

UNIVERSITAT OBERTA DE CATALUNYA (UOC)

**The transition ‘from student to researcher’ in the digital age:
Exploring the affordances of emerging learning ecologies
of PhD e-researchers.**

Doctoral Dissertation

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Ai miei genitori, che hanno sempre creduto in me.

“The first draft is fraught with difficulty.
It’s like giving birth, very painful, but after that
taking care of and playing with the baby is full of joy.”
(Interview to Julian Barnes, *Paris Review*, 18th October 2011).

BIOGRAPHICAL SKETCH

Antonella Esposito has a background in Philosophy and Media Studies. She has been an e-learning practitioner for more than fifteen years, in the capacity of course designer and online tutor, mainly in the higher education sector in Italy. She has been working at the University of Milan, where she was director of the local e-learning center for seven years. In 2011 she was awarded the MRes in Educational and Social Research, Institute of Education, University of London. An extensive excerpt of her MRes dissertation was published on *First Monday* (Esposito, 2013). In 2009 she also earned the certificates in Open and Distance Education from the Open University, UK and in E-learning Course Design and Teaching from the Open University of Catalonia (UOC), Spain. Her current research interests are concerned with learning ecologies of doctoral researchers, digital scholars and open scholarship practices, social media and teacher/student engagement in higher education and research ethics in online settings.

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Abstract

This doctoral dissertation reports an exploratory study on how emerging learning ecologies enabled by Web 2.0 and social web are affecting the self-organized practices and dispositions in the digital of individual PhD students. The PhD candidates are increasingly expected to be ‘doctoral researchers’ rather than ‘doctoral students’ and to demonstrate a greater autonomy in crafting their future position and their becoming ‘knowledge worker’ in a network of research bonds and digital resources. On the other hand, they are provided with unprecedented opportunities to draw advantages from their ‘personal ecologies’ (Andrews & Haythornthwaite, 2011) in their research training and to shape their ‘being researchers’ in a functional or divergent manner with respect to the self-entrepreneurial role they are called to perform as newer researchers. I have contended in this PhD study the relevance of gaining empirical evidence of the current higher education student experience in the digital, in particular at the intersection of being a learner in higher education and becoming a digital scholar in academia. In this perspective, I set out to gain further understandings on students’ experience of e-learning in higher education (Ellis & Goodyear, 2009), as an informed basis for universities to design new social web aware spaces for research training. Likewise, I aimed to gain insights of the extent to which the PhD students are influenced in their doctoral journey by the ‘networked scholarship practices’ (Veletsianos & Kimmons, 2012a) and in which ways they mould social media affordances for their doctoral needs. Thus, this research has explored the emerging learning ecologies of a sample of research students dealing with the Web 2.0 opportunities that are likely to be combined or to compete with the established practices of the local research training and with the scholarly conventions grounded in specific subject areas. The research topic has resulted underexplored, especially in the Italian higher education sector. This lack of empirical research fits the choice of a constructivist grounded theory approach (Charmaz, 2006), where the concepts of ‘learning ecologies’ (Barron, 2006; Jackson, 2013) and ‘chronotope’ (Bakhtin, 1981) have played a role as ‘sensitizing concepts’ in guiding research questions and data collection. These theoretical assumptions have been discussed and integrated in a non-prescriptive theoretical framework. The interplay of spatial and temporal affordances of ‘learning ecologies’ as shaped by PhD e-researchers are here considered relevant to highlight the inherent features of learning ecologies as complex and evolving systems and to reveal characteristics of student agency on the part of individual learners. The theoretical framework has helped to refine the analytical focus of the following research questions: 1) to what extent do the PhD students learn to become researchers using digital tools and environments of Web 2.0; 2) how the trajectories carried out by

the PhD e-researchers in emerging learning ecologies can be conceptualized; 3) what the qualitative findings tell us about the chronotopes activated in the emerging learning ecologies of PhD e-researchers; 4) what are the tensions arising between institution-led activities and emerging self-organized learning opportunities of new PhD 'e-researchers'. An extensive data gathering process has been undertaken across three Italian and one UK universities and has included a sequence of online questionnaires, individual interviews and focus groups. Among the findings, I have firstly drawn a repertoire of digitally-mediated practices self-organized by individual PhD students mostly in an ephemeral and often unplanned manner, but aiming to creatively support or enhance their scholarly practices. Secondly, the analysis of the trajectories in the digital has led to the development of the Digital Engagement Variation framework, where digital engagement is mapped out considering the variation patterns framed by the dimensions of Space, Time, Socialization, Digital Identity, Stance and Tensions. These are intended to be broad categories guiding the theoretical consideration of the socially and historically situated digital behaviours the research participants may display as individuals and as a collective set of people. Thus, some meanings attributed to the Bakhtinian chronotope have been adopted to metaphorically enlighten the core value of digital engagement in terms of resilience, that is as the capacity of the PhD e-researchers to act upon or being acted upon the opportunities of the open Web. Diverse forms of resilience have been identified in PhD researchers, as characterized by peculiar individual dispositions, time and space perspectives: Staying afloat, Pursuing convenience, Embedding the digital and Playing as a bricoleur. To sum up, we have achieved the theoretical understanding of the affordances of PhD e-researchers' emerging ecologies as multi-dimensional and transitional trajectories intentionally undertaken by the individual and generating different reactions toward the opportunities provided by the open Web. These empirical and theoretical achievements have coalesced into implications for practice, where the analysis of the tensions underlying the PhD students' digital engagement has helped to better understand the need for grounding any institutional initiative on social media training for research in the preliminary exploration of student experience and in the negotiation of a 'partnership' between dotcoral education's stakeholders and newer researchers.

Keywords: doctoral researchers, digital scholars, learning ecologies, chronotope, digital engagement.

Abstract (Spanish)

La transición 'de estudiante a investigador' en la era digital: Explorando las potencialidades de ecologías emergentes de aprendizaje para los doctorandos.

Palabras clave: doctorandos, académicos digitales, ecologías del aprendizaje, cronotopos, compromiso digital, gestión del aprendizaje.

Esta tesis doctoral presenta un estudio exploratorio de cómo las ecologías emergentes de aprendizaje, potenciadas por el desarrollo de la Web2.0 y la web social, están afectando la organización de la prácticas y el entorno digital de los estudiantes de doctorado. Las expectativas acerca de los doctorandos son cada vez mayores, y han pasado de ser vistos como 'estudiantes de doctorado' a ser entendidos como 'investigadores de doctorado'. Este giro los sitúa frente al desafío de demostrar mayor autonomía en el establecimiento de una futura posición profesional y en su transformación como “trabajador del conocimiento” al interior de una red de vínculos de investigación y de recursos digitales.

Por fortuna, para su formación a la investigación, se encuentran en una situación sin precedentes de donde poder sacar provecho de las ventajas en contruir sus ‘ecologías personales’ (Andrews & Haythornthwaithe, 2011). Esta transición a ser investigadores puede hacerse de modo funcional o divergente, siempre atendiendo al rol emprendedores que están llamados a cumplir como nuevos investigadores. En esta tesis doctoral he procurado poner de manifiesto la relevancia de obtener evidencia empírica de la actual experiencia del estudiante de doctorado en la era digital; en particular, en la intersección entre ser un alumno de educación superior en un contexto digital y convertirse en un investigador que utiliza eficientemente la web social en un entorno académico. Desde esta perspectiva me he propuesto obtener mayor entendimiento de la experiencia que los estudiantes de educación tienen en entornos digitales (Ellis y Goodyear, 2009) y elaborar, en base a información contrastada, una serie de indicaciones para que las universidades puedan diseñar propuestas de formación en investigación atendiendo a las potencialidades de la web social. Del mismo modo, me he fijado como objetivo indagar en qué medida los estudiantes de doctorado están influenciados, en su recorrido de vida doctoral, por las 'prácticas de aprendizaje de investigación en red' (Veletsianos y Kimmons, 2012a) como así también en las formas en que se apropian de las potencialidades de los medios sociales para suplir las necesidades de devenir investigadores.

Por lo tanto, esta investigación ha profundizado el estudio de las ecologías emergentes de aprendizaje de una muestra seleccionada de estudiantes de doctorado que utilizan la Web 2.0 con el propósito de hacer visibles las oportunidades que estas tecnologías ofrecen y el grado en que son susceptibles de ser combinadas o de competir con las prácticas establecidas de formación de doctorado como así también con las prácticas académicas de cada disciplina.

Este tema de investigación seleccionado ha sido poco explorado, especialmente en el sector de la educación superior italiana. Esta falta de investigación empírica permite justificar de manera coherente la elección de un enfoque de investigación conocido como Teoría Fundamentada Constructivista (*constructivist grounded theory*) (Charmaz, 2006), donde los conceptos de “ecologías de aprendizaje” (Barron, 2006; Jackson, 2013) y “cronotopo” (Bajtín, 1981) fueron integrados y utilizados como “conceptos sensibilizadores” en la formulación de las preguntas de investigación y la colecta de datos. Estos supuestos teóricos se han discutido y se han integrado a un marco teórico no prescriptivo.

La combinación de las potencialidades espaciales y temporales de las ecologías de aprendizaje, tal como articuladas por cada uno los estudiantes de doctorado sujetos de esta investigación, son estudiadas con el fin de delinear sus constituyentes en tanto sistemas complejos y en evolución y de revelar sus características en función de la gestión del aprendizaje de cada individuo.

El marco teórico ha ayudado a refinar el enfoque analítico de las siguientes preguntas de investigación: 1) ¿En qué medida los estudiantes de doctorado aprenden a ser investigadores utilizando herramientas y entornos digitales en la Web2.0?; 2) ¿Cómo pueden ser conceptualizadas las ecologías emergentes de aprendizaje de los estudiantes de doctorado en función de las trayectorias individuales?; 3) ¿Qué pueden informarnos los resultados de un trabajo cualitativo en cuanto a los “cronotopos” activados en las ecologías emergentes de aprendizaje de los estudiantes de doctorado?; 4) ¿Cuáles son las tensiones que surgen entre las actividades propuestas por el programa de doctorado y las oportunidades de aprendizaje auto-organizado emergente de los estudiantes en transición a investigadores?

Un extenso proceso de colecta de datos se ha llevado a cabo en tres universidades italianas y una del Reino Unido que ha incluido una serie de cuestionarios en línea, entrevistas individuales y grupos focales. Entre los hallazgos, he delineado en primer lugar, un repertorio de prácticas digitalmente mediadas y auto-organizadas de los estudiantes de doctorado. Estas prácticas revelaron en su mayoría tener un carácter efímero y muchas veces no planificado, más siempre orientadas a apoyar de manera creativa o mejorar las actividades de investigación.

En segundo lugar, el análisis de las trayectorias en el mundo digital ha permitido el desarrollo de un Marco de Variación del Compromiso Digital, donde el compromiso digital es definido teniendo en cuenta los patrones de variación siguientes: Espacio, Tiempo, Socialización, Identidad digital, Posicionamiento y Tensiones. Estos patrones constituyen categorías útiles para hacer inteligibles los comportamientos de los doctorandos en el mundo digital. En su diversidad permiten dar cuenta de comportamientos tanto individuales como colectivos que pueden ser además situados histórica y socialmente. Asimismo, algunos significados atribuidos a la noción de cronotopo, según la expresión Bakhtiniana, han sido doptados para, metafóricamente, explicar el compromiso digital en términos de la capacidad de resiliencia, es decir, la capacidad de los investigadores de doctorado de actuar o permitir ser influenciados por las oportunidades de la Web abierta.

Diversas formas de resiliencia se han identificado, caracterizadas por aptitudes individuales, disponibilidad de tiempo y las peculiaridades espaciales: Manteniéndose a flote, Buscando la conveniencia, Integrando el mundo digital y Jugando al bricolaje. En resumen, se ha realizado una formulación teórica para explicar las potencialidades de las ecologías emergentes de aprendizaje como trayectorias multidimensionales y de transición, intencionalmente llevadas a cabo por el individuo y generadoras de diferentes reacciones en función de las oportunidades que ofrece la Web abierta.

Estos logros empíricos y teóricos han dado lugar a recomendaciones para la práctica, en el que el análisis de las tensiones subyacentes al compromiso de participación en el mundo digital de los estudiantes de doctorado ha ayudado a comprender mejor la necesidad de basar cualquier iniciativa institucional de formación a la investigación haciendo uso de medios sociales en una exploración preliminar de la experiencia real de los estudiantes en estos entornos y en la negociación de una “asociación” entre los responsables de la formación doctoral y los nuevos investigadores.

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CHAPTER 01

INTRODUCTION

1.1 Introduction

This introductory chapter provides information about the topic and the structure of the present doctoral dissertation, concisely gives justification of the study, outlines the assumptions and the pursued purposes and illustrates the research questions, the related objectives and expected outcomes. It starts accounting for the personal context from which the research topic stems and for the university research settings that were selected in an initial convenience approach and across which a theoretical sampling strategy was applied. Finally, the conclusive sections give an overview of the organization of the chapters and state the limitations of the study and the measures undertaken to counterbalance them.

1.1.1 Personal context and motivation

In this dissertation the plural ‘we’ is conventionally adopted. However, this brief account of the personal context shaping the research is made in first person. My personal background is in Philosophy and Media Studies. I used to be an e-learning designer and manager at the University of Milan, in Italy, before undertaking a journey for re-training myself aiming at a PhD degree’s threshold. This journey was enabled (and made financially sustainable) thanks to the postgraduate degree programs internationally provided by diverse institutions and by the Web 2.0 ecology that has allowed me to build on and contribute to a network of resources, people and ideas, beyond the boundaries of the educational providers. Thus, from 2008 to 2011, I achieved postgraduate certificates in e-learning from the UOC (Open University of Catalonia) and the OU (The Open University, UK) and then a Master of Research degree in Educational and Social Research (online edition) from the Institute of Education, University of London. In parallel, I sought my own way in social media, at the very beginning prompted by personal curiosity and progressively motivated by the desire of re-positioning my ‘academic’ identity as a researcher-in-information rather than as an e-learning practitioner. From 2009 onward, I have undertaken a range of tentative activities in the open Web to ‘test’ diverse social media for my research purposes, but with a serendipitous approach. These self-organized activities have being associated to manifold social media accounts but have also produced many unattended digital spaces. As an example, I tried a blogging activity, but I early realized that the supposed ‘free writing’ of the blog posts indeed required me the time and commitment of a research paper to be published. Thus, I have early drawn my attention to develop a significant online presence on Twitter, through tasks such as acting as a ‘hub’ of relevant

information and scholarly papers on educational technology, building over time my network of trusted contacts, crowdsourcing current grey literature and published research, regularly checking some selected hashtags, engaging in short conversations and capturing the ‘echo’ of international conferences where delegates generously tweeted links and comments. Over time, I have coupled this Twitter handle with the curation of some aggregator web sites (Scoop.it) and overall of my profile in Academia.edu, by adding my published papers and searching new research bonds using selected tags. Although I have not yet designed a proper social media strategy, I can say that I find it my Twitter-focused online presence sustainable and rewarding in terms of personal reputation, construction of a personal learning network and updating on my research topic, that is very current and therefore likely to get benefits from this social network. It is worth noting that the eLearn Center at the UOC, where I have been developing my doctoral program, has always encouraged all the doctoral students to harness the opportunities of social media, according to personal interest and disposition. For instance, when the case of research seminars or involving the PhD students in a scheduled contribution in a research forum or inviting them to participate in the 1st Online International 3 Minutes Thesis Contest (Anderson, 2014), to learn popularizing one’s own research topic. Moreover, the PhD candidates are provided with the opportunity for meeting some guest scholars in person or via web conferencing tool, in order to briefly present and discuss selected aspects of their doctoral research. The emergence of the new strand in e-learning research fostered by the Web 2.0 ecology, my previous professional experience and my wandering attempts in social media led me to focus on changing academic practices of learners and scholars as a core research interest. In the present doctoral study, being a PhD student and a social media user at the same time allowed me to ideally “travel along with the interviewees” (Kvale, 2009, p. 48), by sharing similar practical issues, perplexities and expectations with my research participants regarding the digital engagement of a newer researcher in Web 2.0 ecologies. Thus, my personal story unfolding across social media, along with the conceptual assumptions endorsed and explained next in this chapter, contributed to create a basis on which interpretation of the phenomenon being researched is constructed (Bruner, 1991). In fact, the consideration of the personal perspective of the researcher along with those of the research participants also fits the constructivist grounded theory approach (Charmaz, 2006, 2014) elicited for this study: my condition of an ‘observer as participant’ (Cohen, Manion & Morrison, 2007) in fact provides me with further opportunity for exercising reflexivity in the research process.

1.1.2 Personal ecologies and digital engagement of the PhD researchers

The topic of this dissertation deals with the digital engagement of a group of heterogeneous doctoral students (different age range, subject areas and university contexts), making sense of the ‘emerging Web 2.0 ecologies’ (Williams, Karousou & Mackness, 2011) in the scholarly practices they are developing. In the claims of the “technology enthusiasts” (Gurung & Rutledge, 2014) regarding the learners grown up in the digital age (popularly named ‘digital natives’ by Prensky, 2001a, 2001b, 2009) and coming to the university, also the current doctoral students are supposed to be social media users in their everyday life. As a consequence, they are provided with unprecedented opportunities to draw advantages from their ‘personal ecologies’ (Andrews & Haythornthwaite, 2011) in their research training. In other words, they are supposed to build on the pervasiveness of social media and ownership of digital devices to take “greater agency in the creation of their learning contexts” (Luckin, Clark, Garnett et al., 2011, p. 74), as well as academics of all ranks are subject to techno-cultural pressures (Veletisanos & Kimmons, 2012a) to experiment new participatory behaviours across digital venues. However, the actual uptake of the Web 2.0 tools by the doctoral students is still controversial (James, Norman, De Baets et al., 2009; British library/JISC, 2011). More importantly, Harley, Acord, Earl Novell et al. (2010) consider the PhD students as exposed to local research cultures and argue that is unlikely that young scholars can actually innovate research practices. In fact, these apprentice researchers usually rely on behaviours and discipline-bounded conventions followed by senior scholars, in order to advance in their career. As students and newer researchers the current doctoral students are located in an increasingly ‘digital university’ (Jones, 2013), defined by the controversial narratives around ‘digital natives’ (opposed to a previous generation of ‘digital immigrants’), ‘digital literacy’ (encompassing competing meanings of skills and situated practices) and ‘digital scholarship’ (embedding the sense of producing and sharing knowledge through digital networks). These debates can help to understand how digital technologies have undoubtedly affected higher education rather than how they *per se* have *determined* occurring changes in behaviours of students and researchers. Moreover, just the enabling conditions for digitally-mediated research practices are likely to expose the doctoral researchers to additional tensions in their journey towards the achievement of ‘scholarship’, understood as “a set of epistemological and ethical practices that underpin the social construction of an enduring record of objectively validated knowledge” (Goodfellow, 2014, pp. 2-3). In fact, they are likely to be exposed to the overlapping and competing endeavours of contributing to the elaboration of some original knowledge, dealing with digital technologies for supporting and communicating research in a specific disciplinary and institutional context, and taking one’s own stance towards a culture of sharing that goes beyond the local academic conventions. In the present doctoral study we concur that most PhD students develop their digital

engagement in Web 2.0 ecology through “a trial and error manner, without the direct support or advice of educational institutions” (White, Connaway, Lanclos et al., 2012, p. 3), despite some early attempts on the part of institutions to provide well-established and newer scholars with basic information about social media for research. This self-organized digital engagement represents a case of ‘informalisation of education’ (Sangrà & Wheleer, 2013), where emerging ‘learning ecologies’ are at work. Generally speaking, the notion of ‘learning ecologies’ can be understood as providing a frame to interpret the manifold learning opportunities enabled by the current complex digital landscape, in which issues such as the integration of formal, informal and non-formal opportunities and needs for personalization are at work to improve lifelong learning and professional development (Sangrà, Guitert, Mateo et al., 2011). In the present research, the attention is drawn to the “synergies between participation in technologically mediated informal learning activities and more formal educational environments” (Barron, 2006, p. 198). In other words, the emerging learning ecologies of a sample of research students dealing with the Web 2.0 opportunities are likely to be combined or to compete with the ecologies of the local research training and with the scholarly practices conventions grounded in specific subject areas. This study aimed at exploring dispositions and self-directed activities across social media of a group of digital learners in their becoming (digital) scholars, by moving across hybrid (physical/digital; institution-led/self-directed) learning ecologies (Barron, 2006) they contribute to shape. This qualitative and multi-method research investigated the extent to which the PhD researchers are actually engaged in the open Web and explored in which ways they are moving across institution-led and self-organized learning opportunities. Thus, the topic of the dissertation focuses on the digital engagement of individual PhD researchers able to self-organize the use of Web 2.0 environments and tools to develop academic activities such as searching materials about emergent topics, doing networking with new experts, disseminating one’s own publications, practicing scholarly writing, etc. We contend that a focus on the digitally-mediated practices of the doctoral researchers constitutes a key research topic in order to: a) gain further understandings on students’ experience of e-learning in higher education (Ellis & Goodyear, 2009; Andrews & Haythornthwaithe, 2011), as an informed basis for universities to design new ecologies for research training; b) gain insights on emergent scholarly practices undertaken in the open Web by newer researchers, as predictors of new forms of digital engagement in higher education by scholars (Weller, 2011a, Veletsianos & Kimmons, 2012a; Greenhow & Gleason, 2014).

1.1.3 The study at a glance

The study is based on the exploration of digitally-mediated scholarly practices and attitudes of doctoral students selected across three Italian and one UK universities, during the timespan of about one year. We are aware that the opportunity for collecting the experiences in the ‘digital’ of PhD researchers located in diverse national contexts added richness to qualitative data. However, it is worth noting that the research focuses on the accounts received by individual PhD researchers rather than on the construction of case studies of specific university contexts. The study seeks firstly to map out the actual practices being developed by doctoral students across social media, to complement more ‘traditional’ scholarly channels for supporting and communicating research. Secondly, it identifies the motivations, expectations and criticalities observed by the scholars-in-information while using these tools for research purposes. Thirdly, the research highlights the tensions emerging between the individual initiatives in digital engagement and the work practices of the subject area, the local academic culture and the presence or lack of support on the part of the institutional stakeholders. Finally, the whole exploratory mapping of the digitally-mediated academic practices aims to suggest the implications for scaffolding digital literacies (Sharpe, Beetham & de Freitas, 2010), towards a critical appropriation by the doctoral students of emergent networked practices in their ‘identity-trajectory’ (McAlpine & Amundsen, 2011) as future researchers. In the end, this research therefore seeks to respond to the question whether the PhD e-researchers in their self-organized activities are able to act upon or are being acted upon the opportunities of the open Web. Consequently, it attempt to outline recommendations for research training, considering the emerging dimension of the new scholarship practices (Weller, 2011a; Veletsianos & Kimmons, 2012a; Greenhow & Gleason, 2014) enabled by the open Web.

1.2 Background

This subsection focuses on two main research strands from which this research stems: the extent to which the ‘digital’ is affecting research work in academia and how the doctorates and doctoral students’ profile are changing and are connected with the ‘digitality’.

1.2.1 The ‘digitality’ and the changing academic research practices

New technologies are challenging the “cultures in higher education” (Elhers & Schnekenberg, 2010), that is the way academics and students research, learn and teach at the university. Here digital technologies are understood as “assemblages of practices and components” (Arthur, 2009, p. 28), where focus is on the complex entanglements among technologies and social practices, in a socio-cultural approach. The impact of technologies on research practices in academia is twofold: it

is systemic and infrastructural on the one hand, and emergent and personal on the other hand. In the last two decades, researchers have in fact increasingly built their expertise and conducted their inquiries in digital environments. Digital infrastructures have produced well-established forms of e-research in scientific domains (David, den Besten & Schroeder, 2008; Deepwell & King, 2009; Anandarajan, 2010), while promoting an increasing convergence between scientific and humanistic research work, based on data- and information-intensive, distributed scholarship, as well as on a more collaborative, interdisciplinary approach (Borgman, 2007). The evolving digital landscape constitutes one of the key factors that are shaping “academic tribes and territories” (Trowler, Saunders & Bamber, 2012) in the 21st century, transforming academic practice and knowledge characteristics of disciplines in higher education. On the other hand, we could consider social media as personal information and communication technologies (ICTs) spreading in the last decade and facilitating new forms of socialization for leisure, professional and academic activities. Social media (or Web 2.0 tools) are defined as Web-based software applications enabling user profiles, their interconnections and facilitating the production and sharing of user-generated content (Cormode & Krishnamurthy, 2008). The ecology of tools and services under the umbrella term of social media or ‘open Web’ has been fostering new forms of socialization of knowledge production and dissemination that have been variously discussed as ‘digital scholarship’ (Weller, 2011a), ‘networked scholarship practices’ (Veletsianos & Kimmons, 2012a) and ‘social scholarship’ (Greenhow & Gleason, 2013). Such modes of scholarly communication in the Web 2.0 ecology are said to overcome the boundaries of academia by creating spaces for interaction and participation among professional scientists and amateurs (Lievrouw, 2010). This kind of new technologies is also claimed to enable a growing overlap between networked modes of learning and working in academia (Weller, 2011a; Scanlon, 2011; Veletsianos & Kimmons, 2012a). This potential convergence prompts a rethinking of popular conceptualizations of scholarship (Boyer, 1990) towards a focus on “co-creating learning” as a transversal and constitutive dimension of doing research and teaching (Garnett & Ecclesfield, 2011, 2012). The modes of learning and interacting in the Web 2.0 ecology are said to be the emergence of a “seismic shift in epistemology” (Dede, 2008, p. 80), enabling a permanent peer review approach, that makes the open Web “resemble to an academic world” (Haythornthwaite, 2009) and fosters more fluid interrelation between e-learning and e-research approaches. However, this stance contrasts with the view of specialism in scholarship of the various disciplinary areas (Goodfellow, 2014), and their differently horizontal or hierarchical ‘modes of knowledge production’ (Gibbons, Limoge, Nowotny et al., 1994) that are more or less resilient with respect to change work practices. Furthermore, such claimed evolutions in academic scholarship are in fact said to be still ‘emergent’ and can be better understood within an

ecological framework of “digital scholarship resilience matrix” (Weller, 2011a), in which both conservative motifs and drivers of innovation should be identified at governmental, institutional, disciplinary and individual level. Thus, considering as a whole this contentious field of the digital academia, the attention is drawn to the doctoral students as witnesses and likely contributors of these changing scholarly practices.

1.2.2 Changes in doctorates and doctoral students

In the growing body of knowledge focusing on the changing nature of the doctorates in the last decades (e.g. Walker, Holling, Carpenter et al., 2004; Cumming, 2008, 2010; Boud & Lee, 2009; Lee & Danby, 2011; McAlpine & Amundsen, 2011) many concerns are expressed about the weak approach of doctoral education regarding the challenges faced by the 21st century newer researchers, and produced by a range of pressures from knowledge economy, globalization process and policy recommendations. However, the digital factor is generally not explicitly thematized, in favour of issues of diversification of types of doctorates (e.g. academic vs professional); the need for more collaborative and interdisciplinary research approaches; the progressive emergence of the ‘mature student’ beside the traditional profile of doctoral student who seamlessly access a doctoral program after being awarded a graduate degree. Such issues can be seen as interwoven with policy recommendations for a greater ‘individual researcher development’ (EUA, 2010). In particular, the PhD students “engage in creative mixes of education, training, research, work and career development” (Cummings, 2010, p. 26) in their doctoral experience, that is increasingly characterized by relationships with a range of stakeholders. This is likely to produced new forms of “negotiated agency” (McAlpine & Amundsen, 2011) that go beyond the core, traditional relationship between the apprentice researcher and the supervisor(s) (Shulman, 2004). Moreover, in a university which is changing its own nature from being the source of progressive knowledge in a nation state to being a network of services and research bonds (Cornelissen, Simons, & Masschelein, 2007, p. 132), also the commitment expected by PhD researchers is subject to changes:

Doctoral students are asked to take responsibility for *their own* learning processes. They need to maintain *their own* research businesses and define *their own* projects. This suggests that is up to them to establish the norm and to define *their own destinations*. (Cornelissen et al., 2007, p. 132)

Such a picture references what Neil Selwyn calls “individualization of practice and action” (2011, p. 13) occurring across the various levels of the current digital education and requiring “increased levels of self-dependence and entrepreneurial thinking on the part of the individual” (p. 13). It can

be said that PhD candidates are increasingly expected to be ‘doctoral researchers’ rather than ‘doctoral students’, where a greater autonomy is required to produce knowledge in a network of research bonds and resources:

In doctoral researchers’ training, competences assume a key role in relation to communication, negotiation, management, adaptability, capacity to solve complex problems and to work with multi-disciplinary approaches and in international contexts. (Trincherò, 2014, p. 230, our translation)

This focus is aligned with the Dublin Descriptors (ECA Wiki) of the expected competences of higher education, where the doctoral education has as main objective in making the PhD students knowledge producers. Likewise, a recent EU policy report aiming at devising a developmental framework for digital competences (Ferrari, 2013) provides a baseline instrument for reasoning about the need for digital literacies in doctoral experience, whereas the attention to the personal dispositions, the context of the research culture and training result of paramount relevance in the case of the PhD e-researchers.

Finally, it is worth noting that the the ‘digital’ has also a relevant impact on the textual academic practices, challenging the same format of the dissertations (Andrews, Borg, Boyd Davis et al., 2012). Accounting for the UK higher education context, Andrews and his associates discuss the occurring shift towards an idea of dissertation as a process rather than as a product. This practice is being enabled by the use of social networking sites to publish rough ideas and early findings and seems to be aligned with the dire need for early building an academic identity (and the related career development) by the newer researchers.

1.2.3 Emergent institutional and self-organized initiatives

Currently, some higher education institutions have started to acknowledge the productive link between the need for developing general research skills related to engagement, influence and personal effectiveness (see VITAE Researcher Development Framework) such as communication and networking skills and the use of (social) technologies supporting the individual tasks. Focusing on the UK and Italian university contexts as the research settings for this study, we should briefly remind some key differences between doctoral education in Italy and UK: the former was established only in 1980, whereas the latter has a longstanding tradition dating back at the beginning of the twentieth century. Moreover, in Italy the doctoral programs are still experiencing a tension (Regini, n.d.) between the traditional European approach (based on the apprenticeship model) and the US approach (based on coursework in the early PhD phase), whilst the UK is closer to the US model and the endeavours for meeting the needs of new types of PhD students (Park,

2005) have been developed along with a strong provision of research methods training (see some current examples in LERU, 2014). This gap between the two doctoral contexts is also apparent looking at the attention given to the training needs of the PhD researchers regarding the digital technologies. In fact, we can count across UK a range of institutional initiatives provide the well-established and future academics with websites of resources and advice (e.g. Ready to research, The Open University, UK); multimedia tutorials (e.g. Digital technologies for researchers, University of Exeter, UK) and guides (Social media for researchers, IOE, UK; Minocha & Petre, 2012). National bodies such as the RIN - Research Information Network and VITAE have produced devoted guides for researchers (Cann, Dimitriou & Hooley, 2011). Moreover, a cluster of devoted funded projects in the field of digital literacies in higher education has recently been developed in UK (Developing Digital Literacies, JISC), where the digital engagement of postgraduate students (Digital literacies as postgraduate attribute, IOE) and the skills of digital scholars (Exeter CASCADE Project, University of Exeter) have been investigated. In Italy some isolated pilots of workshop and short seminars on social media for research are present in specific doctoral programs (e.g. Information Society at the University of Milano-Bicocca; Design at the Politecnico of Milano), or otherwise these instruments are briefly mentioned in research communication classes. On the other hand, a recent paper has drawn attention to the relevance of PLEs (Personal Learning Environments) and MOOCs (Massive Open Online courses) as means to vehicle social media training addressing doctoral students (Trincherò, 2014).

1.3 Justification of the study

This section aims to highlight the main reasons why this study was undertaken, starting from the findings of a previous small-scale interview study in an Italian university and discussing the current gaps in the literature regarding the empirical evidence of the PhD e-researchers and the ways of understanding digital learners and their engagement through the lens of learning ecologies.

1.3.1 A previous study on digital scholars

The initial idea of this doctoral thesis stems from the findings of a small scale interview project submitted as a MRes dissertation¹ and then published (Esposito, 2013). In that qualitative study a few profiles of researchers (including PhD students) in an Italian university to a degree matched the definition of “digital, networked and open” scholar recently elaborated by Martin Weller (2011a), in

¹ The dissertation “*Research practices in transition: investigating the relationship between digital scholarship and open scholarship in higher education settings*” was submitted in October 2011 for the requirements of the Master of Research in Educational and Social Research, Institute of Education, University of London.

relation to the emergent scholarly practices harnessing the social Web to exploit innovative forms of knowledge production and distribution. In particular, among the interviewees in Humanities and Social Sciences subject areas there were a few champions of an eclectic and self-legitimizing approach to new technologies of communication, despite the respective disciplinary contexts are fairly indifferent to the potential of new digital tools/environments. In that interview study some vignettes and cues arise as related to the doctoral experience in the digital age: for instance, the reluctance by faculty in Health Sciences to let PhD researchers daring academic writing in the open (e.g. blogging draft ideas); the opportunity given to a doctoral student in Social Sciences to take part in a group blog in his department; the constraint experienced by a PhD students in Physics who exclusively interact with the members of a large, international research group, within a bounded digital environment; the case of PhD student in Humanities, but involved in the new field of Digital Archeology, who needs working in the open just to collaborate in the construction of suitable methodological instruments. These probed examples suggest the opportunity to investigate the extent to which emerging digital tools and environments are starting to affect the work practices and even the ‘being researcher’ of the PhD students in the Italian higher education setting. The proposal of this doctoral research has therefore taken cue from the contention that there are unheeded networked practices undertaken by niches of doctoral researchers in diverse disciplinary contexts that it is worth focusing on, because they are likely to highlight any gaps and weaknesses in current approaches to formation of new ‘digital’ researchers in academia. In fact, a focus on doctoral students could be of interest from an institutional perspective, to outline prospective actions of academic literacies and design projects of innovative online communities of practices. Following Whiteman and Oliver (2008), we consider the study of digitally-mediated practices being constructed by doctoral e-researchers as an opportunity to rethink doctoral education as a process in which to balance the elements of ‘knowing’, ‘acting’ and ‘being’ (Barnett & Coate, 2005), whereas the dimension of ‘being’ (understood as embedded forms of knowing and acting in the world) is often neglected, although it is at the heart of the transition from a role as a ‘good course taker’ towards that as an ‘independent researcher’ (Lovitts, 2005).

1.3.2 The lack of empirical research on PhD e-researchers

In fact, the PhD candidates have typically hybrid profiles of students and researchers which are likely to provide insights both about digital learners in universities and future (digital) scholars in academia. Whereas empirical research on social media practices of academics is still scant, although growing (Procter, Williams & Stewart, 2010; CIBER, 2010; Nicholas & Rowlands, 2011; Rowlands, Nicholas, Russell et al., 2011; Lupton, 2014; Manca, 2014; Zhu, 2014), the topic of

digital engagement of doctoral students is to date particularly underresearched, whilst the investigation of digital scholars belonging to diverse ranks is advocated:

it would be worthwhile for future research to explore how scholars use social media to cope with the expectations of their academic roles (eg, being a doctoral student vs. being a newly hired faculty member). (Veletsianos, 2013, p. 648)

However, regarding the 'digital' PhD students, a few large-scale studies have started to mine the empirical field (James, Norman, De Baets et al., 2009; British Library/JISC, 2011). Generally speaking, the current university students are proved not to be 'default' digitally literate learners (Hargittai, 2009; Bullen & Morgan, 2011; Ferri, Cavalli, Mangiatordi et al., 2010; Sharpe et al., 2010; Bennett, 2012; Jones & Shao, 2011), as popular and contested generation-focused metaphors claimed in the last decade (e.g. Prensky 2001a; 2001b; 2009). Wide-range studies on the digital engagement of higher education students (e.g. LLIDA Project, 2008-2009; Digital Visitors and Residents Project, 2011-13) show a range of digital behaviours and a variety of communication and collaboration approaches that is hard to crystallize in typologies of digital learners. Likewise, an increasing uptake of the open Web by doctoral students has been demonstrated by some recent large scale inquiries across UK universities (James et al., 2009; British Library/ JISC, 2011), notwithstanding controversial findings referring to a prevalent passive versus active ICTs use and the lack of institutional support, guidance and legitimation as main inhibitors. Moreover, recent scholarly contributions have highlighted relevant issues related to the need for not undervaluing the learning curve in digital literacies (Meyer, 2010); the likely role of participatory design activities in fostering self-reflection in ICTs use by the newer researchers (Carmichael & Burchmore, 2010); the opportunity for harnessing the different facilities provided by the Web 2.0 ecology (Heinze, Joubert & Gilet, 2010; Millan & Bromage, 2011) across the diverse phases of a doctoral journey (Zaman, 2010); the perspective of building one's own academic identity in social media (Coverdale, 2011; Fransman, 2013). On the other hand, in Italy there is scarcity of empirical research on the topic, whereas the relevance of the digital skills as transversal competences in doctoral education is generally acknowledged (Orefice & Cunti, 2009) and the need for including the digital competences in the design of research training has just started to be thematized among educational researchers (Ranieri, 2014; Trincherro, 2014).

As a whole, current research returns a still unclear picture of the extent to which current PhD students can be considered as digitally-literate in scholarly usage of social media. However, some scholars (Williams, Karousou & Mackness, 2011; Gourlay & Oliver, 2012) acknowledge that some individuals are more able than others in developing resilience (Ross, Gallagher & Macleod, 2013) in open digital environments, that is to develop personal meaning making trajectories, despite the

lack of directions and shared behaviours. Thus, we can argue that there are niches of “*silent experts* in how, where and by whom want to be educated” (Williams et al., 2011), whose digitally-mediated practices constitute a sort of “learning black market” (White, 2011) that particularly needs to be valued in formal doctoral education in order to meet the double-face needs of digital learners and digital scholars. Within this scenario, this study focused on emergent profiles of doctoral e-researchers as digital learners playing a role as many “*silent experts*” (Williams et al., 2011), experiencing a transition process towards their ‘being a researcher’, with or without support and advice from a more or less digitally resilient university context, peers and disciplinary culture.

1.3.3 The need for mapping emerging learning ecologies

The debates between the supporters of the ‘hope argument’ and the opponents endorsing the ‘fear argument’ about digital education (Gurung & Rutfeld, 2014) make it relevant to gain empirical evidence of the actual student experience in personalized forms of e-learning (Ellis & Goodyear, 2009), in particular at the intersection of being a digital learner in higher education and becoming a digital scholar in academia. A perspective of understanding higher education digital learners as ‘free floating’, as observed by Gourlay and Oliver (2014), that is as individuals self-directing their behaviours in the digital landscape thanks to personal, fixed and decontextualized skills, can be misleading. In fact, such perspective is likely to miss the point of the complex entanglements linking and shaping (and that are shaped by) the students and the personal and multiple contexts where they live, often work and study. In this sense, focusing on digital engagement in the perspective of learning ecologies (Barron, 2006) can help to holistically consider the constraints of the local research training, the underlying pressure from the research culture linked to (inter)disciplinary areas and the personal background and orientations contributing to shape a defined digital behaviour occurring in a specific situation. This mode of treating digital engagement posits a distance from a conception of digitally-literate learners as characterized by specific personal traits, as in the popular innovation propensity types devised by Rogers (1995) and sometimes used to indicate personal conditions affecting the levels of digital competence, or in the generation-bounded classification of ‘digital natives’ and ‘digital immigrants’ (e.g. Prensky, 2001a, 2001b, 2009; Palfrey & Gasser, 2008). Rather, focus on the individual agency of the PhD researchers as a perspective to shed light on how emerging learning ecologies work and change over time and across digital spaces can help to understand the extent to which the PhD students are influenced in their ‘identity-trajectory’ (McAlpine & Amundsen, 2011) by the ‘networked scholarship practices’ (Veletsianos & Kimmons, 2012a) and in which ways they mould social media affordances for their doctoral needs.

1.4 Assumptions and purposes of the study

The study encompasses a series of assumptions framing the research as a whole and that will be discussed across the subsequent chapters. Generally speaking and building on previous research, this study is based on the main assumption that there is a niche of digitally engaged PhD students that it is worth investigating as witnesses and co-authors of emerging learning ecologies and bearers of potentially innovative research practices. As we underlined in the previous sections, from a preliminary literature review the topic results to be underresearched, especially in the Italian higher education sector. Thus, it fits a grounded theory approach in a constructivist perspective (Charmaz, 2006), where the concepts of ‘learning ecologies’ (Barron, 2006; Jackson, 2013) and ‘chronotope’ (Bakhtin, 1981) play a role as ‘sensitizing concepts’ in guiding data collection. The concept of ‘learning ecologies’ is here specifically interpreted in the perspective of the individual’s effort of combining and merging diverse learning opportunities, drawing from formal and informal, physical and digital contexts (Barron, 2006) and sifting and shaping the ‘forms of assistance’ (Luckin, 2010) needed for the doctoral journey. In such endeavour the individual learner creates and crosses shifting spatial and temporal configurations, that shed light on the affordances of emerging learning ecologies, characterized by an inherent hybridity of formal/informal, physical/digital contexts. Thus, the concept of ‘chronotope’ (Bakhtin, 1981) - originally devised to identify literary genres and author’s and characters’ worldviews - is understood as a matrix, in which time and space markers taken together help to gain insights on how the doctoral students are making sense of the multiple spaces, resources and observed practices which they are exposed to. The endeavour of the PhD researchers making assemblages of institution-led and self-organized opportunities is in fact understood as a chronotopic (i.e. space/time) movement, that is as an intentional shifting state of experience across diverse space and time dimensions. A special attention is devoted to the exploration of the ways in which doctoral e-researchers interpret and orientate themselves across virtual and physical spaces (and the related temporal dimensions) while adopting social media in their research training. The ‘institution-led learning ecologies’ refer to the engagement of the doctoral researchers with the evolving set of ‘forms of assistance’ (Luckin, 2010) provided during their doctorate. The ‘self-organized learning ecologies’ are related to the engagement of the doctoral researchers with the informal digital spaces and resources they are acquainted in their everyday life, in order to shape them for academic purposes. The process of making sense of the two complementary/competing learning ecologies is likely to produce shifts in spatial and temporal dimensions of the individual’s doctoral experience. Taking into account the cautious and nuanced accounts of the digital engagement of university students provided by recent empirical research

(Bullen & Morgan, 2011; Jones & Shao, 2011; Gourlay & Oliver, 2012), the study also assumes to avoid the trap of defining ‘typologies’ of digital learners, because eliciting some clusters of observed practices to define as many categories of digitally-literate individuals may be reductive with respect to the complexity and variability of digital engagement. On the contrary, this research aims at grounding in data a conceptualization of the digital engagement of the PhD researchers making sense of their variable orientations. Focusing on social media practices, the study particularly considers the extent to which the scholarly communication changing habits (Hpolliman, 2011; Weller, 2011a; Ponte & Simon, 2011; Acord & Harley, 2013; Czerniewicz, 2013; Kulczycki, 2013; Puschmann, 2014) are influencing (or not) the ways in which the newer researchers build their own academic identity, relate to their peers and other experts, disseminate their published research or dare experiments in academic writing, rather than how the digital (understood both as devices and software applications) is affecting their methodological practices (e.g. Giannandrea, Fedeli & Fiorani, n.d.; Adams & Thompson, 2014). Given the assumptions above summarized, this doctoral research focuses on whether and to what extent learning ecologies being co-constructed in the social web by learners in their doctoral journey can suggest opportunities and challenges for doctoral education to be more aligned with an emerging dimension of networked scholarship. In particular, the present research seeks to pursue the following purposes (Table 1), leading to specific types of knowledge contribution in empirical and theoretical domains and regarding the implications for practice.

Table 1.

The purposes of this doctoral study, inflected per empirical and theoretical domains and implications for practice.

Domain	Aims	
Empirical domain	Exploring the underresearched phenomenon of the PhD e-researchers, mainly across the Italian academic setting.	Gaining insights on the capabilities of self-directed PhD students to combine original space/time configurations in their digital engagement.
Theoretical domain	Framing the dimensions of the digital engagement of PhD e-researchers, starting from a focus on new spaces and temporal practices.	Bridging discourses on digital learners in higher education and digital scholars in academia.
Implications for practice	Considering PhD e-researchers as a possible new ‘keystone species’, that is as likely resilient agents, able to be compliant to the scholarly communication conventions along with introducing new scholarship practices.	Drawing recommendations about considering the needs of digital literacies in doctoral training.

The inquiry project aims to identify current and emergent uses of Web 2.0 technologies for knowledge production and communication undertaken by individual doctoral students. In particular is designed to illustrate complementary or alternative learning spaces and temporal configurations

arising from PhD researchers' personal ecologies, along with absorbing conventions from a defined research context and culture. This approach is likely to reveal tensions occurring between institution-led prescribed learning practices and self-organised digitally-mediated practices. Thus, this research seeks to highlight contrasting behaviours striving to balance “openness and constraint” and “emergent and prescriptive learning” (Williams, Karousou & Mackness, 2011); the resulted ‘map’ of such behaviours aims to help to cover the lack of information “on synergies between participation in technologically mediated informal learning activities and more formal educational environments” (Barron, 2006, p. 198) and to provide clues to university stakeholders to enhance the approach to doctoral training.

1.5 Research questions, objectives and expected outcomes

The general goals of the proposed study refer to: a) gain insights on the doctoral experience supported and/or enhanced in Web 2.0 ecologies in self-organized ways; b) gain understandings of the trajectories of the PhD e-researchers in emerging learning ecologies; c) draw lessons learned for doctoral research training to support the development of some generic skills through social media and to enable a critical uptake of networked scholarly practice. Within such general goals, a series of research questions and related objectives and outcomes are identified, as showed in the Table 2 below.

Table 2.

Matching research questions with the related objectives and expected outcomes.

Main research question	Main objectives	Main outcomes
<p>What are the affordances of emerging learning ecologies of PhD ‘e-researchers’ in higher education settings?</p>	<p>The main aim is to explore digital engagement of the PhD students as a key process to understand the affordances of emerging learning ecologies in the interception of being a postgraduate student and becoming a researcher in the digital age.</p>	<p>The main expected outcome is to draw empirical evidence and conceptualize the time/space orientations as the affordances characterizing the PhD e-researchers’ digital engagement in emerging learning ecologies,.</p>
Sub-questions	Objectives	Outcomes
<p>A. To what extent do the PhD students learn to become researchers using digital tools and environments in Web 2.0 ecologies?</p>	<p>Add to the knowledge base of empirical studies revealing current and emergent digitally-mediated behaviours of doctoral students (James et al., 2009; JISC/BL 2009-2011; Zhu & Procter, 2012). Collect baseline data on which developing the subsequent individual and group interviews.</p>	<p><i>Descriptive.</i> Informed collection of the current digitally-mediated practices undertaken by individual doctoral e-researchers in three Italian and one UK university settings.</p>
<p>B. How can the trajectories carried out by the PhD e-researchers in emerging learning ecologies be conceptualized, as arising from the accounted practices and dispositions in the open Web?</p>	<p>Add to the emergent body of knowledge seeking to define online engagement of digital learners in higher education (White & Le Cornu, 2011; White et al., 2012), by linking digital engagement and learning ecologies (Gurung & Rutfeld, 2014).</p>	<p><i>Analytical.</i> Working out of a conceptual framework grounded on qualitative data and apt to articulate the trajectories of the PhD e-researchers in hybrid (physical/virtual; institution-led/self-organized) learning ecologies.</p>
<p>C. What can the qualitative findings tell us about the chronotopes activated in the emerging learning ecologies of PhD e-researchers?</p>	<p>Probe the capacity of individual PhD e-researchers to act upon or to be acted upon the opportunities of the open Web, by using the analytical tool of chronotope (Bakhtin, 1981) and highlighting the implied traces of resilience. Add to the emergent body of knowledge focusing on ‘time factor’ in digital education (Gros, Barberà & Kirchner, 2010; Barberà & Clarà, 2014).</p>	<p><i>Analytical.</i> Identification of <u>the chronotopes activated by the PhD e-researchers</u>, in their individual engagement with technologies, by crossing boundaries between scripted and self-organized activities.</p>
<p>D. What are the tensions arising between institution-led and emerging self-organized learning ecologies of new PhD ‘e-researchers’?</p>	<p>Gain understandings on enablers and constraints for the construction of trajectories of digital literacies in research training.</p>	<p><i>Practical implications.</i> Draw recommendations about change in doctoral research training to be critically aligned with networked practices in academia.</p>

1.6 Organization of the chapters

This dissertation is organized in nine chapters, whose content is summarized below in order to provide the reader with a quick preview of the sequence of topics presented in the dissertation.

CHAPTER 01 – Introduction

The present introductory chapter has the function to provide a general overview of the thematic focus, the aims and the methodological path characterizing this PhD research. In particular, it briefly locates the research topic in the literature and in the current initiatives, framing the boundaries and the limitations of the study.

CHAPTER 02 – Methodology and Methods

Chapter Two deals with research approach and methodology. The exploratory and qualitative nature of this doctoral study is discussed in relation with the choice of a constructivist grounded theory approach (Charmaz, 2006, 2014), within an interpretive epistemological orientation, that gives value to the negotiation of meanings and implies a conception of findings as tentative and provisional. The data gathering plan, including a sequence of online questionnaires, one-to-one interviews and focus groups, and the data analysis are outlined and justified as well as the methodological underpinnings of the data collection techniques. The approach to ethical issues is also explained as well as the perspective on generalization, validity and reliability of findings. Finally, the role of literature review is located in the debate on the different interpretations of grounded theory.

CHAPTER 03 – Literature review: The newer researchers and the Web 2.0 ecologies' pressures on the university in a digital era

Chapter Three is devoted to the research literature strands considered in this study and framing the selected topic at a crossroad of the knowledge domains about digital learners and digital scholars. The literature review takes cue from this map of research areas linked to the topic of the PhD e-researchers:

illustrated along with the ethical procedures applies. This baseline data allowed to sketch an early picture of learning ecologies of the ‘digital’ PhD researchers, considering the digital facilities provided by the respective institutions, the actual ICTs uses and the expectations towards the open Web for research activities. In particular, the open comments received in e-surveys let it emerge a range of orientations that were further explored in the subsequent interviewing process.

CHAPTER 06 – The individual interviews: Conceptualizing the Digital Engagement Variation

Chapter Six presents and discusses the findings drawn from the development of 26 individual interviews undertaken in three subsequent time spans, across the four universities involved in the study. Firstly, the profiles of the interviewees are briefly presented. Secondly, the selected quotes from the interviews are framed under the main themes emerged, comparing PhD students’ insights from different contexts and disciplinary areas. Finally, the conceptualization of the Digital Engagement Variation (DEV) arising from data is discussed, as characterizing the chronotopic moves of the PhD students across the overlapping/competing institution-led and self-organized digital opportunities. The six dimensions of Space, Time, Socialization, Digital identity, Stance, Tensions and the related polarizations are discussed and grounded in the collected data. Furthermore, the sampling strategies applied and the sample drawn from the individual interviews are described along with the interview protocol and the ethical cautions. Subsequently, data analysis process is detailed from initial coding to theoretical coding, along with the conceptual achievements it has allowed.

CHAPTER 07 – The focus groups: Assessing the Digital Engagement Variation

Chapter Seven presents the findings of the four focus groups carried out across four diverse university settings. The aim of the chapter is to cross-check the individual interviews’ results and accounts for new examples to assess and scaffold the dimensions and the polarizations identified in the Digital Engagement Variation conceptual framework. Similarly to Chapter 6, the findings are framed according to main themes and then are used to further discuss the occurring changes in digital engagement as previously observed in interview data. Likewise, the focus group protocol, the sampling strategies and the drawn sample are described along with the ethical procedures applied.

CHAPTER 08 – Conclusions: Reviewing the PhD e-researchers' trajectories in the digital

Chapter Eight re-examines all the research findings and seeks to match them with the research questions and with further literature review. Thus, firstly the map of social media practices for research are discussed. Secondly, the trajectories in the digital arising from the research participants are highlighted as their peculiar crossing boundaries activity between learning opportunities. Thirdly, focus is on the identification of the more apparent chronotopes drawn from the interviews' accounts, in order to shed light on the capacity of individual PhD e-researchers to develop resilience in their digital engagement. Finally, the tensions occurring between the self-organized activities and the well-established conventions of the local research training and disciplinary cultures are highlighted, in order to draw implications for practice. Some recommendations are drawn for approaching social media for research in a flexible and critical way, avoiding a one-size-fits-all model which would overlook local research cultures, institutional environment and need for personalization. Finally, the limitations of this study are discussed along with the need for future research.

CHAPTER 2

RESEARCH METHODOLOGY AND METHODS

2.1 Introduction

This chapter accounts for the constructivist grounded theory approach informing this doctoral work and for the related strategies and techniques that were actually adopted to design the research project and carry out data collection and analysis. The exploratory nature of this study, the research questions to be answered, the selected methodology and techniques frame the dissertation work as field research with an interpretative lens, thus striving to “understand and interpret the world in terms of its actors” (Cohen, Manion & Morrison, 2007, p. 26). We set out to explore the affordances of emerging learning ecologies of the PhD researchers in the digital age, by combining the ‘emic’ perspective of individual doctoral students with the ‘etic’ views of us as researchers, mainly gathering “qualitative empirical materials” (Denzin & Lincoln, 2005). The interpretative orientation is pursued by approaching the strategies of ‘constructivist grounded theory’ (Charmaz, 2002, 2006, 2008, 2014), that is aligned with the most recent developments of grounded theory (Pidgeon & Henwood, 2006; Dey, 2007; Morse, Noerager Stern, Corbin et al., 2009; Birks & Mills, 2011). We adopt approaches and techniques of constructivist grounded theory to inform this research study, and in places to mark differences and overlapping with other strands of qualitative research (Cohen, Manion & Morrison, 2007, 2011; Cresswell, 2007). This chapter accounts both for the philosophical and methodological underpinnings characterizing the research approach and the techniques selected to undertake this doctoral project. The chapter firstly presents the interplay of ontological, epistemological and methodological stances at work in the research approach and process of this study; secondly, it locates Constructivist Grounded Theory (CGT from here onward) within the subsequent generations of Grounded Theory (GT from here onward) developed over time; thirdly, it discusses some key issues characterizing CGT as shaping the specific perspective of this research project, including the role of theoretical and empirical literature review. Thus, it outlines the research design with a focus on the sampling strategies and on data collection approach and discusses the methodological background on which the selected data gathering techniques were based. Then, ethics decision making is made clear, both as theoretical background and as the practical solutions being applied. Finally, the application of quality assurance criteria of generalization, validity and reliability to this qualitative study are discussed, on the basis of literature for qualitative research and from the angle of GT methodology.

2.2 Ontology, epistemology and methodology

Leading qualitative social scientists acknowledge that researchers approach their research work with a basic set of ontological, epistemological, axiological and methodological assumptions (e.g. Guba & Lincoln, 1994, p. 105; Cresswell, 1998, pp. 74-77; Patton, 2002, p. 206). Thus, clarifying what is our general philosophical idea of the world, how we can gain knowledge of it and how we aim at investigating it constitutes the essential premise of any inquiry effort. This is also inescapable in order to locate our position as researchers within the historical developments of GT approach (Birks & Mills, 2011): in fact “it is the researchers’ ontological and epistemological position that determines the form of grounded theory they undertake” (Mills, Bonner & Francis, 2006, p. 9). In other words, any research work requires to make explicit the underlying ‘metatheory’. The term ‘metatheory’ in fact refers to a particular way of thinking theory within the mode of interrogation of research, highlighting reasons why researchers do what they do, how they situate it, how they validate it, in a specific inquiry (Brown & Dowling, 2010). Others argue that: “A metatheory places specific research questions within a broader framework and encourages the integration of theorizing for a range of potentially disparate phenomena” (Abrams & Hogg, 2004). This means that a particular metatheory can be useful to account for a specific class and range of phenomena to be researched: in fact a metatheory can be understood as an overarching perspective that helps to provide a ‘narrative of coherence’ to all the design components of a specific inquiry. It accounts for the epistemological, ontological and methodological researcher’s stances and at the same time has the potential to show ties to other theories. Where any consistent explanation of the alignment of the research design to the decisions guiding the research process is missing, the “research design can appear random, ununiformed, inconsistent, unjustified and/or poorly reported” (Koro-Ljungberg, Yendol-Hoppey, Smith et al., 2009, p. 688). However, the role of metatheory in the research process should be interpreted as “interrogative, inspirational, but not prescriptive” (Brown & Dowling, 1998, p. 89), as well as implications for practice and policy are with respect to research. Moreover, consistency in epistemological/ontological awareness and instantiation of methods should be recursively interrogated, in order to reveal how “the paradoxes and tensions we encounter as we design our research studies” can enable us to change, adapt and redefine “the boundaries among epistemologies and methodologies” (Koro-Ljungberg et al., 2009, p. 697). Actually, one of the big challenges of social and educational research is related to combining competing statements at epistemological, ontological and methodological level, while arising along the research process. For this reason, we briefly discuss our overall position (see a summary in Table 3 below) in this devoted section, but we repropose this kind of discussion across the dissertation (in this chapter and beyond), in order to better articulate and challenge, where needed,

these claims.

Table 3.

Summary of epistemological, ontological and methodological assumptions.

	Assumptions	
Ontology	Social constructionism ('constructivism' in Charmaz's terminology) = 'Truth' or 'meanings' are constructed, not created or found, through the interaction between individuals and the "worlds that are interpreting" (Crotty, 1998).	'Subtle realism' (Hammersley, 2002): acknowledgement of the reality socially defined, as referred to the subjective experience of everyday life. Reality as co-constructed in the interaction between the observed and the observer (Charmaz, 2000).
Epistemology	Interpretive orientation = 'emic' perspective in which the researchers (from their own 'etic' view) aim to "understand and interpret the world in terms of its actors" (Cohen et al., 2007).	Interpretations are "social constructions of social constructions found in data" (Charmaz, 1990). Knowledge as context-bound (Dey, 2004), tentative and provisional.
Position of the researcher	'Participant as observer' (Cohen et al., 2007), in a continuum in which on the one end researcher is 'full observer' and on the other end is 'full participant' in the research process. Researcher is a "co-producer of meanings and data" (Charmaz, 2000).	The researcher makes it explicit her theoretical pre-conceptions and her being historically and socially situated.
Methodology	Constructivist grounded theory (Charmaz). "Ontologically relativist and epistemologically subjectivist" (Mills, Bonner & Francis, 2006b).	CGT aims at elucidating respondents' and researchers' meanings through closely examining views and values, beliefs and ideologies as well as acts, facts and artefacts.
Initial Method	Online questionnaires are used as secondary method to collect baseline data.	Exploratory use of the online survey (Bailey, 1994).
Core Method	Interviewing: individual interviews and focus groups.	Notion of 'active interview' (Holstein & Gubrium, 2002). Interview knowledge as produced, situated, relational, conversational, narrative and pragmatic (Kvale & Brennan, 2009).

We have stated in the introduction that the exploratory aim, the research questions and the data gathering techniques adopted in our study frame it as a qualitative inquiry, within an interpretive epistemological orientation. Unlike positivist orientation, which aims at pursuing objectivity through scientific methods, measuring phenomena and drawing general laws, interpretivist orientation relies on subjectivity as a way to view the world. It typically uses "human as research instrument" (Lincoln & Guba, 1985, p. 39), focusing on examining people's understandings and interpretations of their social environment. Interpretivism gives value to negotiation of meanings and implies a conception of findings as tentative and provisional. It is worth noting that for a long time epistemological and ontological tensions between interpretivism and positivism have been

interpreted as closely related to a supposed dichotomy of qualitative versus quantitative research. Otherwise, more recent views concur that “interpretivism, like positivism, is distinguished by its analytical approach and the goals of the researcher, not by its methodology” (Roth & Metha, 2002). This is the reason why we prefer using the term ‘orientation’ rather than paradigm. Our general goal is both to gain insights from doctoral researchers to better understand the extent to which doctoral journey is changing in digital age and how PhD students deal with competing or overlapping spatial and temporal dimensions across institution-led and self-organized academic activities. The related analytical approach we adopt strives to reveal neglected aspects of academic (in particular learning and research) cultures in transition; to give voice to different perspectives by individual new researchers of different subject areas and level of experience; to detect predictors about digital engagement and change to be led by doctoral researchers. This analytical approach matches constructionist claims that “meanings are constructed by human beings as they engage with the world they are interpreting” (Crotty, 1998, p. 43). Thus, ‘truth’ is socially constructed and situated: “realities are social constructions of the mind, and that they exist as many such constructions as there are individuals (although clearly many constructions will be shared)” (Guba & Lincoln, 1989, p. 43). Such an approach is aligned with the ontological position defined by Hammersley (1992) as “subtle realism”, in which “reality is socially defined but this reality refers to the subjective experience of every day life, how the world is understood rather than to the objective reality of the natural world” (Andrews, 2012). This constitutes a mid position in a continuum in which on the one end there is a conception of reality as ‘objective’, ‘out there’ and on the other end there is the postmodern stance of multiple realities and multiple interpretations. Epistemologically, the individuals are seen as constructing subjective, varied and multiple meanings of their experiences: this leads to highlight the ‘voice’ of the researched throughout the research process. At the same time, the researcher aims “to look for the complexity of views rather than to narrow the meanings into a few categories or ideas” (Cresswell, 2007, p. 20). Thus, we endorse a social constructivist approach, in which the reality is seen as something co-constructed through the interactive process between an observed (or interviewed) and an observer (or interviewer) (Charmaz, 2000). In this approach, the researcher is positioned as “participants’ partner in the research process, rather than as an objective analyst of subjects’ experiences” (Mills, Bonner & Francis, 2006, p. 12). The interaction between the researcher and participants “produces the data, and therefore the meanings that the researcher observes and defines” (Charmaz, 1995, p. 35). In terms of CGT the overall position can be summarized through the following statement:

Ontologically relativist and epistemologically subjectivist, constructivist grounded theory overtly reshapes the interactive relationship between the researcher and participants in the

research process and in doing so brings the centrality of the researcher as author to the methodological front. (Mills, Bonner & Francis, 2006, p. 9)

In this perspective, an effort to demonstrate that what is being gathered as data matches what informants actually think and do, is neither useful and necessary (Maxwell, 2002). In fact, ‘objectivity’ of this kind of inquiry relies on researcher's subjectivity as supported by a rigorous focus on research approach and methods to be adopted and by a continuing effort of reflexivity. Specifically, in the constructivist perspective by Charmaz (1990, p. 1165), a GT analysis is understood “as a social construction of the social constructions found and explicated in the data”. In this perspective, the researcher is seen as co-producer, in the capacity of the author of “a description of the situation, the interaction, the person’s affect and [their] perception of how the interview went” (Charmaz, 1995, p. 33). This constructivist interpretation of GT especially seeks to elucidate respondents’ and researchers’ meanings through closely examining views and values, beliefs and ideologies as well as acts, facts and artefacts. This resonates with the interpretive epistemological orientation characterizing the research questions of our research, aiming at gaining insights by asking research participants on their capacity as doctoral students of coping with overlapping or competing learning opportunities. Unlike classical GT approach, where the researcher maintains a position as a “distant expert” (Charmaz, 2000, p. 513), in a CGT approach the researcher makes it explicit her theoretical pre-conceptions and her being historically and socially situated (Charmaz, 2006; Mills, Bonner & Francis, 2006a). Given this orientation, our role as a researcher can be ascribed to a ‘participant as observer’ approach (Cohen et al., 2007, p.179), firstly because our digital behaviour as a doctoral student at a distance and social media user is likely to be actually aligned with the networked practices of the doctoral e-researchers to be investigated; secondly, because we consider a perspective in which the researcher is engaged in gaining skills necessary to participate in the activities being described (Flyvbjerg, 2004). Taking our research questions as a guide, we selected an appropriate perspective of GT methodology and the techniques that are able to be functional to our study and consistent with the metatheory above drafted.

2.3 Background of the grounded theory approach

Grounded Theory has been ascribed to the main paradigms of inductive theory building research (Cresswell, 2007), along with case study, ethnography, phenomenology and narrative research. In general, GT can be defined “as a way of generating theory *through* research data rather than testing ideas formulated *in advance* of data collection and analysis” (Dey, 2007, p. 80). In particular, GT “posits that theory is derived from data and that cannot be divorced from the process by which it is

developed” (Howell, 2013, p. 131). Unlike other theoretical perspectives, such as ethnography focusing on culture, ethnomethodology on everyday life or phenomenology on lived experience, GT “focuses on the process of generating theory rather than on a particular theoretical content” (Patton, 2002, p. 125). Dey (2007) states that GT methodological effort leads to gain analytical and practical value, reminding us the pragmatist roots (Dewey, 1952) of this approach. More extensively, Howell (2013) underlines that there are multiple interpretive philosophical underpinnings in GT derived from the qualitative views of symbolic interactionism (mainly from Mead, 1954 and Blumer, 1962), such as focus on pragmatism, idiographic versus nomothetic approach, exploration and intersubjectivity seen as core processes, a preference for “social action rather than structuration”, the “creation of worldviews through sensitizing concepts” (p. 137), and the tendency of giving value to empathy and judgement. Charmaz (2003) locates GT in the broader traditions of fieldwork and qualitative analysis, but suggests its specificity: “the grounded theory quest for the study of basic social processes fosters the identification of connections between events” (p. 270).

2.3.1 The ‘methodological spiral’ of Grounded Theory

Grounded theory approach was originally introduced by Glaser and Strauss (1967): the subsequent versions of GT developed over time by these originators and their disciples (Glaser, 1978; Strauss & Corbin, 1990) have constituted as many mutual sources of tensions for the main stances and procedures of this approach. Mills, Bonner and Francis (2006a) metaphorically define GT as a “methodological spiral that begins with Glaser and Strauss’ original text and continues today” (p. 25), where CGT is located in the final section of such spiral. Indeed, the originators of GT faced the challenge of rationalizing qualitative inquiry at a time in which “qualitative approaches to data gathering and analysis were seen as loose, unsystematic, impressionistic and unscientific” (Pawluch & Neiterman, 2010, p.179). The aim was to oppose “the dominant view that quantitative studies provide the only form of systematic social scientific inquiry” (Charmaz, 2000, p. 509) and to value data as main source to generating theory rather than as fields of application and verification of pre-conceived theories. Charmaz (2008) helps to provide a general definition that every grounded theorist is likely to agree: “Grounded theory starts with an inductive logic and emphasizes simultaneous data collection and analysis to construct middle-range theories” (p. 461). In the tradition of the social research, the construction of middle-range theories (Merton, 1968) just implies the initial study of an empirical phenomenon and then the elaboration of a theory verifiable through data, rather than applying a theoretical schema to the empirical instance being researched. Some key strategies are generally acknowledged (Gibson & Brown, 2009; Cohen et al., 2011, pp.

598-603) as characterizing any grounded theory approach. They are summarized in Table 4 reported below.

Table 4.

Key strategies shared by any Grounded Theory approach.

Strategies	Explanation
Theoretical sampling	Repeatedly selecting sources and sites for data collection on the basis of one's own research interests.
The constant comparative method	Continuing comparison of findings with other instances in which they might be applicable.
Data-driven coding	Applying systematic procedures to identify categories from data, in a progressive effort of abstraction.
Memo writing	Jotting down step-by-step notes on the methodological process, as integral part of the research process.
Triangulation	Using multiple methods for data gathering, as functional to the constant comparative method.

GT was defined as “the most influential paradigm for qualitative research in the social sciences today” (Denzin, 1997, p. 18, quoted in Patton, 2002, p. 124). Here the term ‘paradigm’ refers to ‘research approach’ with a core, established set of rules.

Certainly it has become a popular approach in education and social research (Cresswell, 2007), due to different reasons (Punch, 2005): GT explicitly addresses the issues of *how* to develop theory generation in research methodology; it presents a systemic but flexible research strategy; it provides an organized method for data analysis. Charmaz (2003) identifies the strengths of GT methods in: “a) strategies that guide the researcher step by step through an analytic process; b) the self-correcting nature of the data collection process; c) the methods’ inherent bent toward theory and the simultaneous turning away from acontextual description and d) the emphasis on comparative methods”(p. 271).

2.3.2 Objectivist vs Constructivist grounded theorists

However, grounded theory cannot be properly conceived as a shared body of theoretical knowledge and strategies (Dey, 2007, 2008; Morse, 2007). Charmaz (2008) explains that “major differences among proponents arise from varied assumptions about what constitutes theory and from contrasting epistemological allegiances” (p. 461). Every form of GT is therefore necessarily considered as a ‘re-construction’ (Charmaz, 2007), a remodeled version being shaped by the metatheoretical position of the researcher. The variety of positions labeled as ‘grounded theory approach’ can in fact be understood in the historical development of qualitative research (Denzin &

Lincoln, 2008). The seminal work “The Discovery of Grounded Theory” (Glaser & Strauss, 1967) was published in a moment dominated by a post-positivist philosophical approach, which implies unveiling a reality ‘out there’, by a researcher acting as a neutral observer. From mid ‘90s to present, the constructivist philosophical stances have started to draw attention to the role of researcher’s subjectivity in research conduct and her relation with research participants. Charmaz (1995, 2000, 2003, 2006, 2007, 2014) has developed her original CGT position on these kinds of concerns, along with a core interest to writing as a vital process, leading to a final research report grounded in data. Thus, CGT

lies squarely within the interpretative approach to qualitative research with flexible guidelines, a focus on theory developed that depends on the researcher’s view, learning about the experiences within embedded, hidden networks, situations and relationships, and making visible hierarchies of power, communication and opportunity. (Creswell, 2007, p. 65)

Different scholars (Charmaz, 2000, 2003, 2006; Bryant, 2002, 2003; Bryant & Charmaz, 2007; Mills, Bonner & Francis, 2006a;) discuss the fundamental distinction between ‘objectivist’ and ‘constructivist’ GT. Speaking of data analysis in interviews, Charmaz (2002) provides us with an effective synthesis of this discussion: “Constructivist grounded theorists acknowledge that they *define* what is happening in the data. Objectivist grounded theorists assume they *discover* what is happening in the data” (p. 684, emphasis in original). According to Charmaz (2003) CGT responds to a ‘pragmatist’ criterion of usefulness and strives to define statements interpreting in which ways subjects construct their realities. This research approach “recognizes that the viewer creates the data and ensuing analysis through interaction with the viewed. In this perspective, data do not provide a window on reality. Rather, “the ‘discovered’ reality arises from the interactive process and its temporal, cultural and structural contexts”. (Charmaz, 2003, p. 273). In contrast, objectivist GT “assure that following a systematic set of methods leads them to discover reality and to construct a provisionally true, testable and ultimately verifiable “theory” of it” (p. 273). This approach provides not only understanding but also prediction. However, in a constructivist view the objectivist grounded theorists “may offer rich descriptions and make conditional statements, but they remain outside of the experience” (Charmaz, 2003, p. 276). Furthermore, there are key differences in what the role of the researchers can be whether s/he is interpreted as an unbiased observer or as an author in the research process. Whereas Glaser’s (1998) assumes that data become transparent through respondents’ explanations and Strauss and Corbin (1998, p. 85) stress that “the data do not lie”, Charmaz argues that “an acontextual reliance on respondents’ overt concerns can lead to narrow research problems, limited data and trivial analyses” (2003, p. 257). Indeed, the extent to which GT

belongs to one or another research paradigm was not clear from the very beginning, due to a long-lasting lack of a systematic treatment of GT as a methodology and a philosophical position rather than as a set of techniques for data gathering and analysis (Mills, Bonner & Francis, 2006a; Birks & Mills, 2011; see also Charmaz, 2000, p. 524). Otherwise, among scholars endorsing classic grounded theory approach, there is who holds that seeking to attribute GT to a defined research paradigm is misleading, since “as a general methodology, classic GT transcends the specific boundaries of established paradigm to accommodate any type of data sourced and expressed through any epistemological lens”(Holton, 2007, p. 268). More recently, Bryant & Charmaz (2007) consider the distinction between ‘objectivist’ and ‘constructivist’ GT as bearer of the tensions occurring between the *essences* and the *historical accidents* of GT: in other words, between the set of methods characterizing a GT research as such and the historical context in which the various versions of GT have been developed. They hope for a repositioning of GT in the current, complex epistemological landscape, permeated by interpretive conceptual frames and apparently distant from a deterministic approach. In fact, it is currently acknowledged that “we stand at the threshold of a history marked by multivocality, contested meanings, paradigmatic controversies and new textual forms” (Guba & Lincoln, 2008, p. 281). Thus, a repositioned GT in current times “builds on the fluid, interactive and emergent research process of its originators but seeks to recognize partial knowledge, multiple perspectives, diverse positions, uncertainties and variation in both empirical experience and its theoretical rendering” (Bryant & Charmaz, 2007, p. 51). Considering this ongoing debate, we endorse the dialogical stance pertinent to the CGT approach, where the interpretive frames are dominant and are open to harness methodological suggestions coming from qualitative approaches different from GT. CGT also aims to provide a valuable response to the numerous criticisms moved to GT, in particular against the ‘objectivist’ stances: for instance, as Clarke (2007) clearly summarizes, more traditional GT strands lack of reflexivity about the research process; are likely to produce some “oversimplifications, such as analytic reduction to a single (rather than multiple) social processes characteristic of a particular phenomenon or situation” (p. 430); reductively conceive data variation as ‘negative cases’; and finally over-emphasize the ‘purity’ target to be pursued in GT methodology. On the other hand, further critiques remain in tension also in the CGT re-construction: for instance, we need to be aware of issues such as the difficulty of learning an ‘esoteric’ method (as GT is said), unless a proper ‘immersion’ in an apprenticeship situation is made doable. This case properly matches our situation, where consulting empirical studies using a CGT approach along with reference literature (Charmaz, 2006, 2014) has in fact replaced the apprenticeship mode. Moreover, it is the acknowledged that GT data analysis implies the task of ‘fracturing the data’, an activity that is in danger of “violating the integrity of participants’

narratives” (Clarke, 2007, p. 426), according to different qualitative approaches more concentrated on illustrating the ‘wholeness’ of participants’ experience. Indeed also in a CGT study the aim is to underscore the collective experience of the research participants rather than the lived experience of the individual interviewees. In our study, the holistic lenses of ‘learning ecologies’ (Barron, 2006) and ‘choronotope’ (Bakhtin, 1981) can help to overcome this danger through their metaphorical power. Finally, it is highlighted the risk that findings drawn from small studies can be “overtheorized and/or overgeneralized” (Clarke, 2007, p. 426): we aim at lowering such risk by clearly identifying the empirical and conceptual boundaries of the situated contexts where the research is conducted. However, these criticalities suggest the necessity to better explain what characteristics of the GT tradition are here considered and what practical solutions were taken into account during the research process.

2.4 The constructivist grounded theory approach in this study

The main reasons for the choice of a GT approach, inflected according to a constructivist view, rely on the exploratory nature of this research project, on the opportunity to focus on a basic social process (digital engagement) to examine the emergent learning ecologies of a sample of PhD e-researchers, and on the aim of becoming acquainted with a wide-spread educational and social research methodology. It was noticed that “if a satisfactory theory already exists on a particular topic, there is no point in mounting a study to generate new theory about that topic” (Punch, 2005, p. 159). The topic of the doctoral e-researchers being researched in this work as a whole is emergent and in particular the perspective of the relationships between the dimensions of self-organized and institution-led ecologies results to date underexplored and undertheorized. Moreover, the exploratory goals of this research can draw advantage from a pragmatic use of GT strategies and to a close attention to context-bounded factors, as enabled by the constructivist version of the research approach. GT methods are here adopted “as flexible, heuristic strategies rather than formulaic procedures” (Charmaz, 2003, p. 251). In fact, unlike classic GT approach in which the method is over-emphasized and the “theory-method linkage” crucially orientates the researcher “into and close to the real world” (Patton, 2002, p. 125), in CGT major attention is drawn to the studied phenomenon rather than to the method to be applied (Charmaz, 2006). In this line we locate our work, opting the following main characteristics (see Table 5) of the adopted CGT approach: the ‘theorizing’ outcome understood as situated and flexible conceptualization of findings and as the researcher’s interpretation of the studied phenomenon, rather than generalizable explanations and predictions (Charmaz, 2014, p. 228) assuming our own abstraction as generalizable in a positivist way; an abductive logic rather than a purely inductive logic for approaching data analysis; a

sensitizing role to be assigned to the theoretical framework rather than assuming a theoretical ‘neutrality’; memoing as a recursive reflexivity effort for letting the researcher’s view emerge; literature review as instrumental to the research process, without being prescriptive.

Table 5.

Characteristics of the CGT approach in this study.

Characteristics	Explanation
<i>Arising ‘theory’ as circumscribed conceptualization</i>	Situated and flexible conceptualization of findings. Theorizing as researcher’s interpretation of the studied phenomenon.
<i>Abductive logic in data analysis</i>	Neither purely inductive or deductive logic, but abductive logic to achieve “plausible interpretations”(Dey, 2007) rather than logical conclusions.
<i>Sensitizing theoretical framework</i>	Non prescriptive theoretical framework, used as guidance in data collection and analysis.
<i>Memoing as a reflexivity process</i>	Recursive memo writing as a quality check (Birks & Mills, 2011) of the research process.
<i>Preliminary and Iterative literature review</i>	Preliminary literature review as a useful orienting process (Urquhart, 2007). Iterative literature review as means to reveal the researcher’s stance (Charmaz, 2006).

2.4.1 What counts as ‘theory’ in the expected outcome

This study aims to presenting a ‘theory’ understood as the conceptualization of a located and limited story of the capacity of the PhD e-researchers of coping with institution-led and self-organized learning opportunities. In particular, the ‘theorizing’ endeavour is assumed to be the researcher’s interpretation (“imaginative understanding”) of the studied phenomenon rather than the verification of the relationships among concepts understood as observable variables (Charmaz, 2014, p. 229). In addition, the ‘theorizing’ outcome is understood as situated and flexible conceptualization of findings, rather than a generalizable explanation and prediction (Charmaz, 2014, p. 228). This research therefore aims at “interpretive sufficiency” (Charmaz, 2006), pursuing “both more explicitly situated analytic claims-making and the avoidance of over-generalization and over-abstraction” (Clarke, 2007, p. 427).

2.4.2 An abductive logic in data analysis

Unlike the objectivist strands of GT, adopting an inductive logic in data analysis, this study applies an abductive logic (Dey, 2007), in alignment with the intent of revealing the researcher’s endeavour of interpreting meanings rather than inferring them in an over-intellectualization of data analysis:

abduction relates an observation to a theory (o vice versa), and results in an interpretation. Unlike *induction*, theory in the case of abduction is used together with observation, in order to produce an interpretation of something specific, rather than to infer a generalization. Unlike *deduction*, the result does not follow logically from the premises: *abduction offers a plausible interpretation rather than producing a logical conclusion.* (Dey, 2007, p. 91, emphasis added)

Thus, the abductive approach helps researcher to “remain open to all kinds of theoretical possibilities and gather more data to check the most plausible explanation” (Charmaz, 2008, p. 467). This logic has a key influence in the definition of the device of ‘categories’ in a CGT analysis: in fact, unlike in earlier objectivist GT approach, in this perspective ‘categories’ are not reduced to a set of indicators ‘found’ in the observations. Otherwise, “we attach meanings to observations, in terms of specific contexts and particular purposes” (Dey, 2007 p. 88). Categories, derived by an effort for conceptualizing selected data-driven codes, are therefore understood as context-bound, rather than context-free. Dey underlines that such an approach may lead “to resolve the tension between the analytic and sensitizing use of categories in the grounded theory approach” (p. 88).

2.4.3 A sensitizing theoretical framework

Concepts such as ‘space’ and ‘time’, articulated in the notions of ‘learning ecologies’ (Barron, 2006) and ‘chronotopes’ (Bakhtin, 1981) are used as ‘sensitizing concepts’ (Blumer, 1956) to inform a non prescriptive theoretical framework, understood as initial guidance in data collection and analysis. As Charmaz (2008) underscores:

Constructivist grounded theorists use their prior knowledge and disciplinary perspectives to sensitize them to conceptual issues at the beginning but seek new theoretical interpretations as they interrogate their data and emerging analyses. (p. 472)

The researcher’s assumptions are therefore integral part of the research design and process and enable the use of a theoretical framework as an ‘anchor’ “to demonstrate how your grounded theory *refines, extends, challenges or supercedes (sic) extant concepts*” (Charmaz, 2006, pp. 168-169).

2.4.4 Memoing as a reflexivity process

Cresswell (2007, p. 217) mentions “a reflexivity or self-disclosure by the researcher about his or her stance in the study” among main quality criteria in a CGT work. Memos represent the most important instrument to systematically practice reflexivity in GT process: in fact they are interpreted as “uniquely complex research tools” (Lempert, 2004, p. 245). They constitute the infrastructure of a GT research process rather than mere mechanisms “for recording analytical

insights” (Birks & Mills, 2011, p. 115) as they are generally used in qualitative research. Maintaining an ‘audit trail’ as a quality check (Birks & Mills, 2011) can just be pursued through a recursive memo writing, along with a continuing analysis of one’s subjective self in relation to grounded theory process. Furthermore, “reflective memo writing makes clear the multiplicity of influences in the reconstruction of theory” (Mills, Bonner & Francis, 2006b). However, following a good practice in the GT studies, in memoing activity “pre-existing concepts are not used as forcing concepts, only as flexible, modifiable and sensitive ideas, creative associations, and heuristic tools” (Thornberg, 2012, p. 254). This leads to clarify the crucial role and timing of empirical and theoretical literature review in a doctoral research project carried out with a CGT approach.

2.4.5 The role of empirical and theoretical literature review

In GT tradition “one of the most problematic issues relates to how and when existing literature should be used during a grounded theory study” (Dunne, 2011, p. 111). However, among social and educational researchers it is generally acknowledged that “a substantive, thorough, sophisticated literature review is a precondition for doing substantive, thorough, sophisticated research” (Beile & Boote, 2005, p. 3). A rigorous and creative literature review can foster what Shulman (1999) calls ‘generativity’, defined as the capacity of building on scholarship of those who were scholars before us. Approaching this hallmark in scholarship is crucial in any doctoral dissertations, where a fine-tuned and systematic understanding of the research field creates for doctoral researchers the conditions “that will greatly increase the likelihood of their developing productive insight” (Beile & Boote, 2005, p. 11). In other words, it enables critical insights on the current body of knowledge rather than mere summaries of previous research. Flick (2006, pp. 57-64) lists the multiple uses of literature in doctoral work, such as theoretically thinking about the topic; building on previous empirical and methodological studies; using theoretical and empirical literature to contextualize, compare and generalize findings. He compares such well-established ways to the traditional tenets of GT (Glaser & Strauss, 1967), hoping for researchers to assume an open mind as ‘tabula rasa’ with respect to a topic and thus recommending to postpone literature review after data collection. This ‘radical’ position has been widely criticized as a source of a misleading approach likely to generate some pieces of research loosely located in the wider scientific production: this is also said to cause rejection among educational researchers (Thomas & James, 2006; Thornberg, 2012). Dey (1999) ironically stresses that “an open mind does not imply an empty mind” and that the recommendation not to undertake a preliminary literature review comes indeed from expert researchers, who are likely to be well acquainted with the research field to be investigated. To novice researchers the danger might be to exchange their own ignorance with the ‘discovery’ of an illusory innovative

breakthrough: on the contrary, “a literature review provides me with the current parameters of the conversation that I hope to enter.” (Lempert, 2004, p. 254). Moreover, Gibson (2007) wonders the extent to which it is even possible to develop ‘theoretical sensitivity’ – one of the key skills to be developed by the GT researcher - without undertaking an in depth exploration of relevant literature. In this line, Henwood and Pidgeon (2003) hold for a critical approach to earlier theories as a foundation for further GT research. However, among others, Charmaz attempts to mitigate this contentious aspect of traditional GT: “The intended purposes of delaying the literature review is to avoid importing preconceived ideas and imposing them on your work” (2006, p. 165). This claim can be interpreted in relation to the reasons why a study is being carried out with a GT approach: whether a defined topic was deeply explored in previous studies, there is no substantial reason to embrace this kind of approach. Thus, as we have experienced at the start of our research project, a preliminary literature review can contribute to assess the choice of a GT methodological approach and to identify uncharted territories. In this path, Urquhart (2007) considers a preliminary literature review in GT studies as a useful orienting process rather than as the basis for the construction of a prescriptive framework. He suggests to conceive it “as aspect of a broad research problem, and organize broad categories of literature around that problem” (p. 350). Birks and Mills (2011) refer to Glaser (1998) stating that when procedures in research work (e.g. in doctoral dissertation) require a preliminary literature review, literature should be usefully considered as data. In other words, it should be treated as all other data relevant for one’s own work, in relation to theoretical sampling, that gives direction to and is likely to increase literature review as the study advances. However, this controversy should not overlook the manifold uses of literature considered in classic GT essays. In fact, Strauss and Corbin (1998, pp. 49-52) list a range of ways of using literature, such as: 1) concepts from literature can be a source for comparison of data; 2) becoming familiar with relevant literature can enhance theoretical sensitivity to subtle nuances in data; 3) published descriptive materials can help in understanding your own materials; 4) philosophical writings can be inspiring; 5) literature can constitute a secondary source of data; 6) literature can be used to formulate questions as springboard in early interviews and observations; 7) literature may stimulate questions in data analysis. This eclectic approach to relevant previous studies can help to sift “sensitizing concepts” (Blumer, 1954) leading to enlightening meanings as research work is underway. For instance, in our case a literature review on time factor in e-learning has led us to consider the notion of ‘chronotope’ (Bakhtin, 1981) to better explore the agentic role of the PhD e-researchers in shaping their own emerging ‘learning ecologies’. Charmaz (2006) posits the idea of ‘interrupted literature review’, suggesting a flexible and iterative approach to literature review, as unexpected themes emerge from data analysis. For instance, focus on variation in digital engagement (as a key

process in emerging learning ecologies) has been reinforced by the discussion with alternative conceptualizations of online engagement found in literature. In addition, the attention to the theme of ‘resilience’ arising from interview data has been confirmed by some reasoning lines found in studies focusing on digital learners in higher education. Moreover, we took into account the opportunity to explore literature in the methodological area (Birks & Mills, 2011), in order to learn from well-established grounded theory researchers how they have shaped the methods and found our own approach to GT. Overall, from a constructivist viewpoint, Charmaz draws attention to linking the effort of delving into literature to the need for locating the researcher’s role: literature reviews for research are in fact seen per themselves as ideological sites “in which you claim, locate, evaluate and defend your position” (2006, p. 163).

To sum up the stance endorsed in this study, a preliminary literature review has firstly been carried out as a means to acquire knowledge of a research field relatively underresearched (Thornberg, 2010). Furthermore, a review of literature has been considered to define the theoretical ‘frame of reference’ of ecological perspectives and chronotope that constituted the lens through which the topic being researched was examined. Finally, previous empirical studies have also been used as a tool to shed light on data while the ‘constant comparative method’ has been applied to dataset, in order to iteratively compare data drawn from the same participant at different points in time (when filling out the questionnaire and when participating in the interview), among different participants and across diverse contexts.

2.5 Research design

Unlike in other types of qualitative research, in a GT study the research design cannot entirely be defined from the beginning, because the inherent GT research process is recursive rather than following the linear sequence of activities research questions/data collection/ data analysis (Charmaz, 2006). However, as in every dissertation work, an initial research plan has been submitted, including an overview of the expected data collection process and the related outcomes (Figure 2).

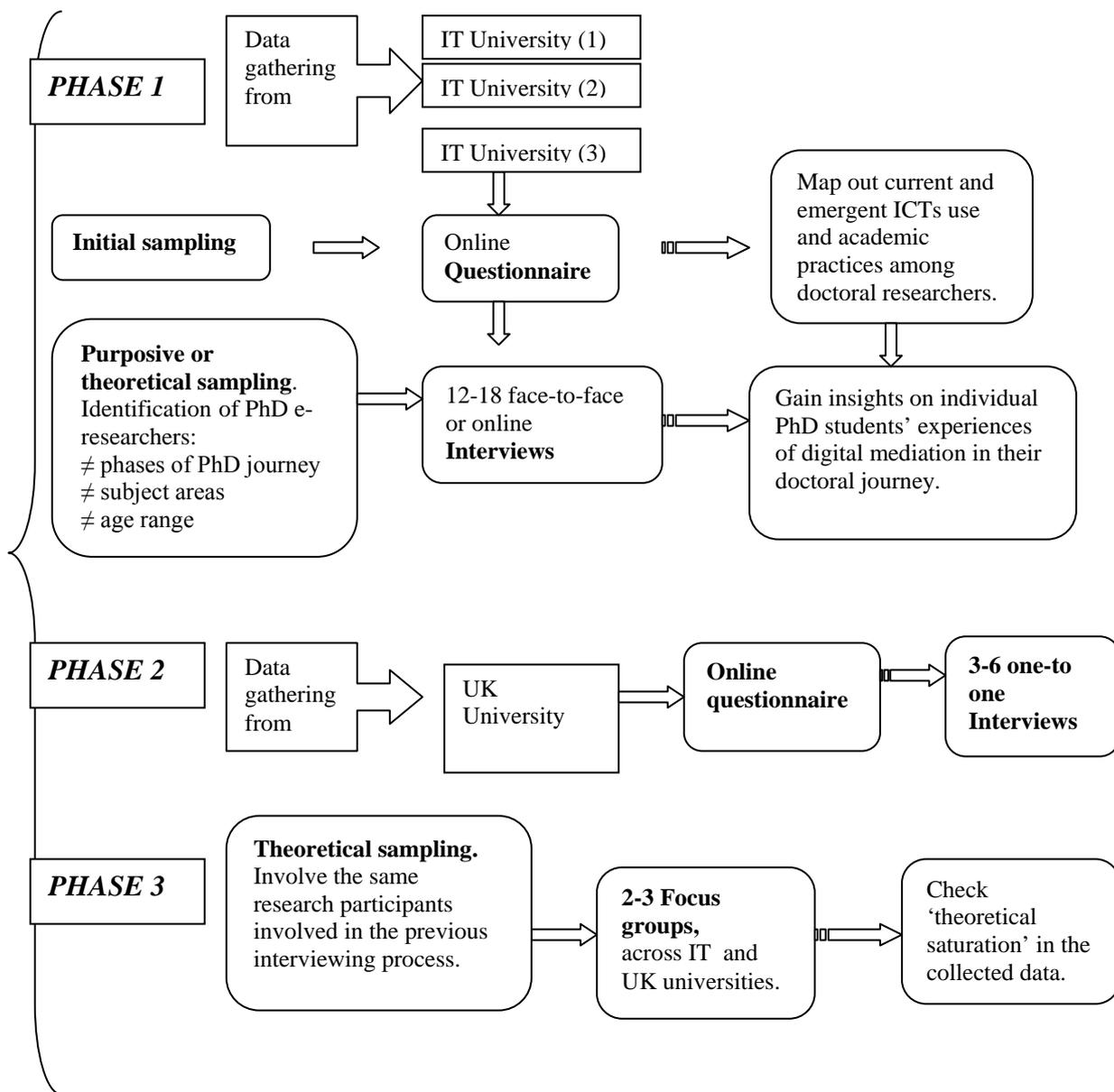


Figure 2. Outline of the research design as defined in the initial proposal.

Building on the initial research design, this study has been planned to adopt a combination of methods, including an online questionnaire as well as individual interviews and focus groups: interviewing has been elicited as the core data gathering method, whilst the e-survey and focus groups techniques have respectively served as preliminary and follow-up inquiry. In the research design, the choice of using a plurality of data gathering techniques matches the grounded theory methodological “pragmatism”, where quantitative and qualitative research methods are mainly regarded as having complementary strengths and non-overlapping weaknesses rather than seen as underpinning irreconcilable epistemological traditions. Thus, specific data-collection methods do not need to belong exclusively to any particular methodological tradition, so that the questionnaires can constitute a valuable instrument to collect data - such as self-reports - that can be qualitatively analyzed (Frey et al., 2004) or an interview or observational procedure might be used to collect quantitative data for statistical analysis or indeed, as it is more common, to collect qualitative data. In this work, the choice of using different data gathering techniques matches the need of pursuing triangulation in qualitative inquiry, that especially fits grounded theory as a recommended procedure (Charmaz, 2006). In fact, research design (Figure 3) in this study has adopted both data triangulation (Denzin, 1989; Flick, 2002) – especially triangulation in space, gathering data from multiple higher education settings and from two different national university contexts - and methods triangulation, using a sequence of e-survey, individual interviews and focus groups to draw and comparing data from different angles, moving from baseline data to individual-based views to collective discourse. Here it is worth recalling the discussion by Denzin and Lincoln (2008) about the contemporary sensitiveness toward the notion of triangulation. This would be better understood through the metaphor of a prismatic crystal, where triangulation is seen as a performing montage, as “the simultaneous display of multiple, refracted realities” (p. 8). In this perspective, the qualitative researcher can be intended as a methodological *bricoleur*: “the interpretive *bricoleur* understands that research is an interactive process shaped by his or her own personal history, biography, gender, social class, race and ethnicity and by those of the people in the setting” (p. 8).

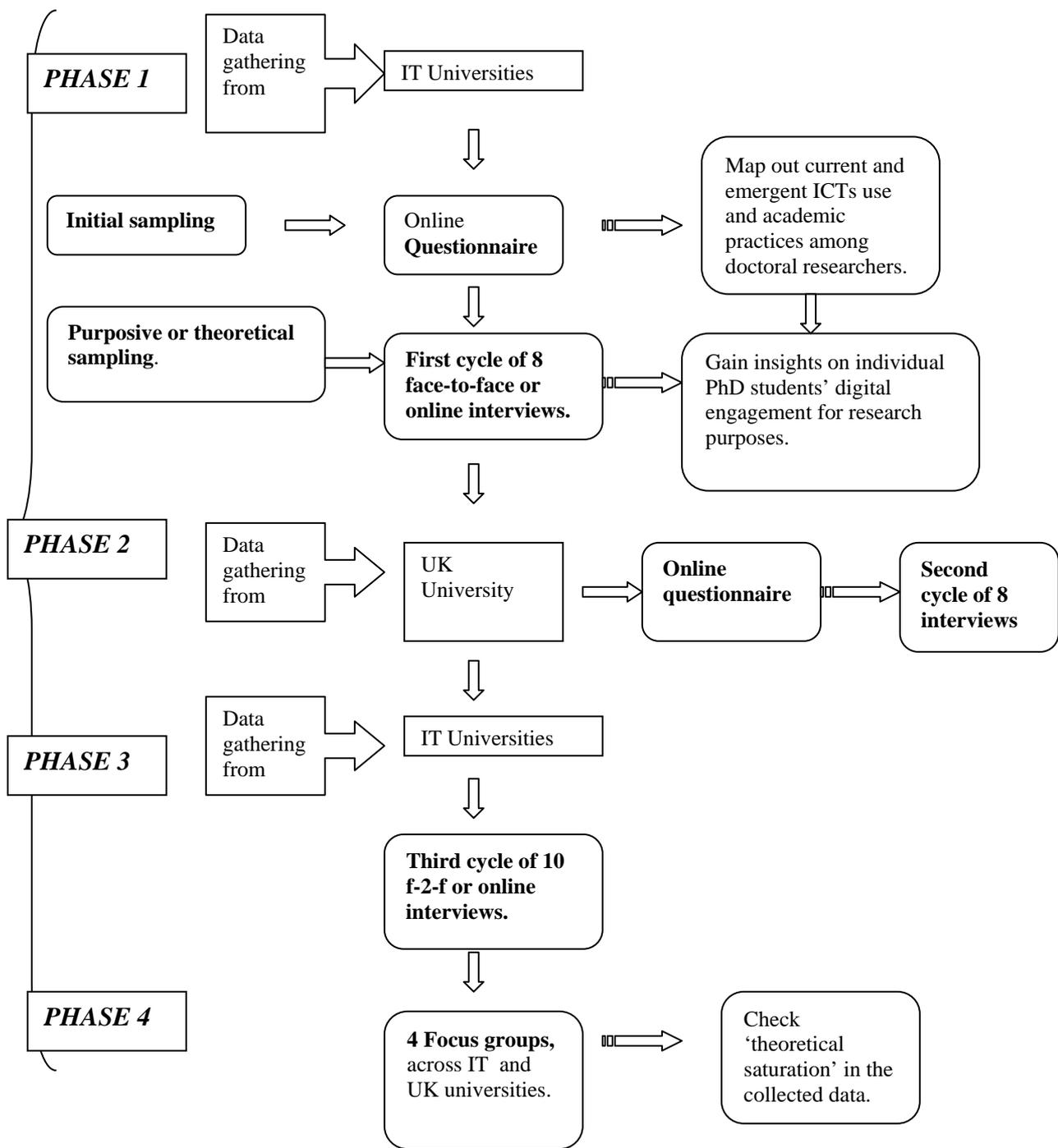


Figure 3. Outline of the research design as actually developed in the project.

2.5.1 Approach to sampling strategies

This section discusses the peculiar role of sampling strategies - typically *theoretical sampling* - in grounded theory approaches and points out the choices from methodological literature that have guided the sampling strategies in this study. We start providing some short information related to the empirical settings selected at the beginning of our research following a convenience approach.

The empirical settings

The main research settings have been identified in three universities located in the North of Italy: University of Milan, University of Milan-Bicocca, Polytecnic of Milan. They have different dimensions (see Table 6) but a relevant and varied doctoral education's provision, in subject areas that to a great extent do not overlap. In fact, main criteria adopted to select the university contexts refer to convenience reasons such as to be well acquainted with the context or have previous direct knowledge of their features. Furthermore, we have considered the variety of research areas (and related range of doctoral programs) that these universities provide, so as they can be representative of a number of disciplinary cultures and settings. Finally, we have chosen to focus on the Institute of Education (IOE), based in London as the fourth 'contrast case' university across which investigating instances of doctoral e-researchers. In 2011 we had completed at the IOE the MRes in Educational and Social Research and this previous attendance had the potential to facilitate gaining access and building trust in that university context. Moreover, the IoE is an international institution attended mostly by mature students and focusing on postgraduate programs (Gourlay & Oliver, unpublished report) specialized in educational and social research, in a wide range of themes. Furthermore, from 2011 the IoE has been both organizer and empirical setting of a two-years long, JISC-funded project, entitled "Digitally literate as a postgraduate attribute", that has apparent affinities with the topic of our study.

Table 6.

Number of the PhD students and programs for each university involved in the present study

University	Students	PhD students	PhD programs
	2009/10	2009/10	
Università degli Studi di Milano	60.000	1.462	93
Università degli Studi Milano - Bicocca	30.000	611	42
Politecnico di Milano	15.000	900	40
Institute of Education, UK	Over 4.000 postgraduate students each year.	870	Over 20 (in research strands related to Educational and Social Research)

The main empirical setting of this study is therefore represented by doctoral programs being delivered in Italian universities, in which from 1980 doctoral education has officially become integral part of higher education curriculum. The MUR's (Italian Ministry of Education and Research) website publishes official statistics related to the doctoral students enrolled across about 80 accredited (mainly public) universities: in the academic year 2009/2010 (the most updated statistics at the time of writing) about 40.000 PhD candidates were enrolled, and in 2009 about 12.000 students were awarded a PhD degree. In the last decade, due to the influence of the Bologna Process, there have been an increasing role of internationalisation of doctoral programs. Furthermore, a recent reform has drawn attention to the 'industrial doctorates', in the attempt to better connect the third level of higher education to the job market, both for those subject areas (e.g. Engineering, Biotechnologies) where the potential collaboration between university and industry appears to be smooth, and also in more traditional areas such as Humanities and Social Research. However, it can be said that Italian doctoral education's asset has substantially remained unvaried from its start. Its approach is still located in-between the US model and the European model (Regini, n.d.). Currently PhD candidates' access requirements and organizational issues, as well as doctoral pedagogy approaches and the kinds of research apprenticeship may significantly vary according to different university boards and services and in particular they depend on individual doctoral committees and programs. This basic understanding of PhD programs' settings in Italy and in the UK has been the starting point for a sampling strategy to be informed by a grounded theory approach.

Sampling and theoretical sampling in grounded theory

Theoretical sampling represents the typical way to the research process characterizing a GT study: in fact, it inherently "supports the constant comparative method of analysis" (Patton, 2002, p. 239) and thus it is at the heart of the interplay between data collection and analysis. Unlike other kinds of qualitative inquiry approaches, in GT research sampling design cannot be completed when outlining the research proposal, but it is supposed to be progressively shaped by new research hints and by changing analytic focus arising as data are being collected. In fact, "grounded theory builds checks on the analysis throughout the process" (Charmaz, 2008, p. 472): in this line, "theoretical sampling builds a pivotal self-correcting step into the analysis process" (Charmaz, 2002, p. 689). In a constructivist view theoretical sampling arises from researcher's analyses and "invokes abductive reasoning because researchers test their tentative ideas" (Charmaz, 2008, p. 472). In 'theoretical sampling' the researcher bases her sampling strategy on what is already known and what is needed next, in order to push the understanding of the researched phenomenon further. Charmaz attributes

to theoretical sampling the general value of quality check across all the research process, with multiple advantages: it helps the researcher to “gain rich data; fill out theoretical categories; discover variation within theoretical categories; define gaps within and between categories” (Charmaz, 2002, p. 689). Cresswell (2007) especially sees - in what he calls “*discriminant sampling*” - the key instrument to help moving towards data saturation: applying such strategy “the researchers gathered additional information from individuals similar to those people initially interviewed to determine if the theory holds true for these additional participants” (p. 68). Focusing on the practicalities of the research work, in a grounded theory study the researcher sets out to select participants who can contribute to the development of the theory. In other words, the researcher adopts purposive sampling strategies (Miles & Huberman, 1994, p. 28), particularly orienting her effort towards the ‘theory based’ sampling, aiming at finding “examples of a theoretical construct and thereby elaborate on and examine it” (p. 28). Indeed, Pidgeon & Henwood, (2006, p. 635) just refer to Miles and Huberman (1994) prospect of 16 different purposive sampling strategies and indicate – beside the theory-based sampling - the typical case, the extreme or deviant cases, the maximum variation sampling and the rich response sampling as many useful strategies to the GT researcher. In this study we particularly value the ‘maximum variation sampling’, that is so described: “A softer version of negative case sampling is maximum variation sampling, selecting cases from as diverse a population as possible” (Anderson & Arsenault, 1998, p. 124). We have actually applied such approach by selecting cases from diverse subject areas, university contexts and also national settings. This choice has implications for a revised notion of generalization of findings in a qualitative GT study, as subsequently discussed in the section 2.9. The modes for progressing in GT sampling are variously approached. Cresswell (2007) recalls Strauss and Corbin (1987) statement that theoretical sampling “begins with selecting and studying a *homogeneous* sample of individuals and then, after initially developed the theory, selecting and studying a *heterogeneous* sample” (p. 128, emphasis added). GT studies start inquiry in a variety of ways (Pidgeon & Henwood, 2006): from a small number of rich response cases or from previous findings from literature. As explained in Chapter 1, we have taken cue from our previous interview study about digital scholarship’s practices of a group of academics in an Italian university to sketch the profile of our research participants (PhD students self-organizing the adoption of social media for research). Moreover, we have used previous literature in particular to build the e-survey protocol and to design an “initial sampling” (Charmaz, 2006), useful because the topic is relatively new and we need a starting point. More importantly, we have found Morse’s (2007) pragmatic approach to sampling strategies particularly interesting for our exploratory study, where for instance the research settings selected per convenience has provided us with opportunities and constraints in

the data gathering process. Morse in fact recommends a sequence of strategies starting from an *initial convenience sampling* (informants selected on the basis of their accessibility), followed by a *purposeful sampling* (selected “as indicated in the initial analysis of interviews”) and then by *theoretical sampling* (selected according to “the descriptive needs of the emerging concepts and theory”), to conclude with *theoretical group interviews* that “are intended to provide the final missing pieces of the puzzle, polish data collection, complete processes of saturation or provide any other information that the researcher requires” (Morse, 2007, p. 241). When the theoretical group interviews are organized, the research participants are in fact recalled in small groups by the researcher who draws from the preliminary findings of the ongoing study to prompt discussion, asking participants to provide further examples of the findings. Thus, theoretical group interviews are “used to expand on and to verify the emerging model” (p. 241), implicitly providing support or challenging the emergent ‘theory’ or conceptualization of the results.

Table 7.

Summary of the sampling strategies: methods, participants and settings.

Sampling	Data	Methods	Participants	Settings
Initial sampling	Baseline data	Online Questionnaire	624 (3 IT universities) 44 (IOE)	3 IT and 1 UK universities
Purposive sampling	Emic perspectives	Individual interviews	8	UniMi, UniBicocca
Purposive/Theoretical sampling	Emic perspectives	Individual interviews	7 10	IOE (UK); UniMi, UniBicocca; PoliMi
Theoretical group interviews	Collective discourse	Focus group	3-4 participants per focus group (n. 4)	UniMi, UniBicocca, IOE, PoliMi

In our study we have delivered two e-surveys, respectively in three Italian and in one UK university, in order to collect baseline data, according to the initial sampling strategy. Then, we have started to explore the emic perspectives of the PhD students involving 26 doctoral researchers in three subsequent cycles of individual interviews undertaken across Italian, UK and again Italian universities. Thus, 12 PhD students, mostly former participants in the previous e-surveys and in the individual interviews, were involved in the final focus groups, in order to assess findings through collective discourse. It is worth noting that there is no agreement about the appropriate number of interviews to be undertaken in a study applying a GT approach. Some authors suggest a recommended number of participants as appropriate to generate grounded theory: for instance, Cresswell (2007) indicates up to 25 interviewees, that approximates the number of the individual interviews we have actually undertaken. However, Charmaz (2006) stresses the relevance of reaching saturation of categories rather than reaching a defined quota of participants: we adhere to her stance and in fact have stopped to plan further individual interviews when the themes arising from data appeared to be redundant.

The sampling strategies applied to the data collection process

In this section we provide information about the actual application of the sampling strategies elsewhere discussed in their methodological background and specific aims (see Chapter 2). The sequence of the sampling strategies (Table 8) has meant to approximate the GT logic of a progressive advancement from an initial sampling towards theoretical sampling (Charmaz, 2006; Morse, 2007), but has also been affected by what achieved in the intermediate steps and by some constraints encountered in the data collection process. As illustrated in the previous sub-section, the empirical settings - the three Italian universities based in Milano and the UK university based in

London – have been selected in a logic of convenience sampling. Such an opportunity has contributed to frame the choices of subject areas and potential participants. Furthermore, interviews and online questionnaires have been respectively used as primary and secondary data gathering techniques to make the proposed methodology functional to the identified research questions.

Table 8.

The temporal sequence of the sampling strategies applied in data collection.

Sampling	Methods and locations	Activities undertaken
1. Initial sampling	Online questionnaire distributed across the three Italian universities involved in the study.	Starts mapping the uncharted territory of PhD students' digitally-mediated activities and forms of assistance in the Italian university context. Collecting baseline data (non probabilistic sample) to build a purposive sampling for the subsequent interviews.
2. Purposive sampling	First cycle of individual interviews across the Italian universities.	Starts exploring the PhD e-researchers' learning ecologies through the insiders' views. Interviewing participants of different age range, PhD phase and in diverse disciplinary areas, but with a focus on educational and social research, in the light of the subsequent comparison in the UK context.
3. Initial sampling	Online questionnaire distributed across one UK university.	Starts mapping PhD students' digitally-mediated activities and forms of assistance in a different national context. Collecting baseline data (non probabilistic sample) to build a purposive sampling for the subsequent interviews.
4. Purposive sampling	Second cycle of individual interviews carried out across the UK university.	Exploring the UK PhD researchers' learning ecologies (in the subject areas of educational and social research), in order to compare the results with analogous interviews undertaken in Italy.
5. Purposive sampling	Third cycle of individual interviews undertaken across the three Italian universities.	Further checking the emergent learning ecologies of the PhD researchers with additional interviews across diverse subject areas, including social and educational research.
6. Theoretical sampling	Focus groups carried out across the three Italian and the one UK universities involved in the study.	Cross-checking the themes and categories arising from the previous interviewing cycles with structured opportunities to let collective discourse emerge.

2.5.2 Approach to data collection

Grounded theory has often been identified with ‘interview research’, but for Charmaz (2006) this constitutes a reductive vision of such eclectic research approach, which in fact has also been used with different data gathering methods such as surveys and documents. On the other hand, it is acknowledged that within GT methodology “the role surveys and quantitative data play is ambiguous” (Howell, 2013, p. 144). However, the aim to gain richness in data suggests flexibility in the use of research techniques, through a triangulation approach: thus, the use of surveys can add value to the generation of theory, even if they are not GT techniques “in the purest sense” (p. 144) and although in their application the rules of verification and accuracy of evidence are not closely applied, just to enable further generation of theory. In this work, we have considered the example of a recent study (McCaslin & Scott Wilson, 2003) adopting both survey and interview research, but above all very close to our theoretical interest in ecological metaphors as applied to PhD e-researchers. McCaslin and Scott Wilson see constructivist grounded theory as “focused on discovery through understanding data in a human ecology” (p. 2), drawing attention to the needs for researchers to become acquainted with the instance being investigated rather than relying on conceptual procedures to theorize about it, thus risking to “obscure the ecology” (p. 4) of the researched. They recall that the same qualitative research tradition (mentioning Cresswell, 1997) consider the observation and experience of human ecologies as main concern, whereas predictions and applications are secondary during early inquiry stages. In this line, the authors recommend to the researcher to gain ecological sensitivity of the phenomenon being researched, before undertaking any other research procedure, since “recognizing and striving to convey the relationships and interactions of the informants within their ecologies is incumbent upon a responsible researcher” (2003, p. 4). Such an approach prompting the preliminary acquisition of an holistic view of the human ecology being investigated has been pursued in our study by exploring existing empirical literature, getting information on the doctoral research settings through a series of informal interviews to PhD coordinators, and then carrying out online questionnaires to map out the contextual conditions, ICT habits, expectations and motivations of the PhD candidates. Specifically, a mixed strategy has been adopted to develop the data sets: firstly, the aim has been to collect ‘elicited texts’ (Charmaz, 2006) - defined as the texts and opinions produced by participants at the request of the researcher – through an online questionnaire; secondly, we have set out to gather inherently first-hand, qualitative data, by undertaking individual interviews; thirdly, the emergent theory about the basic process of digital engagement in doctoral activities has been verified through a series of focus groups. The table below summarizes information about research participants, types

of data, objectives, validity and reliability criteria related to the techniques used in the data gathering process.

Table 9.

Summary of the features and objectives of the selected data collection methods.

Methods	Participants/Sampling	Types of data	Objectives	Validity /Reliability
Questionnaires (Online)	The sampling frame targets all the doctoral students currently being enrolled in the doctoral programs of 3 Italian universities and 1 UK university. A “volunteer sampling” (Cohen et al., 2007) is considered as a means to reach participants really interested in the topic. It constitutes the ‘initial sampling’ – or starting point - in the procedures suggested by Charmaz (2006).	Quantitative data related to the typologies of Web 2.0 tools being used and information about the kinds of analogue/digital research training opportunities that PhD students are being provided. Qualitative data highlighting: a) areas of academic activities in which tools in the open Web are actually adopted; b) personal expectations for a more accomplished use of the social web.	Get a non probabilistic sample with a participation rate of at least 10% of the total respondents and for each university’s respondents. Achieve a varied sample of learners studying in a range of subject domains and using social media in their doctoral journey. Get early information of the ‘forms of assistance’ provided by the doctoral programs and about the uses of the open Web by the PhD researchers.	Validity: the questionnaires pursue “maximizing variation” of views (Larsson, 2009), rather than seeking to construct a representative sample of PhD e-researchers. Furthermore, the alternance of ‘closed’ and ‘open’ questions meets the ‘exploratory nature’ (Bailey, 1994) of the e-surveys in this study and serves the purpose of lowering the potential bias related to the suggested lists of possible responses. Reliability: description of the procedures applied in order to enable replicability of the e-survey.
One-to-one Interviews (Face-to-face or Online)	Twenty-six doctoral e-researchers selected among the online questionnaire’s respondents who have self-nominated for a subsequent interview. Moreover, the selection process takes into account the organizational features of the doctoral programs (full-time/part-time) and the state of advancement of potential interviewees in their doctorate.	Accounts of the boundary crossing activities undertaken by PhD e-researchers coping with institution-led and self-organized learning ecologies.	Gain insights on the capacity of PhD students to coordinate formal and informal learning ecologies.	Validity: reflexivity through ‘memo writing’ as quality criterium (Charmaz, 2006; Birks & Mills, 2011). ‘Member checking’ by meeting interviewees again and check early themes and categories. Reliability: consistency of the interview schedule and equal duration of the interviews.
Focus groups (Face-to-face)	Doctoral researchers (across the involved universities) that submitted the questionnaire and (preferably) participated in the one-to-one interviews.	Accounts of doctoral researchers discussing main themes and categories arising from interview research previously carried out.	Matching the case narratives of individual PhD e-researchers with the opinions being developed in group discussions.	Cross-checking whether ‘theoretical saturation’ is reached with respect to the themes and categories generated by the analysis of the previous interviews.

We have faced diverse constraints during the data gathering process. For instance, at the very beginning, the aim to obtain rich data has included some observational research, to be applied to blogging activity and other forms of online presence in part of doctoral students, building on the information provided by the initial questionnaire. Indeed, the findings of the first e-survey across the universities in Milano have showed a very low ‘active’ presence across social media: thus, observational research (e.g. observing blog entries) has apparently been resulted as non applicable and interviewing has become the primary research method. Moreover, the opportunity for exploring practices and attitudes across one UK context as a ‘contrast case’ against the Italian university settings, was constrained by the formal requirement for the ethical permission for undertaking data collection within the timespan of our actual research stay at the IOE (one term, from April to June 2013). This constraint has forced us to concentrate the delivery of the online questionnaire and the subsequent interviews in a fairly short period (14th May-21st June), whilst from the delivery of the e-survey across the three Italian universities (September/ October 2012) and the subsequent individual interviews (March/April 2013) a period of about four months occurred. As a consequence, only the Italian doctoral students could be investigated at two different points in time (at the time of the e-survey and, after a few months, in the interviewing process), following one of the options recommended by the GT comparative method. However, despite the tight schedule to meet in the IOE case, the experience achieved in the previous organization and early analysis of the questionnaires and the first cycle of interviews in Milano has helped us to effectively approach the comparative method also in the UK context. Moreover, the inquiry undertaken at the IOE has been planned with a comparative rather than exploratory character. Actually the inquiry at the IOE has focused on PhD students in educational and social research, being investigated with the aim to confirm or challenge the findings previous achieved by interviewing Italian PhD students in similar subject areas. Otherwise, we have been able to the plan the four focus groups (both in Milano and in London) in the same timespan, between the month of November and early December 2013.

ACTIVITY	2012		2013						
	Sept	Oct	Mar	April	May	June	July	Nov	Dec
IT e-survey	█								
IT interviews			█				█		
UK e-survey					█				
UK interviews					█				
IT Focus groups								█	
UK focus group									█

Figure 4. Timeline of data collection.

2.6 Data collection methods

This section discusses the general approach and the methodological literature that supported and guided the choice and application of the data gathering techniques adopted for this study: online questionnaires, individual interviews and focus groups. In the subsequent Chapters 5-6-7 we have provide detailed information on the construction of the e-survey, interview and focus group protocols and on application process of such research instruments.

2.6.1 The online questionnaire as research method

An online questionnaire was planned as a starting point for this study, in order to provide breadth to the investigation, to let early patterns emerge and use these to generate new questions for subsequent interviews. In particular, the online questionnaire was planned to answer the following sub-question:

Sub-question A) To what extent do the PhD students learn to become researchers using digital tools and environments in Web 2.0 ecologies?

To researchers in education surveys are considered an effective means to get baseline data and to support other methods of research. For instance, Conole, de Laat, Dillon et al. (2006) used an online survey to give “a wider contextual review of the use of technologies across a broad spectrum of students” (p.154) in their case study research of higher education students’ experiences of e-learning. This argument for adoption of an online questionnaire is close to that applied to our research, in which the aim is to map out contextual factors in research training, technology uses, motivations and expectations of current doctoral students. Moreover, this technique appears to be low cost, efficient, suitable to maintain anonymity of would-be informants and aligned with the networked attitudes of doctoral researchers to be investigated. However, among the negative aspects of online surveys, Cohen et al. (2011, pp. 227-231) number the low response rate in comparison to a paper based survey: for online surveys 10% can represent a good participation rate, but for others such threshold is questionable, because it is preferable to take into account contextual factors (e.g. the frequency of questionnaires sent to defined groups of PhD students or even any indirect pressure to respond to the questionnaire). A low participation rate can due to many reasons such as the respondents lacking in developed computer skills or not having familiarity with online questionnaires – that is not the case of the participants in this study. Moreover, a complicated layout, insufficient clarity of wording and even the excessive length of the questionnaire might discourage the respondent from completing it. These are all elements that we have taken into account in designing the online questionnaire. Furthermore, we have adopted an accredited internet

survey software package, to assure a smooth proceeding in the e-survey and a good degree of usability (De Vaus, 2002, p. 141). For the case of this study, a questionnaire mostly made of ‘closed’ questions – where the range of possible responses are prescribed - has been considered, since these type of questions are easy to complete and to submit to some statistical analysis of frequencies (Cohen et al., 2011, p. 321). On the other hand, the opportunity to add open comments has also been included, to counteract the potential bias of the listed options and enable to add insights, useful in an exploratory study like this (Bailey, 1994, p. 120). The main aim of the online questionnaire in this study is “obtaining an idea of the range of responses or ideas that people have” (De Vaus, 2002, p. 90) rather than to draw inferences about the entire population of the PhD students enrolled in the Italian and UK universities involved in the preliminary e-surveys. In this sense, “maximizing variation” (Larsson, 2009, p. 31) of the survey’s responses has here been considered as main validity criterium in the application of this data gathering technique. The adopted typology of questionnaire – a questionnaire delivered via email - matches what Cohen *et al.* (2007) describe as a “volunteer sampling” (p. 116) of respondents. They state that it is easy to ignore an email received among other administrative communications: therefore, volunteer respondents are ideally willing to contribute to the research and have at least a tentative opinion on the topic being investigated. This feature fits the purpose of reaching social media users among doctoral students, in order to map out the characteristics of the context in which they are learning to become researchers.

2.6.2 Interviewing as research method

The subsequent interviews have been constructed on the basis of the questionnaire’s findings and aim at answering the following questions:

Sub-question B): How can the trajectories carried out by the PhD e-researchers in emerging learning ecologies be conceptualized, as arising from the accounted practices and dispositions in the open Web?

Sub-question C): What can the qualitative findings tell us about the chronotopes activated in the emerging learning ecologies of PhD e-researchers?

Sub-question D): What are the tensions arising between institution-led and emerging self-organized learning ecologies of new PhD ‘e-researchers’?

Interviewing is in fact the eminent research technique for qualitative researcher: at the heart of interviewing there is “an interest in understanding the lived experiences of other people and the meaning they make of that experience” (Seidman, 2012, p. 9). In this sense, its most common aim is “to derive interpretations, not facts or laws, from respondent talk” (Warren, 2002, p. 83), in such

communicative conditions that makes the interview resembling a guided conversation. Also Corbin and Strauss (2008) refer to the interviewer as the coordinator of the conversation with the aim of generating the construction of a theory. However, other scholars have noticed that “the interview has become a routine, almost unnoticed, part of everyday life” (Fontana & Frey, 2003, p. 63): this exposes researchers to a danger of underevaluating methodological, technical and practice issues underlying such a research method. Indeed, “interviewing is never just a ‘conversation’, it may be conversational, but you as the interviewer do have some level of control” (Rapley, 2007, p. 26). Interviewer has for instance the power of selecting the topic, the sequence of the questions, the timing of the interview: thus, the interview as a conversation “is not a neutral tool, for the interviewer creates the reality of the interview situation” (Denzin & Lincoln, 2005, p. 353). The pitfall implied in a potential hierarchical relationship between the interviewer (in a dominant position) and interviewee raises apparent ethical and methodological issues (Punch, 2005) that are widely discussed in literature. Most recent approaches recommend of minimizing status differences between interviewer and interviewee, aiming at a more equal relationship based on trust and reciprocity: in particular, Charmaz (2002, p. 679) underlines that “grounded theory researchers use in-depth interviewing to explore, not to interrogate”. The meaning of interview as a conversation is better interpreted by Kvale’s (1996) words:

The interviewer wanders along with the local inhabitants, asks questions that lead the subjects to tell their own stories of the lived world, and converses with them in the original Latin meaning of conversation as ‘wandering together with’. (p. 4)

This image has been recently expanded by the same author in the metaphor of the interviewer as a ‘traveler’, who “wanders through the landscape and enters into conversations with the people he or she encounters”(Kvale & Brinkmann, 2009, p. 48). This metaphor particularly resonates with our constructivist view of the relationship between interviewee and interviewee. The opposite metaphor is represented by the interviewer as a ‘miner’, according to which the “knowledge is waiting in the subject’s interior to be uncovered, uncontaminated by the miner” (p. 48). Kvale and Brinkmann (2009) direct attention on epistemological issues of interviewing and provide us with a shared background of what interview knowledge can be in contemporary social and educational research. Considering the postmodern turn and the interplay of hermeneutics, pragmatism and phenomenology, they discuss seven features of interview knowledge (2009, pp. 54-56): ‘knowledge is seen ‘as produced’, since “the interview is a production site of knowledge”; it is ‘relational’ and ‘conversational’, since “research interviews rely on conversations giving access to knowledge”; moreover, knowledge is ‘contextual’, since “the interview takes place in an interpersonal context,

and the meanings of interviews statements related to their context”; finally, interview knowledge is ‘narrative’ and ‘pragmatic’.

The ‘active interview’

In alignment with such background perspectives from methodology literature, in this research work interviewing is considered as more of a dialogical process that approximated Holstein & Gubrium’s (1995, p. 141) ‘interpretive’ concept of the ‘active interview’. In this view meanings are being produced through “collaborative accomplishments” between interviewer and interviewee, against a mode of interview – more aligned to a ‘positivist’ perspective - in which respondent is seen as a “vessel-of-answers” and the interviewer’s intervention is intentionally limited. Holstein and Gubrium make a distinction among a ‘rational’ type of interviewing (mainly used in survey research); a kind of interviewing in which a mutual disclosure of feelings occurs between interviewer and interviewee; and a third kind of interviewing as an ‘interpersonal drama’. In the latter typology, interviewer and interviewee draw on their conceptions of what an interview ought to be, and this inevitably shapes what takes place. They underline that “to say that the interview is an interpersonal drama with a developing plot is part of a broader claim that reality is an ongoing, interpretive accomplishment” (1995, p. 116). In this study, the interviewing process is meant to enable accounts of PhD researchers’ individual experience of learning environment, forms of digital mediation, motivations and boundary crossing activities between institutional and self-organized digital spaces. Such accounts are shared and co-constructed with the researcher who is herself a PhD student and thus is likely to play a role as a ‘traveler’ (Kvale & Brinkmann, 2009) in the interviewing process and to attempt similar practices and interpretations of her research-focused digital behaviours. This notion of ‘active interview’ – in which interviewer and interviewee aim to reach a shared formulation of the issue being discussed – suggests a more participatory approach to interviewing that fits the constructivist stances held by Charmaz (2003): “a constructivist approach necessitates a relationship with respondents in which they can cast their stories in their terms. It means listening to their stories with openness to feeling and experience” (p. 275). In fact Gubrium and Holstein (1998) see the interview as storytelling and suggest to pay heed to the *whats* (the narrated content) and the *hows* (the way in which the content is narrated) of the interview. In a more recent reflection, Holstein and Gubrium underline:

active interview data can be analyzed to show the dynamic interrelatedness of the *whats* and the *hows*. Respondents answers and comments are not viewed as reality reports delivered from a fixed repository. Instead, they are considered for the ways that they construct aspects of reality in collaboration with the interviewer. The focus is as much on the assembly process as on what is assembled. (2002, p. 124)

Charmaz (2014) concurs on the relevance of the interviewer/interviewee interaction in building shape and direction in the interviewing event. However, she specifically refers this tenet by Holstein and Gubrium to the opportunity for GT researchers to ask ‘what’ and ‘how’ questions “to begin to shape a subsequent theoretical analysis” (2014, p. 93). Thus, in our research we have recursively asked ‘what’ the PhD researchers do online and ‘how’ they move across institutional and self-organized forms of assistance in order to have a backbone along which we have been able to let it emerge the theoretical conceptualization of the basic process of digital engagement. Furthermore, Charmaz maintains interview as useful to tap the individual experience, but clearly states that “grounded theory interviews are used to tell a collective story, not an individual tale told in a single interview” (Charmaz, 2002, p. 691). This statement has assumed particular relevance in our writing phase, when the attention has been directed to return a collective account rather than to highlight the lived experiences of individual research participants. However, it is worth stressing that the conception of the interview as co-construction requires a close attention to that unavoidable “residue of ambiguity” implied in written or spoken word (Fontana & Frey, 2003), that might make unreachable such ‘accomplishment’ (see Mishler, 1991). Furthermore, “interviewees don’t always speak ‘as individuals’, since they can speak, at various moments, as representatives of institutions or organizations or professions” (Rapley, 2007, p. 29). In fact, our interviewees sometimes explicitly speak as ‘we PhD students’ or on behalf of a specific research sub-group in a defined context; otherwise, they more indirectly align their own digital engagement to peers’ and faculty’s, subtly seeking for legitimation.

Semi-structured, face to face and online interviews

Among the authors who have discussed the interview typologies, Patton (1980), Minichiello, Aroni, Timewell, & Alexander (1990), Fontana and Frey (1994) and Fielding (2003) provide different classifications of the interview methods according to the degree of structure involved. In particular, Fontana and Frey (1994) articulate the distinction among ‘structured’, ‘semi-structured’ and ‘unstructured’ interviews. The choice among the three types depends on the research questions and on related methodological approach of the specific research work. We have chosen to carry out a ‘semi-structured’ interview (see also Fielding, 2003, p. 136), in which the sequence and wording of the questions tend to be stable, as a form of guarantee of equal condition for all research participants and thus as a primer to strengthen reliability. However, we consider that in semi-structured interviews, the sequence and wording of the questions can also be used as cue to structure an “interview-as-event as a setting for data collection” (Brown & Dowling, 2010, p. 74). In fact, Salmons (2010) illustrates in practical details what the continuum from structured to

unstructured interview may be and provides us with a more nuanced scale of opportunities as regards to 'semi-structured interviews'. Thus, we have opted for an approach with the "same open-ended questions asked in varied sequence based on responses" (Salmons, 2010, p. 61). This leads to fulfill the requirements suggested by Charmaz for open questions which enable both interviewees' accounts and the conduct of 'focused interviews', especially in the focus groups, with the aim to develop "shaped but not determined process" (2002, p. 683). Regarding the practicalities of interviewing, the choice of time and location is acknowledged as a key organizational issue affecting successful interviews (Seidon, 2002). In our study, the interviews have always been taken place where the interviewees have indicated their own preference (usually within the research department), whilst the duration of the interview has never gone beyond the announced limit of one hour. However, during our data collection some research participants have asked of being interviewed via Skype, mostly because this is the 'place' where research interactions mainly occur for them. This has drawn attention to issues related to online interviewing. Discussing the differences between face-to-face and online interviews, Bampton and Cowton (2002) highlight "two types of displacement, relating to two fundamental dimensions of human experience. In relation to time, the interactions between interviewer and interviewee are likely to be asynchronous, with pauses of varying lengths between bursts of communication or "episodes"; while in terms of space, the relationship takes place "at a distance" through the medium of electronic, screen-based text". Fontana and Frey (2003) further comment on the current opportunity for Internet interviewing:

it remains to be seen whether electronic interviewing will allow researchers to obtain "thick descriptions" or accounts of subjective experiences and whether such interviewing will provide the "process context" so important to qualitative interviews. (p. 98)

In other words, interviews in online settings are often said to be in danger of not fulfilling the concept of interview process as full social encounter, just because they may create additional problems in "maintaining the momentum of the dialogue" (Bampton & Cowton, 2002). Birks and Mills (2011) recall the extent to which in GT interviews "we often rely on the direction provided by the participant" (p. 75): thus, the lack of non-verbal clues can affect the interviewing process, requiring a greater attention to verbal communication. The challenges around interviewing from distance relate to the four non-verbal techniques that are cited by Fontana and Frey (2003): proxemic, chronemics, kinesic and paralinguistic techniques. These are entirely absent in the case of communication by email, whereas interviewing via Skype allows only for chronemics and paralinguistic forms of non verbal communication. In our study we have attempted to offset these limitations by offering the interviewees at a distance appropriate response time, for instance by

enabling them to construct their narratives with a few interruptions, just to let wider explanations emerge. On the other hand, it has been noticed that online interviews may provide participants with the opportunity of communicate in a familiar and physically safe environment (Mann & Stewart, 2000, p. 25), that is likely to cause a feeling for major control of the interviewing process by the interviewee. It is worth noting, however, that this sense of familiarity towards the interview place is shared among all our research participants, because we have always adapted both schedule and locations according to our interviewees' needs.

2.6.3 Focus groups as research method

The logic pursued in the sampling strategies (see Table 7) has included in the final phase the organization of four focus groups, one for each research setting. This technique has been used to add a group view on the issue being investigated and to further cross-check findings and conceptualizations arising from the individual interviews (Morse, 2007). Mostly, the same research participants in the one-to-one interviews have been involved in the focus groups (in groups of 3-4), to fulfill the recommendation of iteratively interviewing research participants (Charmaz, 2006). Focus groups can be defined “as a research technique that collects data through group interaction on a topic determined by the researcher” (Morgan, 2012, p. 92). As a research technique it implies three key components: the focus group is considered as a research method addressing data collection; it relates to interaction in group discussion as “the source of data”; the researcher’s active role in prompting discussion for data collection purposes is acknowledged. Such implications tend to exclude the use of focus groups for non-research purposes (e.g. marketing, decision-making); the cases in which free interaction among participants is not allowed or where in the group discussion no one plays the role of the interviewer. Focus groups are said to embed the benefit of facilitating “synthesis and validation of ideas and concepts” (Halcomb, 2008, cit. in Gibbs, 2010, p. 187), highlighting collective perspectives. Focus groups are methodologically distinguished from ‘group interviews’ for at least three order of reasons (Hobson & Townsend, 2010): focus groups are based on the interaction among the participants, where the researcher suggests ‘focus’ of the discussion and facilitates it; unlike group interviews, where data essentially relates to content of the discussion, in focus groups also the dynamic patterns among participants are relevant to shed light on the formation of opinions; finally, in a focus group an in-depth discussion is likely to occur, whilst in group interviews a range of issues can be discussed. The key advantage of the focus group can be thus summarized:

What makes the discussion in focus groups more than the sum of separate individual interviews is the fact that participants both query each other and explain themselves to each other. (Morgan, 2012, p. 90)

For the reasons above reported, we have considered focus groups as a suitable technique to be applied in the final phase of our data collection, when the synthesis being provided by the collective discourse can help to sharpen the theoretical interpretation of the previous data. In this line, Birks and Mills (2011) suggest the possible application of focus group as a useful technique for data generation in a GT study, but warn about the greater expertise required to researchers to successfully manage such technique. More importantly, as previously mentioned, we have followed Morse's stance (2007), who attributes to focus groups a clear-cut role in GT sampling strategies, as an instrument to expand findings and consolidate core conceptualizations arising from previous data collection and analysis.

2.7 Data analysis approach

This section accounts for the CGT methodological background on which data analysis in this study is based. Firstly, we provide a general overview of the data analysis approach adopted in this CGT study, and subsequently we devote separate sub-sections for some relevant methodological issues encountered, focusing on the use of data analysis software, the decisions related to transcription and translation and the problematic area of data saturation. It is worth noting that here discourse deals with qualitative data analysis, used to examine interview data sets and also open comments drawn from the e-survey. The quantitative data analysis procedures related to the descriptive statistics applied to the online questionnaire, along with the detailed qualitative data analysis procedures applied to the individual interviews and focus groups and are illustrated in the respective Chapters 5, 6 and 7.

2.7.1 An overview of GT data analysis approach

One key characteristic of the GT methods is the requirement for researchers to assume control of data collection and analysis: "in turn these methods give researchers more analytic control over their material" (Charmaz, 2006, p. 28). In essence, data analysis in GT methodology is code-based and clearly differs from other opportunities developed in qualitative research, such as case-based and text-based analysis (Lee & Fielding, 2006). In the logic of a GT approach there is an emphasis on coding understood as an emergent and iterative process: indeed, this is aligned with a more general conception of "qualitative analytical process – comparing data to data, data to code, code to code, code in category, category to category" as "cyclical rather than linear" (Saldana, 2013, p. 58).

In qualitative data analysis a code “is simply a conceptual device for the description of commonalities of data” (Gibson & Brown, 2009, p. 131). In a CGT approach “the codes reflect the researcher’s interests and perspectives as well as the information in the data” (Charmaz, 2002, p. 683). More specifically, Dey (2007) argues that “in terms of grounded theory, though, the process of ‘coding’ data can also be usefully considered as a process of recontextualization” (p. 91). In other words, coding is not merely understood as a matter of attributing labels to chunks of data to facilitate their retrieval for further interrogation. Instead, the coding process implies an effort to relate observations to researcher’s “frame of reference”, whose relevance “depends of its capacity to generate insights, which taken together can produce a new account of the subject under investigation”(p. 91). To sum up, in this constructivist view the goal is to ‘discover’ new relationships among facts rather than new facts.

Regarding the recommended sequence of GT coding procedures, Charmaz suggests a streamlining of the process, with respect to the traditional GT methodology, as defined by Strauss and Corbin (1990; 1998). In fact, she proposes a two-steps approach, starting with *initial coding*, generally undertaken with a very detailed analysis of data, examined line-by-line or even word-by-word, and followed by *focused coding*, in which “the codes are more directed, selective and conceptual” (Charmaz, 2006, p. 57). It can be said that in the first phase coding is closely ‘data-driven’, or based on “empirical codes” (Gibson & Brown, 2009, p. 130), whilst in the subsequent phase coding becomes more ‘concept-oriented’, activating the abstraction process leading to the creation of ‘categories’.

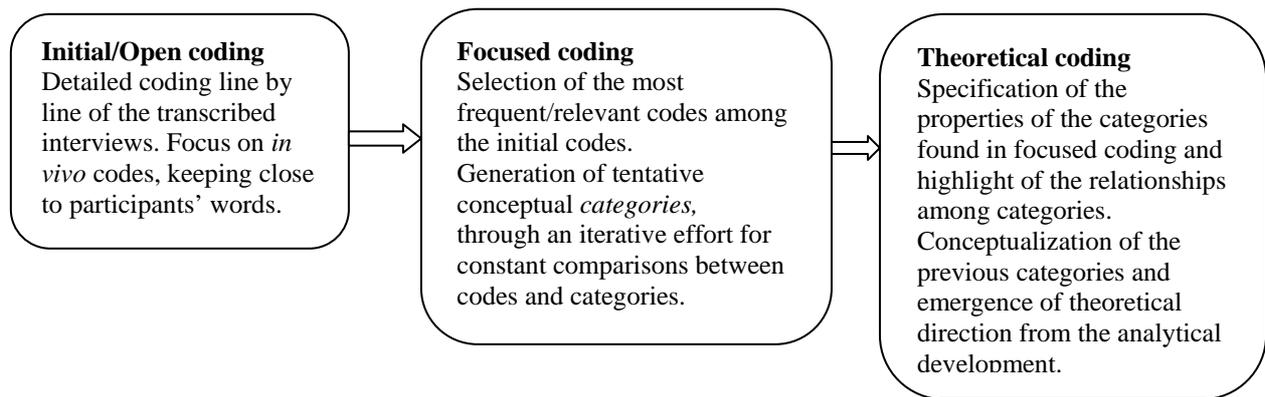


Figure 5. Outline of Data Analysis Procedure.

In initial coding data is analyzed “per incidents, an umbrella term for recurring actions, characteristics, experiences, phrases, explanations, images and/or sounds” (Birks & Mills, 2011, p. 142). As Saldana (2013) underlines:

One major face of Initial Coding to grounded theory methodologists is the search for *processes* – participant actions that have antecedents, causes, consequences and a sense of temporality. (p. 103, emphasis added)

In this approach, a very detailed, line-by line coding is valued by Charmaz (2008): “by constructing active, specific and short initial codes, the grounded theorist creates handles for making comparisons between data and between codes” (p. 472). In Initial Coding, the so called *in vivo* codes – codes including utterances used by the interviewees - particularly help to anchor the analysis to the research participants’ world, reveal condense meanings and “reflect assumptions, actions and imperatives that frames action” (Charmaz, 2006, p. 56). It is well-known the recommendation by Charmaz to use ‘active terms’, such as gerund forms, to define ‘what is happening in the data’: “I try to make action in the data visible by looking at the data as action” (2002, p. 685). Once established well defined analytical directions through such a detailed coding, the researchers can sift among the most significant and frequent codes they have drawn earlier and attempt to define their adequacy to their analytical perspective. In this second phase - focused coding - “the researchers use focused codes to sort large amounts of data and to construct tentative categories in their emerging theories” (Charmaz, 2008, p. 472). Thus, the analysis is gradually moved from descriptive to more theoretical levels, leading to a “saturation” of the material by the coding process, when no new insights and interpretations seem to emerge from further codings. It is commonly acknowledged that in a GT coding process the researcher strives to progress “from codes toward a central/core category that suggests a grounded theory at work in the data” (Saldana, 2013, p. 249). However, as Birks & Mills (2011) discuss, whereas GT seminal texts (Glaser, 1978;

Strauss, 1987; Strauss and Corbin, 1990) stress on the identification of one core category or concept encapsulating the process emerging from the categories previously identified, authors such as Charmaz (2006) and Clarke (2005) tend to attribute less importance to this. In fact, they suggest a more flexible and open approach “that describes how categories and their sub-categories integrate together to form an abstract grounded theory of a substantive area of inquiry” (Birks & Mills, 2011, p. 143). Following these authors, we particularly value in the analysis the links among categories rather than the identification of any all-encompassing main concept/category: more specifically, just working on refining the links among categories we have drawn the conceptual framework of Digital Engagement Variation, as illustrated in Chapter 6 and further assessed in Chapter 7. This effort corresponds to what Charmaz (2006) indicates as the phase of the ‘theoretical coding’ process. It is worth noting that GT coding significantly shapes the product of the analysis to be pursued and displayed in the writing: focus is in fact on the analytical and theoretical features of the analyzed materials, rather than on producing rich descriptions of the interviewees and events, such as, for instance, in ethnography research.

Constructivist grounded theorists place a greater priority on developing a conceptual analysis of the material than on presenting participants’ stories in their entirety. (Charmaz, 2002, p. 691)

As previously mentioned, this approach to coding and data analysis has attracted criticism from other strands of qualitative research, highlighting that these procedures risk to hide the complexity and richness of the individual accounts. However, it is worth reminding that the main aim of grounded theory approach is to shed light on basic social processes mainly from an emic perspective, rather than holistically return the ‘lived experiences’ of the research participants (Mills et al., 2006a). On the other hand, constructivist sensitiveness on the co-production of meanings – as prompted by scholars like Charmaz - can help to overcome the danger of an over-intellectualization of the research process (see also section 2.9). In fact, as Cresswell (2007, p. 65) highlights: “Charmaz places more emphasis on the views, beliefs, feelings, assumptions and ideologies of individuals than on the methods of research”. This emphasis emerges both in the use of ‘action code’ in order to be closer to participants’ voice and in the call for a writing style that is “evocative of the experiences of the participants” (Mills et al., 2006a, p. 12).

2.7.2 Issues in computer-assisted data analysis

We have made a decision for undertaking qualitative data analysis both manually and via technology-mediated applications. Such a decision has been determined on the one hand by the learning objective of better understanding the logic and practicalities of data analysis before relying

on a technology-mediated tool. On the other hand, it has also been supported by methodological literature consulted about issues related to computer-assisted data analysis. In fact, it is currently acknowledged that computer-assisted analysis software (acronym CAQDAS) enables efficiency in data analysis process (Bazeley, 2007), thanks to computers capacity of recording, sorting, matching and linking. Cresswell (2007, pp.167-168) makes a comprehensive list of advantages of using CAQDAS: among them, there are some of particular relevance, such as the opportunity to easily store and organize qualitative data, to easily compare code labels; to produce visual diagrams of codes and themes; to create templates for coding data within a defined research approach. However, the use of technology-mediated applications cannot replace the task of learning from data (Bazeley, 2007). Moreover, a researcher should properly harness the software to pursue specific objectives in her project, rather than been 'driven' by the software's characteristics (Richards, 2002). Indeed, the use of technology introduces a tension between the researcher's effort of being close to her data and the need of improving efficiency by putting her data in a mechanism with its own rules and logic: this implies that in the learning curve of using a CAQDAS is included more than the familiarity with specific functionalities. About this issue, we particularly considered the reflections provided by Gilbert (2002), who describes researchers' transitions to using these kinds of software and identifies three subsequent phases of 'closeness to data': the 'tactile-digital divide', the 'coding trap' and the 'metacognitive shift'. In the first phase researchers experience a sort of displacement, due to the distance from data, produced by their digital treatment; on the contrary, as researchers become more and more acquainted with the software, the experience is of an 'excessive' closeness to data, with a related the risk of a neverending coding effort; subsequently, researchers acquire a proper ability to develop a suitable strategy and to think *through* the software with the same level of reflexivity necessary in any qualitative data analysis process.

Indeed, the use of specialized software is now said to be mainstream (Birks & Mills, 2011) and recent discussions state that it can positively affect the quality of data analysis in GT studies in terms of reliability (e.g. Bringer, Johnston, & Brackenridge, 2006; Hutchinson, Johnston & Breckon, 2010). However, this practice has been contested by Glaser (1978), who sees a risk for researcher to distance herself from data and to apply pre-conceived ideas included in the technology-mediated system. Also Charmaz (2003) expresses her own perplexities about the use of software for data analysis: in particular, she thinks that "these software appear more suited for objectivist grounded theory than for constructivist approaches" (p. 268) and that "the programs may unintentionally foster an illusion that interpretive work can be reduced to a set of procedures" (p. 268). In this study we follow the directions suggested by Birks & Mills (2011), who suggest a combination of manual and technology-mediated analysis, where software is treated "as an adjunct

tool for analysis rather than an analytical solution in itself” (p. 140). Through other researchers’ experiences, they recommend to preferably use software in the advanced phase of the coding process, when codes become more selective and memoing activity has provided us with the opportunity to draw an early map of theoretical concepts. This choice resonates with other scholars (Welsh, 2003), approving the integration between the two work modalities. In fact, according to Welsh, an initial phase carried out in a more traditional way is advisable, since the use of a software tool would improve researcher’s (especially an apprentice researcher) self-confidence in data analysis just because of the embedded procedures rather than justified by data. This view, although it underlines a conception of qualitative research as hardly constrained in control procedures, at the same time highlights the role of reflexivity and the perspective of ‘craftmanship’ that is typical of qualitative inquiry and is emphasized in grounded theory. For practical reasons (we exclusively use one Mac laptop), we have selected Hyperresearch (Researchware, 2008) as CAQDAS software that “serves qualitative sociologists across a broad range of analytic applications” (Charmaz, 2003, p. 267). How this application has been used in data analysis will be described in Chapter 6, addressing process and findings of the individual interviews.

2.7.3 Issues of interview transcription

The activity of transcribing interviews enables researchers to begin to interrogate available documents to gain informants’ views, having a specific research aim and a methodology to be applied. Generally, most attention is drawn to conventions to be applied and technical quality to be pursued, rather than to methodological aspects inherent to transcription (Poland, 2002). In this work we consider a number of qualitative researchers (Mishler, 1991; Kvale, 1996; Gee; Poland, 2002) focusing on the interpretive nature of the transcription process. In this line, transcription can never be intended as merely procedural, even if it embeds a set of procedures to be followed (Gibson & Brown, 2010). Otherwise, transcription already activates an interpretive process, because it involves making analytic judgements about what to represent and how to represent it:

in other words, data are (re)constructed in the process of transcription as a result of multiple decisions that reflect both theoretical and ostensibly pragmatic considerations. (Poland, 2002, p. 630)

Transcription is never a neutral act, since it implies a researcher’s construction whose decisions in turn influence findings and their interpretation (Mishler, 1991). In this sense, transcription is about analysis, and a transcript can be considered as a “theoretical entity”, which “does not stand outside an analysis, but, rather, is part of it” (Gee, 1999, p. 88).

Despite the claims for a 'verbatim' transcription as main quality criterium, representation of the original document is always partial and a transcript can be at best considered as "a faithful reproduction of the oral record" (Poland, 2002, p. 635). Firstly, because it is impossible to get a perfect reproduction of the original discourse, even with the most sophisticated recording devices. Our hearing ability is itself selective and prompts inferences and oral discourse provides tricky challenges to the transcriber such as "problems with sentence structure,, the use of quotation marks, omissions, and mistaking words or phrases for others" (Poland, 2002, p. 632). Secondly, because transcription is guided by researchers' perspective and thus it sifts "details of speech (and gaze) and gesture and action) or writing that are arguably deemed relevant in the situation and that are relevant to the arguments the analyst is attempting to make"(Gee, 1999, p. 88). Thirdly, because many aspects of interaction between the interviewer and the interviewee and non verbal interpersonal communication are not captured by the audio tape. An excessive emphasis on the necessity of producing a 'verbatim' transcript may on the contrary hides such complexity and leads to a sort of 'reification' of the "transcript as data about the interview, frozen in time (and space)" (Poland, 2002, p. 635). Instead, here the perspective endorsed about the transcription is aligned with the acknowledgment of "the socially constructed nature of the research interview as a co-authored conversation-in-context" (p. 635). Furthermore, just because it is at the heart of the iterative process of generation of data in qualitative research, transcription should preserve a proximity to original data, in an attempt to gain understanding that is always to be thought as recursive and tentative. As Heath and Hindmarsh (2004) underline, the transcription doesn't replace the recording "as data, but rather provides a resource from which a researcher can begin to become more familiar with details of the participants' conduct" (p. 19). Such notation is particularly relevant for CGT data analysis, which values 'in vivo codes' – drawn from the same utterances of the respondents - especially in the initial process of open coding. A transcription process can produce multiple transcripts, more or less detailed. From a practical standpoint, it is important that "the level of detail of the transcription matches the use to be made of the transcripts" (Brown & Dowling, 2010, p. 78). For instance, within GT tradition, Strauss (1987) suggests that it is more reasonable to transcribe as much and only as exactly as is required by the research question and that it is worth giving value to manageability, readability, analyzability and searchability of the interview data. In fact, validity of a transcription doesn't deal with how detailed the transcript is; once again, criteria are related to the researcher's purpose and to the other elements of analysis as a whole.

Furthermore, we have taken a decision about the typology of transcription. Gibson and Brown (2009) distinguish among diverse typologies of transcription: *focused* (in which the focus is on particular nuances of the discourse or action in the data), *unfocused* (in which the attention is to

what is said) and *indexical* (in which an index puts in relation general content of the data and analytical interests). Since our need in the initial coding has been to closely examine data in order to let interviewees' actions emerge, the choice has been to use *unfocused* transcription, to provide "an overview of the entire dataset" (Gibson & Brown, 2009, p. 114).

2.7.4 Issues of translation in data analysis

This empirical research is being undertaken across Italian and UK university contexts, using Italian and English language in the respective national settings, in delivering questionnaires, individual interviews and focus groups. Notes, memos and the dissertation as a whole have been drafted, re-written and edited in English language. Thus, an issue of adoption of different languages in data collection, analysis and reporting is apparently advanced. The topic of translation is said to be at the heart of the work of a social researcher, dealing with the iterative reconfiguration of "sense and signification ("meaning") that research participants make in and of life" (Roth, 2013, p. 17). The same transcription is inherently a translation, because it implies a mutual elaboration of tape and transcript (Ashmore & Reed, 2000). Roth underlines that the coding act - as an effort to establish patterns in data - "constitutes an abstraction and, therefore, a translation into the language of the researcher" (2013, p. 17), whatever the adopted method. Such an issue has also specifically discussed in its close interplay with the methodological stances of grounded theory (Shklarov, 2009; Tarozzi, 2013). Tarozzi faces the issue of conducting data analysis in English whereas data collection was carried out in Italian language. This researcher starts by saying that, even if translation and research practice do not overlap: "Translating is doing GTM, because every translation is a form of interpretation, an investigation of meaning, a rigorous inquiry aimed at understanding a text" (Tarozzi & Glaser, 2007, p. 22, quoted in Tarozzi, 2013). Interestingly, Tarozzi founds his argument on the morphological features of the two languages and attributes to the Italian language a 'descriptive' affordance, particularly useful in an early coding process, whereas the English language nicely fits the need to synthesizing initial codes and categorizing them, in a more advanced coding effort. Therefore, the use of Italian language to carry out initial coding in our study would be not only justified by the fact that most of our data are produced in Italian language, but "also because Italian can better describe meaningful segments of text with long and accurate codes" (Tarozzi, 2013). However, the same researcher notices that "the more the analysis proceeds into selective and theoretical coding, the more English becomes appropriate for sorting and conceptualization" (2013).

Always in a GT framework, Shklarov (2009) deals with a similar issue in her doctoral dissertation, coping with the Russian language as the *source* language to conduct interviews and with English

language as the *target* language for the research report. She adopts the strategy of intertwining translation and conceptual analysis: unlike traditional qualitative research, where a preliminary, complete and detailed translation of the collected data is expected before undertaking analysis, “the interplay between the two activities – translation and conceptual analysis – involves the strategy of intertwining, which includes analytical efforts that take place before, in parallel to, or independent of the technical textual translation” (Shklarov, 2009, p. 55). Although we find Tarozzi’s solution interesting in order to preserve the expressive power of the original data, we think that using only the target language also for initial coding can foster the opportunity to select the most relevant codes in the subsequent focused coding phase. However, we agree with Shklarov that a translation from Italian as source language to English as target language is to be considered only for analytical reasons, when the interplay between translation and conceptual analysis is at work. Moreover, we have preferred to consistently write memos in English, in order to facilitate a more advanced writing process.

2.7.5 The issue of saturation

Unlike conventional qualitative research, Charmaz underlines the extent to which for GT tradition just “the emphasis on categories and properties makes saturation a *theoretical* concern, not merely a methodological measure indicating redundancy of data as in conventional research”. (2006, p. 473, emphasis in original). Generally speaking, it can be said that in GT “saturation is achieved when the coding that has been already completed adequately supports and fills out the emerging theory” (Ezzy, 2002, p. 93). In fact, “the partner of saturation is theoretical completeness, when the theory is able to explain the data fully and satisfactorily” (Cohen et al., 2011, p. 601). Moreover, “the saturation metaphor implicitly emphasizes the density of categorization rather than its parsimony” (Kelle, 2004, p. 186). However, this concept remains problematic in GT: Morse (1995) and Charmaz (2006) admit how often grounded theorists uncritically use the term saturation and assert to have saturated the properties of a category rather than demonstrating it. Dey (1999; 2004) extensively criticizes the notion of saturation in GT both for its meaning and for related consequences. He contends that saturation constitutes “another unfortunate metaphor” (1999, p. 257) whilst the term “theoretical sufficiency” (p. 257) seems to be more adequate, since GT researchers indeed draw categories as suggested by data. Moreover, he is concerned with the process of saturating categories as derived by a self-referencing application of grounded theory methods. This concern resonates the recommendation by Charmaz (2006), in order not to adopt GT strategies as mundane recipes. In fact, she warns that “uncritical or limited analytic treatment may also result in early saturation of categories” (Charmaz, 2006, p. 114). In other words, she leads back

the issue of saturation to the capacity by the researcher to make sophisticated interrogation of the phenomena being investigated: the more complex are the questions to be answered, the more accurate will be the procedure to be followed, implying a minor risk of claiming that saturation is reached, without evidence to be demonstrated through data. Significantly, Morse (1995) warns against counting the frequency of a code as an indicator of theoretical saturation early in the piece. Rather, she states that “researchers cease data collection when they have enough data to build a comprehensive and convincing theory. That is, saturation occurs” (p. 148). These concerns about saturation are taken into account in our study and guide the theoretical sampling process and the decision related to the number of interviews to be carried out.

2.8 Research ethics issues

This section firstly reports a selection of research ethics literature constituting the background of the ethical decision making developed in this study. Detailed information about the ways in which such theoretical stances were applied are provided in the related sub-section.

Research involving humans has in the Nuremberg Code – shared across the Western societies at the end of the Second World War - its ethics primer, as regards to the inescapable principles in protecting individual research participants from any direct or indirect harm that a research intervention might cause. Since then, some developments and practices have strongly increased the importance of ethics in social research, such as the growing role of societal contexts in research evaluation and the transition towards naming humans involved in research as ‘participants’ or ‘respondents’ rather than ‘subjects’ (Demiray & Sharma, 2010). Current research ethics approaches strive to combine general rules of the codes of conduct provided by the institutional review boards with a continuing effort to gain *phronesis* or ‘practical wisdom’, “which demands understanding of specific situations and reference to prior experience” (Tracy & Carmichael, 2010). In a research project, ethical concerns may arise from the nature of research, from the context being investigated, from the kind of participants (e.g. children or vulnerable people), from the data collection methods, from the type of collected data and from the modes of disseminating research (Cohen et al., 2011, pp. 51-77). In our case, the topic being researched is not particularly sensitive or risky and the participants are all adults, being interviewed in the capacity of PhD students. However, even if a research project does not reveal apparent sources of tension, good research practice requires to pay attention to ‘theoretical ethical field’, the body of knowledge related to research ethics and ‘empirical ethical field’, the specificities of the local context being researched (Dowling & Brown, 2010, pp. 32-42). In fact, to a degree qualitative research with human participants is always intrusive and we can only attempt to smooth this condition (Basset & O’Riordan, 2002). Moreover,

whereas an online questionnaire easily allows to preserve anonymity of participants, interviewing can be generally numbered among the ‘obtrusive’ inquiry techniques (Lincoln & Guba, 1985) and requires to consider some cautionary procedures. Moreover, it is acknowledged that “there is no international agreement or regulations of ethical standards in research” (Ryen, 2007, p. 219; see also Ess, 2004). In fact, our doctoral project can be defined as international research because it is carried out in Italy and UK, whilst the institution of our doctoral program is located in Spain. Thus, different kind of sensitiveness have been considered on the part of the institutions and research participants to be involved. At the UOC, a dissertation project not involving children or not focusing on sensitive topics is not required to obtain full ethical clearance from the institutional review board, even if the related ethical issues are to be widely discussed in the initial research proposal. Moreover, as previously stated, three Italian universities (University of Milan, University of Milan-Bicocca, Polytechnic of Milan) have been involved as many research settings. In all these cases the agreed procedure has been to ask permission via email to the respective Vice-Chancellors and Pro-Vice-Chancellors, briefly informing them about the intention to conduct such an investigation, anticipating a minimum involvement by the doctoral programs' administrative staff. Differently, at the Institute of Education, University of London, we are expected to gain full ethical clearance by providing the local Research Ethics Committee with a very detailed plan of research practice and related ethics decision making to be applied. The main decision has been to take the procedures applied to the UK participants as the point of reference also while undertaking the online questionnaire, individual and group interviews across the Italian universities. The general approach here endorsed acknowledges that “the evaluation of risks and benefits, the construction of informed consent procedures and the development of confidentiality and disclosure policies need to reflect a ‘goodness of fit’ between study goals and participants characteristics” (Fisher & Anushko, 2008, p. 106). Issues related to informed consent, confidentiality, anonymity have in fact been taken into account.

Informed consent is generally indicated as the key issue to be addressed when building an ethical framework (Mann & Stewart 2000; Christians 2005). The kind of research undertaken – mainly based on interviewing – makes obvious the choice of assuming an overt approach by the researcher. On the other hand, just this situation makes the informed consent an instrument for researcher to demonstrate credibility and accountability. However, there are contrasting views about the mandatory character of the informed consent and its operationalization. Some scholars (Bakardjieva & Feenberg 2001; Bruckman 2002) state that obtaining consent (through signed forms) from each participant is mandatory, even if it is logistically difficult or potentially disruptive of the online environment. On the other hand, Fahy and Spencer (2004, pp. 33-34) maintain that an ethics

institutional board can waive informed consent where minimal risks in research are present, if subjects can be provided with additional information after participation, or if there are serious hurdles in getting it. We have decided to inform in advance the research participants as regard the scope and context of the research underway: in the online survey we have added an introductory text at the beginning of the questionnaire; as regards to the individual interviews, we have delivered a brief document via email to each participant, in order to allow her/him to carefully read the information and take related decision to sign the attached release form.

The second hallmark of research ethics is the principle of confidentiality, according to which “we are obliged to “protect the participants’ identity, place and the location of the research” (Ryen, 2007, p. 221). However, generally such principle can not be literally applied, but adapted to the specific situation being researched, in order to not affect the integrity of the research project: for instance, in our research we have reported some information of the context or the personal experience of the doctoral students when this kind of information could return a more nuanced account of the digital engagement of the research participants. Thirdly, anonymity has been protected in every research reports, by using acronyms pointing out subject areas and university rather than using the names’ initials.

It is also worth noting that ethical issues are not only related to data collection but affect all the research process (Kvale, 1996; Kvale & Brinkman, 2009): for instance, while transcribing tape recordings or writing report the researcher should consider a loyal representation of interviewees’ accounts as an integral part of the ethical aspects of qualitative research. Moreover, we find it is important to go beyond the mere application of the procedural guidelines defined by the institutional review boards, in order to consider the entanglements between methodology and ethical issues (Markham, 2007). These entanglements are often neglected, for instance, when considering online survey tools (Buchanan & Hvzidak, 2009), whose ethical issues are mainly taken into account to improve response rate and quality of data rather than to protect research participants. Furthermore, the constructivist orientation endorsed in this work (Charmaz, 2006; Holstein & Gubrium, 2002) envisions a more equal relationship between the interviewer and the interviewee and leads attention to the multiple identities of the interviewees. Both issues suggest a different kind of ethics decision making and research practice to be enacted. However, it is worth noting that the some ethical procedures (e.g. the informed consent) might even be perceived as an excess of bureaucratization of the research process (Ryen, 2007), when applied across contexts well acquainted with educational and social research and in research projects where the topic is not sensitive and the type of participants is not particularly vulnerable.

2.8.1 The ethics procedures applied

As outlined in the previous sections, we have organized data collection according to a sequence of online questionnaire, individual interviews and focus groups. A number of ethical issues can be highlighted as arising from the different techniques adopted: as a consequence, the following ethical procedures have been considered and applied. Firstly, the research participants have been made clear that their participation in the study would have not produced any direct or indirect advantages to them. Anyway, the individual doctoral students being involved were provided with a multi-step opportunity to reflect on her/his own institution-led and self-organized digitally-mediated practices. They were not given any form of incentives but, if interested in the topic, they could access a devoted website where we have been curating the aggregation of resources focusing on 'Doctoral education and PhD e-researchers': <http://www.scoop.it/t/doctoral-education-and-phd-e-researchers>. The anonymous questionnaire was created comprised of closed questions, but with the option to add open comments, in order to offset the standardized survey approach. The respondents were engaged in the e-survey for the estimated timespan of 20 minutes. The questionnaire was administered online through the online service called SurveyMonkey, upgraded to the first-level fee-based version, in order to assure a thorough reliability and more performing functionalities. Ethical issues related to the adoption of this specific application were considered (Marra & Boque, 2006). In fact, the service does not require the use of personal email by respondents and allowed us not to track the IP addresses of the participants, by applying the devoted option in the administration side. In the welcome page at the beginning of the questionnaire an introductory section was set up to briefly illustrate the context and the aims of the research and informed the potential respondents of the voluntary nature of their participation and of their right to withdraw from the survey at any time, merely quitting the online form. Across the Italian universities being involved, the invitation to participate in the survey was delivered via email to all the doctoral students by the administrative staff of the respective doctorate offices. At the IOE, in the UK, the invitation message was delivered in the news forum within the Moodle platform, whose messages can be received in one's own mail box via subscription. This collaboration with the doctorate offices enabled us to indirectly use the official mailing lists of the doctoral students and so to match the sampling frame with the actual population of the informants. More importantly, anonymity of the respondents was guaranteed both on the part of the doctorate office, that could not access the filled out questionnaires, and on the part of the researcher, who could not access contact information, unless the individual respondent voluntarily indicated it for a subsequent collaboration in the interviews. The name of the researcher and her contact information were explicitly quoted in the final thanks message at the end of the survey. Finally, in our early contacts to gain access to the field we made clear to respective decision

makers across the universities that focus of the survey data was not on making inference about the entire population of research students enrolled in the selected universities. Otherwise, the aim was to use them as baseline data to map out ICTs uses, motivations and expectations related to digitally-mediated practices before undertaking interviews to a sample of individual PhD candidates.

As regards to the interviewing process, the sample of the potential interviewees was drawn on the basis of any survey respondents who stated their availability to be interviewed, face-to-face or via web conferencing system. The potential interviewees were directly contacted via email to confirm or withdraw their participation: only in one case the potential participant was firstly contacted via twitter (as she voluntarily indicated in the survey) and then via email. The potential interviewees (either in the individual interviewees or in the focus groups) were also given access to available documents and presentations (at that time) related to findings of the online questionnaire submitted to PhD students across the Italian universities. The consent of the participants (either in the individual interviewees or in the focus groups) was obtained through a signed form. The informed consent form and the related release form (**see Appendix n. X**) were sent to the interviewees in advance, via email: it included both details on how vulnerability of participants is protected, the researcher's contact information and a release form in paper format, to be signed before starting the interview. The low number of interviewees made it straightforward to obtain informed consent through a signed form, even when the interview took place at a distance. However, we noticed in a few cases a different cultural attitude between Italian and UK students towards the informed consent and the release form, whereas some Italian participants (especially in social science subject area) showed to consider such a practice an non-necessary bureaucratic procedure, given the non sensitive topic being researched.

At the beginning of the research, there were no known risks to which the research participants might be exposed during or because of the interviews. However, we undertook the following steps to minimise any unanticipated discomfort or embarrassment:

- 1) The informed consent ensured participants of anonymity and confidentiality of their personal data and released opinions.
- 2) Participants were allowed to withdraw from the study at any time. The option to withdraw consent was explicitly included in the informed consent: participants were able to withdraw merely by sending a message to the email account we specifically set up for this research project. In case of withdraw the related data would not be used for the final report.
- 3) It was made clear to doctoral students that they had the right to view the interview/focus group transcript and to add comments. Moreover, their feedback during the individual or group interviews would have had no impact on their academic progress.

4) Only doctoral students were involved in the group interviews, in order to avoid issues of power relationships (e.g including tutors or supervisors).

5) The interviews' audiotapes, transcripts and/or email recordings were kept confidential, and statements drawn from specific interviews were explicitly quoted only in agreement with the respective authors. In any case, the quotes remained anonymous.

6) A recursive debriefing process to be undertaken with the individual participants was a key guarantee as regards to the transparency of conduct of research. Moreover, the focus groups themselves constituted a form of member checking, since they were organized to further discuss and assess findings of the individual interviews, before any dissemination activity.

Information obtained from participants was only assessed by ourselves and our supervisors. It was said to be used for the dissertation work and related publications and not be transferred to third parties. Personal data (such as email or social media accounts) were released by research participants only on voluntary basis, as an optional response in the online survey. These data were exclusively used to invite a group of them to participate in the subsequent interviews or focus groups. Moreover, personal data and quotations from the interviews and focus groups were anonymised by using acronyms. Whether the interview took place through a web conferencing system such as Skype, we canceled the participant's record from the contact list just after undertaking the interview.

Data security was pursued by applying back up procedures to survey, interview and focus group data: all the produced data sets, transcriptions and data analysis were stored in one devoted hard disk and in a password-reserved online storage service. In the UK context, the study was said to conform to the code of ethical practice defined by the British Educational Research Association (BERA, 2011) and the guidelines included in the Data Protection Act.

Finally, the findings drawn from the e-survey, the individual interviews and the focus groups were shared with our UOC supervisors and IOE tutors. Moreover, the findings were organized and discussed in the format of this doctoral dissertation and further dissemination is planned through the conventional channels of research conferences and journals.

The ethical procedures above illustrated demonstrate another potential of considering research ethics also in non-sensitive topics and contexts: such endeavour fosters the researcher to think of her own inquiry project as a detailed 'script' to be enacted (and if needed modified) during data collection. This helps to figure out 'what is going on' across the different stages of the project and to gain insights on problematic areas.

2.9 Generalization, validity and reliability issues

This section briefly discusses issues of generalization, validity and reliability as many quality assurance criteria in qualitative research, as applied to this GT study (see a summary in Table 3). In the scholarly debates on qualitative inquiry often these notions to a degree overlap, making the case for a critical review embedding pragmatic directions. The different positions arisen also lead to reflect again about the tensions between objectivist and constructivist GT.

Table 10.

The quality assurance criteria adopted in this research.

Quality assurance criteria	Stances in this study
Generalization	Notion of generalization related to credibility, dependability, transferability of findings (Lincoln & Guba, 1985; Denzin & Lincoln, 2005). Mechanism of ‘maximizing variation’ (Larsson, 2009) as aligned with the GT process of theoretical sampling.
Validity	Validity as a holistic notion encompassing a matter of degree (Cohen et al., 2007), matching concepts such as ‘trustworthiness’ (Lincoln & Guba, 1985), ‘credibility’ and ‘resonance’ (Charmaz, 2006). Researcher’s concerns highlighted from reflexivity effort (Howell, 2013) contribute to minimize invalidity.
Reliability	Dialectic relationship between validity and reliability. Space and method ‘triangulation’ (Golafshani, 2003) as main techniques to preserve validity and reliability at the same time. Ambivalence of the GT coding procedures as potential protection of both validity and reliability, but also implying a risk for an over-intellectualized research process (Howell, 2013).

2.9.1 Generalization

The notion of generalization is concerned with the applicability of the research findings to other settings and samplings. Generalization is linked to the use-value of any research studies (Brown & Dowling, 2010) and embeds a range of meanings and interpretations, according to positivist or interpretive orientation endorsed by researchers. Whereas in nature sciences (and in social research endorsing positivist views) generalization is interpreted as the power to draw general causal laws from empirical studies of phenomena, in interpretive research its meaning is controversial and even neglected (Larsson, 2009). In fact, an extreme stance states that “the only generalization is that there is no generalization” (Lincoln & Guba, 1985, p. 110). Indeed qualitative methodologists (Lincoln & Guba, 1985; Denzin & Lincoln, 2000) have suggested alternatives to the positivist view of validity and value a concept of generalization understood as comparability and transferability of results, implying the comparison among different contexts. Our qualitatively oriented research is located in this broad area of meanings related to generalization. It is worth noting that in more

recent times the opposition positivist/interpretive view of generalization has blurred and it has been acknowledged that the aim of working with representative samples is not actually rejected by qualitative research as a whole (Gobo, 2008). This observation leads to address “the problem of generalization in practical terms, doing so by examining the nature of the units of analysis considered, rather than adhering to standard procedural rules” (2008, p. 201). Furthermore, other authors (Flick, 2006; Mayring, 2007) have drawn attention to the epistemological position of the researcher, the conditions found in a research field and to the research questions as key factors in the definition of the aims of generalization in a study.

Generalization of findings in GT studies

Grounded theorists have marked the differences of their approach also regarding the issue of generalization of findings. Glaser (1992) explicates the distinction between “methods that generalize to a large population (unit sociology) and methods to (*sic*) methods that generalize to a basic social process of scope and depth, one of which is grounded theory” (p. 107). Charmaz (2006) stresses the importance of gaining in-depth understandings of locality of the context being researched: “I argue that situating grounded theories in their social, historical, local and interactional contexts strengthen them. Such situating permits nuanced comparisons between studies” (p. 180). Following Charmaz, in our study we direct attention to scrutinizing the particulars of the instances being investigated, in order to enable comparison and let its generality emerge from such endeavour. Charmaz position on generalization is closely connected to Strauss and Corbin’s (1998) tenet on the opportunity to compare situations to situations, as a further dimension of generalization against the mono-dimensional approach of quantitative research, aiming to generalize the specific sample to the entire population. Moreover, the aim of theoretical sampling in GT is said “to sample theoretically stimulating settings, not to generalize from representative samples of populations” (Dey, 2007, p. 84). This statement – substantially shared by Charmaz (2006) – posits a clear view on the issue of generalizability of findings drawn from GT research. In fact, theoretical sampling provides the researcher with a form of argumentative generalization across the process of data collection, leading to a theoretical understanding of the phenomenon being researched.

Theoretical sampling and ‘maximizing variation’

We can draw further reasoning about theoretical sampling from Larsson (2009), who argues the current inconsistency of the terms related to the notion of generalization. He calls for the construction of a pluralist view of generalization in qualitative research. To this end, he identifies

different lines of reasoning about generalization, each of which is pragmatically grounded in specific methodological approaches and techniques. For the purpose of this study, we find it of particular interest the line of reasoning aiming to enhance “the generalization potential by maximixing variation” (p. 31), because it is close to the GT process to go back and forth across data to be collected and to be examined. Larsson sees ‘maximixing variation’ as usefully applicable to studies concerned with a number of cases - such as in qualitative interviews – in which the researcher “wants to cover a variation of qualitatively different cases of a phenomenon”(p. 31). Extensively exploring variation in diverse qualitative views contributes to enhance generalisability of findings. For Larsson this line of reasoning resonates with the strategy of ‘theoretical sampling’ in GT, where “sampling is based on what is already known and what was needed next in order to push the understanding of the research phenomenon further”(p. 31). However, he notices that it is not an easy task to identify cases or individuals on the basis of early impressions or formal characteristics. Moreover, the researcher may not be aware of the extent to which the variation should be explored, even if in our case literature review has provided a valuable help, along with the mechanism of saturation (Morse, 2007). In our study, maximizing variation is also applied as a generalization criterium to the online questionnaires, where the aim has been to map out a wide range of academic activities and digital practices of individual PhD students across diverse contexts, rather than draw inferences about the entire population of doctoral researchers.

2.9.2 Validity

Validity can be generally defined as a “set of criteria through which you can measure what you think you are measuring” (Brown & Dowling, 2010). In quantitative study validity is usually coupled with generalization, and understood as ‘external validity’ (Cohen et al., 2007, p. 136), that aims to measure the extent to which findings are generalizable to other settings. In qualitative studies the landscape is more nuanced and contested. Against a dominant, positivist conception of validity, Cohen and colleagues underline that “it is important that validity in different traditions is faithful to those traditions” (2007, p. 134). In other words, they relinquish the tendency of declaring any study invalid unless it follows certain standardized set of criteria such as controllability, replicability and predictability, that are specifically inherent to quantitative studies. Rather, they prefer to opt in qualitative-oriented studies for validity as a more holistic view, where it “should be a matter of degree” (p. 133) and the researcher strives to minimize invalidity. In fact, in qualitative research the umbrella concept is ‘trustworthiness’ (Lincoln & Guba, 1985, p. 289), that deals with the strategies and arguments adopted by the inquirer to persuade her audience that findings of a study “are worth taking into account of”. Within this frame, alternative terminology has thrived:

“Terms such as credibility, transferability, dependability and confirmability replace the usual positivist criteria of internal and external validity, reliability and objectivity” (Denzin & Lincoln, 2005, p. 21). Whereas controllability and replicability are criteria being implied when reflecting on the management of the online questionnaire in our study, a notion of validity as credibility – based on “honesty, depth, richness and scope of data achieved” (Cohen et al., 2011, p. 47) - is pursued in applying the primary method of interviewing. Thus, trustworthiness criteria such as ‘member checking’ are applied (especially in the final focus groups), in order to assess rough results with the research participants. Credibility, along with originality, resonance and usefulness are also considered as quality criteria by Charmaz (2006, pp. 182-183) for a GT study. Howell (2013) refers the dependability criterium to replicability of the research process and notices that “a good example of dependability may be found in grounded theory coding procedures and memo writing” (p. 190). Further elaboration on validity for a GT study is drawn from Cho and Trent (2006), building on this spectrum of terms and discussing a holistic view of validity, that can be differently inflected according to different kinds of purposes in qualitative research. For instance, the purpose of “seeking the truth” as ascribed to GT originators (Glaser & Strauss, 1967) implies strategies aiming at explicating causal relationships among data, through rigorous and logical procedures. This approach of ‘progressive induction’ leads to the representation of ‘what is’ in the data, through a credible and corresponding account. Otherwise, in a constructivist view, validity has more to do with “a process of thinking out loud about researcher concerns, safeguards and contradictions continually” (Cho & Trent, 2006). In this perspective, validity is approached as a process inherent to reflexivity (Howell, 2013) rather than being interpreted as a milestone to reach in a linear sequence or as an overliance on researcher’s subjectivity. This is aligned with the adoption of ‘memo writing’ as practice to scaffold reflexivity across the research process (Charmaz, 2006) and with the recommendation of using an ‘audit trail’ (Bricks & Mills, 2011) among main quality criteria when undertaking a GT study. However, it is worth taking into account that reflexivity has a limited validity “as it asks the reader to take interpretations at face value as an authentic attempt to explore selves and be truthful and conscientious about the narrative accounts provided” (Howell, 2013, p. 186). On the other hand, in our research the adoption of multiple data sources (e-survey, individual interviews and groups) directs us also to consider ‘triangulation’ as a key validity strategy (Golafshani, 2003), inherent to grounded theory methodology and at the heart of the interplay between validity and reliability.

2.9.3 Reliability

The notion of reliability deals with the replicability of the selection process and presentation of data, as developed by the researcher(s). Whereas in quantitative research reliability and validity are usually treated as separate criteria, in qualitative research there is a tendency to overlap meanings and to use “terminology that encompasses both, such as credibility, transferability and trustworthiness” (Golafshani, 2003). Some authors (Lincoln & Guba, 1985; Patton, 2001) concur that reliability is a consequence of the application of validity criteria in a qualitative study: thus, “a demonstration of the former (*validity*) is sufficient to establish the latter” (Lincoln & Guba, 1985, p. 316). We acknowledge the close interplay between validity and reliability in our mainly qualitative research, but we prefer to consider the dialectic relationship between validity and reliability as differently occurring in the empirical instances, rather than opting for a direct correspondence. For instance, in our semi-structured interviews - relying on an approach of interviewing as mutual accomplishment between the interviewer and the interviewee – a change occurring in wording or sequence of questions to a degree could affect reliability (i.e. consistency of the interview protocol over time). On the other hand, such a change could increase validity, since a greater flexibility would enable the interviewees to convey their views with minor constraints.

Furthermore, we have used triangulation as a key strategy for enabling validity and reliability in qualitative research (Golafshani, 2003), since engaging multiple methods “will lead to more valid, reliable and diverse construction of realities” (2003, p. 604), in alignment with a constructivist perspective. In this approach, triangulation constitutes a validity procedure to access to multiple perspectives about the phenomenon, rather than a procedure used to check stability of findings across diverse techniques and contexts. Thus, building on the closed and open answers received in the online questionnaires, the individual narratives unfolding in the individual interviews and the collective discourse drawn in the focus groups, Finally, Howell (2013) highlights the ambivalence of the attempt developed by grounded theorists to assure reliability through rigorous and documented coding procedures: on the one hand the complexity of the procedures may “alienate the reader from the research” (p. 183); on the other hand, “coding and categorizing help to preserve the image of the experience as well as sharpen and direct questions” (p. 183). To contrast the risk of over-intellectualizing the research process and to shed light on multiple meanings and complexity arising from what is being researched, constructivists “limit the simplifying, generalizing impulse, and resist decontextualizing the analysis, as advocated in earlier grounded theory statements (Charmaz, 2008, p. 469).

2.10 Conclusions

This chapter has discussed the strands of methodological literature on qualitative and grounded theory research which this study has been structured as regards to research design, sampling strategies, selection of data gathering techniques, data analysis issues and ethics decision making. Such discussions are integrated with the descriptions of the stances endorsed and, where appropriate, of the practical decisions made. Research approach and practicalities of the methods applied have been grounded in a defined interpretive epistemological approach and in a constructivist ontological orientation. The subsequent Chapters 3 and 4 will respectively keep on delving into literature focusing firstly on the theme of PhD e-researchers and digital engagement in higher education and then on the theoretical domains of ‘learning ecologies’ and ‘chronotopes’, in order.

CHAPTER 03

LITERATURE REVIEW: THE NEWER RESEARCHERS AND THE WEB 2.0 ECOLOGIES' PRESSURES ON THE UNIVERSITY IN A DIGITAL ERA

3.1 Introduction

The aim of this chapter is to define the boundaries of the empirical research field in which this research is located. The intent is therefore to ‘set the scene’ of our current research topic, drawing from relevant literature and crossing diverse foci of interest: the impact of Web 2.0 ecologies on the forms of individualised educational opportunities (Sangrà & Wheeler, 2013) in higher education; the changing competencies required to the PhD candidates as ‘self-entrepreneurs’ (Cornelissen et al., 2007) and seeking for new forms of “negotiated agency” (McAlpine & Amundsen, 2011); the evolving academic practices of individual researchers active in the digital, variously discussed in terms of digital scholarship’ (Weller, 2011), ‘networked scholarship’ (Veletsianos & Kimmons, 2012) or ‘social scholarship’ (Greenhow & Gleason, 2014); the extent to which such emerging scholarly practices in the digital have the potential and are actually affecting the newer researchers’ behaviours, guided by institution-led or self-organized activities in their doctoral journey. In the last two decades, the impact of technologies on research practices in academia has been twofold: systemic and infrastructural on the one hand (Borgman, 2007; David, den Besten & Schroeder, 2008; Deepwell & King, 2009; Anandarajan, 2010), and emergent and individual-led (Weller, 2011; Veletsianos, 2013) on the other hand. In this research we aim to focus on the self-organized forms of digital engagement undertaken by doctoral researchers. To this purpose, we intend to highlight the existing gaps in the current empirical body of knowledge, in order to justify the adoption of a constructivist grounded theory approach, as stated in Chapter 2. Moreover, we set out to advance a stance to eventually inform the discussion about the implications for practices of the empirical findings of this research. In fact, we aim to consider the study of the PhD e-researchers as a knot in the interplay between student and researcher engagement in the emerging Web 2.0 ecologies, figuring out the implications for university stakeholders for building a shared approach of student engagement (Trowler, 2010) in the digital university.

3.2 The changing competencies and role of the PhD candidate

We understand the doctoral candidate as a peculiar higher education student experiencing diverse “developmental phases” (Gardner, 2009) in a progressive evolution from a more accentuated ‘guided’ apprenticeship towards a greater autonomy and agency as a researcher. However, we are aware that the current context of doctoral education adds new challenges to the path from the good

course taker to an independent researchers (Lovitts, 2005), by requiring a self-entrepreneurial approach fostered by the complementary pressures from knowledge economy, globalization process and policy recommendations. In fact, in alignment with the goals defined by the Lisbon Agenda (European Parliament, 2000) for augmenting the formation of knowledge workers able to solve increasingly complex working issues, the doctorates across European (and non-European) contexts have been progressively shifted their focus

from the 'PhD as a product', that is, the contribution to the advancement of knowledge through an original piece of research, to the 'PhD as a process', that is, a training providing the necessary competencies to become a knowledge worker fitting the needs of the global labor market in a knowledge economy. (Durette, Fournier & Lafon, 2014, p. 1)

The changing nature of the doctorates in the last decades has been object of a growing body of knowledge (e.g. Walker et al., 2006; Boud & Lee, 2009; Cumming, 2008; 2010; Lee & Danby, 2011; McAlpine & Amundsen, 2011), where many concerns are expressed about the weak approach of doctoral education regarding the challenges faced by the 21st century newer researchers. In the current, multiple formats of doctorate, the PhD students "engage in creative mixes of education, training, research, work and career development" (Cummings, 2010, p. 26) in their doctoral experience, where they are increasingly required to deal with a range of stakeholders, often outside the academic boundaries. This is likely to produced new forms of "negotiated agency" (McAlpine & Amundsen, 2011) that tend to complement, and to a degree to overcome, the core, traditional relationship between the apprentice researcher and the supervisor(s) (Shulman, 2004). Metaphorically, we can say that the PhD candidates are knots in a network of research contacts and resources, where they are required to shape their own research projects, businesses, learning processes and destinations (Cornelissen et al., 2007). Thus, the greater responsibility attributed to the doctoral students draws attention to the key role of competencies such as "communication, negotiation, management, adaptability, capacity to solve complex problems and to work with multi-disciplinary approaches and in international contexts" (Trincherro, 2014, p. 230, our translation), in line with the Dublin descriptors outlining a future researcher as a 'knowledge worker'. However, it has been noticed (Durette et al., 2014) that there is scant literature related to the competencies actually developed in the PhD programs, irrespective of disciplinary peculiarity and university contexts. Building on a large scale empirical research, Durette et al. draw a set of six categories core competencies, from the more 'traditional' 'knowledge and technical skills', to communication, dispositions, behaviours and meta-competencies (related to the capacity to adapt a certain subset of skills to a specific professional and research situations). Although the digital competencies do not result to be thematized in these studies, the development of the capacity of being comfortable in the

digital and adapting digital resources to specific learning contexts has been framed by EU research policy initiatives (Ferrari, 2013). Moreover, discourse about the training needs of the newer researchers in rapport with the advent of digitality affecting the forms of scholarship and the influence of the openness movement has started to involve educational technologists (Veletsianos, 2013; Ranieri, 2014; Trincherro, 2014). As an example, Ranieri suggests to consider the dimensions of technology, management, cognition, sociality and ethics in approaching an institutional policy for introducing the digital competencies in the formation of the newer researchers. However, we intend to overcome an approach to the individual PhD researchers understood as the sum of a series of (also digital) competencies and to suggest a more holistic approach to the PhD students' profiles, who are being shaped by and contribute to shape the emerging Web 2.0 ecologies in their doctoral journey. In particular, we set out to focus on the doctoral journey of a PhD student as characterized by three interrelated strands contributing to the identity formation of a scholar (McAlpine & Amundsen, 2011): the 'intellectual', the 'networking' and the 'institutional'. The 'intellectual' represents the contributions to disciplinary knowledge, the 'networking' refers to the continuing interweaving of research bonds constituting the community of practice, whilst the 'institutional' is constituted by the ensemble of relationships and forms of support being provided by the university in which the individual doctoral student is located. We hold that digitality in everyday life and academia and the complementary/competing dimension of openness provide opportunities and challenges to the doctoral journey of the current PhD researchers (potentially 'self-entrepreneur') that it is worth investigating. The following sections set out to give an overview of the interplay of issues in play when we speak about the 'digital university' in the current days.

3.3 The Web 2.0 ecologies in higher education

The commonplace discourse that new technologies have been challenging the "cultures in higher education" (Elhers & Schnekenberg, 2010) actually refers to a cluster of information and communication technologies (ICTs) - variously reported as 'Web 2.0', 'social web', 'open Web', 'social media' or 'social software' - that since more than a decade have been affecting the way academics and students research, learn and teach at the university. The rapid spread of these ICTs as "ordinary stuff in everyday life" (Shirky, 2008, p. 56) has in fact shifted the idea of the Web as a product designed by the software developers and underlying defined scenarios of user engagement, toward a concept of the Web as "an artifact evolving according to shifting user engagement" (Brown, 2012, p. 50). This recent generation of software tools and services is distributed by interconnected virtual servers across the web (cloud-computing), provides basic free access and use to end users, have simplified and consistent navigational features, is cross-platform and accessible everywhere through smart phones and any mobile computing devices. However, the various

umbrella terms aforementioned encompass remarkably different software applications and technological affordances. Educational researchers have iteratively attempted to aggregate and frame them in coherent socio-technical understandings (e.g. Suter, Alexander & Kaplan, 2005; Cormode & Krishnamurthy, 2008; Crook, Cummings, Fisher et al. 2008; Tittenberg & Siemens, 2009; Dabbagh & Reo, 2010), aiming to reduce confusion in educators. For instance, Crook et al. (2008) aggregate Web 2.0 tools according to **technical functions** such as media sharing sites, enabling users to create and share multimedia content; blogging, enabling single/multiple users to write a web-based journal and receive comments; wiki spaces, where users can have different levels of access to read, share and edit pages; and social creation of ‘subgroups’. Differently, Suter et al. (2005) review the **meanings attributed to social software** and identifies three main perspectives to understand this term:

social software as a tool (for augmenting human social and collaborative abilities), as a medium (for facilitating social connection and information interchange), and as an ecology (for enabling a 'system of people, practices, values, and technologies in a particular local environment'). (p. 48).

On the other hand, Dabbagh & Reo (2010) think social media as a continuum of multifunctionality, inflected according three **main levels of utilization**: management of personal information, configuration of sharing of resources and social networking activity. In this line, Conole and Alevizou (2010) notice how social media have been evolving, becoming always more integrated each other, through common functions such as “tagging, commenting, rating, syndication and the development of relationships (‘friendship’)” (p. 11). Thus, the ensemble of social media tools can be more properly understood as one “platform for dialogue and collaboration and user-generated content as a mutually added value component for community building” (p. 11). This suggests to consider as more appropriate to understand these emergent technologies in the perspective of an ‘ecology’ of tools and practices. In our study, digital technologies are understood, in a socio-cultural approach, as “assemblages of practices and components” (Arthur, 2009, p. 28), where focus is on the complex entanglements among technologies and social practices.

3.4 The ‘hope’ and ‘fear’ arguments about the impact of Web 2.0 in higher education

Researchers maintain ‘hope’ and ‘fear’ arguments (Selwyn, 2011) about the impact of the Web 2.0 ecologies on higher education. In fact, Web 2.0 ecologies are seen as enabling a “social revolution” (Downes, 2005) rather than representing any technological disruption. In this sense, these ICTs are thought as embedding the “powerful ideas” (Anderson, 2007, p. 2) of a new approach to knowledge production and distribution, featured by the architecture of participation, collaboration, user-

generated content, 'openness' understood as the philosophy and work practices underlying the open source movement. The Web 2.0 approach is variously seen as enabling the development of the 21st century skills (Jenkins, 2007), such as problem-solving, team-working, capacity to filter online information, creativity, leadership, technology proficiency (see also JISC/HEFCE, 2009). These value-laden digitally-mediated practices, that are at the same time drivers and result of the social web approach, are therefore considered as many change agents, in an ecological perspective of co-evolution of societal changes, arising from the current digital generation and pedagogical innovations (Brown & Adler, 2008; Dabbagh & Reo, 2010). Social media would constitute for instance an enabling context for 'open scholarship' (Anderson, 2009), promoting a more participatory approach in teaching and learning. The tenets of this stance also underlies a discourse about the "pedagogy of abundance" (Weller, 2011b) of free resources, means and data available for teaching and further investigation, in a world permeated by an increasing complexity of the problems to be solved. These issues would require innovative approaches on the part of researchers (Weller, 2011a), such as adopting collaborative forms of research conduct and communication, finding new rules for peer reviewing, data sharing, and modes of academic discourse and reputation and involving new subjects – for example students and non-specialist communities - in the research process. Furthermore, the modes of learning and interacting in the Web 2.0 ecology are said to be the emergence of a "seismic shift in epistemology" (Dede, 2008, p. 80), enabling a permanent peer review approach, that makes the open Web "resemble to an academic world" (Haythornthwaite, 2009) and fosters more fluid interrelation between e-learning and e-research approaches, since it embeds similar learning practices. In this view, a move to the participatory culture featuring Web 2.0 approach "may, in learning, be a transformation to an inquiry culture taught, practiced and used at all levels of education" (Haythornthwaite, 2009). The envisioned, close relation between networked-based modes of knowledge production and distribution and academic cultures of teaching, learning and research would make social media the enabling locus where the formation of both digital learner and future academic is at work. This leads for instance to apply the learner-centric pedagogical perspective of 'heutagogy' – generally speaking "the ability to play with form and question existing structures" (Garnett, 2010) – to the "process concerned with thinking about new knowledge" (Garnett, 2010), in order to enhance quality of 'epistemic cognition' in doctoral students working in the social web era.

However, issues focusing on the implications for knowledge production and legitimate academic practice have been argued. On the one hand, the attention has been drawn toward the incumbent risk that the Web 2.0 approach can undermine the rigour of knowledge production in academia. The fear of the 'cult of amateur' (Keen, 2007) depicts the Web 2.0 revolution as the 'great seduction'

promising the democratisation of knowledge, but in reality bringing “superficial observations of the world around us rather than deep analysis, shrill opinion rather than considered judgement” (Keen, 2007, p. 17). In fact, Conole and Alevizou (2010) underscore that “the changing socio-technical spaces of the Web challenge interpretation, synthesis, and explicit evolution of ideas or the structured nature of formal education” (p. 57) and that such fears highlight the ongoing debate in higher education, encompassing ethical and copyright issues and affecting the sphere of the academic autonomy. However, it is also acknowledge that in higher education

Openness is becoming a trend, both in terms of the production and sharing of educational materials, as well as making research publications (and even research data) freely available. (Conole and Alevizou, 2010, p. 42)

3.5 The narratives of ‘digital natives’, ‘digital literacy’ and ‘digital scholarship’

As students and newer researchers the current doctoral students are located in an increasingly ‘digital university’ (Jones, 2013), defined by the controversial narratives around ‘digital natives’ (opposed to a previous generation of ‘digital immigrants’), ‘digital literacy’ (encompassing competing meanings of skills and situated practices) and ‘digital scholarship’ (embedding the sense of producing and sharing knowledge through digital networks). A range of critical stances have been advanced against the narrative of ‘digital natives’, providing ‘reality checks’ coming from empirical based research. For instance, the socio-economic, cultural conditions and the family context play a more relevant role as drivers or inhibitors in adoption of digital tools by young learners (Hargittai, 2010). Moreover, the persistence of the digital divide among university students belonging to a same cohort is widely reported (e.g. Franklin & van Harmelen, 2007, pp. 25-26; Kennedy, Dalgarno, Bennett *et al.*, 2008; Fitzgerald *et al.*, 2009, p. 43; Jones & Cross, 2009; Minocha, 2009; Ferri, Cavalli, Mangiatordi *et al.*, 2010; Bullen & Morgan, 2011). Furthermore, it has been acknowledged (Jones & Shao, 2011) that the hype on digital natives has neglected the role of agency of higher education students, thus seen as active agents in the engagement with technologies (Czerniewicz, Williams & Brown 2009). Likewise, the emphasis put on ‘collaborative learning’ enabled by social media has often overlooked the key role played by the networked individualism (Castells, 2000) in the use of such tools in academia.

Discourse about ‘digital literacy’ have highlighted the extent to which it is not sufficient to treat this theme in terms of mere ‘digital competences’, where the capacity of being online is seen as a measurable skill, in a ‘deficit model’ approach (e.g. Goodfellow & Lea, 2013). Building on their longitudinal research about university students’ digital engagement, Sharpe, Beetham and de Freitas (2010) stress the importance, against the generational arguments, to locate such diverse kinds of

engagement within a developmental framework of digital literacies. The lowest level of this framework is represented by the 'functional access' to technology (featured by the construction of the related 'skills'). The intermediate level is related to 'practices' (featured by the increasing awareness of the tools to be selected for specific learning needs). Finally, the top level is assigned a sense of 'creative appropriation' of technologies, in which learners build on the previously acquired skills and practices to develop their own digitally-mediated learning environments. In this view, they state that higher education students should be considered as learners being situated in discipline-grounded knowledge, in which they strive to build conceptual approaches as well as combine tools and techniques that fit academic practice and professional development. Thus, at the same time higher education learners need to become well acquainted with this complex digital landscape and to develop critical thinking about that, in order to build the necessary digital flexibility for inflecting one's own ICTs appropriation according to the situated learning contexts they happen to dwell. In this line, we concur with Brown (2012) highlighting the limitations of the body of knowledge characterized by an 'essentialist' view of social media in education, that is "a view concerned more with notions of universal best practice than with practice oriented to specificities of context" (2012, p. 51).

The discourse of 'digital scholarship' is built around rethinking in the age of social media the model of scholarship as originally discussed by Boyer (1990), where the intent was to give value to the dimension of teaching among the academic priorities. This model outlines four dimensions: Discovery (creation of new knowledge in a specific area); Integration (position of the individual discoveries in a wider context); Application (engagement with the world outside university); Teaching (management of all these procedure supporting teaching and learning). For the purposes of this research, we report some interpretations of emergent forms of scholarship as seen in rapport with the status of the researchers in formation. Thus, Pearce et al. (2010) review Boyer's dimensions of scholarship in the light of 'digital scholarship', that is of the ensemble of emerging practices relying on the use of Web 2.0 tools by individual researchers. These 'digital scholars' increasingly act as networked researchers, beyond the disciplinary and institutional conventions and constraints. Weller (2011a) has further elaborated the concept, highlighting some value-laden meanings that have relevant implications for researchers' engagement:

Digital scholarship is more than just using information and communication technologies to research, teach and collaborate; it also includes embracing the open values, ideology and potential of technologies born of peer-to-peer networking and wiki ways of working in order to benefit both the academy and society. (p. 50)

Subsequently, Garnett and Ecclesfield (2012) have discussed a stance on academic scholarship as characterized by a close interrelationship between the dimension of ‘discovery’ (more properly related to research) and the dimension of ‘teaching’, based on the blurring distinction between knowledge production and knowledge transmission in higher education. To this purpose, they add the dimension of ‘co-creating’, that refers to the participation process of both teachers and students (and practitioners) to the “permanent Beta” (Garnett & Ecclesfield, 2011, p. 13) of knowledge, through a collaborative creation of learning. Their stance of ‘co-creating research agendas’ calls for a major involvement of the research students in the process of advancing new scholarly strands of study.

Within the realm of educational technology, Veletsianos & Kimmons (2012b) have critically reviewed the current narratives about digital and open practices to highlight the assumptions and challenges of ‘open scholarship’, that they view in close connection with ‘networked scholarship practices’ (Veletsianos & Kimmons, 2012a).

The assumptions we identified suggest that open scholarship

- is rooted in an ethical pursuit of democratization, human rights, equality, and justice;
- highlights the importance of digital participation;
- is treated as co-evolutionary with technological advances;
- is considered as an approach capable of achieving socially valuable scholarly aims.

Challenges facing open scholarship are associated with each one of these assumptions.

Examples include the misappropriation of open scholarship; the need for scholars developing social and digital literacies; the consideration that technology is neither neutral, nor a single solution to problems facing education and scholarship; and the consideration that open scholarship introduces new dilemmas relating to power, fairness, and equity (Veletsianos & Kimmons, 2012b, p. 189).

Such review accurately discloses the ideological and ethical implications implied in a participatory approach to social media as educators. Moreover, it helps to gain a more critical awareness to the issues to be coped with, including the needs for acquiring social and digital literacies, that are particularly relevant for the doctoral researchers.

More recently, Greenhow and Gleason (2014) have suggested the notion of ‘social scholarship’, building on the aforementioned statements and embedding the openness view, with a particular focus on the enabling affordances of social media:

Social scholarship seeks to leverage social media affordances (ie, promotion of users, their

interconnections and user-generated content) and potential values (ie, knowledge as decentralized, co-constructed, accessible and connective) to evolve the ways in which scholarship is accomplished in academia. (p. 3)

They underline how for graduated students and newer researchers (in social research areas) “the benefits may be a better contribution to the knowledge base, a more participatory research process, enhanced reputation, expanded definition of “expert” and democratized access to expertise” (p. 5). However, they recognize that the doctoral activities are permeated of more traditional promotion criteria and hope for a balance (to be found by the individual early career researchers) between traditional and novel practices. It can be noticed that the terminology underlining the ‘new’ scholarship at work tends to emphasize the ‘integration’ and ‘application’ dimensions of the Boyer’s model, where the role of engagement of the individual researchers plays a key role in the converging efforts between knowledge production and distribution. Furthermore, we can state that the forms of scholarship envisioned in the above constructs, although mainly developed and shaped within educational technology research community, have left the “edtech bubble” (Selwyn, 2010) of self-referencing behaviours of early champions and have resonated in a few years in the open practices recommendations delivered by international policy bodies (e.g. European Commission, 2013). Sharing research outputs, processes and data is envisioned as guarantee of transparency, reliability, better quality and source for unanticipated research strands (LERU, 2011).

In our previous research we have drawn from literature for discussing the untapped relations between digital scholarship and open scholarship (Esposito, 2013). However, more recently, Goodfellow (2014) has added thorough insights about the tensions between the digital practices of some researchers and the practices enacted by the advocates of openness view. He argues about the “impossible triangle” occurring among the scholarship, digitality and openness. In particular he finds ‘particularly confounding’

the tension between digital scholarship and open knowledge, where the former is focused on the creation by *specialist communities of knowledge of a stable and enduring kind*, whilst the latter is characterized by *encyclopaedic knowledge and participation that is unbounded by affiliation or location*. (Goodfellow, 2014, p. 12, emphasis added)

However, unlike the well-established researchers who in his view might have a peculiar sensitiveness on these tensions, he seems to entrust the PhD researchers for seeking “some compatibility between the principles of scholarship and those of digital openness, and find ways to relate them in their teaching” (p. 11). This stance however is in stark contrast with other statements (Harley et al., 2010) where the newer researchers are seen as more subject to the constraints of the academic conventions in order to craft their future positions in academia. Moreover, his statement

that “the enduring importance given to objectivity and the ‘*scholarly record*’ is often in tension with ideas about democratizing scholarly knowledge” is closely related to the core endeavour of the researchers in formation to demonstrate to be able, to a degree, to create an original knowledge contribution.

3.6 Competing pressures on the PhD and established researchers’ digital practices

Considering the perspectives of digitally-mediated forms of scholarship discussed in the previous section, we aim to provide some concrete examples of the extent to which academic socialization in the digital is producing opportunities and concerns among established and newer researchers.

Academics “increasingly inhabit ‘in-between’ spaces between private and public, physical and virtual worlds” (Prinsloo, 2014, p. 3). Such condition is likely to have an impact on what counts as academic identity and performance, in a tension between the “quantification fetish” (Prinsloo, 2014, p. 3) and the perspective of enhanced forms of open practices in academia, increasingly considered in the individual sphere of influence and acknowledged at a level of international policy bodies (e.g. EU). Thus, we can identify competing pressures at work when speaking of digital practices in academia, considering that:

The increasingly active space between self-directed, informal, and independent forms of academic social media, and the more formal, institutionalised interventions represents an area of contestation in the coming years. (Coverdale, 2012, p. 4)

Although with different relevance and capacity for stating one’s own academic autonomy, senior, junior and PhD researchers, to a degree researchers of any age groups and ranks share similar concerns. The potential conflicts inherent to the networked scholarship practices has a relevant influence on the identity-building endeavours enacted by the PhD researchers in the digital. On the one hand, there is a dire need for communicating research in varied ways and with high frequency and on the other hand there is fear that the indices of presence on social media can significantly distort the sense of evaluating the quality of a good researcher. Thinking of the possible involvement of the newer researchers, we briefly focus on the scholarly activities of academic writing, communicating research and building reputation to highlight some of the tensions in play when using the digital venues.

Academic writing

The informal writing enabled by a weblog may play a role as a “creative catalyst in the work of researchers” (Kjellberg, 2010) in certain subject areas developing scholarship through discourse. Moreover, it opens up the opportunity for blurring the boundaries of formal publication (e.g. monographs), enabling a closer relationship between academic identity and performance (Prinsloo,

2014).

Blogging – free, accessible, interactive – restores immediacy to scholarly discussion, removes logistical roadblocks to knowledge dissemination, and up-ends the communication/validation hierarchy in favour of the open exchange of ideas. (Maitzen, 2012, p. 352)

These advantages even seem to allow outclassing, at least in Humanities and Social research areas, the core principle of peer review, that is at times seen as a requirement to reassure the institutional reputation (Fitzpatrick, 2009). This stance resonates with a vision of digital scholar who might have no institutional affiliation (Weller, 2011a), since the reputation one can build across digital networks is likely to become more and more relevant. Otherwise, there are stances that see blogging as closely linked to the formal context where the individual researcher happens to work: “Writing for blogs needs to be awarded academic esteem as well as public esteem. This esteem would not be just to the individual but also to the institution where they work” (Kirkup, 2010, p. 82-83). However, regarding the PhD students, along with the multiple advantages of developing one’s own research ideas through a regular online research journal (Kjellberg, 2010), for instance in the comfort zone of a password-protected blog, it has been noticed (Coverdale, 2012) that in online venues the PhD students are likely to cope with the same hierarchical asset of the conventional communication channels and that this condition can easily prevent them to raise their voice during the doctorate.

Communicating research

Against a conceptualization of scholarship as measurable outputs, a dialogical view of scholarship emerges, where scholarship tends to equate engagement: “Scholarship is not just about publication, but about interaction, interpretation, exchange, deliberation, discourse, debate and controversy” (Gray, 2013, p. 5). On the other hand, it is worth reminding that digitality has allowed an unanticipated granularity of scholarly content (Weller, 2011a) and has changed what is understood as scholarly communication. This leads to consider even the recorded conversations occurring among scholars as ‘scholarly content’ that can be conveyed through digital networks:

comments on a blog become a form of content potentially as valuable as the original blog itself. New forms of content arise that are hybrids of talking and writing, a online chat, and this becomes part of the shareable scholarly record. In addition, social media engagement amplifies, extends or morphs the content through, for example, tweets which may themselves be captured as narratives. Other examples abound, where online conversations through social media and collaboration spaces blur the boundaries of what online

scholarship is and looks like. (Czerniewicz, 2013)

These opportunities however may seem bewildering to the PhD researchers, engaged in structuring an enduring record of their scholarship and in preserving to a degree the ‘originality’ of their doctoral project. On the other hand, there is an explicit call to newer researchers because they embrace these new forms for communicating research to have impact:

In an era of budget cutting, early-career scientists will have to be effective ambassadors for the profession. This might manifest in conversations with family members or with strangers sitting next to us on a plane, or it might mean posting videos on YouTube or blogging about our ongoing research. The days of scientists communicating only with each other, in the languages of our individual disciplines, and relying on science journalists to translate for the public, are rapidly coming to an end (Small, 2011, p. 141).

Building academic reputation

Closely linked to the new practices of scholarly communication there are the identity building efforts, converging to establish an academic reputation necessary to advance in one’s own career, attract funding and start new research relationships. Pasquini, Wakefield and Roman (2014) have underscored the role that the individual early career researchers can have in crafting a personal ‘impact factor’ by smartly using social media. Interestingly, they draw attention to a recent proposal emerging in a hard science subject area (i.e. Medicine) and related to the setting of an integrative ‘single researcher impact factor’ (Castelnuovo, G., Limonta, D., Sarmiento, L., & Molinari, E., 2010), where a range of non-scientific activities are considered as integral part of a more comprehensive evaluation of the quality of PhD as well as of experienced researchers. Such initiative is aligned with the attempts focusing on alternatives metrics (named ‘altmetrics’, see Roemer & Borchardt, 2012) aiming to overcome the reductionist view of a mere quantitative evaluation of the academics’ production, whereas “in these new types of impact the overarching measure becomes use and re-use” (Czerniewicz, 2013) of the research process and outputs. It is worth noting the role of blogging in constructing impact as “co-production of multiple knowledge” (Fransman, 2013, p. 3) for early career researchers, since

unlike the profile page and personal website, an academic blog is dynamic, unfolding over time and space in response to other blogs as well as within its own discourse. It is therefore capable of framing impact within the research process as well as the research findings, with archives potentially cataloguing the development of ideas, drafts and re-drafts of research texts and reflexive commentaries on the research (Fransman, 2013, p. 2).

On the other hand, just the regular adoption of social media can imply the phenomenon of the

“quantified academic self” (Lupton, 2013) alongside the positive incentive for an academic public engagement. Generally speaking, digital media has in fact increased the opportunities for the individual academics to create and collect varied forms of data about their publications, beyond the aggregations per ‘big data’ undertaken by their universities. For instance, they can calculate on their own the h-index building on Google Scholar, Web of Science or Scopus, or check in the research journals’ websites how many times their articles have been downloaded. In particular, researchers using social media “have ever greater opportunities to quantify their output and impact in the form of likes, retweets, views of their blogs, followers and so on” (Lupton, 2013). This leads this sociologist to wonder if the range of opportunities for quantifying their own outputs can put additional pressures on the researchers for quicker and more numerous publications, potentially affecting this way the quality of knowledge production and the same sense of academic freedom. However, Lupton notices an aspect of such opportunity that is of peculiar relevance to researchers in formation:

for academics, collecting and presenting data on their professional selves can engender feelings of achievement, satisfaction and pride at their accomplishments. Such data are important to the academic professional sense of self. (2013, para 5)

However, seeking to build one’s own reputation as researcher through a social media presence may appear in strong contrast against the acknowledged rules for building reputation in academia. To this purpose, a scientist has recently sparked debate in academic blogosphere after publishing a scholarly paper where he has provocatively devised the ‘Kardashian index’. This index is intended to measure the discrepancy between the quantitative success (in terms of number of followers) that one researcher may reach in social media and the correspondent number of citations in scholarly venues. He takes cue from the popular phenomenon of the starlet Kim Kardashian, become famous just for her presence on Twitter (where she counts ten of thousands of followers) rather than for any other type of merits.

I am concerned that phenomena similar to that of Kim Kardashian may also exist in the scientific community. I think it is possible that there are individuals who are famous for being famous (or, to put it in science jargon, renowned for being renowned). We are all aware that certain people are seemingly invited as keynote speakers, not because of their contributions to the published literature but because of who they are. In the age of social media there are people who have high-profile scientific blogs or twitter feeds but have not actually published many peer-reviewed papers of significance; in essence, scientists who are seen as leaders in their field simply because of their notoriety. (Hall, 2014, p.1)

The reasons of such concern notwithstanding, we might suppose a diverse sensitiveness across different subject areas, especially where individual-led work practices are prevalent as well as the mode for ICT appropriation (Fry & Talja, 2007). For instance, we find it interesting that a report on maximising the impact of Social Research, delivered by the London School of Economics Public Policy Group (LSE Policy Group, 2011), includes ‘celebrity’ (managing one’s own personal branding) among the current main activities undertaken by the academics, along with ‘research’, ‘teaching’, ‘authoring’, ‘networking’ and ‘administration’. Moreover, the increasing convergence between the dimensions of ‘networking’ and ‘celebrity’ (LSE Policy Group, 2011, p. 45), as enabled by networked environments, figures out new forms of research impact that might be undertaken by the individual researchers and thus further motivate ICTs uptake:

Celebrity has hugely increased in importance relative to networking interactions. Whereas once academics relied on people knowing them and their work personally in order to gain citations from other academics, now what matters is how easy it is to find someone’s work – and how many versions of it there are out there in different channels to be picked up and noticed by other academics and researchers. (LSE Public Policy Group, 2011, p. 45)

The levels of engagement in a subset of these academic activities depend on the seniority of the researchers and on their professional orientation. Generally speaking, it can be said that the concern for curating one’s own ‘personal branding’ when building an academic profile online is likely to have a minor effect on the online engagement of the researchers in formation during their doctorate. However, it constitutes a perspective which the newer researchers will quickly and necessarily cope with, individually and collectively, because it suggests a role of academics as ‘self-entrepreneurs’ in an increasing market-driven academia.

3.7 The adoption of Web 2.0 tools by well-established researchers

In the last four-five years research on social media uptake by academics has produced some extensive surveys about the extension of adoption and some early reflections on the actual ICT practices supporting teaching and research commitment. Despite a progression in the uptake of social media by academics can be accounted (Zhu, 2014), we can agree that the current extension of the occurring experimentation by faculty in Web 2.0 ecologies is “highly localised and dispersed and likely to be protracted” (Procter, Williams & Stewart, 2010). According to recent large-scale studies undertaken across a range of international academic contexts (Harley, Acord, Earl-Novell et al., 2010; Procter et al., 2010; Schonfeld & Housewright, 2010), Web 2.0 tools (e.g. blogs, wikis, twitter, social networking sites) are not generally cited as popular mechanisms among academics

and are even seen as a “waste of time because they are not peer reviewed” (Harley et al., 2010, p. 25). Moreover, the extended culture of sharing enabled by the Web 2.0 ecologies is seen as unlikely to become a new habitus for the researchers of all ranks working in competitive academic environments (Harley et al., 2010). Faculty seem to mainly rely on traditional channels, such as conferences, seminars, to formally and informally communicate, rather than usually adopting the celebrated new interactive channels available in the open Web. Such results are also confirmed by small-scale inquiries, such as Kraker & Lindstaedt’s (2011) carried out in the e-learning research field and Pearce's audit (2010) within the Open University, in UK. However, other research addressing social media adopters in international academic settings reports an initial impact on the research workflow, “from identifying research opportunities to disseminating findings at the end” (CIBER, 2010, p. 2). More interestingly, Procter et al. (2010) have highlighted the most frequent reasons why researchers are likely to adopt any among social media tools:

The services most likely to succeed are those where researchers are actively involved in uncovering, exploring and exploiting new capabilities, and adapting them to their own purposes, in accordance with the broader cultures and contexts and contexts in which they undertake their work. (p. 8)

Working with peers based in other institutions may be an additional driver in the adoption of new technologies (CIBER, 2010), where the most important barriers to the uptake of digital tools are reported to be the “lack of clarity over the precise benefits that might accrue to the researcher” (p. 25). In the last five years, the Pearson Group has iteratively delivered an e-survey across US academics, investigating social media use for personal, professional and teaching purposes. They can confirm as a pattern that “faculty are much more willing to embrace social media in their personal lives than they are to use it for professional or teaching purposes” (Seaman & Tinti-Kane, 2013, p. 3). Building on the Pearson survey model, the Italian Institute of Educational Technology of the National Research Council (CNR) has recently carried out the first Internet survey across Italian academics (Manca, 2014). The survey presents a particular focus on social media use for teaching purposes, but we can draw that a similar discrepancy between personal and professional use of social media arise in the Italian sample, where the novelty of the research has revealed the need for a wider and systematic debate related to the concerns and the drawbacks of using digital networks beyond the institutional commitments. Furthermore, it is worth mentioning a growing body of empirical research accounting for a range of observed scholarly practices related to specific social media (see Tables 11, 12, 13), especially focusing on Twitter (Ebner & Schiefner, 2008; Letierce, Passant, Breslin & Decker, 2010; Priem & Costello, 2010; Grosseck & Holotescu, 2011; Veletsianos, 2012; Mahrt, Weller & Peters, 2014; Regis, 2012); blogs (Nardi, Schiano &

Gumbrecht, 2004; Halavais, 2006; Walker, 2006; Kirkup, 2010; Kjillberg, 2010; Heap & Minocha, 2011; Fransman, 2013) and social networking sites (Jordan, 2014; Nentwich & König, 2014; Puschman, 2014), along with autoethnographies (e.g. Efimova, 2009; Veletsianos, 2012) and position papers in defined research fields (e.g. Maitzen, 2012) that witness of the dire need of the research community to make sense of these emergent media. Drawing from an international survey, Nicholas and Rowlands (2011) identify collaborative authoring services, web conferencing systems and scheduling meeting tools as the most popular instruments, whereas blogging, microblogging (Twitter) and social bookmarking among the least adopted. They also advance a classification of two types of academic users of social media: those adopting blogs, microblogging and social networking sites and those who prefer only use tools for scheduling meeting and sharing documents. Otherwise, a non-representative sample of Italian academics reports (Manca, 2014) a professional (research) use of social media mainly focused on the daily consultation of websites for slide sharing and podcast services, along with the use of Twitter, blogs to collect relevant content. However, the opinions converge on stating the peculiar usefulness of social networking sites such as ResearchGate, Academia.edu and LinkedIn for research purposes: the first two services help to broaden the spectrum of literature in specific research fields, whilst LinkedIn contributes to amplify one's own network of professional contacts also beyond the academic boundaries.

Table 11.

Examples of scholarly practices in Twitter drawn from literature.

Examples of practices	Sources
Building backchannel at conferences	Mahrt, Weller & Peters, 2014
Facilitating contacts among conferences' delegates	Letierce, Passant, Breslin & Decker, 2010
Information resource, and media sharing	Veletsianos, 2012
Peer recommending literature.	Ebner & Schiefner, 2008; Priem & Costello, 2010
Seeking for support using specific hashtags	Regis, 2012
Disseminating research and sharing professional interests.	Grosbeck & Holotescu, 2011; Manca, 2014

Table 12.

Examples of scholarly blogging practices drawn from literature

Examples of practices	Sources
Updating, producing and reading other opinions, enabling 'thinking by writing' and releasing emotions and tensions.	Nardi, Schiano & Gumbrecht, 2004
Enabling an emergent mode for being 'public intellectuals' and making 'visible colleges'.	Halavais, 2006; Kirkup, 2010
Reaching multiple audiences.	Kjellberg, 2010
Enabling critical discussions.	Walker, 2006
Creating a dynamic form of research impact.	Fransman, 2013
In-depth understanding and discussion of topics related to personal interests.	Manca, 2014

Table 13.

Examples of scholarly practices in social networking sites drawn from literature

Examples of practices	Sources
Positioning oneself in the research community and interacting with peers.	Jordan, 2014
Updating about the professional life of the colleagues. Widening one's own network of contacts.	Manca, 2014
Profiles, means of internal communication, tools to direct attention, group functions, and literature-related services.	Nentwich & König, 2014

3.8 The potential of the Web 2.0 tools for the apprentice researchers

Various small-scale studies, along with some reflexive contributions have increasingly acknowledged the range of opportunities and challenges social media is likely to provide doctoral students with. Millan and Bromage (2011) underline the possibilities for contacting new scholars, research collaboration and sharing datasets. Meyer (2010) reports controversial findings related to the acceptance of using new tools in a doctoral level training course, but she concludes that the Web 2.0 instruments are likely to foster learners' reflection on their own learning process as a whole and enables alternative ways they might endorse for accomplishing their learning goals in the doctoral journey. In the e-learning field, the doctoral students pragmatically state to prefer "tools that make it easier for them to gather information on relevant researchers to their topic, important events, possibilities for scholarships and internships as well as collaboration tools like a semantic wiki to collaborate and share findings" (Heinze, Joubert & Gillet, 2010, p. 91). Coverdale (2011) highlights that networked environments also play a key role in the prospective researchers' efforts for building an academic identity. Moreover, he stresses (2012) the particular relevance of social media for PhD students in Educational and Social Research for disrupting "institutionally bounded research sites with new discourse communities and networks that are more socially constituted, timely and participative" (2012, p. 1). He also highlights the constellation of peripheral activities (e.g. reports on academic events, book reviews, commentaries about use of technologies, etc.) that might constitute as many topics for a 'sustainable' blogging activity during the doctorate. Zhu & Procter (2012) state that the newer researchers can use in particular blogs, Facebook and Twitter, in various combinations "to benefit their scholarly communication practice, promote their professional profiles, disseminate their work to a wider audience quickly, and gain feedbacks and support from peers across the globe" (p. 1). Kirkup (2010) underscores that "blogging might provide students with alternative sites for academic identity creation that are less problematic than traditional ones" (p. 74). In this line, we can consider the comment of an Italian Social research PhD student about how joining the collective blog run in his research group at the department has helped him to feel part of the research community and start new relationships (Esposito, 2013). This kind of opportunity for contributing to collective research blogs, especially for the newer researchers in

Educational and Social research, has been elsewhere acknowledged (Coverdale, 2012), although these apprentice contributors may be significantly constrained by the local controls regarding format and content. Moreover, it has been noticed that PhD students adopting innovative academic writing practices in their doctoral journey (such as regularly running a blog as a research journal) may be forced to change their approach to social media (Ferguson, Clough & Hosein, 2010), when they start their academic career and are involved in funded projects, because of the external constraints that impose limitations to sharing practices whilst any project is underway.

Finally, it is worth mentioning some attempts to frame the use of Web 2.0 tools for doctoral research. Zaman (2010) builds on Gardner (2009) to provide a matrix to help the interpretation of how these tools can usefully support the different developmental phases experienced by of a doctoral student and foster a more collaborative research approach. Zaman identifies the areas of the 'research awareness' (the opportunities to exchange information to solve doctoral problems and search job offers), 'research networking' (the advantage to easily reinforce global access to researchers) and 'research management' (the opportunities for data, bibliographies and texts storage) as main fields of impact of Web 2.0 tools. However, the definition of such areas are based on an 'ideal' PhD student active in the digital rather than on empirical findings that take into account, for instance, that many disciplines are characterized by individual-based work practices.

Ranieri (2014) links the use of the Web 2.0 tools to the main activities to be undertaken in an empirical doctoral research project, focusing on educational subject areas. Thus, in the phase of planning research and in project management tasks, tools such as Zotero or Diigo to collect and share references, but also services for content curation such as Scoop.it are recommended, alongside the more 'traditional' use of the password-protected databases and open search engines such as Google Scholar. Data gathering for survey research can be validly supported by instruments such as Survey Monkey or Google Docs to set up online questionnaires and to start an early data analysis. Web conferencing tools such as Skype or Google Hangout can be adopted to keep in contact with the supervisors or to interview research participants at a distance. Academic writing and dissemination can be effectively supported by self-publishing tools such as blogs and wikis, whilst mind mapping tools can help to draft conceptual frameworks. However, she underlines that the Web 2.0 technologies also enable cross dimensions such as reflexivity (through research journals run in weblogs or videoblogs), identity and networking (the Web 2.0 ecologies providing opportunities for amplifying personal visibility and reaching experts of all ranks) and research ethics (by prompting reflection on overexposure of the researchers and the researched). Other scholars (Petre, Minocha & Barroca, 2014) suggest a more extended classification of the types of adoption of Web 2.0 services on the basis of a longitudinal e-survey conducted among computing

research students at a distance. They categorize the social software uses according to six different communication functions: formal dialogues (PhD student/supervisor), informal interactions among peers, documentation (e.g. collecting and archiving references and various materials), space for reflection (e.g. through blogging and microblogging, but also with mapping and annotation tools), engaging with the research community (by participating in general purpose or research-focused social networking sites) and keeping informed (e.g. through specialist groups in mailing lists or social networks).

3.9 Institution-led initiatives to digitally enhance research training

The advent of new forms of scholarly communication in the digital has generated reflections related to the impact on the PhD practices, from diverse standpoints. Andrews, Borg, Boyd Davis et al. (2012) focus on the changing nature of the dissertation a final product toward a process in the doctoral journey. This shift is being enabled by the use of social networking sites where publishing rough ideas and early findings while dissertation is underway. These emergent practices seems to be aligned with the dire need for the current newer researchers to early build their own academic identity in order to start crafting a future job position. Furthermore, it has been considered that the networking needs of doctoral researchers starting their dissertation project cannot be narrowed within the boundaries of an institutional e-learning platform (Coverdale, 2011), since they usually require a specific niche community that is easier to find both in conventional (seminars, conferences) and in emergent venues (e.g. social networking sites). Along with these hints, early institution-led initiatives are reported in literature. Hicks and Graber (2010) discuss current university projects of Web 2.0 applications designed to improve student and faculty engagement in the diverse phases of a research process. Otherwise, Dabbagh and Kitsantas (2010) acknowledge that universities still rely on 'traditional' e-learning platforms and do not generally take into account the students' 'personal ecologies' (Andrews & Haythonthwaithe, 2011), being produced by the pervasiveness of social media and the ownership of digital devices. Within the UK university contexts, Banks, Joyes and Wellington (2008), Espinoza-Ramos and Hammond (2008) and Thomson and Allan (2010) account for issues arising from projects using ICTs to address research students and aiming at improving networking and collaborative work. Banks et al. (2008) aim at creating a community of practice in the student body, building on an online pedagogy based on the use of video narratives. Whereas the PhD students involved in the pilot has demonstrated a good acceptance of the video support service, the experiment has not eventually failed to produce any form of community of practice, since the doctoral researchers have pointed out individual goals as main drivers in engaging in multimedia service. Building on these previous experiences, Thomson and Allan (2010) have considered the productive alignment between the use of Web 2.0 and

abstract learning (e.g. acquisition of general research skills) to design and evaluate which a project for a Virtual Research Environment. These pilots help to reflect on the challenges and opportunities of technology-mediated environments for research training, highlighting the need for combining physical and virtual venues and of integrating online activities with research work of the individual doctoral students. However, beyond the successful and/or controversial achievements reported in these accounts, what is missing is the variation of needs across the diverse broad subject areas, in which different work practices and modes for ICTs appropriation occur (Fry & Talja, 2007). Considering these issues makes it more complex the construction of a Virtual Research Environment at an institutional level, especially in medium-large universities, in which diverse doctoral schools are present, belonging to a range of disciplinary fields. Otherwise, the effort might be limited to a single function (e.g. fostering networking skills), but such a self-limitation might be non-sufficient to justify the initial investment in part of one university drawing resources from its own funds. At a micro-level, we can also mention a few scattered initiatives discipline-specific or carried out by faculty. For instance, Heinz, Joubert and Gillet (2010) account for a needs analysis conducted to build an online community of practice aiming to enable research 2.0 practices among a cohort of PhD students in technology-enhanced learning. A similar needs analysis has been conducted more recently by the Institute of Educational Technology of the Italian National Research Council among the young researchers of Biomedical Sciences (Raffaghelli, Valla, Cucchiara, Giglio & Persico, 2014). In this case, a pilot interview project (within a wider EU funded project) aims to collect information about discipline-bounded social media uses and then design and deliver online courses intended to foster professional uses of digital technologies by the PhD students, with the support of the university libraries. An interesting although narrow strand of research papers accounts for initiatives of ‘e-supervision’ addressing part-time students at a distance (e.g. Lubega & Ninyitegeka, 2008; Sussex, 2008; Unwin, 2007) and aiming to enhance the traditional relationship PhD student-supervisors through the new Web 2.0 communication channels. Otherwise, in the wider perspective of better introducing the part-time students at a distance in the academic discourse, Petre, Minocha and Barroca (2014), report a longitudinal study exploring the ICTs uses of the PhD students “to support them in engaging in formal and informal doctoral dialogues, documenting and reflecting on their research, engaging with the community, and keeping themselves informed” (p. 2). At an institutional and individual level they highlight advantages such as ‘bringing dispersed students together’, creating professional profiles or presence and assuring longevity of the archived materials, portfolio and contacts, beyond the institution-based PhD research. Moreover, they notice how the PhD students tend to introduce each other to technologies and create different instances of the same service to keep their identities separate. Finally, it is

worth considering that the online guides under the form of handbooks (e.g. Goodier & Czerniewicz, 2012; Minocha & Petre, 2012) or series of tutorial (e.g. Digital technologies for researchers, University of Exeter, UK; Social media for researchers, IOE, UK) constitute another relevant and creeping frontline of the institutional initiatives to support digital practices by disseminating adequate information about technicalities, ethical issues and examples of adoption of social media among the newer researchers.

3.10 Self-organized adoption of Web 2.0 tools by the PhD researchers

The landscape of the scholarly digitally-mediated practices is also varied among the apprentice researchers. One of the first studies undertaken in a UK university context (James et al., 2009), reports that the early career researchers use a number of ‘old’ (including ‘email’ as the key tool) and ‘new’ technologies: in particular, the newer researchers are said to show a great flexibility in adapting their digital behaviours to the technological preferences of supervisors and peers. Subsequently, a longitudinal research carried out across the UK universities (British Library/JISC, 2011) state that Web 2.0 technologies are proven to be increasingly spread among the PhD students, although a prevalent passive attitude and a scarce creativity in ICT use is revealed. Moreover, peer recommendation results to be relevant, whilst the issue of a low shared adoption of social media is frequently reported. In an extensive online survey addressing individual scholars in international academic contexts (CIBER, 2010), they draw that “social media are by no means a digital native phenomenon” (p. 13). In fact, the only evidence is that the under 35 researchers are more likely rather than those over 35 years old to use at least one social media tool for research purposes. However, in the aforementioned study the researchers prefer to apply the innovation types’ model devised by Rogers (1995) to identify profiles of ‘early adopters’ of social Web tools, rather than featuring any young generations’ innovative approach. However, more than any supposed personal attitudes towards innovation, researchers have mostly drawn attention to contextual factors and dimensions related to diverse academic ranks. In fact, doctoral candidates particularly value the influence of the local research environment (James et al., 2009), where hostility towards technological innovations at personal level (e.g. innovations perceived by senior scholars as frivolous or time-wasting) and the lack of institutional support (e.g. the blocking of social media web sites) constitute significant factors holding new researchers back from the adoption of emerging tools. In this line, the model of ‘the apprentice shadowing the master’ appears to be still paramount in the doctoral experience to influence the ICT practices of the newer researchers. However, this latter statement is mitigated by other research:

supervisors are quite influential in getting students to adopt institutionally supported technologies relevant to the specific nature of students’ research; however, they are very

much less influential when it comes to influencing the use of open web technology among students. (British Library/JISC, 2011, p. 53)

Moreover, it is worth reminding that key concerns such as privacy, confidentiality and risk of an early exposure to the academic community are likely to prevent doctoral students from a wider adoption of Web 2.0 tools (Coverdale, 2012). On the basis of a large scale project addressing academics across prestigious US research universities, Harley et al. (2010) conclude that there is "No evidence that "tech-savvy" young graduate students, postdoctoral scholars, or assistant professors are bucking traditional publishing practices" (2010, p.ii). They concur that the mid-career researchers are more likely to pilot and adopt social media for research purposes, rather than early career researchers, who generally rely on the behaviours and discipline-bounded conventions followed by senior scholars, in order to advance in their career. These findings are confirmed in the UK academic settings, where the frequency of usage of new tools reveal some surprises in favour of older generations of researchers (Procter et al., 2010). However, Nicholas and Rowlands (2011) have noticed that research students are more likely to endorse blogging, microblogging (Twitter) and social bookmarking than senior researchers. Moreover, a more recent survey (Zhu, 2014) has revealed that older researchers are "more likely to be non-adopters of social media services for both seeking and sharing research information" (p. 1), especially in terms of adoption of specific services such as Twitter to post research updates. In line with the above findings, a small scale interview project carried out across one Italian university (Esposito 2013), gives some evidence that senior, young and doctoral researchers generally demonstrate a functional and efficiency-driven approach to digital tools and in particular they show a cautious interest towards Web 2.0 services to support inquiry activities. However, among the interviewed researchers a few 'pioneers' emerge (including doctoral students) with an eclectic and self-legitimizing approach to new technologies of communication, despite the respective disciplinary contexts are fairly indifferent to the potential of new digital tools/environments. Finally, part-time students at a distance are said to be a 'special' category of PhD students who are likely to be more motivated in the ICTs uptake (Petre et al., 2014). The UK surveyed computing research students reveal to endorse personalized choices ("different technologies work for different people", 2014, p. 6), but in general they adopt wikis for collaborative work with supervisors and other researchers, blogs as private space for reflection and Twitter for informal interactions and reflection. Compared to a similar survey conducted in 2010 by the same researchers, this most recent study lets it emerge a clear, self-organized uptake of MOOCs (Massive Open Online Courses) and OERs (Open Educational Resources) to complement and updating one's own knowledge building during the doctorate.

3.11 Conclusions: the PhD researchers' experience and engagement in the digital university

This chapter has reviewed the relevant literature existing on the topic of the digitally-mediated practices undertaken by established and newer researchers. At the time of writing this dissertation we can still concur that “the ways that social media is used and experienced by scholars are poorly understood and inadequately researched” (Veletsianos, 2013, p. 640). Thus, we can say that the scarcity and scattered nature of the current empirical research devoted to the PhD students' digitally-mediated practices makes this topic compliant with the choice of a constructivist grounded theory approach. This judgement can be extended to the current research focusing on digitally-mediated practices of the newer researchers. However, despite, we can identify a tension between the discourses of the doctoral students as ‘self-entrepreneurs’ and the pressure for building academic reputation online, between the actual uptake and concerns about social media practices expressed by academics of all ranks and the contradictory dispositions toward the digital emerging from the available studies on newer researchers. Social media uptake of the researchers in formation seems to be in-between egocentric and participatory dispositions as researchers aiming at crafting their own academic identity and doing and communicating research in defined disciplinary and cultural contexts. More importantly, along with a lack of empirical research, it seems to us missing so far a theoretical efforts for conceptualizing digital engagement of higher education students, beyond the frames related to the ‘hope’ and ‘fear’ arguments and recent insights on online engagement (White & Le Cornu, 2011). Thus, we concur that “in order to understand our present position, and to develop alternatives that matter, we need stories and metaphors and critiques of where we are” (Hall, 2011, p. 11).

Thus, we firstly need to contribute to collect informed accounts of the digitally-mediated practices undertaken by PhD students across diverse subject areas and university contexts. Then, we need to advance a “convincing theory” (Morse, 2007) about how digital engagement occurs among the PhD students in this transitional era of emerging forms of digital scholarship. Although a thorough discourse of the changing academic practices goes beyond the scope of our research, we cannot elude the issue of the higher education institutions' responsibility in training the future researchers for an academic environment wracked by market-driven forces and the perspectives of openness. We hold that ‘student engagement’ in the digital university can be considered as an integral part of the ethos of a university promoting active participation as well as providing a sense of legitimacy, belonging and a supportive learning environment. In fact, the concept of ‘student engagement’ is often attributed a benign sense, either as a key factor in enabling a successful academic performance (Hu & Kuh, 2001; Krause & Coate, 2008), or as underlying a democratic, open disposition by higher education institutions aiming to develop a student-centred educational policy

(HEFCE, 2008; ACER, 2008; Kuh, 2009). A tension between ‘student experience’ and ‘student engagement’ has been underscored (Gourlay, 2011), where an idealized model of student being engaged in the digital may in fact flatten the actual variety of student experience in the digital university (Sharpe et al., 2010).

We aim therefore to ground a critical stance on newer researchers’ engagement in the open Web into an extensive analysis and conceptualization of the PhD student experience in the digital, considering the self-organized practices in play. In our view, giving empirical and theoretical evidence of the PhD researchers’ engagement in the open Web leads to analytically think the personal agency of the individual students in terms of emerging ‘learning ecologies’ (Barron, 2006) and ‘chronotopes’ (Bakhtin, 1981). The next chapter is devoted to the discussion of the theoretical strands developed by previous literature on these constructs, from which we have elaborated the assumptions guiding our data gathering process.

CHAPTER 4

Theoretical framework

4.1 Introduction

This chapter aims to enlighten the theoretical assumptions which have oriented the definition of the main research question underlying this study: ‘What are the affordances of emerging learning ecologies of PhD ‘e-researchers’ in higher education settings?’. This research question is intended to value the PhD students’ endeavour to orientate themselves across institutionally prescribed and personal learning ecologies, by assembling shifting space and time dimensions. In particular, this chapter focuses on the discussion of the main theoretical concepts of ‘learning ecologies’ (Barron, 2006) and ‘chronotope’ (Bakhtin, 1981) adopted as guidelines in the data gathering process and in the endeavour for theorizing findings, as the expected outcome of the applied constructivist grounded theory approach (Charmaz, 2006; 2014). As we have clarified in Chapter 2, we maintain (in alignment with Charmaz) that the initial discussion about elicited theoretical concepts is integral part of the literature review and thus of the reflexivity effort required to the researcher to let one’s own assumptions emerge. Moreover, the theoretical concepts (‘learning ecologies’ and ‘chronotope’) being examined and the produced framework are intended to scaffold the analytical focus of the research questions rather than playing a role as prescriptive constraints in data analysis. We consider ‘learning ecologies’ as the multiple processes (Lemke, 2000; Jackson, 2013) in which the individuals make sense of the various opportunities provided by the diverse contexts they happen to dwell (Barron, 2006). In alignment with our constructivist ontological orientation, this view leads to understand learning ecologies as evolving assemblages of opportunities produced by subjects such as institutions or individuals (Jackson, 2013) rather than as a set of given resources in a local environment from which learners can draw elements when needed. Thus, we refer to learning ecologies as a multi-sited and diacronic construct made by student agency as urged by contextual factors. Thus, the spatial and temporal dimensions co-constructed by individual learners in the endeavour of crossing boundaries among institution-led and self-organized learning opportunities are understood as the affordances of learning ecologies. We generally contend that thinking of doctoral students using social Web tools for academic purposes in ecological terms helps to consider the adoption of ICTs as a component in an ‘ecology of resources’ (Luckin, 2010) rather than as embedding a deterministic value in shaping digitally-mediated practice. Moreover, the ICTs uptake can be regarded as an adaptive response to changing needs for learning and doing research in the current academic ecosystem. Focus is on personal ecologies (Andrews &

Haythornthwaite, 2011), emerging from current uses of individualized media, and on an ecological view of agency (Priestly, Edwards & Priestly, 2012), in which the capacity of the individual is entangled with contextual factors and can be understood spatially and temporally. The interplay of spatial and temporal affordances of ‘learning ecologies’ as shaped by PhD e-researchers is here considered relevant to highlight the inherent features of learning ecologies as complex and evolving systems and to reveal characteristics of student agency on the part of individual learners. We argue that the spatiotemporal matrix defined by the notion of ‘chronotope’ (Bakhtin, 1981), along with an ecological approach to the topic being researched, can be functional to this intent and can shed light on sense-making practices of self-directed PhD students striving to shape their “identity-trajectory” (McAlpine & Amundsen, 2011) as future researchers. We acknowledge the advantages and disadvantages of using metaphors as analytical tools (Sfard, 1998), but at the same time we are aware that the notion of learning ecologies, although widely adopted in emergent forms of e-learning, is particularly undertheorized and requires some cautions for justifying its adoption. The chapter develops according to the following steps: firstly, we develop the notions of ‘ecology’ and ‘learning ecology’ and how the ecology metaphors have been inflected in education and in research about digitally-mediated contexts; secondly, we direct the discourse towards the application of such notions on recent developments of e-learning, including Web 2.0 ecologies; thirdly, we focus on relevant literature about ‘choronotopes’ as applied to research of digitally-mediated learning environments; finally, we discuss the framework derived by setting the connections between the concepts of ‘learning ecologies’ and ‘chronotope’, for the purpose of this study.

4.2 Ecology metaphors for digital learners

This section presents different ways in which the notions of ‘ecology’ and ‘learning ecology’ are adopted to interpret digitally-mediated educational contexts, to account for e-learning in higher education and to refer to emergent forms of networked environments and related learning practices. We have recently and more generally discussed the manifold meanings attributed to ‘ecology metaphors’ (Esposito, Sangrà & Maina, in press), and in the following passages we advance a line of reasoning closely connected to the purposes of this study.

4.2.1 The ‘ecology’ perspective

The perspectives of ‘ecology’ and ‘learning ecology’ have been developed as lenses to consider e-learning (Ellis & Goodyear, 2009; Andrews & Haythornthwaite, 2011) in the age of the “social Web” (Boulos & Wheeler, 2007). The metaphor of ‘ecology’ (the word was invented in the

Nineteenth Century by the German scientist Ernst Haeckel) has variously been adopted to shed light on the entangled facets of socio-cultural activities and educational contexts (see Figure 6 for a tentative map of main perspectives). Drawn from interdisciplinary studies on biological systems, the notion of ‘ecology’ refers to the dynamic relationships between individual organisms and their environment (as a whole identified as an ‘ecosystem’), characterized by interactions with other living or non-living organisms. Key attributes of ‘ecology’ such as ‘complex’, ‘self-organized’ and ‘adaptive’, as applied to digital ecosystem (Louviere, 2012) lead to consider the range of conditions underlying the self-organization of learners exchanging information and knowledge in the open Web. In other words, the notion of ecology refers to the activities occurring among learners and between learners and digital tools and is concerned with the endless cycle of technology change to which users and educational institutions are subject and have to respond. In this sense, ecological perspectives “may offer a new ‘language’ to conceptualise change and stasis in a variety of environments, contexts and spaces of activity, which exist in linked scales or levels, ranging from the global to the local, from the micro to the macro” (Hodgson & Spours, 2009). The ecology metaphor is thus used to better analyze the entanglements between technology and higher education: from the ‘microsystem’ level, considering the factors influencing the individual’s immediate environment to the ‘macrosystem’ level, focusing on the interplay of settings in the wider society (Bronfenbrenner, 1979).

This study focuses on individual PhD students rather than on doctoral students framed as ‘population’: the perspective of analysis is therefore intended to develop at a micro level (Bronfenbrenner, 1979), by examining the contextual factors surrounding and to a degree shaping individual’s behaviours in the digital. Furthermore, the ecology metaphor has differently been inflected according to socio-technical approaches, focusing on the mutual influence of people and technologies (Nardi & O’Day, 1999; Andrews & Haythonthwaithe, 2011) or applying socio-cultural approaches, privileging the exploration of the relationships between the learners and the intricacies of the local environment (Barron, 2006; Luckin, 2010; Pachler, Cook & Bachmair, 2010). In our research, we are more aligned to the socio-cultural approaches, aiming at grounding the individual narratives of the research participants in the situated contexts where they develop their digital engagement for research purposes. Likewise, the approach to technologies in the ‘digital university’ (Jones, 2013) is intended to refer to the interplay between tools and social practices. However, we have taken cue for our initial research proposal from the socio-technical idea of ‘personal ecologies’ (Andrews & Haythonthwaithe, 2011) as a phenomenon inherent to the individualization and informalisation of e-learning, which has in fact enabled the PhD e-researchers’ profiles being researched in this study.

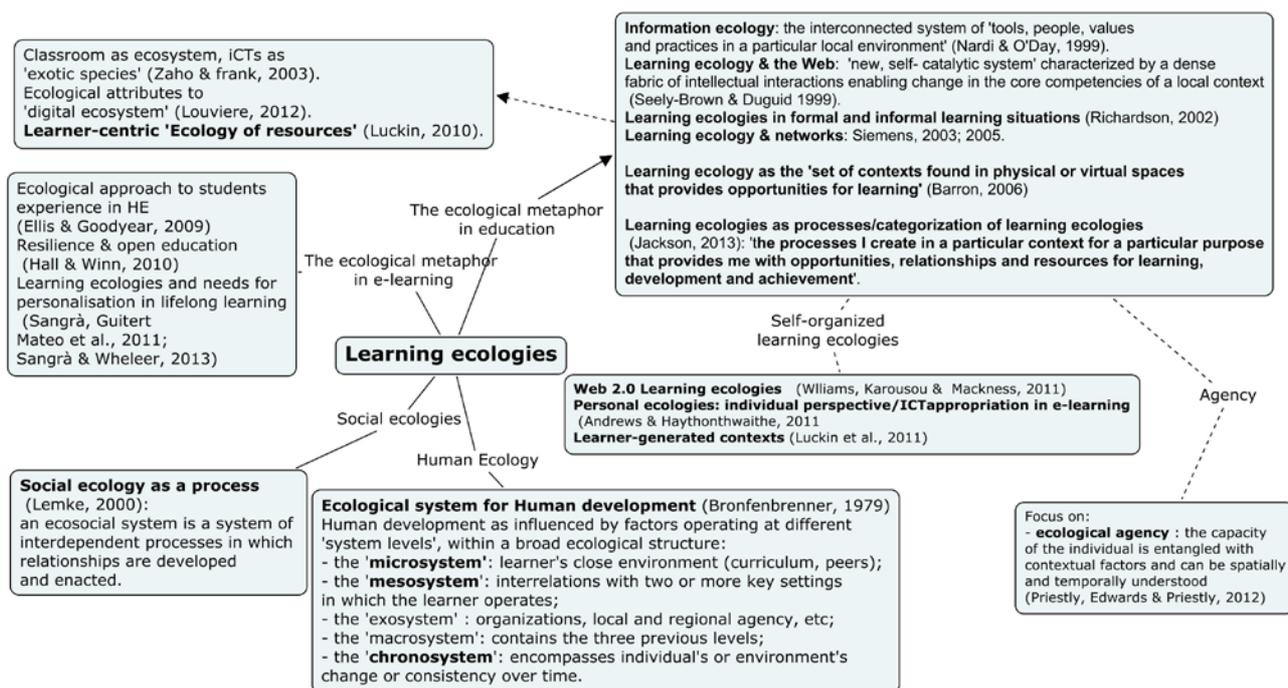


Figure 6. A map of relevant studies considered in this research and focusing on the ecology metaphor and on the proper concept of 'learning ecologies'.

4.2.2 Ecological approaches to e-learning

As applied to e-learning, the 'ecology' perspective helps to gain a holistic view of the components of the e-learning enterprise (Andrews & Haythonthwaithe, 2011) and of needs and interests of higher education students promoting a collaboration culture via digital networks (Mitchell, 2002). Moreover, named as 'learning ecologies' to focus on educational contexts, the ecology perspective is functional for accounting phenomena related to the informalisation of education (Sangrà & Wheeler, 2013) along with its valid allies of ICTs and online learning. In fact, learning ecologies are said to provide a frame to interpret the numerous learning opportunities enabled by the current complex digital landscape, where issues such as the integration of formal, informal and non-formal opportunities and needs for personalization are at work, to improve lifelong learning and professional development (Sangrà, Guitert, Mateo *et al.*, 2011). Specifically, Williams, Karousou and Mackness (2011) point out 'Web 2.0 learning ecologies' as *loci* in which new kinds of learners are developing their self-directed learning practices. They refer to these pioneer-learners as "*silent experts* in how, where and by whom they want to be educated" (cite). These 'silent experts' strive to balance "emergent and prescriptive learning" by coping with "openness and constraint" provided by the open Web and by institution-led educational opportunities. Our research is just located in this emergent space for informalisation of doctoral experience and investigates 'pioneer' PhD students

who self-organize their digital engagement whilst undertaking prescribed tasks in their doctoral contexts. However, we have also considered that an ecological approach used to understand student experience of e-learning in higher education helps to set the scene for thinking the ‘new’ and the ‘traditional’ technological means and related learning and socio-cultural practices in educational contexts as a place “in which new and old entities find ways of coexisting” (Ellis & Goodyear, 2009, p. 17). This approach stresses co-operation, relationships and inter-dependence rather than competition and polarisations. Achieving balance and sustainability becomes crucial for embedding innovations, against approaches focusing on technology viewed as a ‘challenger’ and a driver of disrupting change in the pre-existing educational system. Our research aims at intercepting “ways of coexisting” of well-established and new apprenticeship and scholarly practices on the part of doctoral students immersed in a network of “forms of assistance” (Luckin, 2010).

Furthermore, among the ecological views considering changes in higher education, we have secondly drawn attention to the ecology-grounded concept of ‘resilience’, understood as the ability to learn and adapt, to smooth risks and find effective solutions preserving one’s own identity and key functions (Walker, Holling, Carpenter et al., 2004). This concept has gained an increasing importance in discourses related to the relationships between technology and higher education, challenged by socio-economic disruption (Attwell, 2010; Downes, 2010; Jones, Selby & Sterling, 2010). Hall and Winn (2010) discuss this concept as applied to university educational systems and to open education practices enabled by digital networks. They endorse a critical view of technology used in higher education, aiming to promote through open education a deeper engagement of all stakeholders in identifying reliable solutions in times of crisis. Open forms of higher education are said to be crucial “in framing spaces for personal and communal resilience” (Hall & Winn, 2010, p. 6), prefiguring more complex learning futures. Focusing on digital scholarship and building on Walker et al. (2004) framework, Martin Weller (2011a) suggests a ‘digital scholarship resilience matrix’, where the degree of uptake of networked scholarly practices can be understood as inflected according to national, institutional, disciplinary and individual resilience. The implicit question in our study is the extent to which doctoral e-researchers are able to develop forms of digital resilience in their own research context. This issue underlies our research questions related to let the tensions emerge between self-organized and institution-bounded scholarly practices. As a quick preview of findings, among the observed examples there is an individual PhD student able to search in the open Web and harness the opportunities for additional research training to supplement the flaws of their local context; or a group of doctoral students challenging a conservative context by organizing a PhD scholars-led seminar, using a Facebook group page in order to amplify the dissemination of their contributions.

To sum up, the ecological approach enables a focus on individualized forms of appropriation of social media technologies for specific needs, paying attention to the relationships between peripheral and central modes of ICTs adoption in a local context. Moreover, thinking of individual doctoral students using social Web tools for academic purposes in ecological terms helps to consider the adoption of ICTs as a component in an ecology of resources and as a response to changing needs to learn and adapt their behaviour in the academic ecosystem.

Given the general justification of our interest for an ecological approach applied to our study, we subsequently focus on the task of untangling the varied terms and meanings arising from socio-technical and socio-cultural interpretations of the notion of ‘learning ecology’, used to shed light on digital mediation in educational contexts.

4.2.3 The socio-technical ‘ecologies’ of digital ecosystems

Generally labeled as ‘learning ecology’, the ecological metaphor has been adopted to explore learning contexts and processes underlying communities or individual learners, in particular from the advent of digital ecosystems. Like other theoretical frames such as activity system and actor-network theory, ecological views draw attention to the “cyclical and emergent nature of human activity” (Andrews & Haythonthwaithe, 2011, p. 159), including learning, as related to broader social and cultural processes (Lave & Wenger, 1991). In the last decade of 20th century the advent of the Web has often been examined through the lens of ‘learning ecology’, in order to explore the extended learning opportunities enabled by the Web and to examine learning environments in a more systematic way. Seely Brown (2000) views the Web as a learning medium enabling a “new, self-catalytic system”, namely a ‘learning ecology’, to emerge. This ‘self-catalytic system’ is characterized by a dense fabric of intellectual interactions occurring everywhere and among diverse subjects, and producing and expanding the core competencies of a local context. Seely Brown focuses on *knowledge ecologies* (Seely Brown, 1999), defined as “an open system, dynamic and interdependent, diverse, partially self-organizing and adaptive” (1999, p. 3), and highlights the affordances of the 21st century modes of knowledge building that an educational system should take into account. Unlike most ecological theory, especially focusing on populations rather than on individuals, Looi (2001) defines Internet as an ecology in which anyone can become an author and contributes content. It is “the first mass media that is becoming product of its audience” (p. 19). The Internet fosters “the growth and richness of learning ecologies”(p. 19), by conveying multiple media formats, providing diversity of participation and information access, enabling new forms of learning communities and supporting links among people, information, tools and artifacts.

In the same years, authors such as Prusak and Davenport (1997) and Nardi and O'Day (1999) have drawn attention to an ecology approach applied to information technology. Nardi and O'Day develop their seminal conceptualization of *information ecologies*, defined as the interconnected system of “tools, people, values and practices in a particular local environment” (1999, p. 49). In such systems ‘keystone species’ are organisms playing a crucial role in the operating principle of any ecology, even if their work is invisible and peripheral: the ‘keystone species’ preserve the key functions within the ecosystem, assuring sustainability and “balance found in motion, not stillness” (p. 53). The concept of ‘keystone species’ was introduced by Robert Paine’s (1966) studies on biological ecosystem, where keystone species are said to have a disproportionately large effect on the species assemblage despite the fact that it is low in number of exemplars. The role of a keystone species is analogous to the architectural function of a keystone in an arch and includes organisms which “(I) control potential dominants, (II) act as mutualists, (III) provide critical resources, and (IV) modify the environment” (Payton, Fenner & Lee, 2002, p. 5). Applying this concept to scholarly community, Nardi and O'Day’s attribute to librarians a role as keystone species: in fact, they preserve modes of knowledge distribution while introducing new technology-mediated practices, enabling innovative ways to access, create and distribute materials. The interplay of individuals and technologies is interpreted according to the key concept of ‘locality’, that is related to participants in specific settings who “construct the identities of their technologies through the rhythms and patterns of their use” (Nardi & O'Day, 1999, p. 55). In fact, a technological application, for instance a group page curated in Facebook, is located in a network of relationships comprised of people using it and other kinds of related applications and devices. Following this strand related to information ecologies, Zaho and Frank (2003) develop a relevant analytical framework aiming to integrate the diverse factors affecting the adoption of ICT in the classroom. These factors are often examined in an isolated manner, leading to ill-defined explanations of what the introduction of technology implies in educational settings. Zaho and Frank describe classrooms as ecosystems where teachers belong to a ‘keystone species’ and technological innovations are seen as “invasions of exotic species” (p. 9). Interestingly, they liken technologies to living species, said to have a similar evolution. Reaching interdependence (a state of internal equilibrium) among the different factors and living and non-living species plays a key role in the acceptance and adoption of ICT. This view is aligned to a conception of the digitally-permeated classroom as a ‘digital ecosystem’, in which the interplay between control and chaos is analyzed through the open exchange of information occurring in person-to-person and digital activities (Louviere, 2012). Such strands of studies on ‘digital ecologies’ have been thriving especially among information systems and media experts (Girard & Stark, 2007; Crabtree & Rodden, 2008). More recently, also Andrews and

Haythonthwaithe (2011) have built on Nardi and O'Day's (1999) information ecologies: they focus on university students seen as individual actors co-evolving with the academic environment and emerging as new 'species' of e-learners, previously playing a 'peripheral' role. Unlike ecology approaches endorsing overall perspectives, they consider a 'personal' ecological view on e-learning, resonating the current "on-the-ground experiences of teachers and students" (2011, p. 157), in order to better understand expectations and responses to new technologies demands. They refer to 'personal ecologies' as a new way to think about e-learning, since pervasiveness of social media and ownership of personal devices are challenging the conventional view of e-learning as an institution-bounded set of technology-mediated learning practices. The socio-technical combinations of offline and online communication tools are said to be increasingly complex and prefigure "cyber-local e-learning classes" (2011, p. 152), where learners strive to exert control upon potentially competing ecologies, in order to design their own learning context (Luckin, 2008). In our study, personal ecologies of doctoral researchers are in fact thought as a possible element of discontinuity in academic contexts where networked scholarly practices are occasionally enacted (Procter et al., 2010) but actually not yet thematized to be integral part in the formation of future researchers. As Williams et al. (2011) in their 'Web 2.0 learning ecologies', Pata and Laanpere (2011) focus on competing formal and informal digitally-mediated modes of learning in higher education. However, they explicitly converge on a vision of learning ecologies *as* biological systems rather than as metaphors. In their assumption networked learning environments actually operate like ecosystems. They build on the construct of "hybrid learning ecosystems" to highlight the tensions between formal educational assets and "open learning ecosystems" where digitally literate learners are dwelling in the social Web. Their view stresses the key issues related to the opportunities for learners arising from the open Web and the commitment required to the educational institutions to shape and channel these opportunities. This line of work has been expanded by Normak, Pata and Kaipainen (2011) who set out to provide a universal theoretical framework to structure and enable design of self-directed learning opportunities. To this end, they advance an ecological approach to learning processes in which spatial concepts are particularly valued. In their model, a learner develops a learning path within a niche (or between niches) in a learning space, moving from a progressive series of steps towards a final target, whilst absorbing suggestions from the learning community.

In the socio-technical approaches aforementioned the theoretical stances tend to create close correspondences between the studies of biosystems and the studies of cultural and learning contexts, and suggest a range of related concepts (e.g. 'keystone species', 'resilience') that may be occasionally explanatory of defined events in learning occurrences, but should be understood in

their epistemological underpinnings. In fact, the more learning ecologies are understood as biosystems, the more the researcher is exposed at the risk of reification of the situated context being researched, since this view suggests that human behaviours can be scientifically discovered and to a degree predicted. Whereas socio-technical stances seem to push forward the analogical rather than the metaphorical power (Sfard, 1998) of learning ecologies, in socio-cultural approaches such as correspondence between biosystems and learning contexts is likely to be loosely defined, since the attention is drawn to tentatively understand the irreducible complexity of the human ecology being researched. Moreover, these latter approaches concur on a view of learning ecologies as social constructions, where the subjects' orientations play a key role in shaping individual and collective digital practices.

4.2.4 Learning ecologies in socio-cultural approaches

Generally speaking, 'learning ecology' is said to be "a metaphor for looking at the connections and relationships that exist within a learning environment" (Bonzo, 2012, p. 476). The core attention drawn to 'connections and relationships' occurring in any educational context in fact underlies empirical research using learning ecology. In this sense, it can be said for instance that 'learning ecologies' is used as a heuristic and holistic concept in e-learning research (see for instance research about Personal Learning Environments), with minor concerns with a proper theoretical justification of the term. However, a range of definitions and frameworks have been produced (Barron, 2004, 2006; Frielick, 2004; Luckin, 2010; Pachler, Cook & Bachmair, 2010; Siemens, 2003, 2008; Jackson, 2014). For the purposes of this study we focus on the contributions by Barron, Luckin and Jackson, since their ideas lead to consider spatial and temporal dimensions and the key role of the individual learner in learning ecologies, that are at the heart of our theoretical interests. The study undertaken by Birgid Barron (2006) actually constitute the most cited sources for the uptake and further elaboration of the notion of 'learning ecology'. Barron states a socio-cultural approach and defines the notion of 'learning ecology' as the "set of contexts found in physical or virtual spaces that provide opportunities for learning" (2006, p. 195) which may include formal, informal, and non-formal settings. She pursues a research interest in fostering 'technological fluency' in her students and in exploring "synergies between participation in technologically mediated informal learning activities and more formal educational environments" (2006, p. 198). She aims at highlighting the conditions enabling boundary-crossing activities and examining the characteristics of diverse learning spaces, intended as specific contexts showing a "unique configuration of activities, material resources, relationships, and the interactions that emerge from them" (p. 198). Her focus on the plurality of competing learning contexts particularly fits our focus on digitally-

engaged doctoral students participating in institution-led and self-organized activities, as in a recent study on digital engagement of university students (Gurung & Rutledge, 2014).

On the other hand, Rose Luckin draws attention to the individual learner as unifying principle of the various learning opportunities provided by the educational institution or found outside of it. With an aim to design technology-rich learning activities, Luckin (2008, 2010) devises the learner-centric framework of ‘ecology of resources’. Focusing on the individual learners in their ecosystem, it “considers the resources with which an individual interacts as potential forms of assistance that can help that individual to learn” (Luckin, 2010, p. 159). The goal is to identify the components (people, technologies, frames) supporting the educational experience of learners and any related adjustment providing learners with the appropriate scaffolding. The learner’s intentionality is the axis from which the context can be interpreted as unified lived experience, making sense of the multiple interactions between people, and activities and resources. A context is always “local to a learner”, since it consists of an individual’s subjective experience of the world, that is always spatially and historically situated (2010, p. 18). She holds a view on context in its close interplay with learning and technology and builds on the socio-cultural perspective developed by Cole (1996), who uses the metaphor of ‘weaving’ to hold an interpretation of context merging the activities and their surrounding circumstances (in a time-bounded manner), against a view of context as a container. In this view, technology plays a mediation role helping “to make these connections in an operational sense” (Luckin, 2010, p. 18). Emerging communication technologies have a peculiar role as mediational tools: they foster the production of “learner-generated contexts” (Luckin, Clark, Garnett et al., 2010, p. 74), and provide students with the opportunity to achieve “greater agency” (p. 74) in defining goals and boundaries of their learning contexts. This model provides an individual perspective to look at learning ecologies and considers static and dynamic representations of the interactions occurring among the learner and ‘potential forms of assistance’. It provides the researcher with a heuristic tool to map out the range of ‘forms of assistance’ available to doctoral e-researchers in institutional and self-directed learning ecologies. In other words, this tool allows to draw contextual factors shaping the doctoral experience of the PhD students and to ask questions about their motivations. In fact, as a learner-centric model, the ecology of resources provides a perspective to think of learning context as a product and as a process related to a learner and therefore linked to her effort to ‘internalize’ selected resources and interactions. In this view, the doctoral e-researcher draws ‘trajectories’ of combinations of people, resources and relationships that give evidence of the boundary crossing activities between formal and informal learning ecologies (Barron, 2006). However, in this consideration of the role of student agency in learning ecologies we are more aligned to an ‘ecological view of agency’

(Priestly, Edwards & Priestly, 2012), where the way of acting in the world of the individual student is closely interwoven with contextual factors, rather than as exclusively self-determined by one's own will and motivations or totally dependent on environmental contingencies.

The entanglements between student agency and contextual factors leads us to consider Jackson's (2013) stance on 'learning ecologies' as he draws attention to their inherent nature of "ecosocial process" (Lemke, 2000) activated by individual or institutional subjects. Intentionality of the individual in learning ecologies refers to how we make sense of the various opportunities we partly come across and partly develop:

Our learning ecologies - part planned and deliberative, and part intuitive, accidental and opportunistic result from interactions with the world around us guided by a sense of purpose that has meaning to us. (Jackson, 2013, p.7)

More importantly, such ecosocial processes are seen as developing across spaces and over time and enabling the connection among multiple contexts:

Learning ecologies have temporal dimensions as well as spatial dimensions and they have the capability to connect different spaces and contexts existing simultaneously across a person's life-course, as well as different spaces and contexts existing through time throughout their life-course. (Jackson, 2013, p.1)

Furthermore, Jackson (2013, p. 12) advances an interesting classification of learning ecologies: the 'traditional formal educational learning ecology', the 'enquiry-, problem-, project-based learning ecology' which are *partly determined by learners*, whereas 'self-directed but supported learning ecologies' and 'self-directed learning ecologies' are *completely determined* by learners. Our object of observation is just orientated between the 'enquiry, project-based learning ecology' of the PhD students immersed in a research training context, and the 'self-directed learning ecologies', drawing from the digital preferences and explorations of the PhD e-researchers.

Considering the aforementioned perspectives and building on the conceptualizations devised by Barron (2006), Luckin (2010) and Jackson (2013), we have sketched the following working definition of 'learning ecologies': learning ecologies are defined as the processes co-created by the individual's agency in a defined learning situation and for a particular purpose, by engaging with the opportunities for learning (i.e. people, resources and relationships) provided by physical and virtual, formal and informal spaces and contexts. Thus, emerging ecologies of PhD e-researchers are meant to be the processes of digital engagement for research purposes differently activated by the individual doctoral researchers for fulfilling their evolving learning needs and states of experience during their doctoral journey. We contend that such emerging ecologies, as processes developing across diverse spaces and temporal configurations, are likely to be better explored

considering the Bakhtinian notion of 'chronotope', that shares with the ecological views the perspective of human activity as cyclical and emerging.

However, before proceeding with the discussion about 'chronotope' we would like to briefly draw attention to some limitations and risks occurring in the adoption of the lens of learning ecology in a research study. Firstly, it is easy to misunderstand findings, for instance attributing a general value to phenomena related to a local context. Secondly, it is rarely clarified what level of human ecology is being investigated, in a continuum from a micro to a macro level (Hodgson & Spours, 2009). Thirdly, it is noted (Frielick, 2004) that often the analytical uses of 'learning ecology' are loosely defined and the adherence to a specific ecological view is not made explicit. This leads to the danger of being unaware of one's own epistemological assumptions. In the instance under investigation, focus on personal ecologies and on student agency underlies a constructivist view of human ecology, in which the individual's capacity, shaping and being shaped by environmental factors, is a key to act upon the situated context and create forms of resilience.

4.3 Chronotopes and learning ecologies

This section is concerned with a reflection on the construct of 'chronotope' (Bakhtin, 1981) as a conceptual tool suitable to illustrate the space/time affordances of emerging Web 2.0 learning ecologies of doctoral e-researchers. For the purposes of this work, the 'chronotope' is considered as an analytical lens apt to illustrate the moves of PhD e-researchers, engaged in sifting and making sense of the learning opportunities provided by institutional contexts or self-organized in the open Web. Focus is on the role that personal technologies - especially the social Web tools and environments - play in supporting academic identity building in the doctoral journey and in affecting the boundary crossing activities undertaken across analog and digital, formal and informal learning contexts. The developmental phases of a doctoral journey (Gardner, 2009), along with the interweaving of past-present-future in the "identity-trajectory" of PhD students (McAlpine & Amundsen, 2011) are adopted to preliminarily frame the object of study. It is argued that the spatiotemporal matrix defined by the notion of 'chronotope' (Bakhtin, 1981), along with an ecological approach to the topic being researched, can shed light on the sense-making practices of self-directed learners striving to shape their "identity-trajectory" (McAlpine & Amundsen, 2011) as future researchers by orienting themselves among overlapping and/or competing learning ecologies. The subsequent paragraphs discuss three theoretical strands: 1) time factor in the doctoral journey; 2) the nuanced notion of 'chronotope' in Bakhtin (1981); 3) key instances of application of the notion of chronotope to research on technology-mediated learning contexts. These components will

lead to outline the theoretical framework adopted as a guide in our data collection and in the interpretation of findings.

4.3.1 Time factor in the doctoral journey

There are different options for analyzing time factor in a digitally-mediated doctoral journey. It could be analyzed as a resource, being interpolated between instructional time planned in learning design and time management learner's skills (Romero & Barberà, 2011). Studying time as a resource focuses on the organizational characteristics of doctoral journey and their effects on individual learning timeframes, considering the chronological value of time use for enabling self-efficacy in learners (Odaci, 2011). Otherwise, focus could be led to define time affordances of specific ICT tools – to date an underresearched area (Bates, 2010) - as adopted for doctoral activities.

This study identifies individual, self-directed doctoral students as unit of analysis. Focus on time factor is related to how PhD students “construct time to generate learning opportunities” (Bloome, Beierle, Grigorenko et al., 2009, p. 313) rather than to how much time is given to academic learning. Thus, the attention is concentrated on time as process rather than on time as quantity. The work underlies the assumption that “space is made in time” (Lemke, 2004) and considers time as context of learning activity, “as produced and productive, rather than a container for action or a passive background for ongoing activity” (Brown & Renshaw, 2006, p. 249). A qualitative perspective of analysis of time factor in emergent learning ecologies is endorsed, in order to reveal the “goal orientation” (Riemann, 2009) of self-directed learners (doctoral researchers) making sense of the shifting places and shifting timescales which they are co-constructing and across which they are undertaking their learning path (doctoral journey). Specifically, time factor in the doctoral experience is holistically examined as a meaning-making matrix, in which time and space markers help to gain insights on qualitative features of the lived experiences of doctoral students, grappling with multiple spaces and exposed to a range of resources. As change process, the doctorate has to do with the transition ‘from a good course taker to an independent researcher’ (Lovitts, 2005) and typically suggests a sense of becoming, well expressed in the metaphor of ‘doctoral journey’ (Hughes & Tight, 2013; Baptista & Huet, 2012). In their learning path the individual PhD students develop academic dimensions such as ‘knowing’, ‘acting’ and ‘being’ (Barnett & Coate, 2005), where the dimension of ‘being’ is intended as any embedded forms of knowing and acting in the world and is often neglected in research training design (Whiteman & Oliver, 2008). Such dimension is highlighted in the notion of “identity-trajectory” (McAlpine & Amundsen, 2011) in which the integration of past-present-future is continuously evolving and interweaving across the

three main strands of ‘intellectual’ (the link with the tradition and the perspective of future contributions to knowledge), ‘networking’ (the web of connections being intertwined beyond the academic boundaries) and ‘institutional’ (the ensemble of tasks and responsibilities in which a PhD student is located). Elsewhere this becoming process is described as featured by three fluid developmental phases (Gardner, 2009), in which the individual doctoral student progressively gains greater autonomy: from more structured and guided tasks (e.g. coursework, exams) toward more unstructured and self-directed activities (e.g. decisions on dissertation, choices for future employment). The idea of “identity-trajectory” relates to the notion of ‘chronotope’ understood as dialogical movement, since individual doctoral students have to cope with the diversity, multivoicedness and ever evolving nature of the academic setting in which they are situated. This suggests a possible interpretative frame of emergent profiles of ‘doctoral e-researchers’, in which the capacity to move across institution-led and self-organized space and contexts (Barron, 2006) variously affects ‘intellectual’, ‘networking’ and ‘institutional’ strands of activities (McAlpine & Amundsen, 2011), across the developmental phases of a doctoral journey. Moreover, the inherent dialogicality among learning ecologies activated by individual PhD students may be open the route for creating new spaces for academic socialization and to a degree re-shape the fundamental relationship between the apprentice researcher and the supervisor (Shulman, 2004).

4.3.2 The Bakhtinian notion of ‘chronotope’

The construct of ‘chronotope’ (Bakhtin, 1981) is considered as providing a holistic view on “how people conceptualize their collective and individual movement through time and space” (Bloome et al., 2009, p. 324). In essence, a ‘chronotope’ “characterizes the typical ways in which narrative genres move the scene from place to place” (Lemke, 2004). In fact, this notion was devised and developed by Bakhtin in his seminal construction of a problematics of literary forms. In narratives the ‘chronotope’ represents the peculiar interconnectedness of temporal and spatial indicators as key features of a literary genre in a text. At the same time, it accounts for authors’ and characters’ worldviews, for their capacity to act upon (e.g. in Goethe’s novels the hero co-emerging ‘along with the world’) or being acted upon (e.g. in Greek romance, the unchanging character of the hero), and for their cognitive strategies and degree of freedom to change the historical situation in which they are contextualized. In a text chronotopes are always multiple and changing, and often interwoven and competing and allow its “knots” of meaning “to be tied and untied” (Bakhtin, 1981, p. 15). The particular chronotope characterizing a specific learning environment has been formulated as an ongoing process, being shaped and re-discussed within a dialogical context being nurtured by a range of voices (Brown & Renshaw, 2006). Unlike novels, in which chronotopes indicate moves

from one scene to another one, in a learning process participants negotiate their own identities as authors arising from symbolical moves across different time-space configurations. Like in novels, in everyday life and in educational contexts, chonotopes are generally “messy, complicated, incomplete, multiple, and competing” (Bloome et al., 2009, p. 324). Moreover, there are emergent new chronotopes, for instance in “our use of educational media” (Lemke, 2004) that it is worth understanding “for effective design of educational environments” (2004).

It is important to notice that focus in this study is on understanding how doctoral students “construct time to generate learning opportunities” (Bloome et al., 2009) rather than on identifying learning patterns in doctoral experience, as elsewhere explored (e.g. Boud, 2008; Flores-Scott & Narad, 2012). However, the Bakhtinian approach to learning (Koschmann, 1999) as a social, dialogical and historically situated process is considered in background. In such a process the exposure of the individual to multivoicedness and outsideness, as well as the personal struggle against diverse degrees of power relationships in the dialogue with others, help to increase learning and produce personal growth. This view is aligned with a socio-cultural approach to the notion of learning ecologies (Barron, 2006) and to a conceptualization of context as learner-centric (Luckin, 2010), in which learner’s intentionality and motivations make sense of the multiple interactions occurring between the individual and other people and resources, through the enabling mediation of technology. Thus, in this study, the construct of chronotope is understood as the dialogical movements of the doctoral student interacting with formal and informal forms of assistance, social bonds, local academic conventions and networked spaces.

4.3.3 The chronotope applied to (digitally-mediated) learning contexts

The chronotope construct (Bakhtin, 1981) has been extensively applied to literary, art and cinema critique, and more recently to fields such as organizational studies and educational research. Here, as a mere example, it is worth recalling the prototypical genre of ‘road chronotope’ and its inherent motif of the ‘encounters’ shaping the path of the primary characters in narratives, such as the adventure Greek romance and the ‘road movies’. This kind of chronotope has apparent links with the ideas of doctoral journey and ‘identity-trajectory’. A range of empirical studies have variously applied the construct of chronotope to (technology-mediated) learning contexts (e.g. Lemke, 2004; Brown & Renshaw, 2006; Matusov, 2009; Bloome, Beierle, Grigorenko et al. (2009); Ligorio & Ritella, 2010; Compton-Lilly, 2010; Loperfido & Ligorio, 2011; Hakkarainen, Ritella & Seitamaa-Hakkarainen, 2011; Rajala, Hilppö, Lipponen et al., 2012). In the following paragraphs the attention is drawn to a short selection of these studies, being reviewed as functional to the construction of the theoretical framework in mind. Brown and Renshaw (2006) refer to the particular chronotope

characterizing a specific learning environment as an ongoing process, being shaped and re-discussed within a dialogical context being nurtured by a range of voices. These researchers apply Bakhtin's construct to classroom activities and adopt the 'chronotope' as a means to uncover how students' participation in classroom is inflected through the interaction among past experiences, ongoing involvement and yet-to-be-accomplished objectives. They utilize the notion of chronotope to reveal the shifting identities of students as emerging in the interplay of time and space in a collaborative learning approach. They discuss the co-presence of competing chronotopes in classroom activities: for instance, a collaboration-based approach suggested by the teacher versus the specific, individual interpretation of such approach on the part of students, with respect to past achievements, present problems and foregrounding perspectives. In some cases learners act as 'local heroes' whose actions have an apparent influence on the spatial/temporal matrix. In fact, these researchers conceptualize the chronotope as "creative spaces in which identities, both personal and collective, may be imagined, enacted, or contested" (Brown & Renshaw, 2006, p. 249). What is particularly relevant in this perspective is the connection highlighted between space-time configurations prescribed by the school environment and the capacity of the individual student to affect it and therefore to act upon the environment in which she is located. Bloome et al. (2009) expand such a pedagogical use of chronotope, focusing on the opportunities for learning that can be designed. They build on Lemke (2004), who stresses the role of chronotope in providing descriptions of the 'typical patterns of organization of and across activities in space and time' and in highlighting features of cultures, subcultures and communities of practice. To this end, focus is drawn to "make a distinction among individually held chronotopes, shared chronotopes, and publicly held chronotopes" (Bloome et al., 2009, p. 325). Such a key distinction can help to identify the "institutionally sanctioned chronotopes" (Lemke, 2004) and those chronotopes that are constructed by doctoral students through their self-directed practices in digital environments, for instance for purposes linked to leisure and professional activities and for research purposes. Moreover, it can be argued that some doctoral e-researchers are able to move across different chronotopes (as they move across different learning ecologies) with the goal orientation of moving digital practices of the private/professional sphere (individual and shared chronotope) towards new kinds of 'publicly held chronotopes'. In other words, some self-directed learners could demonstrate to create an 'expansive chronotope' (Rajala et al., 2012). Creating such a transformative chronotope, PhD students expand their agency and the related impact on the historical situation in which they are located, beyond the conventional space/time configuration defined by their formal research training environment. The relation between group work and the perception of space/time while using technology is specifically explored by Ligorio and Ritella (2010), focusing on a case of

collaborative teacher training being developed in a mixed physical/virtual learning environment. They highlight social and cultural factors at work in collaborative activities to gain understanding of the coordination patterns of technology-mediated activities. The metaphor of diverse musical tempos is used to highlight the coordination patterns of the specific space/time configurations emerging from the analysis of the transitional moments in the collaborative work. The identification of the coordination patterns characterizing the boundary crossing activities of doctoral e-researchers between institutional and self-organized learning ecologies is just at the heart of our investigation. Finally, focusing on quality of technology mediation, Hakkarainen, Ritella and Seitamaa-Hakkarainen (2011) view chronotope as “an approach that guides one to examine both temporal and spatial implications of technology-mediation”. They discuss the original chronotope emerging from a collaborative technology-mediated context and providing learners with “amplified semiotic resources based on temporally integrated (bringing crystallized earlier cognitions to present) and spatially merged virtual and social spaces of activity” (2011). This approach brings to consider affordances of ‘learner-generated contexts’ as dynamic and dialogical, being co-constructed by participants (Oliver, 2006) and as networked and evolving across space and time dimensions (Hoffmann & Roth, 2005). On the other hand, it is worth noting that the instances above reported mostly refer to collaborative learning situations organized in formal settings. Otherwise, preliminary findings give evidence that the PhD researchers participating in the inquiry mostly show an isolated mode of study (Esposito, Sangrà & Maina, 2013). Thus, focus is on the extent to which self-directed doctoral students are actually able to originally coordinate opportunities drawing from competing learning ecologies and create a kind of transformative chronotope. In this endeavour, we also pay attention to the dialogic nature of chronotope in learning contexts (Brown & Renshaw, 2006), where issues of identity, socialization, stance about digital engagement and tensions occurring between the individual PhD e-researcher and the institutional context relate to the shifting time and space orientations. It is apparent from the previous brief review that the Bakhtinian notion of ‘chronotope’ has been applied to a range of research topics and this give evidence of its analytical richness and flexibility. However, it is acknowledged that the conceptualization of chronotope is affected by a weak analytical precision, due to a current lack of systematic definition of the term (Leander, 2001; Bemong & Borghart, 2010). Furthermore, the application of this construct by educational researchers is reported to be harshly criticized by philologists (Matusov, 2009). Such hurdles notwithstanding, it can be said that the notion of ‘chronotope’ helps to frame the significant connections between shifting space and time dimensions characterizing emerging learning ecologies of the PhD e-researchers. It highlights the capacity of these individuals to act upon or being acted upon the situated research training context where they

are learning to become researchers. Furthermore, this conceptual tool fits the recommendations by Charmaz (2006) related to the use of theoretical framework in constructivist grounded theory approach. In fact, as well as ‘learning ecologies’, the ‘chronotope’ does not constitute a prescriptive framework from which to draw hypothesis before undertaking data gathering. On the contrary, it provides the researcher with a repertoire of “sensitizing concepts” (Charmaz, 2006) that can be used to orientate the collection and interpretation of empirical data.

The theoretical strands about ‘learning ecologies’ and ‘chronotope’ briefly considered in the previous sections provide the key elements to develop a theoretical framework matching the research question aiming to explore the affordances of emerging learning ecologies of doctoral e-researchers.

4.4 Elements for a theoretical framework

In this section we present the theoretical framework elaborated following the above discussion of the concepts of learning ecologies and chronotope. However, before that, we briefly summarize the line of reasoning supporting in our view the interplay of the two theoretical concepts. In our study we make the case for ‘personal ecologies’ (Andrews & Haythonthwaithe, 2011) of doctoral researchers, situated in a specific research-bounded ecosystem, but coping at the same time with institution-led and self-organized learning opportunities (Barron, 2006). The doctoral e-researchers strive to develop their own set of ‘negotiated forms of agency’ (McAlpine & Amundsen, 2011), dwelling on the opportunities for research training and apprenticeship provided by their local context and on a range of knowledge production and exchange practices they come across and emulate in the social Web. For instance, some PhD students might use the open Web for an early exploration of a research topic, and then mine the library databases to subsequently refine the literature search; in other cases, they might follow the formal channels of the peer-reviewed research journals for the required publications, and in parallel practice academic writing by running a group blog where sharing views and methodological issues with peers. Institutional and self-directed learning ecologies are seen as filtered by the intentionality, motivations and evolving learning needs of individual doctoral students producing unique learning contexts. The attention is therefore directed to an ecological view of agency (Priestly *et al.*, 2012), in which the individual student’s ability to adopt social Web for research purposes is seen as grounded in a specific academic context, shaped by different subject-bounded modes of working and ICTs appropriation (Fry & Talja, 2007) and located in the diverse phases of the doctoral journey (Gardner, 2009; Zaman, 2010). Thus, one doctoral researcher working in a humanistic subject area, where an

individualistic modes of ICTs appropriation is common (Fry & Talja, 2007), is likely to show different digital practices with respect to another doctoral researcher working in a techno-scientific area, where the prevalent mode of working is team-based and the technology uses are usually collectively organized. Likewise, PhD students at the beginning of their doctoral journey are likely to much more rely on well-established academic conventions than peers in their final phase, when they usually feel more pressures about improving personal development and gaining visibility of one's own academic profile across multiple digital venues. Given such variety of situations in which PhD e-researchers happen to develop their journey, we can crystallize the past-present-future orientation of these newer researchers across digital spaces by highlighting the chronotopes arising from the digital engagement of the research participants. The graphical visualization of the theoretical framework used in this study is summarized in the Figure 7 below reported.

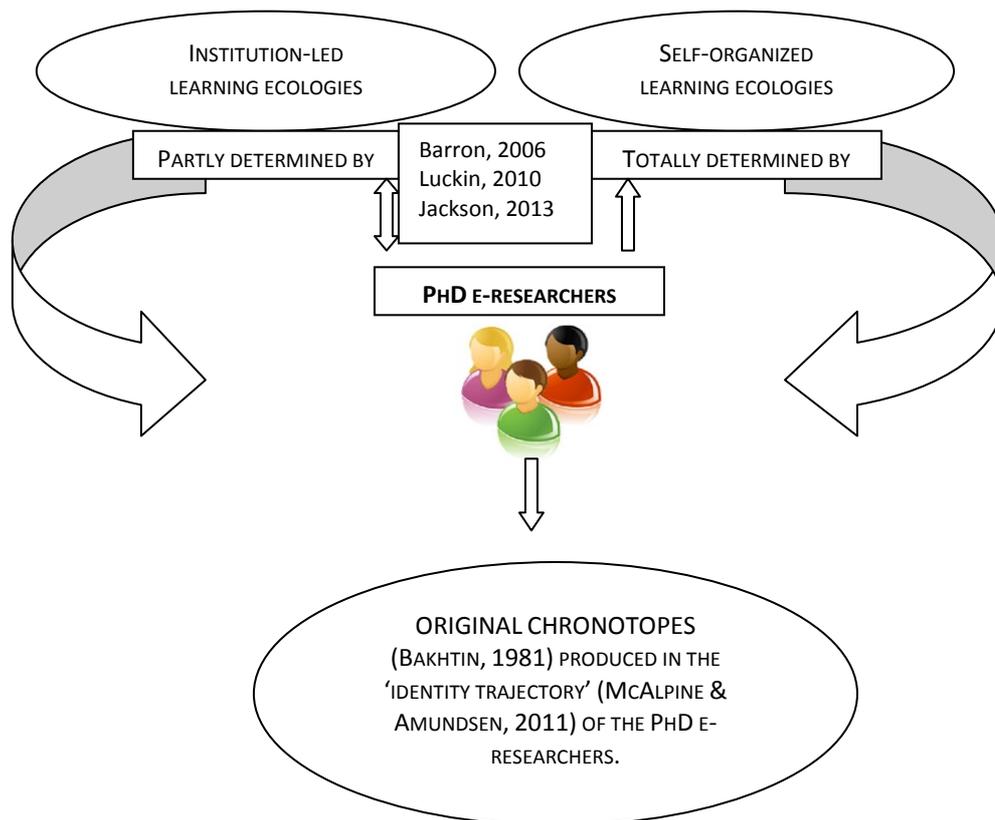


Figure 7. Diagram of theoretical framework aiming at orientating data gathering process.

To sum up, the doctoral experience is framed as a journey in which an ‘identity-trajectory’ is to be unfolded, through the diacronic interweaving of the ‘intellectual’, ‘networking’ and ‘institutional’ strands (McAlpine & Amundsen, 2011) and across three developmental phases from the status of student towards a more defined autonomy as researcher (Gardner, 2009). The idea of ‘identity-trajectory’ can be coupled to the notion of ‘chronotope’ (Bakhtin, 1981), in which individual PhD students orientate their intentionality through a dialogical and productive ‘struggle’ with other subjects and multiple resources. PhD students’ agency makes sense of institutional and self-directed learning ecologies, thought as complementary, but sometimes overlapping or contrasting sources for learning opportunities. In their digital engagement, doctoral students are driven by their evolving motivations and needs and filter and re-combine such learning opportunities, in order to produce unique learning contexts that are meaningful to them. Thus, doctoral e-researchers manage their moves across institution-led and self-organized ‘forms of assistance’ (Luckin, 2010) and outline diverse ‘chronotopes’ in this continuing endeavour. We build on Bloome et al. (2009) to hypothesize the interplay among private, informally and formally shared chronotopes that reveal shifting modes and spaces of scholarly activity and interaction in networked environments. However, we have merely taken cue from such classification and have left room for specific, original chronotopes arising from data analysis, in the spirit of the grounded theory approach. Highlighting the chronotopes characterizing the emerging ecologies of PhD e-researchers is likely to return the collective experience of this niche of “silent experts” (Williams *et al.*, 2011) coping with institutionally ‘scripted’ and open digital environments. The analysis of the ways in which doctoral students are actually shaping space and time affordances of learning ecologies is likely to reveal the extent to which emerging digital mediation is affecting the areas of ‘intellectual’, ‘networking’ and ‘institutional’ strands of activities, in different phases of the doctoral journey. Furthermore, it can shed light on the capacity of individual doctoral e-researchers to co-evolve along with (or to a degree to contrast) their referring academic setting and discipline culture.

4.5 Conclusions

This chapter has provided a reflection on the constructs of ‘learning ecologies’ and ‘chronotope’ as the combined analytical lenses characterizing the descriptive theoretical framework informing data gathering of the present research. The construct of ‘learning ecologies’ highlights the processes partly or totally directed by the PhD students across diverse contexts and competing learning opportunities. The construct of ‘chronotope’ helps to intercept the shifting spatial and temporal orientations of the PhD e-researchers, in the endeavour for making sense of their digital engagement for scholarly purposes. As a whole, the theoretical framework discussed in this chapter underlies a

perspective considering the interplay of metaphors as a way to inform research (Sfard, 1998). This choice has its own potential and risks. On the one hand the use of metaphors enables “conceptual osmosis between everyday and scientific discourse” (Sfard, 1998, p. 4). On the other hand, this might expose the researcher at a danger of relying on her previous assumptions. As Sfard suggests, it is worth considering a dialogic approach to other kinds of metaphor. The advanced framework provides an attempt to think of an interplay between the metaphors of learning ecologies and chronotope, taking into account a defined research question and with the aim to holistically consider space and time factors. More importantly, as previously stated, in alignment with Charmaz (2006) the theoretical framework is intended to make it explicit the researcher’s assumptions, to let it emerge any contradictions at ontological and epistemological level, and to reinforce and substantiate the analytical depth of the research questions informing this study. The discussion of the methodology and methods in Chapter 2 and the outline of the theoretical framework in the present chapter enable us to proceed to the presentation of findings related to the online questionnaires (Chapter 5), individual interviews (Chapter 6) and focus groups (Chapter 7).

CHAPTER 5

FINDINGS OF THE ONLINE QUESTIONNAIRES

5.1 INTRODUCTION

The purpose of this chapter is to present and discuss the findings drawn from the two online questionnaires carried out across the Italian and the UK universities selected as the empirical settings of this research. The delivery of the online questionnaires (also indicated as ‘e-surveys’) allowed us to start exploring PhD students orientations among competing learning opportunities through a preliminary, non probabilistic sample. In fact, the aim was to draw quantitative and qualitative data useful for mapping ICTs uses, motivations and forms of support characterizing the digital engagement of a random group of PhD students, rather than to make inferences on the whole population (De Vaus, 2002) of the PhD students enrolled in the selected university settings. This choice matches the recommendation for an ‘initial sampling’ (Charmaz, 2006), in order to collect baseline data from a large sample before proceeding with a more focused investigation with a small group of interviewees. This objective to draw an ‘initial sampling’ has been pursued in different timeframes across the Italian and the UK universities selected in a logic of convenience sampling. The choice of undertaking data collection across different national contexts has been motivated (see section 2.5) by the general aims to add richness to data and adopt triangulation in space (Denzin, 1989). In fact, although doctoral education in the UK and in Italy (Orefici & Cunti, 2009) differs in tradition, structure, policy and typologies of PhD students, it can be said that both have been striving to develop an original asset of doctoral education by merging the European apprenticeship model’s tradition and the US model comprised of a strong taught component. Likewise, both Italian (Ranieri, 2014; Trincherò, 2014) and UK (British Library/JISC, 2009-2011) doctoral education’s stakeholders have to cope with digital literacy issues, considered in a more comprehensive European frame of 21st century competences currently under discussion (Ferrari, 2014). Moreover, as stated in the Methodology chapter (see section 2.5.1) we have also selected three Italian and one UK universities as empirical research settings for pragmatic reasons, because we could fairly easily access the contexts. As also stated in the Introduction chapter, the three Italian universities are all located in Milan, including the University of Milan, where in 2011 we carried out a small scale interview project. Moreover, this previous research was undertaken for the requirements of the Master in Educational and Social Research delivered by the Institute of Education, in London, which we have subsequently selected as the UK research setting in our doctoral research. However, we would like to draw attention to the specific scope of the two e-surveys included in the present study: eliciting two different samples of potential interviewees rather than setting up any comparison between the two diverse national contexts. Furthermore, it is worth noting that the

respective Italian and UK e-surveys are intended to be closely functional to the subsequent interviewing process, by providing qualitative hints on which we have been able to build the individual interviews' questions. More precisely, as explained in the Methodology chapter, the instrument of the online questionnaire has been designed to answer the following research question: To what extent do the PhD students learn to become researchers using digital tools and environments in Web 2.0 ecologies?

The expected outcome of the e-survey in the overall research design is therefore to draw a preliminary map of the PhD researchers' academic activities, actual ICTs uses, attitudes and expectations towards the open Web. Thus, the online questionnaires have been carried out across both the Italian and UK empirical contexts for 'setting the scene' of a research topic to date underexplored (Charmaz, 2006) and to draw, through an explicit call, an initial, convenience sample of potential interviewees (Morse, 2007). The e-surveys, comprised of quantitative and qualitative data, have helped to gain a preliminary overview of the contextual factors and doctoral researchers' orientations in their digital engagement, useful in the subsequent phase to better approach and understand the emic perspectives arising from the interviewed PhD students. Thus, although questionnaires' data are presented under the form of descriptive statistics, the scope of the e-survey is to draw 'elicited texts' (Charmaz, 2006) from the research participants, to be cross-checked through subsequent qualitative inquiry.

The present chapter firstly illustrates how the questionnaire's protocol was designed and how its distribution was organized. Then, the findings drawn from the e-surveys delivered across the Italian and the UK universities are presented in the same sequence they have taken place. In both cases, key peculiarities of the local organizational issues are highlighted. Furthermore, the results are firstly presented in terms of frequencies of the given responses, following the sequence of sections and questions defined in the online questionnaire. Secondly, we analyze the open comments received from the research participants, highlighting the selected codes useful to grasp motivations and perceptions related to digitally-mediated scholarly practices. Each main section includes a discussion intended as a line of reasoning leading to identify themes and goal orientations to be further analyzed in the subsequent interviewing process. Concluding the chapter, we build on the findings of the online questionnaires and discuss an early scenario of the current and emerging learning ecologies of the PhD students and the related time dimensions arising from their digital engagement.

5.2 The questionnaires: construction and organization

The questionnaire protocol has been drafted building on some previous large scale empirical studies (e.g. James et al., 2009; British Library/JISC, 2011) undertaken across the UK university contexts and aiming at gathering evidence of social media uses in part of doctoral and young researchers. However, our goal is broader than merely collecting data about digitally-mediated practices, because we aim at exploring entanglements between institutional services and self-organized activities and gaining insights about expectations related to an informed use of the open Web for research purposes. To this end, in the construction of the e-survey's protocol, we have mainly taken into account the areas of individual activities that are more likely to be technologically supported (Kalb, Bukvova & Schoop, 2009), along with the 'balanced scorecard' of academic activities (research, authoring, networking, teaching, administration) defined by the LSE Public Policy Group (2011) and subject to change in the digital age. Furthermore, to scaffold the preparation of the protocol, a series of seven informal interviews to directors of doctoral schools and programs of different broad subject areas (Humanities, Social Sciences, Physics, Education, Pharmacology, Anthropology, Engineering) were carried out across the three selected Italian universities, from the end of March until the end of May 2012. Lacking previous studies about doctoral experience in Italian higher education, the aim has been to collect first hand information about the different options of institutional services, local initiatives and formal and informal forms of assistance that doctoral students are provided with in their academic contexts. The questionnaire's protocol has been composed in Italian and in English language, addressing the Italian and foreign PhD students enrolled in the three Italian universities involved in the study (see Appendix 1a and 1b). Moreover, a slightly different version has been produced for the UK context (see section 5.4.1), due to the need for fitting the diversity of terminology and contextual factors. Thus, the questionnaire's protocol is comprised of 28 questions in the Italian version (Appendix 1a) and 30 questions in the UK (Appendix 1c) version, excluding the respective call for participation in the subsequent interviews. However, this difference has not substantially altered the structure and length of the questionnaire: both Italian and UK questionnaires takes about 20 minutes to be filled out, as checked by two 'beta testers' (volunteer PhD students) who have respectively piloted the e-survey before delivering it across the Italian and the UK universities. The typologies of the questions are based on dichotomous and multiple choice questions, rank orderings questions and on Likert scale-items: in particular, as regards to the order list questions, we have always added the option 'Other' to let respondents to add any item (e.g. among the tools being used for research) not included in the provided list. Regarding the questions asking opinions and based on the Likert-scale, we have chosen to suggest four levels (e.g. very much-much-little-very little) with the fifth option based on 'Not applicable' meaning. Our aim has been to ask for net opinions, mitigating such approach by

including the possibility to add open comments, to enable a better understanding of the respondents' thought. In fact this decision has allowed to collect a consistent data set of open comments. Moreover, the presence of 'closed' and 'open' questions has been intended to meet the 'exploratory nature' (Bailey, 1994) of these e-surveys. Particular attention has been drawn to the likely diverse acquaintance of the PhD students with the Web 2.0 tools: to this purpose, where appropriate, examples are included in the text of the proposed questions. The Italian and UK questionnaires are both structured into six sections as listed in Table 14 below reported.

Table 14.

Sections of the questionnaire and related aims and content.

Section	Aims of the section
<i>A. General information</i>	The questionnaire is anonymous, but this section collects information such as age range, year of the PhD program, subject area, etc., in order to obtain some demographics data about the respondents.
<i>B. Organization of doctoral activities</i>	This section is designed to gather information about contextual factors constituting the research environment of the doctoral researchers.
<i>C. Tools adopted by doctoral researchers</i>	This sections aims to gather information regarding the technologies provided by the higher education institutions, the tools used in everyday life for social activities or for specific research purposes.
<i>D. Drivers and inhibitors in the adoption of new tools</i>	This section is intended to gather information about what can prompt or obstruct the adoption of new tools in the doctoral experience.
<i>E. Potential value of the social web tools for the doctoral research</i>	This section aims at gathering information about the expectations of PhD researchers regarding the value of the open web applied to research project administration, data collection, dissemination, personal development, networking.
<i>E. Social media presence</i>	This section is planned to collect information about the numbers of blogs, accounts in twitter and research-focused social networking sites run by doctoral researchers.

The last question asks the respondents to state or neglect their availability to further participate in the research process. As previously explained in the Chapter 2, we have delivered the e-surveys at different points in time across the Italian and across the UK universities, but in both cases we have adopted the same software package and applied the same procedures (including ethical procedures, previously detailed in the section 2.8.1). Furthermore, all the questionnaires remained open for about one month. The e-surveys were planned to be administered online through an online service called SurveyMonkey, whose basic functions are also available free of charge in the open Web. Compared

to other online survey tools (Marra & Boque, 2006), this application has become popular mainly because it is easy-to-use and user-friendly. Beyond these key advantages, this service results to be affordable in its first-level fee-based version (acquired in July 2012), presents sufficient customization functionalities and storage services and allows to activate an indefinite number of questionnaires, to draw instant graphs and diagrams and finally to download whole or partial datasets in Excel or SPSS formats. In SurveyMonkey we created three questionnaires: Italian and English version for the Italian universities and the English version revised for the UK setting. Moreover, we generated four different URLs addressing the PhD students enrolled at the four selected universities. In fact, data were collected setting four different ‘tanks’ (for each university) in the software program, to facilitate the subsequent selection of potential interviewees and also to enable future data analysis beyond the scope of the present research. The completed questionnaires were downloaded from the SurveyMonkey’s reserved site to our dedicated folders. The quantitative data were maintained in Excel spread sheets for the subsequent calculations and for drawing graphs and tables (Han, 2008; Meyer and Avery, 2009). Descriptive info (e.g. subject area, age range, year of PhD, e-mail of respondent, where indicated) as well as quantitative ratings each received their own cells in a matrix, where rows and columns were scanned and later rearranged for queries. On the other hand, the open comments were imported in Hyperresearch for initial coding and then focused coding, enabling comparison and analytical induction.

In the subsequent sections we present data according to the schedule planned for data gathering (see Chapter 2, section 2.5.2): thus, we illustrate the results drawn from the questionnaires delivered across the Italian universities and subsequently the findings related to the e-survey addressing the UK university. In both cases, we have firstly aggregated the quantitative data and presented them under the form of descriptive statistics, following the sequence of the sections in which the online questionnaire is articulated. The presentation of quantitative data is linked to the correspondent raw data included in Appendix 2 for the Italian questionnaire and Appendix 3 for the UK e-survey. A selection of graphs is reported in the text, indicated as Figure 1, 2, 3, etc. Secondly, we discuss qualitative data drawn from the open comments, by aggregating emerging codes under the categories of Benefits, Inhibitors, Criticalities and Individual Perspectives. Building on this qualitative findings we advance an early outline of the orientations of the PhD students participating in the study, regarding the relevance of the open Web for their scholarly endeavours.

5.3 Findings: the e-survey across the Italian universities

This section provides detailed information of the results drawn from the online questionnaire distributed between September and October 2012 across three Italian universities: University of

Milano (acronym UniMi), University of Milano-Bicocca (UniMi-Bicocca) and Politecnico of Milano (PoliMi). The subsequent subsections firstly report about the delivery issues across the specific contexts, then illustrate the drawn sample and present quantitative and qualitative data.

5.3.1 Delivery across the Italian universities

As aforementioned, two versions of the questionnaire, in Italian and English language, have been arranged, in order to increase the participation of the foreign doctoral students enrolled in the three selected Italian universities. However, in the case of Politecnico of Milano, the online questionnaire was delivered only in English language. In fact, agreed with the director of the local Doctoral School, we have taken into account a recent policy direction, requiring that all the administrative, teaching and research communications in postgraduate courses have to be delivered in English language. The URL address to access the questionnaire was conveyed by email to all the doctoral students enrolled at the time at the three Italian universities. The invitation message (and the subsequent, unique reminder) included the link to the survey in Italian and English version and was distributed via mailing lists by the doctorate offices' staff, after obtaining permission from the doctoral programs' committees or Rector's PhD delegates of the respective universities. The collaboration with the local doctorate offices had apparent ethical advantages (see section 2.8 in Chapter 2) and allowed us to indirectly use the official mailing lists of the doctoral students and so to match the sampling frame with the actual population of the informants (Czaja & Blair, 2005). This implies that the invitation message was exclusively addressed to the members of the population being researched (see Table 15), increasing the reliability of the questionnaire.

Table 15.

Population of doctoral students involved in the e-survey.

University	N° PhD students*
University of Milano	1.400
University of Milano-Bicocca	600
Politecnico of Milano	900

**The estimated numbers of the enrolled doctoral students in 2012 (all the cohorts) were indicated by the doctorate's offices of the respective universities.*

The password-protected administration side of Survey Monkey enabled us to easily monitor the participation rate in the survey: thus, we could observe that in the first ten days from the start of the e-survey, the participation rate was already approaching 10% of the potential respondents at the University of Milano and Politecnico of Milano, whilst this threshold was even slightly overtaken at University of Milano-Bicocca. We therefore asked the respective doctorate offices to send a kind reminder (through a message we adapted) to all the doctoral candidates. The reminder was

submitted after fifteen days from the delivery of the initial message: in the timespan of about ten days from the reminder the number of survey participants was redoubled.

5.3.2 Description of the non probabilistic sample

We recall that the aim of these exploratory e-surveys was to obtain a non probabilistic, initial sample useful to approach the subsequent phases of data collection, rather than a representative sample of the population being investigated (i.e. the PhD students enrolled in the three selected universities). This matches what Cohen et al. (2011, p. 321) name “volunteer sampling” and is said to be one type of starting point in recent grounded theory research (Charmaz, 2006; Morse, 2007). However, we have to state some limitations affecting the description of the sample. In the previous section we have mentioned the key support received from the respective doctorate offices. Such benefits notwithstanding, the collaboration with the doctorate offices also revealed some issues: in fact, they were open to communicate only the estimated numbers of students enrolled in any PhD program during 2012 and across all the cohorts, whereas the national department for Education and Research at the time only provided this kind of data updated at the academic year 2009-2010. Moreover, the doctorate offices did not provide data stratified per subject areas. Although the sample is numerically sizeable, these drawbacks do not allow to check the extent to which it matches the characteristics of the whole population being researched. However, the drawn sample fits our initial purpose, since it can account about the individual PhD students’ digital uptake and attitudes toward the open Web, as preliminary achievement in preparation of the interviewing phase. The description of the sample in terms of demographics (subject areas, age range, nationality, PhD scholarship) is therefore based on the data drawn from the section ‘General information’ filled out in the online questionnaire and on some bibliographic references. At the very beginning we defined 10% as the minimum threshold in the participation rate, considering that response rate in web surveys is said to be usually 11% lower than in paper-based or phone surveys (Fan & Yang, 2010) and that the PhD students are frequently asked to fill out online questionnaires directly by the doctoral programs/schools and by the local department of social research. As reported in the summarizing Table 16 below, the participation rate at the end of delivery timespan was >20%.

Table 16.

Participation rate in the e-survey distributed across the three Italian universities.*

N=2.900	Participation rate	Started questionnaires	Completed questionnaires	Potential interviewees**
Respondents	>20%	624	483 (>77%)	123

**The online questionnaire delivered across the Italian universities remained open from 14th September to 20th October 2012.*

***This data reports the number of survey respondents stating their availability to participate in the subsequent interviewing process.*

Table 17.

Participation rate per university.

UNIVERSITY	% respondents	n° respondents
UniMi	>18%	258
UniMi-Bicocca	32%	193
PoliMi	20%	173

However, Table 17 shows some variation in the participation rate in the diverse institutions, where on the one end UniMi-Bicocca reaches 32% in the response rate, PoliMi equals 20% and on the other end UniMi only records a rate >18%. The received questionnaires were 624, among which 483 completed and 141 not completed. We have decided to consider the whole set of compiled questionnaires, taking into account the exploratory nature of this preliminary survey. Starting from the age range, the respondents show some typical demographic characteristics of the ‘traditional’ profile of doctoral students across Italian universities.

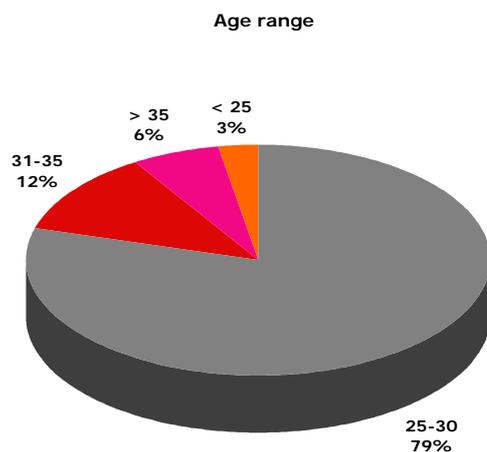


Figure 8. Distribution per age range (N=624).

In fact, the research participants are mostly aged (Figure 8) 25-30 years old (79%), whereas 12% are in the age range 31-35, 6% are more than 35 and only 3% are less than 25 years old. The great majority of the respondents is therefore comprised of individuals in the age range 25-30, who have generally been awarded a doctoral scholarship and thus ‘presumably’ are engaged full-time in their

doctoral programs. We say ‘presumably’ because there is no distinction between full-time and part-time mode in the Italian doctorates and thus such information could not be obtained asking a specific question. This group is made of ‘full-time’ students who have probably undertaken the admission process to a doctorate just after their master level degree. However, two smaller groups of respondents (age range 31-35 and >35) are likely to represent PhD candidates engaged in long-term training (e.g. in the subject areas of Medicine) or are professionals (e.g. teachers) who decide to face the doctoral challenge (typically in Social Research or Education) in a mid or advanced phase of their career. This data is also supported by the distribution of PhD scholarships (Figure 9), where the 76% among the respondents awarded one PhD scholarship is mostly made by individuals aged 25-30. On the contrary, the group of respondents who are >35 years old has the lowest proportion of awarded scholarships. However, 4% have checked ‘Other’ as response, pointing out that their employers (mainly public institutions as schools or universities) indirectly funds their doctorate, granting a remunerated study leave.

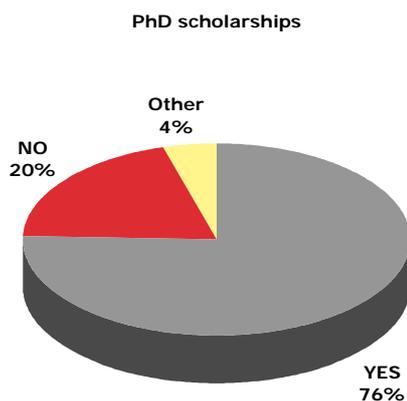


Figure 9. Percentage of doctoral students awarded a PhD scholarship (N=624).

The great majority of respondents includes Italian students (553 against 71 international doctoral students), where in the subject area of Engineering there is the largest group of foreign PhD students. This result matches data related to the low presence of international students enrolled in Italian doctoral programs.

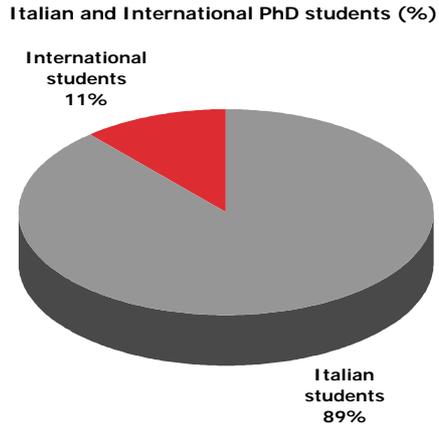


Figure 10. Proportion between Italian and international PhD students (N=624).

Furthermore, the distribution of the respondents across the three years of formal enrollment (Figure 11) is fairly balanced, with a slightly greater group enrolled in their second year of doctorate (36%). This opens up the opportunity to elicit potential interviewees in diverse phases of their doctoral journey.

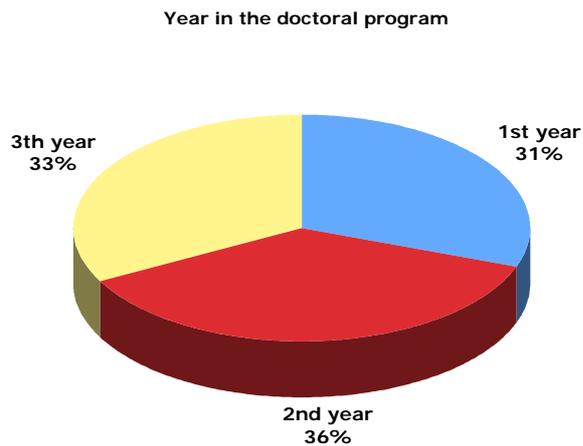


Figure 11. Distribution per enrollement year in the PhD program (N=624).

More interestingly, the received data show participants developing their doctoral project across over 20 different subject areas, according to the definitions pointed out by the respondents in the questionnaire (Figure 12).

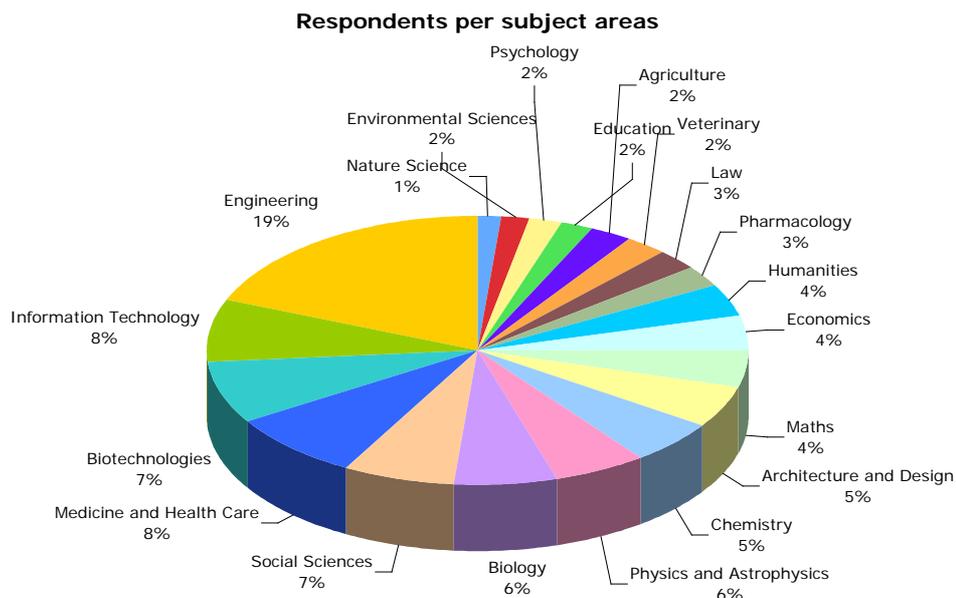


Figure 12. Distribution per subject areas (N=624).

Subsequently, we have aggregated this data according to the broad disciplinary sectors labeled by the Italian Ministry for University and Research (MIUR) and also connotated by progressive numbers. The subject areas can be clearly divided in three groups, as indicated in Table 18 below: four sectors in which respondents are more than 40; six where the numbers vary between 21 to 40; four areas where participants are less than 20.

Table 18.

Range of respondents distributed across the disciplinary sectors set by MIUR-Italian Ministry for University and Research.

>40 respondents	21 to 40 respondents	< 20 respondents
09. Industrial and Information Engineering (102)	10. Classical Studies, Philology, Art History Sciences	11. History, Philosophy, Pedagogy and Psychology Sciences
05. Biology Sciences (73)	13. Economics and Statistics Sciences	04. Earth Sciences
01. Maths and Information Technology (67)	08. Architecture	07. Agriculture and Veterinary Sciences
06. Medicine and Health Care Sciences (56)	03. Chemistry Sciences	10. Law Sciences
	14. Political and Social Sciences	
	02. Physics Sciences	

5.3.3 Quantitative data: facts and opinions

The sample of the questionnaire's respondents can be ascribed to a non probabilistic, convenience sample, that "does not represent any group apart from itself" (Cohen et al., 2007, p. 114) and is not intended to generalize findings about the entire population of the PhD students. Thus, the parameters of generalizability and, as a consequence, the measures to demonstrate the representiveness of the sample can be negligible (cite). In the overall research design, the online questionnaires are intended as starting point of a conversation with the research participants (Charmaz, 2006), "in a dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world" (Green, 2007, p. 20). In this sense, the main validity criterium (see section 2.5.2) is pointed out as "maximizing variation" (Larsson, 2009) of the views collected in the e-surveys. Moreover, we recall that the use of surveys in GT research is mainly valued regarding what they can add to the generation of a theory, whereas the rules of verification and accuracy of evidence are not closely applied (Howell, 2013).

The quantitative findings presented in this section in fact provide a detailed overview of the contextual factors and forms of assistance enabling the doctoral experience and of the institutional and self-organized digital facilities adopted by the Italian PhD students of the drawn sample. Moreover, the result reveals perceived estimates of the actual adoption of the open Web for specific academic activities and the trends of opinions related to the potential of the open Web for research tasks. The findings are presented following the sequence of the sections in which the online questionnaire is organized.

Organization of doctoral activities

After the section about General information, we have invited the participants to fill out a group of questions aiming at collecting information about the modes, spaces and support services facilitating the PhD students in their taught component, if any, and in their research apprenticeship. Firstly, we have spotted that the prevalent mode of study (Figure 13) during the doctoral journey is said to be the 'isolated mode' (with a rate of 62%), against a 37% stating to usually carry out their doctoral activities in a research team and six people (1%) adopting a mixed-mode.

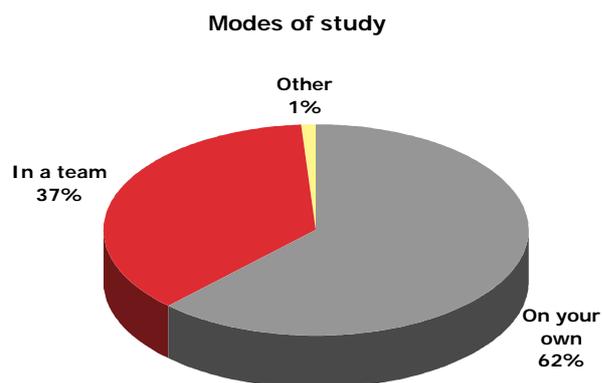


Figure 13. Distribution of the prevalent mode of study ($N = 592$).

However, in a range of scientific subject areas such as Agriculture (64,3%), Biology (51,5%), Chemistry (69,2%), Environmental Sciences (70%) and Pharmacology (68,8%), the ‘team-based’ research work results to be prevalent. Most students state to mainly work in their assigned office rather than in dedicated open spaces within the research departments, but they also attend university labs if engaged in medical or techno-scientific disciplines. The most frequent modes of interaction with the supervisors (Figure 14) result to be regular in person meetings (58,2%), supplemented by email (36,3%). On the contrary, web conferencing services are adopted only by 3,1% of the respondents, whereas 2,4% mention telephone or daily interaction in lab-bounded research activities.

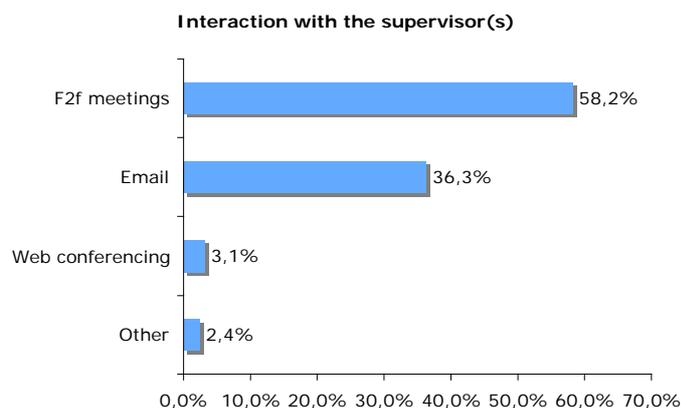


Figure 14. Modes for interacting with the supervisor ($N = 592$).

Regarding the training formats, seminars with guest scholars (cited by 27,5%) and lectures taken by faculty staff (cited by 25%) represent the most common forms of research training (Figure 15), while summer schools (15%) and seminars among peers (13,9%) have a good relevance, especially in techno-scientific subject areas. On the contrary, the practice of virtual seminars results to be still an exception (only 1,3% mentions it), whilst library sessions about literature search strategies and subject-focused methodologies are less ranked than expected (each at 8%). However, in the 15 open

comments received along with this question the participants also added opportunities such as conferences, language courses, short courses, journal clubs and PhD seminars as many research training formats.

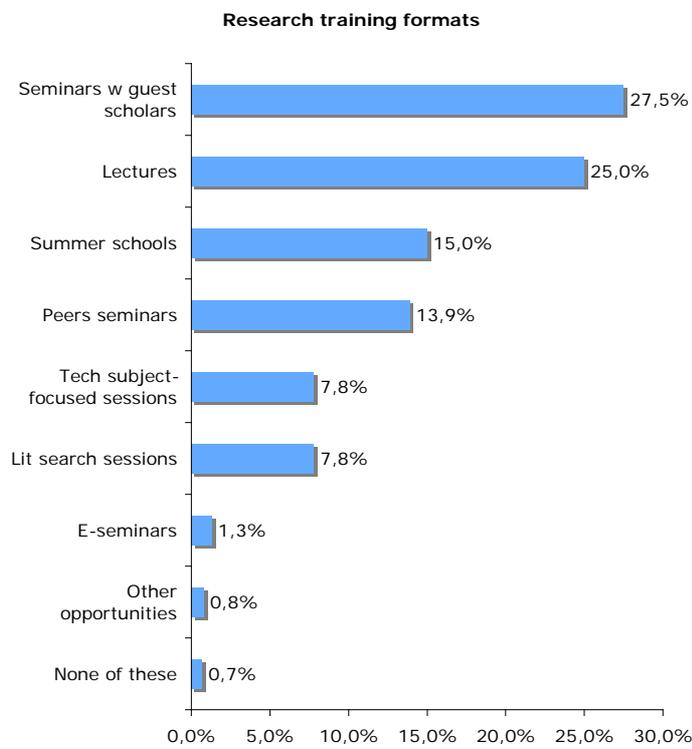


Figure 15. Research training formats provided in the doctoral programs ($N = 592$).

How do Italian PhD students mainly build their research-focused relationships during their doctoral journey? As shown in Figure 16, 36% of the surveyed Italian PhD students rely on the traditional channels of communication such as seminars and conferences to meet peers and get to know new experts in the research field. Likewise, informal meetings among peers are mentioned by 28,4% of the sample. On the other hand, suggestions about new research contacts coming from the supervisors are relevant for 18,6% of the respondents. The networks being curated by the individual researchers in the open Web (Figure 16) find actual application in the 7,8% of the cases, a slightly greater rate than that attributed to password-protected mailing lists and forums (6,6% of the respondents).

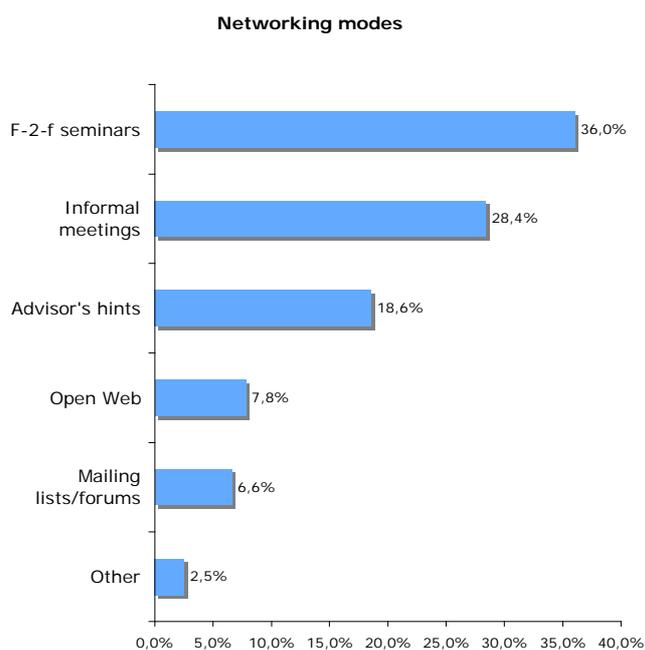


Figure 16. Modes for networking with peers and new experts ($N = 592$).

The e-survey participants have been asked to estimate time dedicated to diverse broad areas of doctoral activities (LSE Policy Group, 2011): the radar chart below (Figure 17) shows that the commitment for acquiring new skills (Research, light blue) along with the endeavours in achieving publications (Authoring, red) is prevalent. On the contrary, tasks such as Networking (violet) and Personal branding (ochre) (i.e. curating one's own academic profile) result as the least undertaken activities. This data contrasts the fact that two third of the respondents are in the second or third year of their doctoral program, and in principle they are likely to be more interested in building their own academic and/or professional profile, envisioning post-doc positions.

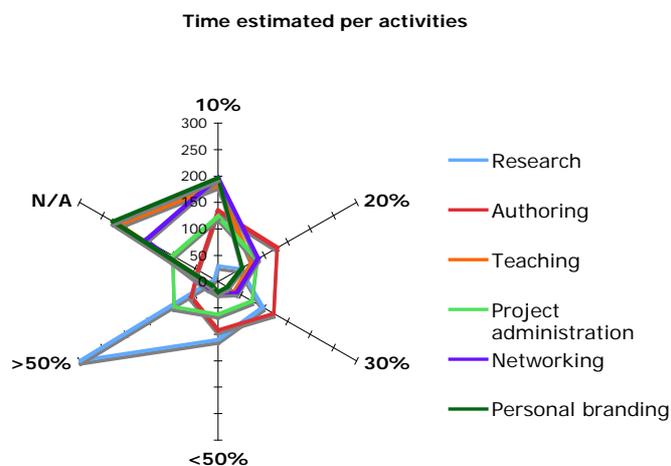


Figure 17. Time amount per doctoral activities ($N = 592$).

Tools adopted by the doctoral researchers

The mix of communication and productivity tools provided by the respective institutions and actually being used (Figure 18) does not reserve particular surprises in the responses. As expected, email (33%) and digital library services (28%) appear to be the most used tools/services across all the subject areas. Only 46 responses (2,7%) highlight that some doctoral programs officially adopt Web 2.0 applications along with more traditional digital services. A group of responses points out those technologies closely related to medical or techno-scientific subject areas, such as lab technologies (15,7%), text/data mining (2,3%), supercomputers (2,3%), grid computing (1,6%) and 3D technologies (1,4%), geo-spatial tools (1,2%), cloud computing (1,4%). But what clearly emerges is that doctoral students are less exposed to institutional e-learning platforms than their younger colleagues: for instance, the presence of VLEs (Virtual Learning Environments) or E-portfolios (both 0,5%) is practically non-existent in the given responses, neither it is mentioned in the open comments.

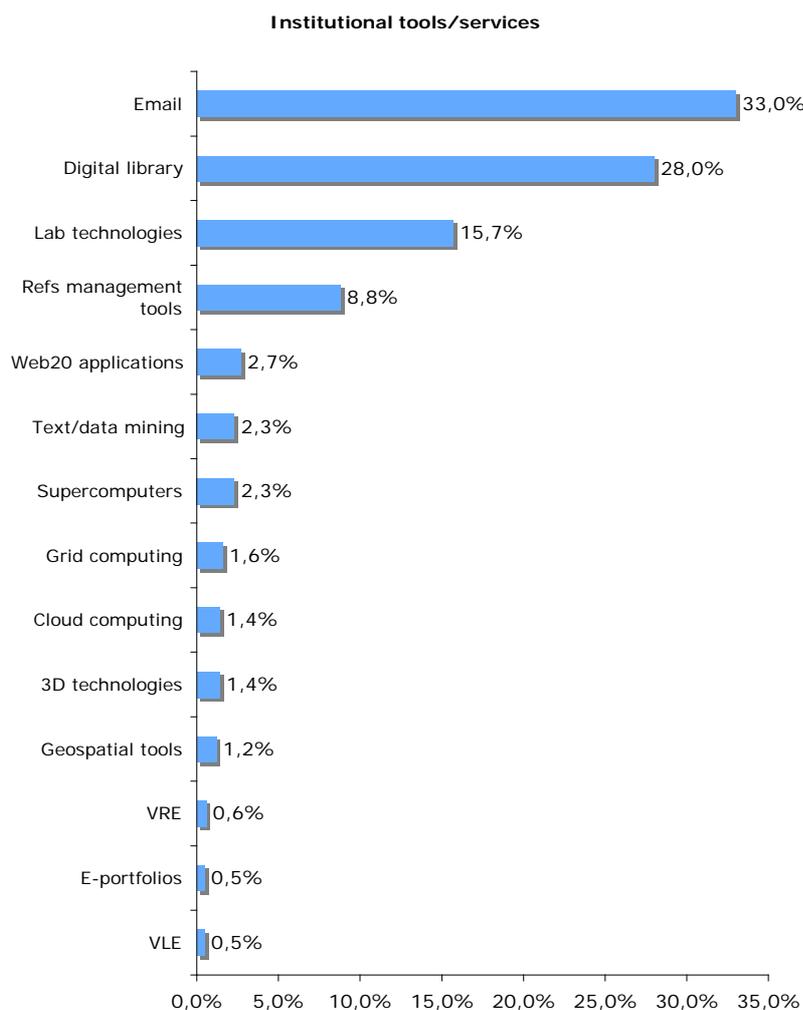


Figure 18. Institutional tech services used in the doctoral activities ($N = 524$).

As subsequent step, the PhD students have listed social media that they daily use for general purposes (Figure 19) in order of preference. They have let it emerge a varied ecology of tools, where web conferencing (12%) and video sharing (11,5%) services stand out, along with document sharing web applications (10,6%), wikis (10,5%) and above all general-purpose social networking sites such as Facebook (11,5%).

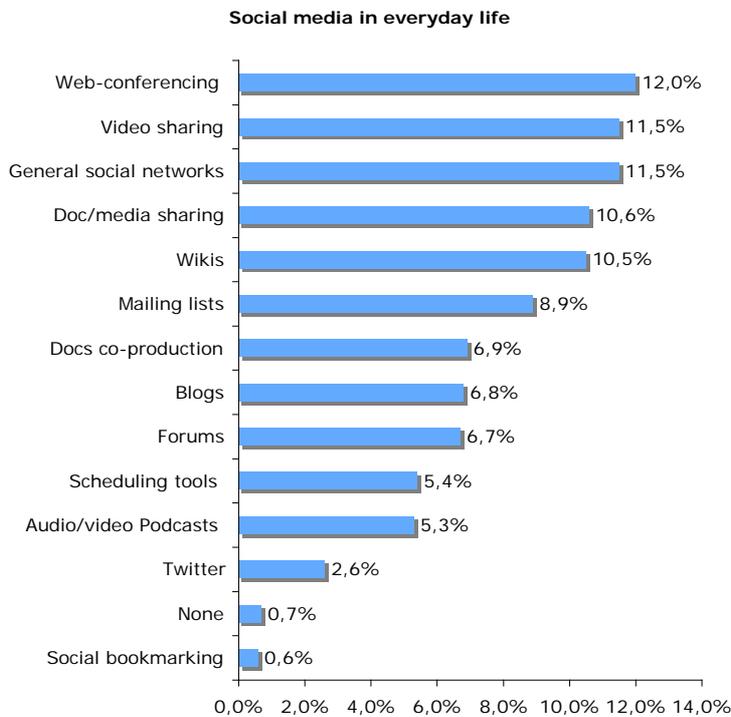


Figure 19. Social media used by the Italian PhD students in everydaylife ($N = 524$).

In Figure 20, scholarly search engines, such as Google Scholar (15,7%) appear, as expected, to be the most cited applications for research purposes, irrespective of the disciplinary areas. On the contrary, the use of Twitter is hardly considered (2,6%) and social bookmarking tools are mostly ignored (0,6%). In a mid position, reading blogs is not particularly valued (5,6%), whilst consulting wikis (e.g. Wikipedia) appears to play a role also in the doctoral work for the 13,3% of the sample. On the other hand, the instruments for documents/media sharing (13%) such as Dropbox and Google Drive and web conferencing tools such as Skype (11,9%) are said to have a high relevance for most of the respondents.

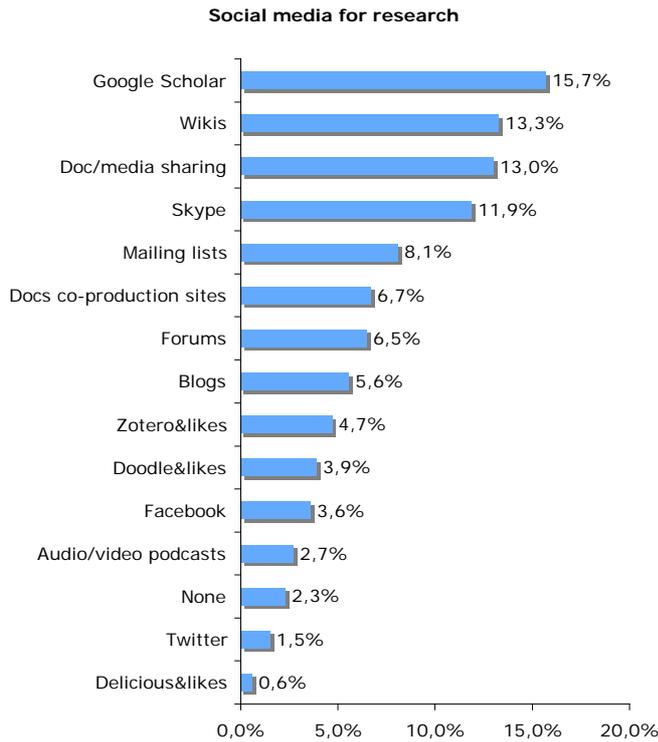


Figure 20. Social media used by the Italian PhD students in doctoral activities ($N = 524$).

Participants have also been asked (Figure 21 and Table 19) about any actual use frequency of the social Web tools in four defined individual-led scholarly activities (Kolb et al., 2010). The received data show that social media are likely to be usually or often adopted in individual activities such as *early exploration* (rose line) of a topic and *information retrieval* (ochre line) on specific issues. On the other hand, it is apparent that social media are mostly neglected as a venue for *practicing academic writing* (dark grey line), whilst there are signs that the practice of *critical reading* scholarly sources through peer recommendation has started to be adopted.

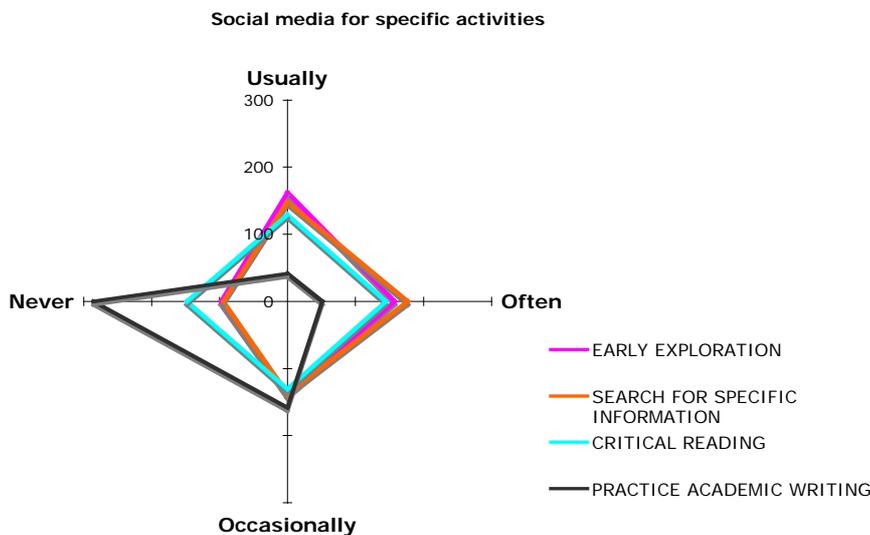


Figure 21. Social media use frequency in specific individual-based activities ($N = 524$).

Table 19.

The table below reports the rate percentages related to the different levels of use frequency of social media across four individual-based academic activities.

	Early exploration of a topic	Search for specific information	Critical reading	Practice academic writing
Usually	29,1%	26,7%	23,4%	7,7%
Often	28,2%	31,7%	26,1%	9,5%
Occasionally	25,0%	21,7%	23,6%	29,5%
Never	17,6%	16,9%	26,9%	53,3%

Drivers and inhibitors in the adoption of social media for research

This questionnaire’s section is dedicated to the exploration of the enabling factors and constraints affecting the uptake of new tools in the doctoral activities. The ‘nature of research field’ seems to be considered neither a particularly relevant *driver* (Figure 22) nor a strong *inhibitor* (Figure 23) in the adoption of new technologies. On the contrary, practical needs occurring in the research process are mentioned as main driver (23%), together with personal curiosity for experimenting with new technologies (19%). On the other hand, among the main inhibitors there is just the lack of time (22,8%) for undertaking this serendipitous activity. Above all, a feeling of uncertainty (24,2%) emerges regarding the choice of social software that is more appropriate for a specific need and situation. In fact, the presence or lack of research training on ICTs are rated in a mid position respectively as a driver (15,4%) or inhibitor (19,9%) in the given responses.

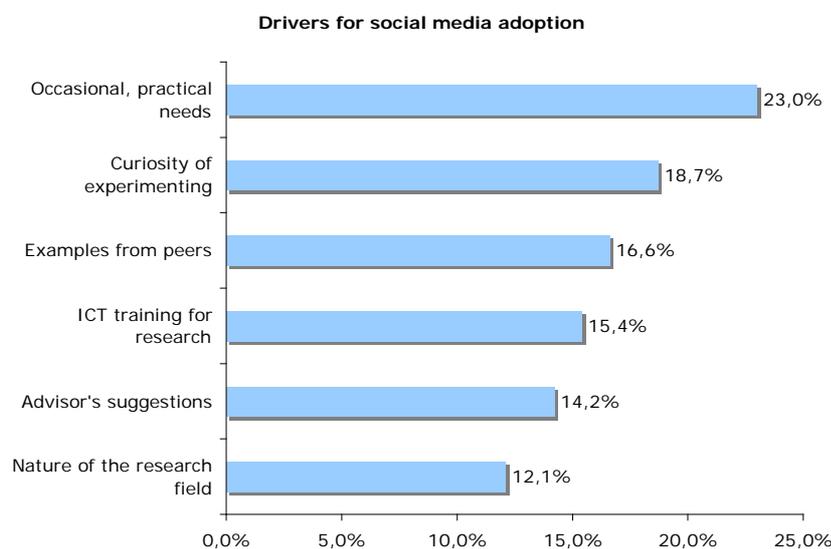


Figure 22. Drivers in the adoption of social media for research (N = 537).

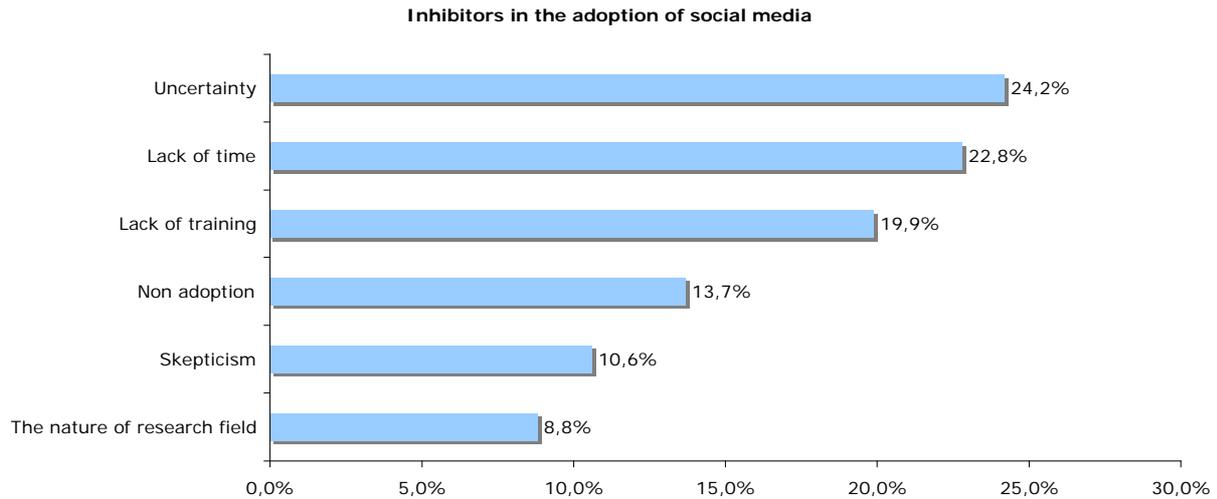


Figure 23. Inhibitors in the adoption of social media for research (N = 537).

Potential Value of the open Web

The participants were asked to indicate in a Likert scale the potential value they assign to the social Web to support the following broad academic activities: Project management, Data collection, Networking, Updating, Critical discussion, Personal development. As the radar chart highlights (Figure 24), the Italian doctoral students of our sample generally orientate their choice towards the ‘High’ (orange) value label, with a slight drop related to Project Management and Critical discussion. However, the ‘Updating’ activity reveals a clear shift towards a positive attitude, since a peak both in ‘High’ and ‘Very High’ (green) value attribution is highlighted. On the contrary, a negative peak is attributed to the option ‘Critical discussion’, in which the summed responses of ‘Low’ (dark red) attribution constitute the highest rate. However, it is possible to observe (see rate details in Table 20) that an equal group of responses also report the High label for the practice of online critical discussion.

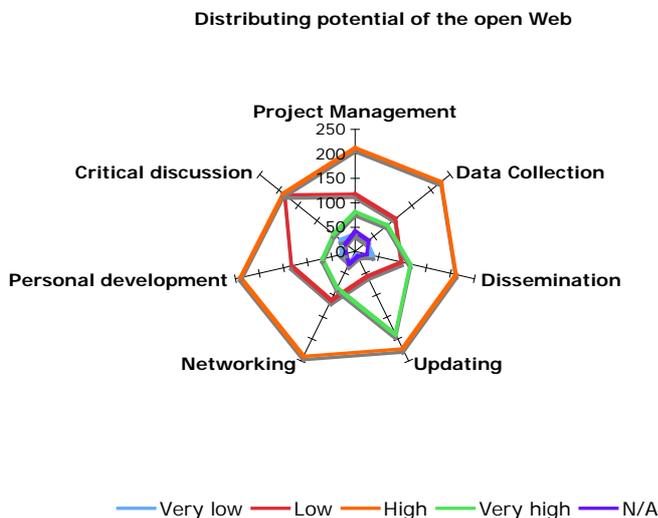


Figure 24. How the Italian PhD students value the potential of the open Web for research ($N = 487$).

Table 20.

The Table below reports the rate percentages related to the different levels of expectation toward the open Web supporting the academic activities.

	Project Management	Data Collection	Dissemination	Updating	Networking	Personal development	Critical discussion
Very low	7,4%	6,4%	7,6%	1,6%	4,9%	5,7%	7,7%
Low	24,0%	21,9%	20,1%	11,7%	22,8%	27,3%	37,5%
High	43,5%	46,8%	43,3%	45,6%	49,1%	49,1%	38,3%
Very high	16,6%	17,6%	23,8%	38,8%	17,0%	14,0%	11,4%
N/A	8,4%	7,2%	5,1%	2,3%	6,2%	3,9%	5,1%

Social media presence

Despite the high expectations stated regarding the potential value of the open Web in a range of academic activities, social media presence revealed by the PhD students in their scholarly uptake of blogs, Twitter or research-focused social networking services is still scant. Running a blog (Figure 25) as a research journaling activity is declared just by 3% of the participants (14 responses), whilst 11% of the respondents (83) state to have a profile in research-focused social networking sites (Figure 26) and the 8% (39) is adopting a Twitter account (Figure 27) for research purposes.

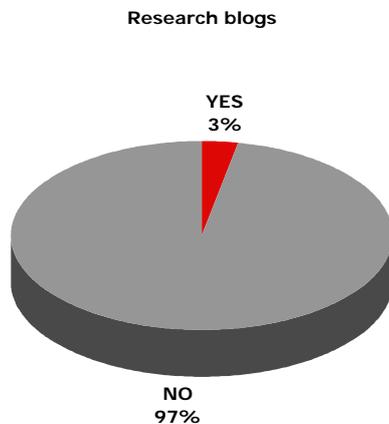


Figure 25. Rate of PhD students running a research blog ($N = 477$).

It is worth noting that among the 14 respondents stating to run a research blog in 13 cases they provide their blog's details, whilst in one case the statement 'I will open it by this year' is added.

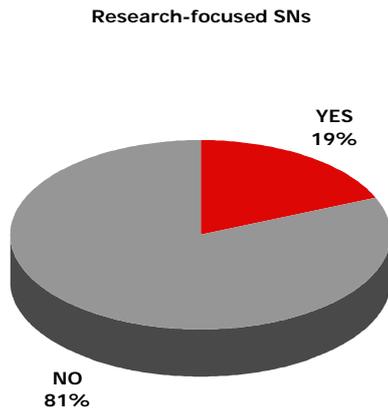


Figure 26. Rate of PhD students managing a profile in a research-focused social networking site ($N = 486$).

Among the 83 respondents stating a presence in a research-focused social networking site, 41 also provide details of their account, usually showing the attendance of a unique social networking site: 25 manage one's own profile in Academia.edu, whilst 11 use Research Gate, 1 LinkedIn and 1 Mendeley. Moreover, in 2 cases both Research Gate and LinkedIn is cited by the same PhD student, whilst one respondent states to use Academia.edu, Research Gate and CiteULike.

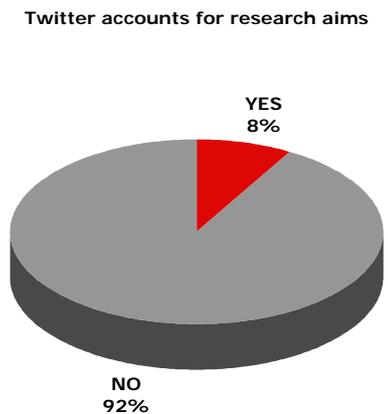


Figure 27. Rate of PhD students managing a profile in Twitter ($N = 486$).

Among the 39 PhD students stating to use Twitter for research purposes, 19 have also provided their twitter handle.

To sum up, the quantitative results show that Italian doctoral students have frequent access to social media in their everyday life, but are self-limiting their adoption into doctoral activities, lacking conventions or early directions about that in their local research context, and persisting a general uncertainty about the real benefits of introducing additional tools in the inquiry process. The current adoption of institutional resources and digital services on the open Web generally seem to fairly well fit the needs of a doctoral experience in which individual-based, face-to-face and institution-

bounded work practices are usual and the relationship apprentice/supervisor remains the most influent form of apprenticeship.

5.3.4 Qualitative data: the open comments

The open comments collected from the online questionnaire (Italian and English version) distributed across the three universities located in Milano were left by a mean of 15 different respondents and were comprised of 533 unique comments, varying from one single word to entire paragraphs. The voluntary comments (mostly written in the Italian language but also in English) are related to the group of questions focusing on the perception of the potential of the open Web in broad research activities such as Research Project management, Data collection, Networking, Dissemination, Keeping up to date, Personal branding (online construction of own academic profile). Indeed, the comments sometimes assume the form of a considered reflection and embed a more general value, beyond the opinion given to the specific question. We have collected all the received comments in one .txt file, have slightly edited them (i.e. amending typos) when needed, and then we have imported and analyzed them into Hyperresearch, in order to highlight significant themes rather than developing a quantitative evaluation. Data analysis has produced 70 initial codes grouped in nine groups of family codes: thus, we have identified a group of focused codes and have subsumed them under the four main categories of Benefits, Inhibitors, Criticalities and Individual perspectives. For the purpose of this presentation we use the wording of the assigned codes to account for the variation of opinions arising from these spontaneous comments. The following tables summarize the most significant codes and the related descriptions, as matching the four categories. The summary tables reported below are supported by some selected comments which have been translated from the Italian language or, where it is indicated, left in the original English version. It is worth noting that among the respondents, beyond the nuanced opinions of the most, two extreme positions can be highlighted: in fact, six people state that the open Web has a key role in their own doctoral research (in terms of methodology and/or research settings), whereas other six participants write that the open Web use is ‘not pertinent’ to their own research project.

Table 21.

Summary of the focused codes subsumed under the category 'Benefits', on the base of the open comments.

Benefits				
<p>The open Web enhances the research work/environment.</p> <p>The open Web makes the research environment richer, more dynamic and challenging, enabling additional modes for sharing research, but also potentially expanding and improving research findings by facilitating.</p>	<p>The open Web as efficiency-enabler.</p> <p>Expanding possibilities for data collection; organizing data more efficiently with store and back up services; speeding communication and information retrieval.</p>	<p>The open Web improves contacts with co-researchers.</p> <p>Making it more efficient team-work, where teams are inter-institutional or inter-national.</p>	<p>The open Web provides a network amplifier. It is easier to informally contact and interact with experts in a defined fields, even if located worldwide or covering senior positions in academia.</p>	<p>Developing one's own digital profile.</p> <p>Curating an online academic/professional profile enables the PhD researchers to build own reputation</p>

The respondents have indicated a range of advantages in the use of social media, from facilitating very specific activities to broadening the same potential of the research work. Social media are for instance appreciated to keep in contact with the dispersed components of a research team (7 comments) in a more efficient and time saving manner (e.g. “It allows to work with distant researchers as if they were here with us”). They may be perceived as an infrastructure able to provide PhD students with timely forms of assistance:

“I do believe in new technologies. They do not substitute the ‘classic’ research methods and means for disseminating results, but they enable and amplify them in an outstanding manner. They are faster, more powerful, you can use them at home or when travelling.

Furthermore they help you by suggesting immediate solutions when urgent situations occur”.

Moreover, these tools are useful as ‘network amplifier’ (8 comments), enabling the opportunity of getting to know new peers and experts.

Some specific and proven advantages of the open Web as an efficiency-enabler are recurrent in the comments, such as the more efficient organization of meetings, data collection and store (7 comments), the more effective and diversified search for references (6 comments), the ‘speed’ of the communication tasks (10 comments) or the important function of the ‘backup service’.

However, a higher level benefit emerges in the comments, where they suggest the extent to which the open Web can ‘enhance the research work and environment’ (nine comments), in terms of “flexibility, varied instruments, improving competences” (e.g. “more usable resources, more knowledge dissemination, more exchanges among experts”) and through enabling sharing data (e.g. “the open Web makes it easier to acquire and share data”) and accessing alternative kinds of materials. In some cases this is not only perceived as an efficiency enabler but as a venue where practising more open forms of knowledge exchange and dissemination:

“I strongly believe that the value of knowledge is completely dependant on how wide it can spread, social web tools allow that to be easier, faster and cheaper. They also often provide with much needed feedback from peers. In any situation I would always go for the open access option” (English in original).

This kind of opinion is also reinforced by the repondents who concur in attributing to open Web the enabling power to improve some research skills and to assure a good level of scholarly discussions:

“You can find cutting-edge (*sic*) and usually decent discussions. It is unlikely that in contexts when technical or methodological topics are being discussed, some users may intervene aiming to disturb or to add some superficial contribution”.

Table 22.

Summary of the focused codes subsumed under the category ‘Criticalities’, on the base of the open comments.

Criticalities						
Reliability issues.	Privacy/copyright issues.	Audience issues.	Risk of dispersion.	Quality issues.	Legitimation issues.	Time constraints.
Multiple sources embed diverse/loosely defined forms of assessment of the published materials.	According to research settings/participants, researched individual are to be protected and data/early findings cannot be shared.	Difficult to know role and expertise of users in the open Web/opportunity to reach new kinds of audience.	Distracting quantity of tools and resources.	Concerns related to non peer-reviewed materials, but also to a more superficial analytical focus.	The open Web practices are not still acknowledged in formal academic contexts.	Learning to use new tools implies extra work.

The issues of reliability of the sources (e.g. “be careful of what can be found and what can NOT be found”) constitutes a recurrent criticality across the comments. This is also coupled with the doubts

about quality of the materials published on the Web, due to the lack of a rigorous peer-reviewed process:

“Problems and needs related to quality and ‘certification’ are not balanced yet with the opportunities for publication, unless an institution acts as a player on the open Web”.

The risk of wasting time with generic content is also associated with the concern about the audience in a non specialized venue (e.g. “uncertainty about who is on the web”): “It not important HOW MANY people read you but WHO reads you”. However, for others this same criticality becomes an opportunity to reach a new readership, although it implies an effort for adapting one’s own academic writing and content.

Some respondents focus on privacy and copyright issues (e.g. “open Web and research leading to patents do not fit”) and negatively view what for other their colleagues (see above) is above all an opportunity to effectively share one’s own research:

“It is too risky disseminating preliminary results, considering the competitors”.

“I would not be open to share partial findings. When results are ok and the article is accepted, then it is the research journal will give them visibility”.

Social media are also thought as a source of distraction *per se* (e.g. “too many tools”) and are likely to expose the users to overwhelming materials (e.g. “Disadvantages in huge number of paper disseminated, preventing from reading them, in a limited time”, English in original). Moreover, the extra work implied when learning to effectively use new software applications is considered:

“I am usually able to organize my research without using these tools: I am barely acquainted with technology...it would take much more time”.

Furthermore, there might be the danger of compromising the credibility as an academic writer that the individual PhD student is striving to build:

“Usually you pay less attention to what you are writing in a blog/website than when writing a paper” (English in original).

Table 23.

Summary of the focused codes subsumed under the category 'Inhibitors', on the base of the open comments.

Inhibitors					
<p>Research work is complex / the open Web is easy.</p> <p>Managing a research process requires refined skills to face highly specialized tasks. The open Web appears to be generic and simplistic as a provider of tools for applying research methods.</p>	<p>Current diffusion of individual-based work practices.</p> <p>They are prevalent in – but not exclusive of – liberal arts.</p>	<p>Current prevalence of face-to-face work practices.</p> <p>Research work develops in a defined place, e.g. in a lab, and teams are small-size.</p>	<p>Institutional is better.</p> <p>Existing tools and forms of assistance - provided/suggested by the institution – already efficiently meet the practical needs.</p>	<p>The open Web not yet used.</p> <p>Lack of shared adoption prevents new researchers from using new tools.</p>	<p>Face to face is better.</p> <p>Methodological/critical discussion with supervisors, peers and other experts is thought as more productive and formative when occurring face to face.</p>

Among the most significant contextual factors which are likely to prevent the doctoral students to adopt digital tools, ‘individual-based work practices’ and ‘face to face work practices’ play a key role. In fact, in some inquiry contexts the research team size (e.g. “our teams are very small”) or the space-bounded activities (e.g. “our daily work takes place within the university labs”) allows a continuity of face to face contacts among the co-researchers:

“I do not work in a team but I regularly meet with my supervisor: so, using digital tools would be quite pointless”.

“I am used to plan research tasks through direct contacts with my colleagues”.

The preference attributed to face to face work practices (10 comments) also emerges when it deals with methodological and critical discussion:

“Developing a critical discussion requires the suitable space and time for arguing, for the construction of a thorough discourse. Currently I don’t think social Web tools has these characteristics, but it depends on the topic”.

A subgroup of inhibitors reveals a tendency of relying on well-known digital tools, institutional services and forms of assistance. For some respondents the practical needs of doctoral research are already satisfied by a few, current tools (e.g. “email/skype enough”) or by well-established channels for scholarly communication:

“Unless the general tendency changes, participating at national/international conferences is an efficient and exciting opportunity to start disseminating your own work”.

In the same line, mailing lists and newsletters are said to already meet the need of keeping up to date. On the other hand, the concern related to the scant diffusion of social media across academic contexts (e.g. “They are not widely and commonly used for these purposes”, English in original) is highlighted:

“I think this works well only if many people do the same, if these practices are widely spread. Otherwise, it is merely a solitary effort with no gains”.

This concern arises when respondents underline that social media are ‘not used’ (10 comments) both individually and in the community of researchers: they also add that the current state-of-the-art would make it a waste of time the uptake of new digital channels and tools for scholarly activities. There is also the perception that ‘research work is more complex’ and that the tools provided by the open Web are not sophisticated enough to be used (e.g. “too superficial for REAL academic works!” or “high risk of imprecisions and errors”), for instance, in data collection and organization:

“Data is complex and needs specific instruments for managing it”.

“The open Web enables us to get a general information, but research work is complex and heavily relies on paper-based texts and personal critical thinking”.

This opinion is even exacerbated by an overall judgement of ‘irrelevance’ which can be found across all the considered questions about the potential of the open Web. Otherwise, a number of respondents think that the use of social media is ‘not pertinent’ to their specific research area.

Table 24.

Summary of the focused codes subsumed under the category ‘Individual perspectives’, on the base of the open comments.

Individual perspectives						
The open Web as fostering self-empowerment. Open Web providing the PhD student with diversified venues where drawing new hints from, challenging own assumptions and knowledge, refining one’s own research.	Open Web good for supporting specific activities. More quickly learning some research skills, such as dissemination and networking.	The open Web use is likely to increase across academia. Prospective critical mass of academic users, better quality of resources and more expert users.	Perspective of an ancillary use. The open Web seen as a marginal supplement to research infrastructure and conventions, which are currently rich and comprehensive.	Individual agency matters. The open Web tools are key enablers but they are just tools: it is the individual will/engagement which is able to shape learning/research environment and find timely solutions.	The open Web is ordinary stuff in the academic life of a PhD student. Practices and advantages of the open Web for doctoral activities are experienced and assessed.	Irrlevance. Stronger than ‘non pertinent’ to a defined research area, the judgement of irrelevance is often not explained, but can be coupled to a belief of no potential of the open Web for research activities.

As regards to the opinions about the overall potential of the open Web for research work, there is who state that “in a dynamic environment as the open Web is, learning new instruments, new ideas and sharing findings would be faster”.

The call for including in the formal research training some opportunities for learning more about the open Web practices appears to be addressed in two comments:

“I think I could find useful instruments in the open Web, but my own supervisor should give me directions about them. Otherwise, if the supervisor was not able to, other academic staff should take care of providing suggestions upon using these tools effectively and efficiently”.

Some respondents underline how the open Web can help in specific activities: for instance in the construction of an academic profile (e.g. “I think it is crucial to have an academic presence also online”) or a professional one (e.g. “in particular to the industry”, English in original).

“The most valuable thing is to gain personal visibility, the social Web (*sic*) becomes important when you aim to expand your contacts abroad”.

Other participants state the belief that “they are fundamental for dissemination“ or that they are time saving because “it is easy to access information on the internet and to share it”(English in original). A group of respondents maintains that nowadays the use of the open Web in research work is unescapable: for a few it is even taken for granted (e.g. “it is possible to undertake research in 2012 without these tools?”); for others also reluctant individuals are going to adopt it (e.g. “recognize its potential, for now I don’t use it, but I guess I will adapt myself to this”):

“In the future, its value is likely to increase as soon as quality and competences on the Web increase”.

However, it is also true that some respondents maintain a skeptical approach throughout the responses, holding for instance that “the open Web’s value for critical discussion is equal to zero, if compared to scholarly literature”.

On the other hand, there is also who accounts how her/his opinion about social media for research purposes has changed over time through a positive experience and has led to appreciate an informal approach to scholarly communication:

“Some time ago I had a fairly negative opinion of these tools, especially the social networking sites. On the contrary, today I am truly convinced of their potential, which I am daily able to appreciate. In a few weeks I have been building networks of contacts with a plenty of scholars (mainly well-established researchers) who otherwise would have hardly got to know, because they are located in very far cities or are based abroad. This has enabled me to get information and be involved in new research projects, to disseminate results of my research, even to obtain discount fees to participate in academic events, and to receive cues for reflection and some constructive criticism in a very ‘relaxed’ and friendly environment, where often communication may be more direct and less rigid than in academia”.

Finally, it is worth noting some comments drawing attention to the role of the individual engagement in adapting these tools to inquiry needs:

“Though I appreciate the value of dissemination tools, networking in my experience fully depends on the will of each person, which in turn depends on face-to-face interaction. Web tools help when there is will, but when there is will there is always a way, regardless. So they do help, but they are not fundamental” (English in original).

This last comment highlights an issue that deserves additional investigation: the perceived need for downsizing the emphasis put on the open Web, towards a pragmatic approach to social media for research purposes.

5.3.5 Discussion: A map of digital practices and orientations

This section highlights the main themes arising from the survey results and discusses the quantitative data in the light of the received open comments. Most of the survey participants develop their PhD activities according to an individual-based mode of working, that is prevalent also across the scientific areas, except from subjects such as Biology, Biotechnology, Physics, Chemistry and Environmental Sciences: these findings mirror a similar situation reported about the UK PhD students (British Library/JISC, 2011). They are generally provided with the conventional forms of assistance designed for research training: they attend lectures taken by faculty and guest scholars, take part in peer seminars, participate in conferences and summer schools, regularly meet their supervisors and also contact them via email or Skype. The open comments confirm this picture of doctoral students daily working in close contact with their supervisors and/or in small teams. They are mainly based in university, where they are provided with a shared place or carry out their research in specialized labs.

General uptake of social media

The survey respondents seem to be usual adopters of social media as well as of more traditional web-based technologies in their everyday life. In fact, beyond their ‘academic life’, the surveyed students state to use a range of social software applications, but appear to particularly like web conferencing tools and video sharing sites, along with applications such as forums and mailing lists. Most of them also spend time in ‘general purpose’ social networking sites (e.g. Facebook). However, there are also signs that they are adopting Web 2.0 tools in their doctoral work, above all to undertake an ‘early exploration’ of research topics and for information retrieval on defined issues. However, the number of the social Web tools becomes significantly lower when it is associated with any use in doctoral activities. It can be said that the Web 2.0 does not affect yet the research workflow of most doctoral students being surveyed, unlike what a recent study (CIBER, 2010) reports focusing on an international sample of early career and well-established researchers. On the contrary, the use of a relatively small number of Web 2.0 tools results as emergent and especially focused on facilitating communication and expanding content sharing and searching for references.

Academic and non academic uses of social media

On the base of the e-survey’s data, in very few cases the higher education institutions provide them with the opportunity to utilize Web 2.0 applications in their doctoral programs. On their own, the PhD students seem to assume a cautious approach towards an autonomous adoption of the digital

facilities available in the open Web, in alignment with findings from international studies (British Library/JISC, 2011). In fact, doctoral researchers appear to accurately ‘filter’ the wide range of tools they daily cope with when they focus on academic activities: their approach is pragmatic rather than pioneering, and there is a tendency to select a small number of efficient, reliable, easy-to-use tools that can make research practices more efficient (Meyer, 2010). Moreover, they seem to rely on general purpose commercial brands rather than calling for specialized tools, as elsewhere observed (CIBER, 2010). However, the opportunities to harness social media to ‘practice academic writing’ and exercise ‘critical reading’ seem to be so far neglected. This can also be interpreted looking at findings related to academic presence in social media. In fact, very few PhD students actually run a blog focusing on their research activities, whilst they generally prefer harnessing Twitter to sift resources and opinions rather than posting contribution in the open network. A slightly more relevant presence of doctoral students can be noticed in research-focused social networking sites. On the other hand, among the clusters of academic activities being undertaken by these early career researchers, the option of building an academic identity (or ‘personal branding’) is judged as ‘not applicable’ by the great majority of respondents. In fact, the opportunity for building one’s own online academic profile seems to be generally overlooked by most of the surveyed PhD students. However, the benefit of gaining visibility by curating a digital profile is in places highlighted in the open comments and clearly linked to academic and professional advantages. As a whole, the Italian doctoral researchers seem to adopt the open Web as an expanding repository of content and resources rather than as a space to practice networking. Networking activity still mainly relies on traditional channels such as conferences and peer seminars, whilst very few PhD students are engaged in international research projects or in research work where the team or the participants are scattered in a range of places. However, it can be said that the scholarly networks self-organized on the open Web are tentatively searching for a definite role in the doctoral experience and currently result to be more used than the well-established forums and mailing lists.

Motivations and hindrances

Drawing from the quantitative data, the need for solving ‘occasional, practical needs’ in their research project stands out as the main motivation for uptaking emerging tools. The qualitative data confirm and reinforce this statement, since the perception of the web-based technologies as ‘efficiency enablers’ of the conventional research practices is recurrent among the respondents. However, the open comments return a more nuanced landscape of contrasting views on the opportunity for experimenting with unconventional practices. These views can be thought in a

continuum. On the one extreme there is the belief that the open Web can enhance the research environment and broaden its boundaries beyond academia, by accelerating and improving the practices of networking and collaboration, by widening the access to traditional and emergent kinds of scholarly resources. This is said to have implications for the whole community of researchers, but also for the individual apprentice scholar, who has additional ways and venues to practice research skills. On the other extreme, there is the belief that research work is complex and rich of highly specialized tasks, whereas social media tools and environments appears to be generic, simplistic and open to undifferentiated audiences. In the middle, a range of criticalities are reported, varying from copyright issues, that are sign of a prevalent competitive approach in some research fields (Harvey et al., 2010) to reliability issues addressing the authorship and peer review process of the resources published in the open Web. Above all, the lack of shared adoption of these tools/practices in the local community of researchers is perceived as one of the strongest obstacle to a more innovative digital engagement by the PhD students. Moreover, it is worth taking into account the persistence of individual-based and face-to-face work practices, which seem to even make it pointless the use of digital communication means, except from the irreplaceable email and very few other tools. The saying ‘email/skype enough’ well summarizes the pragmatic approach endorsed by the PhD students, situated in research contexts already saturated by discipline-bounded applications and well-established tools for scholarly communication. This saying also resonates with previous findings reported in UK contexts (James et al., 2009). On the other hand, the current trials and the uncertainty about clear-cut perspectives of future utilization of such applications are dominant against the rare, self-initiated explorations. More often, social media are merely ‘not used’ because not integrated yet in the local research context: thus, the learning effort to effectively use them might be not rewarding at all. Like the well-established academics (Procter et al., 2010), the PhD researchers, challenged by time constraints and legitimation issues, need to gain understandings of the real benefits before uptaking new tools for inquiry purposes: thus, cultivating awareness of the advantages and challenges represents a key issue.

The goal orientations of the Italian PhD students about the ‘digital’

The positive orientations expressed by the survey participants about the perspectives of a wider use of the open Web for research activities indicate a strong although general expectation about a still unexploited potential of these tools. What emerges from the quantitative data is a generally high expectation on all the indicated areas of activity (from project management to personal development), while the opportunity to access up-to-date materials is most valued by these prospective researchers. Here we argue that this general high expectation might in fact reveal an

underlying uncertainty about the real advantages, compensated by relying on the positive ‘aura’ of the open Web as embedding a sort of liberating power. On the other hand, an early analysis of the open comments has enabled us to draw clusters of real-life attitudes toward the ‘digital’ in relation to the categories of Benefits, Inhibitors, Criticalities and Individual Perspectives. A further analysis (Figure 32), based on the aggregation of the codes subsumed under the aforementioned categories has allowed to step forward in the endeavour of understanding what kinds of goal orientations the PhD students are endorsing in their uptake of the ‘digital’. In this phase we have applied an abductive logic, recalling our theoretical interest in detecting the capacity of the PhD students of acting upon or being acted upon the open Web. To this purpose, we have considered (in preview of further investigation) the emerging ‘Criticalities’ (issues of reliability, privacy/copyright, audience, quality, legitimation, risk of dispersion and time constraints) as transversal to any kinds of goal orientations and we have aggregated in groups the codes related to the other three categories, in the aim of drawing the correspondent, all-encompassing actions.

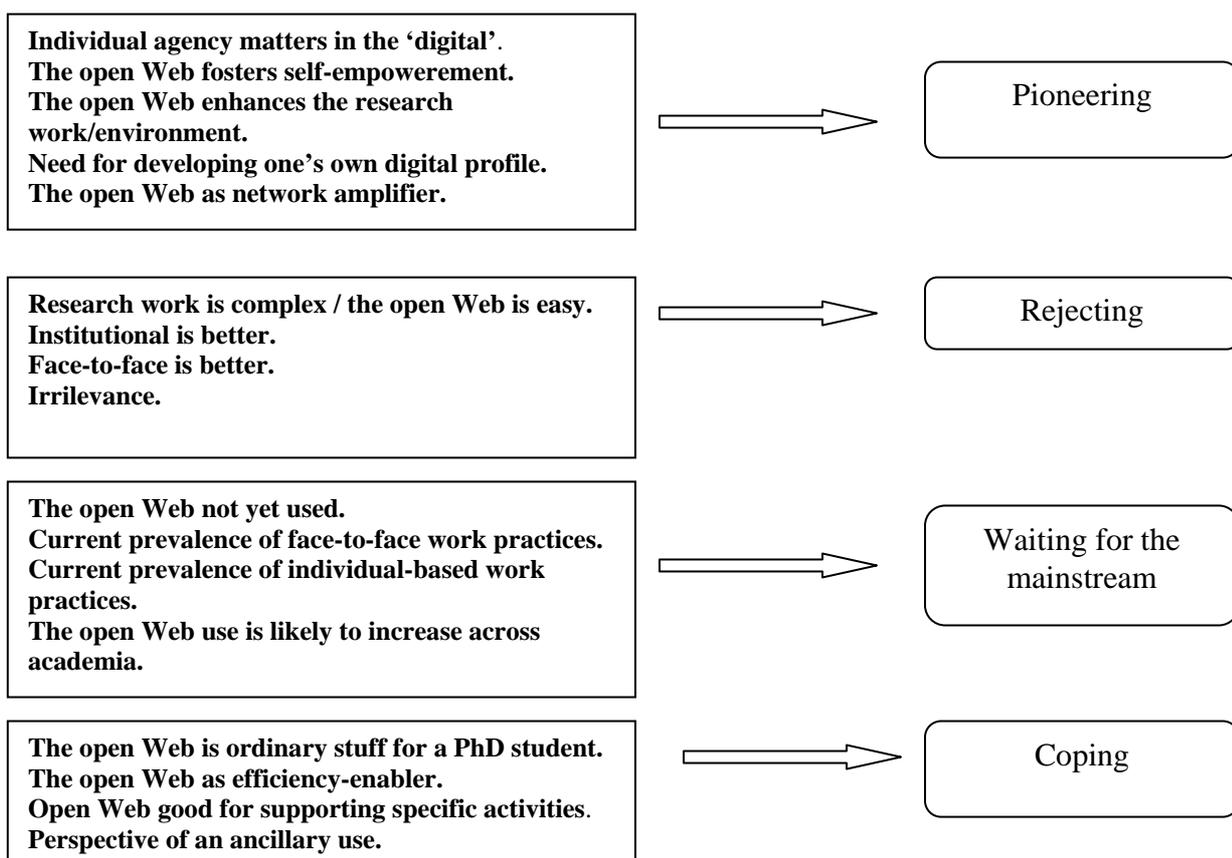


Figure 28. How the verbs related to the Italian PhD students’ ‘goal orientations’ have been drawn on the basis of the open comments’ data analysis.

The identified actions suggest as many ‘lines of orientation’ (Table 20) towards any expected evolution of meaning-making and actual adoption of the open Web during the doctoral experience. These lines of orientation are not intended to suggest a typology of digital learners, but aim to help

framing the goals and trajectories drawn by individual early researchers when adopting Web 2.0 tools to support their doctoral activities.

Table 25.

Main tendencies of individual Italian PhD researchers towards the potential of the open Web for research purposes, as arising from the online questionnaires' data.

GOAL ORIENTATIONS	
Pioneering	Coping
The aim is attempting an exploratory attitude toward social media for research purposes rather than relying on a mere convenience approach.	The aim is gaining a bespoke and efficient support to occasional, practical needs. It deals with a reactive rather than proactive behaviours.
Waiting for the mainstream	Rejecting
A degree of individual engagement is likely to occur whenever specific digital practices become embedded in the academic life of one's own local context. Lack of shared adoption matters.	The open Web is seen as irrelevant to the academic sphere. It does not fit the complexity of the research practices.

In the top left corner, the line of orientation 'Pioneering' refers to a group of contributors thinking the open web with an exploratory attitude, as enabling self-empowerment and even enhancing research process and products. It is seen as providing the PhD students with diversified venues where drawing new hints from, challenging one's own assumptions and knowledge and refining one's own research. This approach seems to imply an ideology-driven attitude, in which the individual feels to be part of a collective movement towards not-yet-defined ways of doing and communicating research. However, this approach sometimes appears to stem from a few, self-initiated and serendipitous explorations of the open Web, leading to discover some real benefits along with a more vague opportunity for personal development.

Otherwise, in the top right corner, the line of orientation 'Coping' refers to another group of respondents (probably the most numerous group, considering the quantitative data) relating social media to some real, context-specific and practical benefits and opting for an 'ancillary use' of the open Web (e.g. used only for networking). In this case, a tactical over a strategic approach prevails and changes in the adoption of new tools and scholarly practices occur when occasional incidents and needs in research work suggest new digitally-mediated solutions. This approach implies an individual-driven, pragmatic attitude towards innovation in academic practices that is motivated step-by-step by concrete reasons and in fact does not challenge current conventional behaviours. A third type of goal orientation, labeled as 'Waiting for the mainstream' in the bottom left corner of the table, is related to those doctoral students who are convinced that the volume and quality of participation and content on the open Web is going to expand, but prefer waiting that this become mainstream in the academic community before becoming active as individual digital scholars.

Finally, a fourth type of orientation ('Rejecting') is instead inclined to exclude the open Web from the academic world because it would not fit the complexity of the research work, that appears to be well served by a range of specialized instruments. This kind of perspective indeed seems to shift towards a judgement of 'irrelevance' neglecting the expectations for an evolution of the open web-based technologies to better respond to scholarly needs.

5.4 Findings: the e-survey across the UK university

This section provides a visual and textual description and discussion of the results drawn from the online questionnaire distributed across the Institute of Education (IOE), University of London, between May and June 2013. As for the previous sections devoted to the Italian e-survey, the subsequent subsections firstly present quantitative data and then consider the qualitative data drawn from the open comments released by the participants. Likewise, the findings drawn from the IOE's PhD students were used as baseline data to undertake the selection of the research participants for the subsequent interviewing process. The received data are presented under the form of descriptive statistics, according to the sequence of the sections defined in the online questionnaire adapted for the UK university context (see Appendix 1c). However, where we found it appropriate, we elaborated some cross-tabulations, in order to provide more detailed information related to any influence of the age range, PhD year or the status of home or international student on ICTs uses and expectations.

5.4.1 The delivery of the e-survey across the UK university

In the organization of delivering the e-survey to the UK university's PhD students we have kept it consistent the structure and questions of the questionnaire and the use of SurveyMonkey. However, before delivering the online questionnaire to IOE doctoral students, a collegial review of the questions was undertaken, together with two IOE researchers – acting as local tutors during our research stay at IOE - in order to detect any likely misconceptions of the wording and terminology being used. As a consequence of such review, some minor changes were applied to the original questionnaire (see Appendix 2b): for instance, the distinction between 'Italian' and 'Foreign' students was replaced by that between 'Home' and 'International' students. Moreover, one question related to the distinction between 'Full-time' and 'Part-time' students and one question related to the diverse forms of PhD collaboration have been added, since considered by the local tutors as typical of the UK university context being investigated compared to the Italian ones. The e-survey was submitted to IOE (UK) doctoral students between May and June 2013. After obtaining full ethical clearance (see Chapter 2, section 2.8.1) and asking permission to the Doctoral School's Dean, the survey invitation message was posted twice (including a kind reminder) by the local administrative staff within the Moodle platform (exactly in the News forum) supporting the doctoral students' activities. This means for distributing indeed required the doctoral students to log on in order to access the news: such a constraint was likely to affect the participation rate (4%) in the first ten days from the delivery of the invitation message. Acknowledging this issue, my local tutors at the IOE tried to gain permission for a communication via mailing list, through which the doctoral

students could receive the invitation directly in their own private mailbox. However, considering the multiple requests to use the mailing list for a range of communications, the Doctoral School's Dean did not authorize the adoption of this communication channel for our survey. In the attempt of mitigating this hindrance, our local tutors disseminated the invitation message among the doctoral candidates based in their respective departments. Moreover, we personally contacted via Moodle the individual doctoral students, given that we could not have access to other kinds of contact information. We can say that these counter-measures contributed to raise the participation rate from 4% to 5%, as shown in Table 26 below.

Table 26.

Participation rate in the e-survey distributed across the UK university.

N=870 n=44	% participation rate	started questionnaires	completed questionnaires (12th June 2013)	potential interviewees
respondents	5%	44	39 (>87%)	20

**The online questionnaire remained open from 14th May to 14th June 2013.*

5.4.2 The description of the non probabilistic sample

The obtained sample of IOE PhD students was smaller than expected (44 respondents out of 870), since in analogy with the previous e-survey across the Italian universities, the defined threshold was 10%. However, the sample appears to be interestingly varied regarding the demographic characteristics of the survey respondents. In fact, the sample shows a balanced distribution across the early three PhD years (Figure 30) and across more than 20 subtopics (Table 27) related to Education (from Pedagogy to Social Research to Humanities).

Table 27.

List of subject areas per number of IOE Respondents.

SUBJECT AREA	N° RESPONDENTS
Higher Education	5
Psychology and Child Development	5
Policy Studies	3
Economics of Education	3
Sociology	2
Arts and Design	1
Arts and Humanities	1
Bilingual Learners	1
<i>Boarding education</i>	1
Comparative Education	1
Curriculum, Pedagogy and Assessment	1
Early years and primary education	1
Educational Assessment	1
Educational Inspection	1
English	1
Health	1
History	1
Information and Communication Technology	1
International Development	1
<i>Inequalities in education*</i>	1
<i>International education*</i>	1
Language and linguistic	1
Music	1
<i>Physical activity*</i>	1
Quantitative Methods	1
<i>STEM*</i>	1

**Subject areas indicated in italics were spontaneously added by the survey respondents.*

The age range (Figure 29) of the totality of the IOE respondents (44) is shifted towards the age range of the ‘non traditional’ students, with 23 students who are >35 years old and 10 between 31 and 35. The number of Home students (Figure 31) is slightly greater (23, 52%) than International students’ (21, 48%). Likewise, the sample is equally split in full-time (22) and part-time students (21). The group of PhD students aged >35 includes a majority of international (65,2%, matching 15 units) and part-time students (77, 3%, matching 17 units). Moreover, only 27% of all the respondents are granted one PhD scholarship (Figure 32) for the attendance of a doctoral program. Among the doctoral researchers aged >35 there is the smallest group of respondents (17, 4%, matching 4 units) who are not awarded any forms of scholarship and as a consequence are self-funding their doctorate. It is worth reminding that IOE does not provide any form of doctoral program at a distance: thus, also international students generally have to attend the taught component, even if there is some flexibility in the attendance requirement, for instance considering the knowledge and experience of the PhD candidates about research methods and according to the type of doctoral program (i.e. professional doctorate). On the other hand, data collection might be carried out everywhere, depending on the topic.

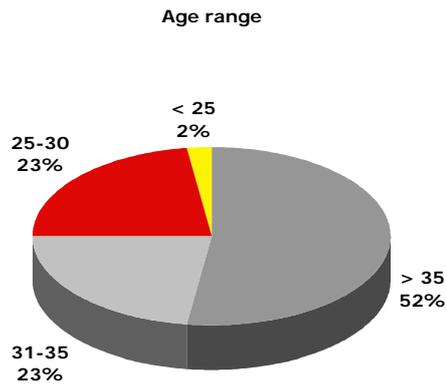


Figure 29. Age range of the UK survey respondents (N=44).



Figure 30. Current PhD year of the UK survey respondents (N=44).

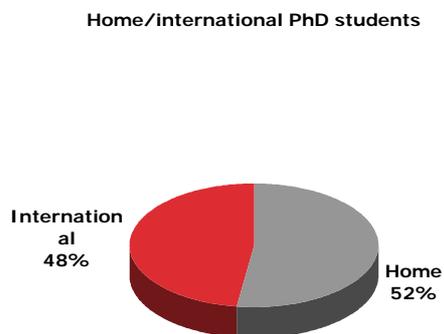


Figure 31. Proportion of Home and International PhD students among the UK survey respondents (N=44).

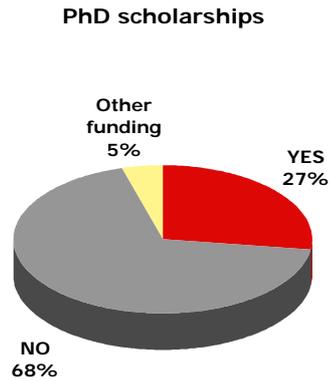


Figure 32. Proportion of UK PhD students awarded of one scholarship (N=44).

5.4.3 Quantitative data: facts and opinions

The quantitative findings presented in this section provide a detailed overview of the contextual factors and forms of assistance enabling the doctoral experience and of the institutional and self-organized digital facilities adopted by the UK PhD students of the drawn sample. Moreover, the result reveals perceived estimates of the actual adoption of the open Web for specific academic activities and the trends of opinions related to the potential of the open Web for research tasks. The findings are presented following the sequence of the sections in which the online questionnaire is organized.

Organization of doctoral activities

This group of questions aimed at collecting information about the contextual conditions in which the PhD students mainly attend the taught component, if any, of their doctoral program and undertake their research apprenticeship. Lectures (21,5%), seminars with guest scholars (20,3%) and literature search sessions (19,2%) organized by librarians are indicated as the most spread formats of research training (Figure 33) among the IOE doctoral students: on the contrary, the practice of virtual seminars is mentioned only by 9 respondents (5,1%).

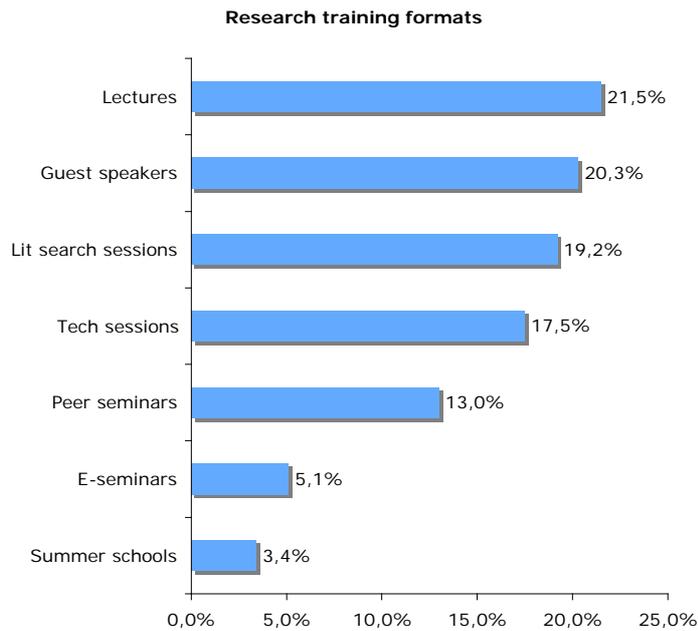


Figure 33. The main research training formats the UK PhD students are provided with (N=43).

Their prevalent mode of study (Figure 34) during the doctoral journey is stated to be the ‘isolated mode’, with 39 responses (90%) out of 44. Likewise, mostly the UK PhD students state to mainly write their dissertation at home (in 34 cases, 47,2%), whereas the university library (23,6%) and the office space (18,1%) constituted the most rated institutional places. Moreover, 60% of the respondents do not undertake any forms of work collaboration within the range of doctoral activities.

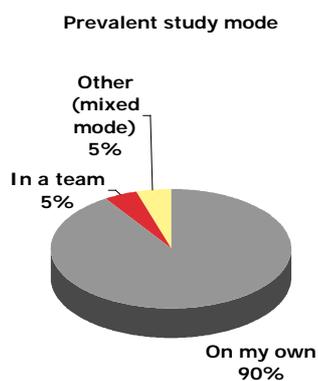
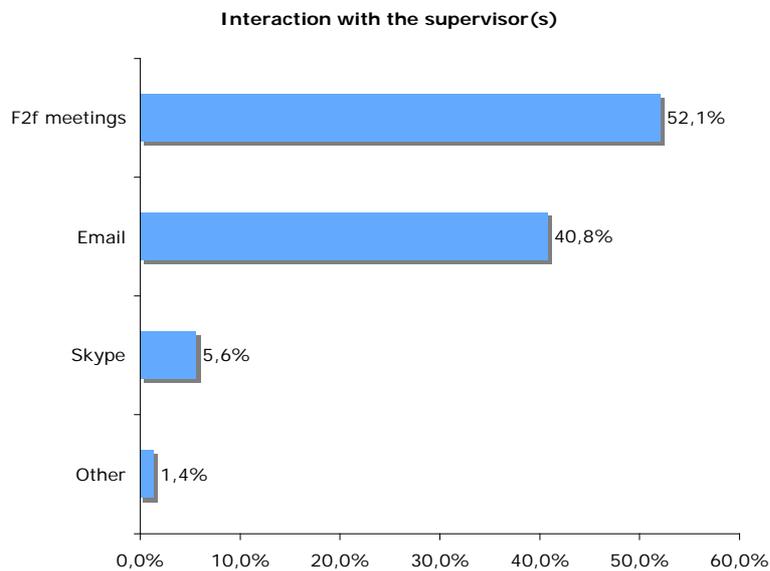


Figure 34. Individual or group-based study mode (N=43).

Two respondents indicated a ‘mixed’ mode, characterized by a mix of team-based professional activities and individual study.

The most frequent modes of interaction with their supervisor (Figure 35) are the regular in person meetings (50,1%), supplemented by email (40,8%), while web conferencing services are adopted only by 3 respondents (5,2%). On the other hand, face to face seminars (38,6%), along with informal

meetings among peers (23,9%) are rated as the most relevant networking modes (Figure 36), whereas the networks being curated in the open Web occupy the fourth position, with 9 responses (11,4%), leaving behind more traditional forums and mailing lists (9,1%).



**Other: in one case 'telephone' is indicated as main communication means.*

Figure 35. Modes of interaction of the UK PhD students with the supervisors (N=43).

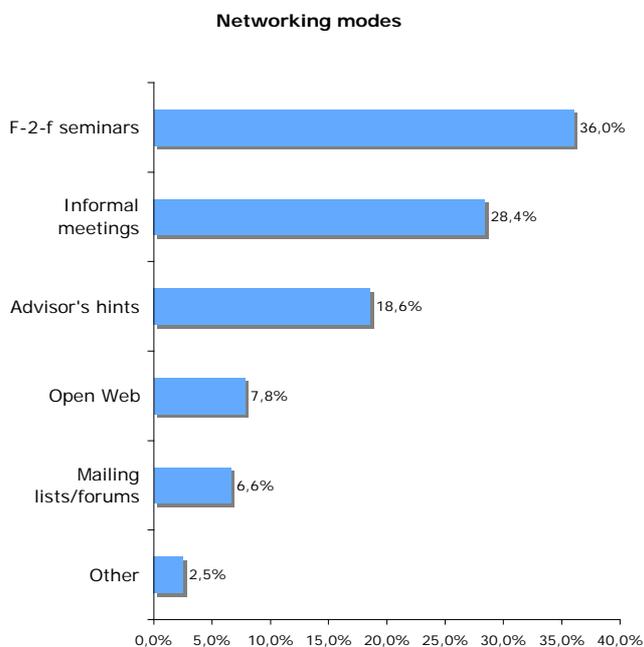


Figure 36. Modes for networking with peers and experts (N=43).

In the option 'Other' three respondents have indicated the itself mandatory taught component of the doctoral program as opportunity for networking.

The e-survey participants were asked to estimate time dedicated to diverse broad areas of doctoral activities: the radar chart below (Figure 37) shows that there is a tendency to balance the time devoted to the acquisition of new skills (Research, light blue) and the commitment in producing publications (Authoring, red). However, a consistent group of respondents declare to devote 10%, 20% or even till 50% of their time to Networking (violet) activity. On the contrary, Personal branding (ochre) results as the least undertaken activity.

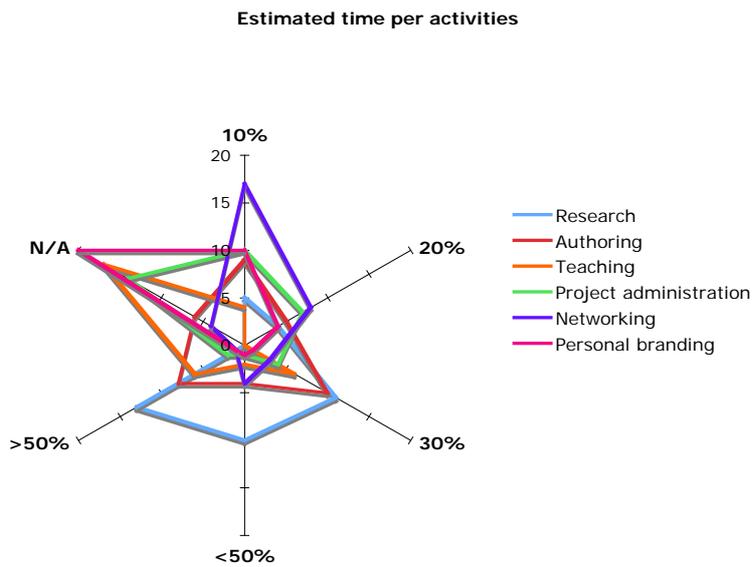


Figure 37. Estimated time engagement per academic activities (N=43).

Tools adopted by the doctoral researchers

In this section of the questionnaire, participants were asked to point out the typologies of technologies being provided by the institution, those actually being used in everyday life and for research scopes. As regard to institutional services, email (28,2%) and digital library services (27,5%) appear to be the most rated tools/services across all the disciplines (Figure 38), whilst the VLE (14,8%, 21 responses) appears to be in third position. In fact, as drawn from the IOE Research Student Handbook (2013 edition), the VLE constitutes the reference point for all the research training activities which the doctoral students are provided with.

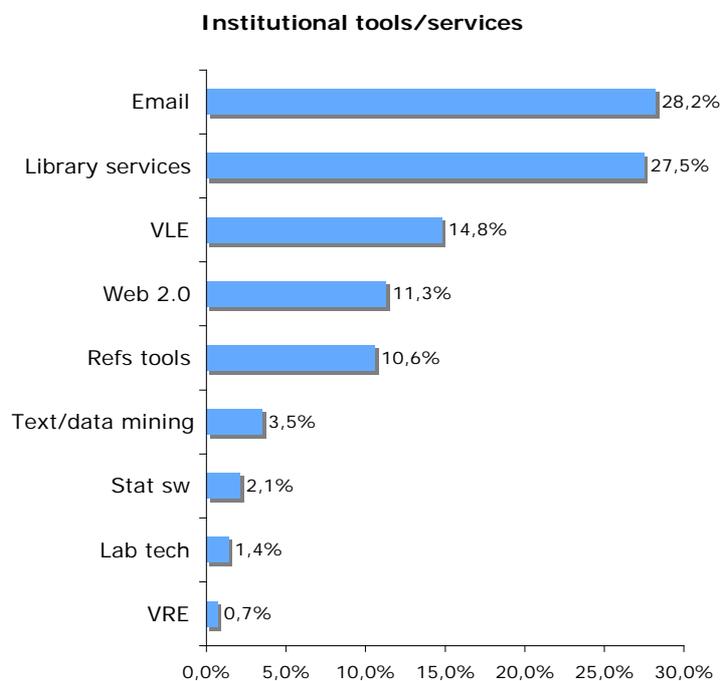


Figure 38. Institutional tools/services used by the PhD students (N=42).

The PhD students were also asked to list social media that they daily use for general purposes (Figure 39): services such as Skype (15,9%), Facebook (14,9%) and services of video sharing such as You Tube (13,4%) are the most rated tools, whilst mailing lists (9,5%) and document sharing sites (9,5%) are located in a more rearward position.

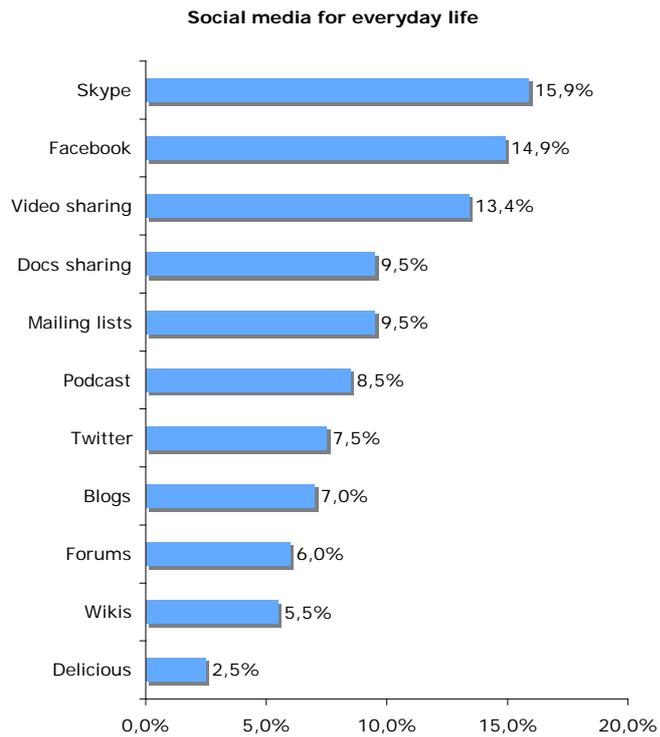


Figure 39. Use frequency of social media in everyday life (N=42).

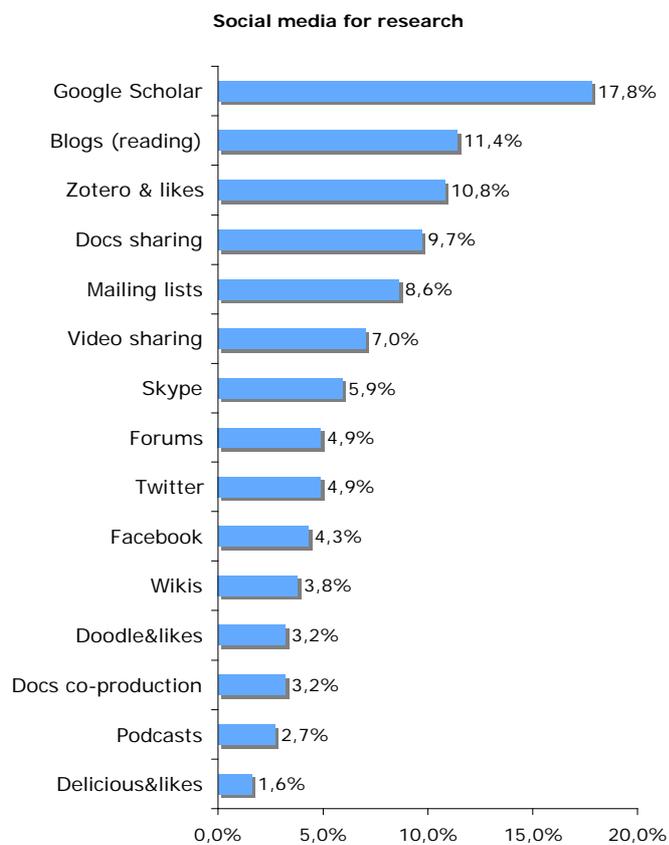


Figure 40. Use frequency of social media for research purposes (N=42).

Participants were asked about any actual use (in terms of frequencies) of the social Web tools in some defined individual scholarly activities. The Figure 41 shows that the adoption of social media seems to be mainly orientated towards an occasional use for reasons such as *early exploration* (rose line) of a topic, *information retrieval* (ochre) on specific topics or for critical reading (light blue line). Moreover, even if with less frequency, searching for specific topics (ochre) and critical reading (light blue line) are said to be often supported by social media. On the other hand, it is apparent that social media are not currently adopted as a venue to *practice academic writing* (dark grey line).

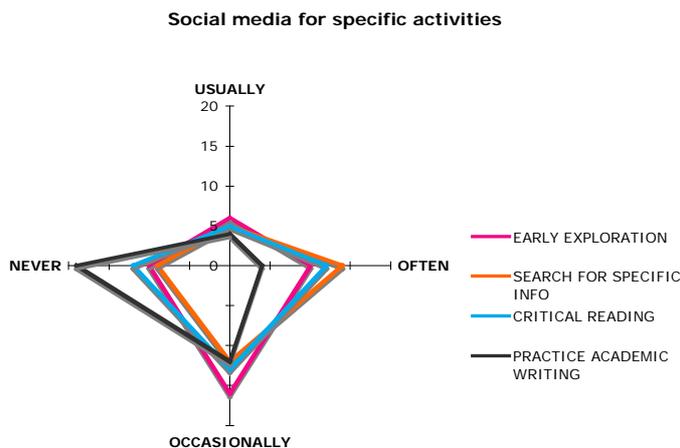


Figure 41. Actual adoption of social media for specific academic activities (N=42).

Table 28.

Rate of the use frequency of social media per types of academic activities.

	Early exploration of a topic	Search for specific information	Critical reading	Practice academic writing
Usually	14,3%	12,5%	11,9%	10,3%
Often	23,8%	35,0%	28,6%	10,3%
Occasionally	38,1%	30,0%	31,0%	30,8%
Never	23,8%	22,5%	28,6%	48,7%

Examining the responses distributed across PhD years, it emerges that in the 1st year the tendency is to *occasionally* harness social media for all the indicated activities rather than *often* use them, as instead seems to be in the cases of the 2nd and 3rd year PhD students. This can be sign of an exploratory approach in the early phases of the doctoral experience, whereas in the subsequent phases a greater awareness is developed.

Drivers and Inhibitors in the adoption of social media for research

In the results illustrated in the Figure 42 the supervisor's advice (20,8%) and the formal research training (18,5%), along with the personal curiosity (17,7%) appear to be the most important drivers for the considered sample.

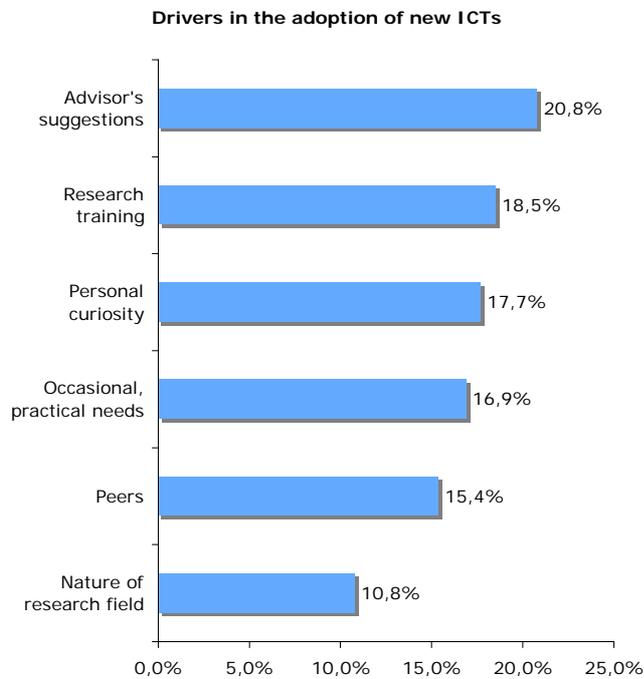


Figure 42. Drivers in the adoption of social media for academic activities (N=41).

Among the main inhibitors indicated, Lack of time (26,7%) and Uncertainty about the right tool to use when needed (24,4%) result to be the most rated options (Figure 43).

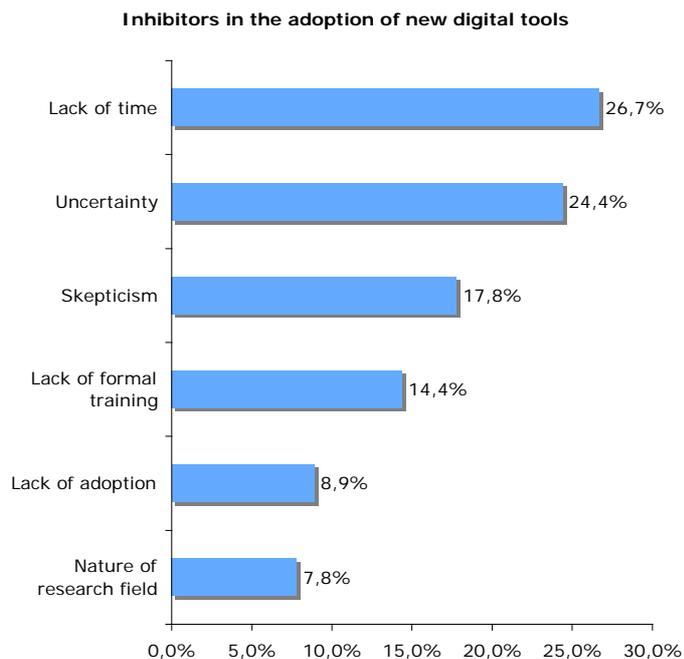


Figure 43. Inhibitors in the adoption of social media for academic activities (N=41).

Potential Value of the social Web

The Figure 44 provides a visualization at a glance of the levels of expectations stated by the UK survey respondents in relation to the potential of the open Web toward the main academic activities. It can be noticed that the peak of the positive value (Very High, green line) is attributed to the function of keeping oneself updated through the digital networks, whereas the negative peak is related to the opportunities of practicing Critical Discussion and Personal Development. High level of expectation (ochre line) is assigned as peak to Dissemination and Networking activities. Browsing the details per activity (Table 29), it is apparent that the option ‘Updating’ is frequently rated both in High (51,3%) and Very High (43,6%) labels, whilst the value assigned to Critical Discussion is more controversial, since the Low option (43,6%) is present along with a 33,3% attributed to High label.

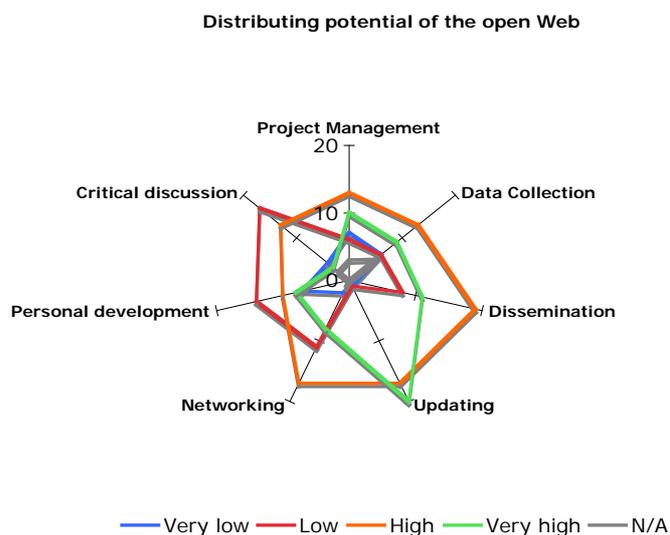


Figure 44. Distributing potential of the open Web per area of academic activity (N=39).

Table 29.

The rate related to the different levels of expectation toward the open Web supporting the academic activities.

	Project Management	Data Collection	Dissemination	Updating	Networking	Personal development	Critical discussion
Very low	17,9%	15,4%	2,6%	2,6%	5,1%	17,9%	10,3%
Low	15,4%	15,4%	20,5%	2,6%	28,2%	35,9%	43,6%
High	33,3%	33,3%	48,7%	43,6%	43,6%	25,6%	33,3%
Very high	25,6%	23,1%	28,2%	51,3%	20,5%	20,5%	7,7%
N/A	7,7%	12,8%	0,0%	0,0%	2,6%	0,0%	5,1%

The great majority stating a High (53%) and Very High (21%) positive attitude toward the open Web is confirmed by the overall opinion expressed about the potential of the open Web as a whole for research work.

Social media presence

Contributing with own ideas and gaining visibility across the digital networks is still a personal initiative of few among the UK PhD students in the sample. Only in 3 cases (Figure 45) the respondents state to run a research blog: these three cases are equally distributed across age range and across the early three PhD years.

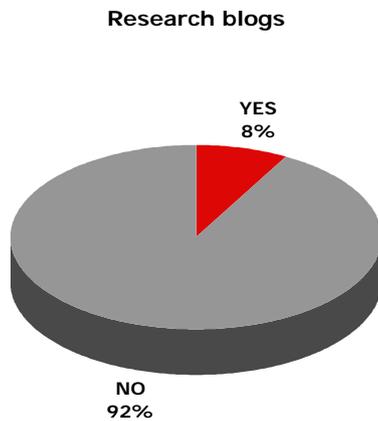


Figure 45. Research blogs run by the UK PhD students (N=37).

The three participants responding ‘Yes’ have also voluntarily indicated the URL of their own research blog. In Figure 46 the number of profiles in research-focused social networking sites is slightly larger (15%, matching 6 units).

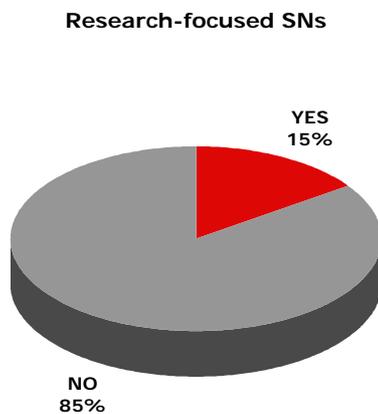


Figure 46. Profiles managed by the UK PhD students in research-focused social networking sites (N=38).

The six participants responding ‘Yes’ have also named the social networking site attended: in all the six cases Academia.edu has been named, but one participant has added Research Gate and another one Zotero Groups. Finally, Twitter results (Figure 47) to be the most attended digital networks for research purposes, although the positive responses relate to low numbers (seven participants).

Twitter accounts for PhD research

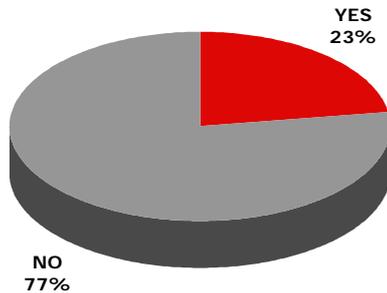


Figure 47. Twitter accounts managed by the UK PhD students (N=30).

The seven participants responding ‘Yes’ have also voluntarily indicated their Twitter account. Moreover, one additional participant has written down that his/her account is not currently used, because of scarce motivation.

To sum up, the UK survey respondents in the sample can be mostly ascribed to the category of ‘mature students’ and half of them are international and part-time students. Given that, it is not particularly surprising that these PhD students, enrolled in Education or Social Research doctoral programs, almost totally state to undertake their PhD in ‘isolated mode’. The participants state to be mostly occasional users of social media for individual-driven activities such ‘Early exploration of a topic’, ‘Search for specific information’, ‘Critical reading’ and ‘Practicing academic writing’, whereas the task ‘Search for specific information’ is highly rated as *often* realized in the open Web. The suggestions coming from own advisors play a role as main driver in the adoption of new ICTs, whereas the Lack of time, coupled with the Uncertainty in the selection of the right tool at the right time are the most rated inhibitors. Finally, their confidence in the potential of the open Web is firm, with the prevalence of the ‘Updating’ function as the most rated and the opportunity for undertaking ‘Critical discussion’ as the most controversial option.

5.4.4 Qualitative data: the open comments

As for the Italian survey, the great majority of open comments in the questionnaire is related to the group of questions (see Figure 44) concerning the perceived potential value of the open Web with respect to some broad activities, such as Research project management, Data collection and organization, Dissemination, Networking, Keeping up to date, Personal development. Ninetyfour unique responses were added in the online blank forms, producing a total of 1.247 words. It generally deals with succinct comments, constituted by a single word at minimum and a couple of sentences at maximum. It is worth noting that sometimes the participants have caught the

opportunity to raise their voice in general about the topic rather than to clarify their opinion on the specific question (e.g. the potential of the open Web for supporting Data collection). Elsewhere, some respondents state that the open Web use is ‘not pertinent’ to their research project. This way this data sheds new light on the information received from the quantitative data of the survey and suggests hints for the subsequent interviews. The received comments were grouped in one file in .rtf format, occasionally edited (i.e. amending typos) and then analyzed sentence-by-sentence in Hyperresearch. This task has led to the elaboration of a list of 17 focused codes, in turn subsumed under four main categories: Benefits, Criticalities, Inhibitors and Individual Perspectives. The summary tables below reported illustrate the most significant codes and related description, matching the four categories. The presentation of the tables is supported by elicited quotes from the open comments.

Table 30.

Summary of the focused codes subsumed under the category ‘Benefits’, on the base of the open comments received from the UK survey respondents.

Benefits			
The open Web as efficiency-enabler. Expanding possibilities for data collection; organizing data more efficiently; speeding communication and information retrieval.	Improving impact of one’s own research. Disseminating own research and informally talk about it through digital networks helps to build reputation and gain visibility.	Providing a network amplifier. It is easier to informally contact and interact with experts in defined research fields.	Improving literature search /accessibility to references/resources.

Among the suggested benefits, the perception of the open Web as an efficiency-enabler plays a key role, even when the contextual factors of the research project seem not to be favourable:

“I rely heavily on technology as it is efficient, multiple versions can be stored and used over and over”.

“The majority of my participants will not have access to the internet, but I will personally use web tools to plan my trip and perhaps arrange some high-level meetings / try to find some academic contacts in country of fieldwork”.

In addition, attributes such as accessibility (e.g. “Immediacy of access. You have the thought and there it is”) and speed of communication (e.g. “free, quick and easy access”) are particularly valued and the adjective ‘useful’ is mentioned 16 times across the comments. A range of specific uses are in fact mentioned, such as:

“I won't use social web tools to collect data, but will use something to organise and manage data once transcribed”.

“Some advantages with meeting new people interested in work”.

“Very useful for widely disseminating work”.

The open Web can provide real advantage as a ‘network amplifier’ (e.g. “critical mass of users to work with”), as a means for “widely disseminating work”, as a source for retrieving updated literature (e.g. “very useful to see what is most current in the field”) and as a venue for data gathering (e.g. “quick and easy way of having data come to you”). However, this latter function is said to be dependent on particular types of research.

Otherwise, the benefits stemming from the open Web are expressed as a positive attitude (seven comments) grounded in more general advantages, such as “practicality, breadth of coverage”, “fast, efficient, large reach” and “good way to get high impact”.

Table 31.

Summary of the focused codes subsumed under the category ‘Criticalities’, on the base of the open comments received from the UK survey respondents.

Criticalities			
Being overexposed in the open Web. Lack of confidence in sharing untested ideas in an unrestricted venue.	Privacy issues. Protecting individual researchers’ private stuff.	Legitimation issues. The open Web practices are not still acknowledged in formal academic contexts.	Audience issues. Difficult to know role and expertise of users in the open Web/opportunity to reach new kinds of audience.
Reliability issues. Multiple sources embed diverse/loosely defined forms of assessment of the published materials.	Legitimation issues. The open Web practices are not still acknowledged in formal academic contexts.	Risk of dispersion. Distracting quantity of tools and resources.	Time constraints. Learning to use new tools implies extra work.

Criticalities are highlighted through a sort of self-reflection aiming at exploring one’s own current digital behaviour and related constraints. As an example, one’s own level of self-confidence is related to the danger of being overexposed online, in a no comfort zone:

“It would be very very useful, as long as it is done in an informal way. I guess the reason we do not get involved in online discussion is *due to our low level of confidence and feeling of being judged by others*. At least I am like that!” (emphasys added).

Thus, the fear of “putting my untested ideas into the public domain” is entangled with privacy issues (e.g. “I prefer to keep personal stuff private”), along with the uncertainty about the type of audience one is likely to deal with in online venues:

“I am very reluctant to make information about my research public when I have very little idea about who I am communicating with. Social web tools can be useful for finding information but I wish to protect my privacy in both my personal and my professional life”.

Furthermore, legitimization issues arise as crucial for a wider adoption: “Very useful, but only it is acceptable in the formal academic world”. Another comment considers the problem of the formal acceptance of new scholarly practices in academia:

“Open access sources provides wide readership for articles/research that may not be accepted by mainstream academic publishers”.

Issues of reliability of the online resources and the risk of distraction (e.g. “I am more likely to be distracted by numbers of social web tools”) are mentioned but they are not frequent across the comments.

Table 32.

Summary of the focused codes subsumed under the category ‘Inhibitors’, on the base of the open comments received from the UK survey respondents.

Inhibitors			
Lack of practice. Being unfamiliar with the open Web tools as used to support research activities.	Institutional is better. Existing tools and forms of assistance - provided/suggested by the institution – already efficiently meet the practical needs.	Face to face is better. Attendance-based research training is thought as more effective.	The open Web not yet used. Lack of shared adoption prevents new researchers from using new tools.

The types of factors that are said to prevent the IOE doctoral researchers from widely adopting the open Web in their PhD activities appear to be focused on personal lack of expertise and on individual preferences rather than on contextual flaws. In fact, issues of ‘uncertainty/unfamiliarity’ and ‘lack of practice’ (ten comments) with social media are particularly recurrent across the comments. Below some examples:

“Lack of experience using social web tools for this purpose”.

“I'm not sure exactly how I would go about using these tools effectively to improve writing and presentation skills etc.”.

This kind of statements is also associated to a more or less explicit call for more formal training about this kind of opportunity:

“It would be very useful, but only if we are guided on how we can do so”.

“We also need guidance and training on different ways in which we can explore these tools for academic studies”.

Furthermore, some participants (five comments) state to prefer institutional services (e.g. “more reliable for scanning journal issues”) and “more formal routes” (e.g. using books and attending formal research training courses) when undertaking doctoral activities. In addition, some think that face to face research training can be more effective, according to their experience. However, it is acknowledged that if the use of alternative digital services was encouraged by faculty, this could “raise the level of confidence of doctoral students”.

Table 33.

Summary of the focused codes subsumed under the category ‘Individual perspectives’, on the base of the open comments received from the UK survey respondent.

Individual perspectives			
The open Web potential is acknowledged, but not yet exploited. Open Web value for doctoral research activities is recognized but the actual practices are left behind.	Open Web good for supporting specific activities. For instance dissemination and networking.	Individual agency matters. The individual will/engagement is able to shape learning/research environment and to find timely solutions.	The open Web is ordinary stuff in the academic life of a PhD student. Practices and advantages of the open Web for doctoral activities are currently experienced and assessed.
Irrlevance. Stronger than ‘non pertinent’ to a defined research area, the judgement of irrlevance is often not explained, but can easily be coupled to a belief of no potential of the open Web for research activities.			

A group of survey respondents (ten comments) admits not to fully exploit yet the potential value of the open Web, although they firmly acknowledge it. This statement is often articulated in future-oriented proposals of improvement, suggesting the willingness of adopting social media in a more advanced stage of the doctoral journey. The drawn trajectories includes acquiring more research skills, changing own current attitude towards ICTs and coping with time constraints:

“I am at an early stage of the doctoral journey but imagine I will begin to exploit social web tools more actively on *peer recommendation*, developing more expertise as I extend research skills and need to *disseminate research findings* over the next four years” (emphasys added).

“I think I could be using social web tools much more - *I tend to be reactive rather than proactive* so use them when others around me start to use them rather than initiating use myself! But I can see potential for more use, if I can find the time to look into different tools etc!” (emphasys added).

Whereas for some respondents the use of the open Web for their doctoral activities is daily experienced and valued (e.g. “Overall being connected has real advantages and I do use the web on a daily basis, for all the above”), others draft a likely evolution of attitude over time during the doctorate. In fact, many respondents hold the firm belief that becoming well acquainted with the open Web *has to be done* as an integral part of their own personal development as a research student:

“At the start of my doctorate they played little role but this is gradually changing”.

“I feel this is an area that I really need to develop further and that will become increasingly important”.

“At the moment I just use it for academic journals and following policy discussions etc, but I do also think I should be following blogs etc.”

“I'm doing a poor job of this at the moment and need to do more to increase my networking activities”.

Finally, it is worth noting that whereas in Figure 47 there is a low expectation related to the use of the open Web to practice Critical discussion, from the comments a tentative effort emerges (e.g. “Yes - I follow blogs which give good overviews of new developments happening in my areas of interest”) in being engaged in scholarly discussion on the web. But, once again, what stands out is

that some respondents seem to personally take responsibility on changing attitude, rather than stating that the social media are not pertinent to scholarly debates:

“Need more expertise to exploit social web tools to undertake critical reviewing activities”.

On the other hand, there is a group of respondents (10) who definitely attribute ‘irrelevance’ to the social Web for their doctoral research work.

5.4.5 Discussion: A map of digital practices

This section aims to provide a brief overview of the findings drawn from the UK e-survey, discussing the interplay of quantitative and qualitative data and considering the cues for the subsequent interviewing process.

Demographics and organization of doctoral activities

As a whole, the UK sample mirrors the main demographic features of the IOE postgraduate students, as reported in a internal project report (Gourlay & Oliver, unpublished). In fact, most of participants are older than the ‘traditional’ PhD researchers, half of them being international students enrolled as part-time learners. Most of them work in ‘isolated mode’ and they frequently develop their own doctoral research at home. When they are institution-based, library facilities constitute the most common workplace, besides other devoted office spaces. The IOE doctoral students are provided with conventional research training formats, where specialized sessions on literature search strategies and subject based technologies are attributed a particular relevance, along with the classic lectures and seminars with guest scholars. Traditional communication channels such as conferences and seminars keep on having a key role but creating and managing networks in the open Web starts to have a significant level of diffusion.

Social media use

The triad Skype-Facebook-Youtube dominates the social media time spent by the UK PhD students beyond their academic commitments. On the contrary, the adoption of Google Scholar, a passive use of blogs (reading) and open references management tools such as Zotero are prevalent when focusing on the doctoral research tasks. It can be said that the preferences for Google Scholar and reading blogs match the findings of a large scale study on doctoral students’ scholarly behaviours across the UK universities (British library/JISC, 2012). Unlike, the use of Twitter for research purposes seems not to be particularly valued in our sample, in alignment with findings from a recent international survey (Nicholas & Rowlands, 2011). As regards to the current use frequency

of social media for specific, individual academic activities, the survey respondents opt for a mainly occasional use of these tools to carry out 'early exploration' of a research topic, whilst they state to often adopt them aiming at searching for specific information. Whereas 'Practicing Academic Writing' seems to be rarely applied, 'Critical Reading' in the open Web appears to have controversial responses, given that three equal groups of respondents respectively indicate to apply it often, occasionally and never.

Motivations and hindrances

The voluntary contributors to the open comments strongly highlight the value of web-based technologies as 'efficiency-enablers', above all in terms of speed of getting information and accessibility to content and experts. Moreover, the open applications are considered as tools on the shelf, ready to be used to solve practical problems (e.g. data backup) as they occur in the research process. Having a 'broader impact' is another benefit frequently mentioned across the comments and associated both to the opportunity to improve dissemination of one's own research and to harness social media as a 'network amplifier', building on the contacts started attending face to face conferences. The suggestions coming from one's own supervisor represent the most appreciated driver in the adoption of new digital tools, surpassing the need of a specific ICT training for research and the driver of personal curiosity. Indeed, from some comments we draw the call for an appropriate negotiation of social media use with one's own supervisor or tech-savvy academic staff, in order to get some personalized advice to build a social media strategy. On the other hand, the 'Lack of time' to dedicate to pilot new digitally-mediated practices and the 'Uncertainty' about an effective selection and application of tools are said to be the main hindrances to a more intensive uptake of the open Web in doctoral activities. However, in the open comments the 'Uncertainty' is closely related to the personal 'Lack of practice' in using these emerging tools for research scopes. The non use (or not really effective use) of social media in the doctoral experience seems to be thought as skills shortage and is partially justified with the 'Lack of time' in the busy life of a doctoral student. It is worth noting that the mentioned institutional services such as the library services are said to be sometimes more efficient and reliable than the open Web, for instance in enabling the retrieval of high quality content. Moreover, some respondents think that face to face situations (e.g. research training sessions) result to be more effective in enabling personal development. Furthermore, a strong attention to privacy issues and the fear of being overexposed on the Web with one's own 'untested ideas' stand out among the underlined criticalities and contribute to filter the possibilities to be active in social media as emerging researchers.

The potential of the open Web in the individual perspectives

In the group of questions focusing on the potential of social media for some types of research tasks, the IOE survey respondents definitely indicate ‘Updating’ as the most rated opportunity, summing the High and Very High labels in the Likert scale. On the contrary, the potential of practicing Critical discussion across social networking venues appears to be the most controversial option, combining an equal number of responses with High and Low level of agreement. However, it is worth noting that also activities, such as Networking and Dissemination, that at first sight can apparently be improved in the open Web, show consistent numbers of ‘Low’ responses in the level of agreement. This negative opinion is supported by some among the Criticalities above reported from the free contributions. Indeed, we can say that the picture drawn from the open comments returns a sample of UK PhD students characterized by a pragmatic approach, with a focus on getting real and immediate benefits from certain sets of tools, and a tendency to use self-reflection to plan subsequent steps. Moreover, the overall account drawn from the e-survey suggests that the UK doctoral students rely on a traditionally well-structured and demanding context, in which the time-constrained, interstitial space for introducing new tools and practices is searched only when it is likely to be rewarding in terms of usefulness and self-empowerment. As for the Italian survey, we have further grouped the codes subsumed under the categories of Benefits, Inhibitors, Criticalities and Individual Perspectives, in order to identify the related main actions underlying any kind of goal orientations. Likewise, Criticalities have been considered as transversal to all the attitudes.

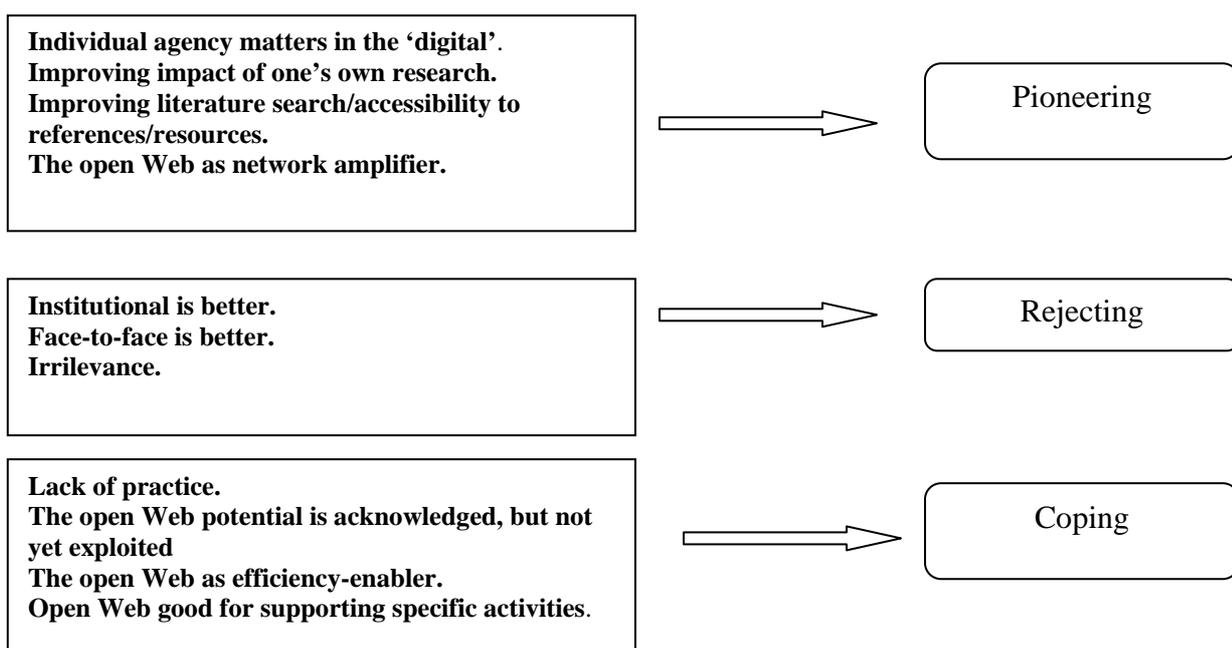


Figure 48. How the verbs related to the UK PhD students' 'goal orientations' have been drawn on the basis of the open comments' data analysis.

Therefore, building on the open comments drawn from the UK survey sample, it is possible to identify (Table 34) three lines of goal orientations (Pioneering, Coping and Rejecting), accounting for diverse attitudes towards a potential use or non use of social media in the doctoral journey. We recall that the intent of surveying PhD students across different university contexts and also in international settings is to identify patterns and recurrences in individual digital engagement rather than properly comparing samples or local contexts. With such caution in mind, we can state that the lines of goal orientations identified for the Italian sample partially match the comments released by the UK survey respondents.

Table 34.

The table summarizes the main tendencies of individual UK PhD researchers towards the potential of the open Web for research purposes, as arising from the online questionnaires' data.

GOAL ORIENTATIONS OF THE UK PhD STUDENTS	
Pioneering	Coping
The aim is attempting an exploratory attitude toward social media for research purposes rather than relying on a mere convenience approach	The aim is gaining a bespoke and efficient support to occasional, practical needs. It deals with reactive rather than proactive behaviours.
Waiting for the mainstream	Rejecting
A degree of individual engagement is likely to occur whenever specific digital practices become embedded in the academic life of one's own local context. Lack of shared adoption matters.	The open Web is seen as irrelevant to the academic sphere. It does not fit the complexity of the research practices.

First of all we can say that in the UK sample we do not find statements related to an ideology-driven approach to the open Web or to a sense of self-empowerment. Neither it is apparent an attitude of 'suspended judgement' matching the 'Waiting the mainstream' approach emerging from the Italian sample's open comments. Rather, in the open comments received from the UK participants the trustful attitude in the institutional asset of the doctoral experience is linked to a strong sense of personal responsibility in the endorsement of the new clusters of digital tools and practices. Instead, the Coping line refers to an attitude mainly driven by occasional, practical needs and is endorsed by the UK participants who currently adopt these tools on daily basis. In this case, the tactical approach follows the needs arising here and now, for immediate, practical benefits, rather than including any personal goal for future plans. In the second line we identify a Rejection attitude towards social media for research scopes. In fact, we have considered that 'skepticism' is rated in the third position among the inhibitors: this might lead to a judgement of 'irrelevance' that is recurrent but has no further elaboration across the comments. Furthermore, the Pioneering line of goal orientation arises from the comments focusing on the relevance of individual agency and the

ideas for future commitment in the ‘digital’ as the doctoral journey advances. This goal orientation is related to a group of respondents who clearly acknowledge the potential of the open Web for their doctoral tasks and aim to repair the gaps for a more informed use in the subsequent phases of their doctorate. In this case the tendency is to design a doable plan for future improvement, building on the state-of-the-art of their own behaviours (e.g. changing a reactive into a proactive behaviour when using digital networks), rather than trusting the capacity of the open Web for self-empowerment.

5.5 Conclusions: An early scenario of the PhD students’ learning ecologies

The map of institutional forms of assistance, contextual factors, ICTs uses and expectations above depicted and drawn from two samples of research participants provides baseline information to start sketching the characteristics of the current and emerging learning ecologies of PhD students. The scenario aims at illustrating contexts, relationships, resources, problems and explicit objectives of individual apprentice researchers coping with social media in their doctoral experience. In this attempt, we have taken into account our take on learning ecologies (see Chapter 4), built on Barron (2006) and Jackson (2013) and interpolated with the notion of ‘chronotope’ (Bakhtin, 1981); the three strands of doctoral student’s development (McAlpine & Amundsen, 2011) and the areas of support that social media can provide during the doctoral experience (Zaman, 2010). The description of institution-led and self-organized learning ecologies starts from the consideration of the available Digital resources and keeps on with Contexts, Relationships, Processes, types of Goal orientations and related Time orientations so far identified. The aim of this description is primarily to identify the gaps in data collection rather than to provide an exhaustive picture.

5.5.1 Digital Resources

The university contexts appear to be saturated by digital mediation enabled by desktop computing and Web 1.0 services (e.g. institutional email and digital library) which keep on efficiently serving the needs of scholarly communication, dissemination and co-production. Moreover, across the diverse subject areas a constellation of software (e.g. statistics software) and hardware (e.g. pharmaceutical lab equipment) facilities daily support the inquiry work, including doctoral research. On the other hand, personal learning ecologies of Italian and UK doctoral students appear to be populated by a variety of tools apt to communicate via audio/video, share content, get information and build web-based research networks. To what extent is this set of tools integrated in doctoral activities? Firstly, in this PhD-driven use, a sub-set of tools seem to be usually considered, led by open search engines (i.e. Google Scholar), web conferencing tools (Skype) and document sharing

services (e.g. Dropbox). Secondly, the open Web seems to provide means to enhance desktop computing facilities (e.g. adding backup services) and to broaden the opportunities for quickly and freely getting conventional and unconventional scholarly materials.

The adoption of tools in the open Web for purposes of fostering immediate efficiency of the individual work as a researcher usually does not imply a process of self-empowerment or the activation of new practices by the isolated scholar. For instance, the daily use of Dropbox may imply a backup plan along with the need for sharing draft materials with the supervisor and/or with the co-researchers in a project. The tools adopted to augment efficiency seem to be more functional to existing, institution-led learning ecologies rather than opening new kinds of scholarly practices. However, qualitative data drawn from the interviewing process can shed light on the different digital practices, according to diverse subject areas, age range and local contexts.

5.5.2 Contexts

The institutional contexts experienced by the Italian doctoral researchers are characterized by individual-based and face-to-face work practices, where most activities are usually developed in a unique and bounded workplace (e.g. Biotechnology lab; department's office, side by side with other researchers). These contexts are mainly structured by lecture-based research training formats, especially in the early phase of a doctorate, but often provide opportunities for peer seminars and summer schools. However, it is quite common that part of these contexts are permeated by self-organized and home-based activities, that become prevalent in the late phases of the doctoral dissertation. Given these variations of the institution-led context, what is the role of the Web 2.0 tools and venues which PhD students are well acquainted with? In the previous sections we have seen that Italian doctoral students (as well as their UK peers) are generally not active users of social networking sites, which are said to constitute a space for experimenting new forms of scholarship, also for doctoral researchers (Weller, 2011a; Zhu & Procter, 2012). Considering the Visitor/Resident continuum (White & Le Cornu, 2011), the surveyed PhD students mostly seem to think of open Web as a 'shed of tools' to be used driven by practical, occasional needs (Visitor approach), rather than as digital spaces where to spend time building relationships and contributing with one's own ideas (Resident approach). The Web 2.0 applications are mostly adopted to amplify and facilitate existing practices defined by the institution-led context rather than as an enabling factor in the construction of alternative scholarly spaces. However, we can also draw from a few open comments some evidence that a bunch of individual PhD students is adopting the open Web environments beyond an immediate, utilitarian scope. In fact, some respondents briefly account of direct experiences where they have taken advantage from the informal ways occurring among

scholars across digital networks, irrespective of one's own rank. Thus, they were able to configure a parallel and somewhat complementary context that does not contrast the institutional context, but provides the doctoral researchers with unexpected opportunities to play a role as autonomous scholars. However, at this stage of the study we still got scarce information about the configuration and making of personal learning ecologies and about the interplay of personal and academic settings with any professional contexts in which some PhD students may be located. We need to collect narratives of significant incidents, motivations and more detailed contextual factors that prompt the moves from the personal to the academic sphere of digitally-mediated practices in the open Web.

5.5.3 Relationships

Regular interactions between the PhD students and their supervisor constitute the key relationship in the apprenticeship trajectory. Shadowing a mentor, also playing a role as a 'critical friend', along with peer recommendation and contiguity with well-established researchers in the local research context represent the main opportunities through which the efforts for a 'negotiated agency' are undertaken by the individual PhD researchers. What is still missing in this phase of data collection is understanding the extent to which such relationships are differently perceived by the individuals located in diverse personal and disciplinary contexts. Moreover, it would be worth grasping if their digitally-mediated practices are or are not grounded in communities of practice encouraging the expansion of their same boundaries also through the open digital networks. The challenge is to give evidence of the current learning ecologies of the PhD students as ensembles of relationships, where the configuration can vary from a self-contained set of relationships (the apprentice researcher relies on the existing contacts) towards an expanding network, where the local research community and the individual scholar have an active role in creating new research bonds.

5.5.4 Processes

What kinds of processes in the 'identity-trajectory' (McAlpine & Amundsen, 2011) are activated when the PhD students strive to reconsider their personal learning ecologies as functional to their doctoral experience? Building on the survey data, we argue that the three processes of 'institutional', 'intellectual' and 'networking' (McAlpine & Amundsen, 2011) are actually activated but with diverse quality and depth of involvement. Firstly, it can be said that a common, tactical approach in using new tools when needed leads to augment efficiency in individual-based activities scheduled in the 'institutional' strand of development. In fact, the survey respondents seem to particularly harness the support area of "research management" (Zaman, 2010) enabled by Web 2.0

applications. Moreover, since the major driver is said to be the ‘occasional, practical needs’, it is also possible to hypothesize that the PhD students use the open digital networks to solve small-size problems, in the support area of “research awareness” (Zaman, 2010). Secondly, a very low uptake of the open digital networks can be noticed in relation to the tasks of establishing research bonds and going published. In fact, ‘networking’ – that at first sight would seem the most obvious application of social media – strongly relies on traditional channels such as conferences, seminars, peer-reviewed journals and advisor’s suggestions for contacting new experts. Trying more informal routes implies risks and uncertain rewards: harnessing the open Web as a ‘network amplifier’ is acknowledged as a benefit, but in fact it is enthusiastically adopted by a few doctoral researchers. Finally, the strand of ‘intellectual’ activities is somewhat affected by the current use of the open Web, due to the significant literature searching activity undertaken by the doctoral students across all the disciplines. We have held that these Italian early researchers seem to mainly harness the open Web as a repository of updated content, useful both to start the exploration of a research topic and to refine own searches. This behaviour is likely to influence the selection of research topics as well as the quality of bibliographies (British Library/JISC, 2011). Furthermore, it is worth noting that a small minority of PhD students, also in techno-scientific areas (e.g. Engineering and Biotechnologies), have started practicing academic writing and critical reading across the digital networks. This aspect deserves additional investigation, but for now we argue that it might represent one of the most relevant predictor of a changing attitude of the apprentice researchers towards scholarly conventions, by blurring boundaries of the formal academic venues.

5.5.5 Goal orientations

To what extent are the PhD students motivated to track alternative, digital routes in their ‘becoming scholars’? To what extent are they able to build on their self-organized learning ecologies and take advantages to institution-led learning ecologies? In fact, from the first phase of the investigation enabled by the survey research, the tentative self-organized learning ecologies result so far to be isolated and unplanned initiatives, stemming from occasional experiences and aiming to be somewhat supported, preferably in the privileged relationship between the apprentice scholar and the mentor. However, the analysis of the open comments allowed to sketch a few different individual perspectives which can be understood as many tendencies of goal orientations: Pioneering, Coping, Waiting for the mainstream and Rejecting. In the ‘Pioneering’ approach the goal orientation seem to be that of using the open Web tools as spaces for constructing a tentative mode of being scholar, probably as complementary to the model suggested by the local research context. In the ‘Coping’ approach the goal orientation is closer to an effort for making sense of a

plenty of instruments to get on demand support to current activities. It is worth recalling that (only in the UK sample) a nuance of ‘planning’ attitude emerges, aiming at shaping a pragmatic ‘day-by-day’ way for coping with the open Web, but also for pioneering new practices. In ‘Waiting for the mainstream’ the research participants show the adequate flexibility and capacity to apply new practices, but only when they are well-established in their local research community. Finally, the ‘Rejecting’ attitude tends to exclude the open Web from the academic sphere: it can be argued that in the ‘Pioneering’ approach the goal orientation of the PhD students in their self-organized learning ecologies gets close to the goal orientation they endorse in their institution-led learning ecologies, whereas in the ‘Rejecting’ approach the goal orientations are likely to diverge. Far from being a fixed (and thus reductive) typology of personal traits in digital engagement, these four lines of goal orientations only aim to advance some rough ideas about the role of student agency, attempting to pursue trajectories from the institution-led towards self-organized learning ecologies and make sense of these moves. For the purpose of better articulating these ‘trials and error’ endeavours, an in-depth exploration of personal learning ecologies and individual agency as developing across competing learning opportunities is addressed in the subsequent interviewing process.

5.5.6 Time dimensions

Generally speaking, we can notice from the e-surveys that time constraints characterizing the doctoral journey clearly represent a relevant inhibitor for the capacity of the individual PhD researchers to explore new digital tools for scholarly purposes. Furthermore, as recently highlighted (LSE Public Policy Group, 2011) time engagement in typical academic activities varies according to the academics’ rank and can be a predictor of a greater or minor commitment of the individual scholar across ‘unconventional’ media for communicating research. In this line, the PhD students, who show a relatively limited engagement (10% in both Italian and UK samples) in Networking activities would be in principle less motivated in exploring social media. More importantly, the above discussion of the Processes and Goal Orientations so far identified building on the e-surveys data enable us to advance some early ideas about the time dimensions activated through the digital engagement by individual PhD students in their emerging learning ecologies. In particular, the Goal Orientations provide cues for understanding the extent to which the digital engagement relates to past, present and future and interplays with the three strands of development ‘institutional’, ‘intellectual’ and ‘networking’ (McAlpine & Amundsen, 2011). As these Goal Orientations are not intended as typologies of digital engagement, so they do not represent any fixed capacity to act upon the open Web. In this sense, the Goal Orientations are thought as temporary states of

experience that can be related to the different phases of a doctoral journey as well as the conventions of a defined research area and the individual initiative. Thus, 'Pioneering' underlies an inclination toward the future, embedding a tension aiming at rethinking the scholarly practices leaving the widely-known tracks. This attitude does not seem to imply any clear conflict against academia, but it encompasses a sort of original, personal uptake of the open Web, either for an ideological take about the liberating power of the Net, or for an embodied need to be up-to-date with all that is likely to change the academic environment. On the other hand, 'Rejecting' appears to be an approach in which the individuals are anchored in the traditional, highly structured work practices defined by the local research context and do not feel any need for innovating them. Such approach is not limited to subjects becoming scholars in techno-scientific subject areas, but might be influenced by the initial phase of a doctoral journey, when all the endeavours are directed toward the achievement of the new language and practice inherent to what 'scholarly' means in a defined context. Otherwise, 'Coping' expresses a day-by-day engagement that always re-negotiates the rapport with the past experiences and the present need for solving occasional problems. The approach underlies a continuing, sometimes frustrating struggle for making sense of a plethora of tools of which the use value is not always clear or conveyed across scholarly contexts. Finally, 'Waiting for the mainstream' is close to the current judgement of irrelevance of the open Web, since it shows a substantial non-endorsement of networked practices that are not widely shared in the academic community.

The hints drawn from the e-surveys data have provided us with an early scenario of the PhD students' emerging learning ecologies and enable a first attempt to outline the chronotopic movements of the PhD e-researchers in their digital engagement. However, some apparent gaps also stand out, and call for a more in-depth, qualitative investigation of the motivations of digital engagement and the meaning-making trajectories of the PhD e-researchers across digital spaces and time dimensions, of the relationships with the 'identity-trajectory', the influence of the social environment and the tensions between the individual and the institutional goals and resources.

CHAPTER 6

THE INDIVIDUAL INTERVIEWS: CONCEPTUALIZING THE DIGITAL ENGAGEMENT VARIATION

6.1 Introduction

This chapter reports and discusses the findings drawn from the 26 individual interviews to PhD researchers undertaken across three Italian and one UK university contexts involved in this doctoral research. The interviews constitute the core research method of this doctoral research (see Table 9): in this chapter we provide the account of the interviewing process starting from the narratives of individual interviewees, whilst in the next chapter we will report the collective discourse drawn from the final focus groups. The previous chapter has provided baseline data about the university resources used and the actual social media practices undertaken by a large sample of Italian PhD students and a limited sample of UK doctoral researchers. More importantly, the e-surveys' results have enabled us to outline the description of doctoral researchers' learning ecologies in terms of contexts, digital resources, relationships, processes, goal orientations and time dimensions (see section 5.5). In particular, in Chapter 5 we have suggested some likely PhD students' Goal Orientations (see Table 20 and 27 in the respective sections 5.3.5 and 5.4.5) toward social media for research, mainly grounded in the open comments received in the e-surveys: Pioneering, Coping, Waiting for the mainstream (only for the Italian sample) and Rejecting. These proposed Goal Orientations constitute an early attempt of giving some evidence of the intentionality of individual students in the digital. In the present chapter we build on the previous findings and strive to better explore the capacity of the PhD students of acting upon or being acted upon the open Web in their doctoral journey. Thus, the aim is firstly to give evidence, by letting insiders' voices speak up, of the ways in which individual PhD researchers make assemblages of institutional spaces and forms of assistance and self-organized activities in the open Web and generate complementary or alternative modes of scholarly practices in the digital. We remind that the interviewing process is designed to contribute to answer the research questions related to the conceptualization of the trajectories outlined by the PhD e-researchers and to their inherent chronotopes tracked in the digital. Thus, focus of this phase of data collection is on gaining understanding of digital engagement as a key process in the interception of being a postgraduate student and becoming a researcher, rather than merely drawing attention to the socio-technical entanglements between the individual students and the social media tools. The basic process of digital engagement – understood as trajectories of behaviour across spaces and over time - is here explored to gain insights of the extent to which individual PhD students act upon or are being acted upon the open

Web in situated research contexts. In fact, the analytical lens considered in the theoretical framework (see Chapter 4) leads to highlight the space/time trajectories developed by student agency in the digital while moving across institutionally scripted and open learning ecologies. Thus, from a GT data analysis perspective (Birks & Mills, 2011), in this chapter we firstly present a descriptive report of the most significant themes (content chunks) and related categories and sub-categories (selected focused codes) arising from the interview data. This intermediate coding achievement is eventually intended to converge towards a conceptualization of the digital engagement of the PhD researchers, as the product of the most abstract level of coding (Charmaz, 2006; Birks & Mills, 2011). This final coding leads to integrate the identified main categories and aims to produce a “convincing theory” (Morse, 2007) to shed light on the phenomenon of digital engagement as the core process of the PhD researchers’ learning ecologies. As result of this conceptualizing endeavour we therefore discuss the framework of Digital Engagement Variation (DEV) as a tool to map out the actual practices and dispositions of doctoral e-researchers interviewed across diverse university contexts and subject areas.

In the first section of the chapter, an audit trail is presented to explain how the interviews have been designed, organized and conducted. Moreover, some background information about the research participants is provided, in order to illustrate the range of student profiles represented in the data set. The second section provides the reader with selected excerpts from the interviewees’ narratives, as grouped under the four main themes (Shaping the scholarly in the digital, Engaging with the digital, Thinking the open Web and Musing upon social media training) and related to complementary or contrasting sets of categories and sub-categories. In the logic of the constant comparison analysis, the statements received from the interviewees in Humanities, Social Research and Education are compared between Italian and UK participants, and a further comparison is highlighted, where appropriate, with the interviewees selected in STEM (Science, Technology, Engineering and Medicine) subject areas. The subsequent section discusses the results within the emerging framework of the Digital Engagement Variation (DEV) of the doctoral researchers, inflected across the dimensions of Space, Time, Socialization, Digital Identity, Stance and Tensions and further articulated in polarizations of engagement. We have approached the presentation of the findings giving precedence to the selected codes over the illustration of the cases, by striving to balance the description along with the conceptual abstraction (Birks & Mills, 2011) progressively applied to qualitative data, in order to highlight the line of reasoning leading to the elaboration of the DEV framework.

6.2 The individual interviews: protocol and organization

Our reading of the survey responses has constituted a starting point both for elaborating the interview protocol and for developing the ‘guided conversation’ enacted in the individual interviews. In fact, we have intended the individual interviews as the keeping of the dialogue with the research participants started with the e-survey. The construction of the interview protocol has implied a pilot phase, where duration, consistency and focus of the research questions have been assessed. Subsequently, we have approached the interviewing process with a constructivist stance (Charmaz, 2006) and have organized the interviews in presence or online, taking into account the interviewees’ needs.

6.2.1 Writing the interview protocol

As a general reference for the construction of the interview protocol we have followed Patton (2002, pp. 348-352), who provides a classification of questions into broad categories such as experience/behaviour, opinion/belief, feeling, knowledge, demographic/background data.

We have designed the questions included in the interview protocol (see Appendix 4 and 5) with the aim of moving from “particular to general, as interviewees often find abstract questions difficult to address” (Brown & Dowling, 2007, p. 73). We have started sketching the following list of topics and related objectives:

Table 35.

First version of the preliminary list of topics and objectives to be developed in the interview protocol.

TOPIC	OBJECTIVE
1. Getting to know the interviewee	Acquire baseline information to build the case study.
2. The local research environment	Get acquainted with the local environment of the interviewee, by drawing information related to organization of daily activities, modes of interaction with supervisors, use of spaces and time constraints in a specific developmental phase.
3. Individual activities undertaken using institutional and self-organized forms of support.	Highlight attitudes and actual uses of Web 2.0 tools/social media for non academic activities.
4. Focus on events or sequences of activities supported (in contrasting or supplementary manner) by both institutional and self-organized forms of support.	Reveal relationships between institutional and self-organized forms of support on specific strands of individual-based academic activities.
5. Adoption/Non adoption of self-organized forms of support available in the open Web	Highlight motivations (or lack of motivations) in the self-initiated academic practices in the open Web, building on findings about drivers and inhibitors.

Subsequently, we have detailed, in diverse drafts, a total of thirteen questions: we have started asking for a description of the participant’s doctoral project and the local research environment, and

have prompted a description of the institution-led and the self-organized activities which could add insights to the correspondent responses collected in the e-survey. We have considered to write a fairly high number of questions also as a memo for any probe to be used in the interviewing process. Thus, we have applied the good practice to undertake a pilot interview (Salmons, 2011) to test the interview protocol before starting the formal interviewing process. The pilot interview was organized in November 2012 with one PhD student enrolled in a Social Research doctoral program of one of the three universities across which the online questionnaire was delivered. Our decision to contact her for the pilot has been prompted by her active social media presence, through which I happened to know her before the start of data collection. The pilot interview has allowed us to check wording, sequence and relevance of the questions and the overall duration of the interview, according to the first version of the interview protocol (see **Appendix 5**). As a whole, the pilot revealed that the first part ‘worked’ well, but we have considered that an excessive focus on shedding light on the answers given by the interviewee in the e-survey could be at danger of producing a closure of sense rather than enabling an open narrative, facilitated by the familiar field of discussion for the respondent. Thus, agreed with our supervisors, we have re-drafted the questions, adjusting the sequence and avoiding a too detailed approach to the description of the digitally-mediated practices, that could prevent the participants from freely accounting their own digital experiences. Therefore, in the sequence of questions we have highlighted the request of explaining one’s own attitude towards social media in everyday life before proceeding with the narrative related to the management of doctoral activities through the use of institution-bounded or open Web services. Finally, we have asked for suggestions for improving self-awareness in the use of social media in the doctoral research process and have solicited with some reflections on the prospective role of the ‘digital’ in the achievement of ‘scholarship’ as a researcher.

Table 36.

The assessed list of topics, objectives and questions used in the individual interviews.

TOPIC	OBJECTIVE	QUESTIONS
1. Getting to know the interviewee	Acquire baseline information to build rapport and start to frame the individual case.	<p><i>1.1 Could you describe the current phase of the doctoral program which you are working in?</i></p> <p><i>1.2 What is your PhD project about? To what extent the nature of your research project requires the mediation of technologies?</i></p>
2. The local research environment	Get acquainted with the local research environment of the interviewee, by drawing information related to organization of daily activities, modes of interaction with supervisors, use of spaces and time constraints in a specific developmental phase of the doctoral work.	<i>2.1 Could you describe your local research environment in terms of available spaces, scheduled activities and interactions with supervisors, peers and other stakeholders, if any?</i>
3. Personal attitude towards social media for non academic purposes.	Explore habitus and motivation of the interviewee as social media user.	<p><i>1.4 What is your attitude towards social media in your everyday life?</i></p> <p><i>1.5 What kinds of activities with social media do you undertake everyday, in non-academic situations?</i></p>
4. Focus on events or sequences of activities supported by institutional and/or self-organized digitally-mediated practices.	Explore goal orientations of PhD students when they select tools in the open Web to supplement resources provided by their local research environment.	<p><i>4.1 Could you explain how you select tools to support your academic activities?</i></p> <p><i>4.2 What are main influencing elements affecting your choice of new tools in the open Web for research purposes?</i></p>
5. Adoption/Non adoption of self-organized forms of support available in the open Web.	Highlight motivations (or lack of motivations) in the self-initiated academic practices in the open Web, building on findings about drivers and inhibitors.	<p><i>5.1 What is the primary value do you attribute to Web 2.0 tools for your research activities?</i></p> <p><i>5.2 What are the main obstacles preventing you from the adoption of Web 2.0 tools for knowledge production and communication?</i></p>
6. Expectations and future developments.	Highlight individual expectations and informed suggestions for an enhanced adoption of the social Web tools and practices for doctoral activities.	<p><i>6.1 Have you specific expectations or proposals about your future use of the social Web for academic purposes?</i></p> <p><i>6.2 Have you any suggestions to your local department as regards to future adoption of Web 2.0 tools in the doctoral experience?</i></p>
7. The idea of digital scholar	Reveal any form of relationship between the adoption of self-organized practice and the identity building effort by the PhD candidates.	<i>7.1 Do you think the digitally-mediated practices introduced by the social Web are somewhat affecting your 'being researcher', beyond the influence of your local research environment?</i>

Writing good questions for an interview is a key issue that needs much practice: like writing a dialogue in a script, we experienced the need of writing questions while thinking of a live conversation rather than of a written text. In the end, this goal has been pursued by considering the written interview questions as a reliable trace of a conversation effort aiming at approximating natural fluency and pace. As a final note we would like to remark our choice of using one interview protocol rather than elaborating new protocols as the interviewing process went on, as often applied to interview-based GT projects (Charmaz, 2006). In fact, in our case, data collection as a whole (across e-surveys, individual interviews and focus groups) has been intended as an interviewing process where the focus progressively becomes more precise and better contributes to enlighten the ‘theorization’ of the findings.

6.2.2 The interviewing process

This subsection is concerned with the description of the key issues considered in the interviewing process, characterized by the elements summarized in Table 30. Regarding the ethical cautions adopted we have taken into account the diverse levels of formal requirements and cultural sensitiveness about privacy and confidentiality issues featuring the local settings where we have accessed (see for details section 2.8.1). Such differences have occasionally resonate during the interviewing process: for instance, in some cases the Italian interviewees (Social Research area) have noticed the informed consent and the release form to be signed as ‘superfluous’, because the interview occurred between peers, adult people and focused on non sensitive topics. As part of the ethical measures adopted, we have sent the preliminary findings of the e-surveys to the potential participants in order to better involve them in the research process and demonstrate that the time voluntarily spent in our study was acknowledged and had produced results.

Table 37.

Characteristics of the interviewing process.

Number of interviewees	Total: 26 interviewees Male: 9 Female: 17
Subject areas of the interviewees	Subjects: Social research, Education, Humanities, Engineering, Medicine, Biotechnologies, Architecture, Information Technology.
Language of the interviews	Interviews in Italian language: 18 Interviews in English language: 8
Type of interview	Semi-structured interview, with possible variation of the sequence of questions on the basis of the responses.
Modes of interview	Face to face: 20 Online (via Skype): 6
Timeframes of the interviews	1° cycle: March-April 2013 2° cycle: June 2013 3° cycle: July 2013
Duration of the interviews	Planned: 60 minutes at maximum Actual: from 40 to 70 minutes Average per interview: 45.8 minutes
Mode of recording	Audiorecording: Ipod Touch, using ITalk software.
Time amount of recording	Total minutes: 1.192
Mode of transcription	Transcription: manually, using a word processor.

The interviewing process has been partly shaped by the locations where the ‘guided conversation’ occurred. As Brown and Dowling (2007, p. 74) underline “there is no neutral locations nor are hard and fast rules for determining the effects of location”. The choice of the locations has always been agreed with the research participants, in order to ensure a comfortable place for them. Our availability to adapt the location to their needs has initially boosted the positive mood of the research participants. On the other hand, it is worth noting that regarding the Italian universities we could have not arrange a unique place *per* university where developing the interviews, due to the remarkable distance among the locations of the research departments within a same university. This continuing search for an appropriate interview location has sometimes implied the need for developing the interviews in places such as university open spaces (most of the times) or in the local cafeteria (in two cases) as well as in quiet office rooms or outdoor in the department gardens (in two cases). This variety has suggested from time to time some technical adjustments to obtain a good recording quality. However, it is worth underlining that the diversity of locations has neither

affected the duration and the fluency of the conversation nor has somewhat compromised the efforts for “maintaining the momentum” (Bampton & Cowton, 2002) of the interview. We have nonetheless noticed that sometimes the choice of some ‘unconventional’ locations for the interview was motivated by the level of self-confidence of the individual interviewees, who felt more relaxed if the location was not so close to the places where their supervisors or colleagues might come along. Furthermore, we have to highlight that a different use of the Skype ‘space’ was applied, since two Italian interviewees decided to participate in the interview only via audio, due to low bandwidth issues (one was connected from home near Milano, one from a location in South Africa). At the very beginning this contingency might have created some issues in establishing rapport with the participants, but all that was quickly overcome through a preliminary, short exchange of PhD experiences that has made comfortable the interviewees. In general, we have noticed that the use of Skype has helped to increase engagement in the interviewees, who were particularly motivated to optimize their time. Moreover, it has reduced the risk of the ‘halo effect’ (Cohen et al., p.), shifting the attention of the interviewer only to the responses’ content rather than also to the whole personality of the interviewee, as unavoidable in the face to face interviews. However, differences between face to face and online interviews can be reported in terms of turn taking: in fact, especially at the beginning of the Skype sessions, we have generally paid attention not to overlap our voice to the interviewee’s and this ‘listening mode’ has occasionally produced a postponing of some probes. However, this issue tended to blur as the conversation proceeded.

One interview protocol in Italian or English language (see **Appendix 6 and 7**) was utilized in individual interview sessions of 60 minutes as maximum duration: all the interviews undertaken in Milan and in London actually lasted between 40 and 70 minutes, with an average of 45.8 minutes per interview. The interviews have taken place using the native language of the research participants, in order to enable the free flow of thought when discussing the proposed questions. In the whole interviewing process we have always taken into account the approach to interview as “interpretive accomplishment” (Holstein & Gubrium, 1995, p. 116) and the relevance of the interviewer/interviewee interaction in building shape and direction in the interviewing event (Charmaz, 2014). In this perspective, we have decided a semi-structured type of interview with the “same open-ended questions asked in varied sequence based on responses” (Salmons, 2010, p. 61). This decision stresses the relevance of validity compared to reliability (see section 2.9.3) in our interviews, since it enable the interviewees to convey their accounts with minor constraints. Approaching a dialogical event, we have tried not to influence the participants’ opinions, by avoiding leading questions or suggestions related to any ‘right or wrong’ responses, but when appropriate we have revealed our position, with the aim of demonstrating transparency and

reinforcing trustworthiness. Thus, after listening to their take on a specific question, if appropriate, we have briefly disclosed our digital experience and opinion. For instance, when an interviewee told us about the pros and cons of his Twitter experience, we intervened with ‘Our Twitter experience has been a bit different...’ shortly explaining reasons why. Such kind of probe has often prompted further account and reflection on the part of the interviewees and as a consequence has contributed to enrich the interview data. Moreover, this attitude has enabled us to cherish the availability of the interviewees by providing them with additional information and perspectives about a topic that they had never discussed before with their peers or any established researchers. This kind of dialogical approach has also helped to reassure the participants, beyond the individual level of self-confidence, about any initial sense of inadequacy regarding the topic being discussed: in fact, none of them has self-defined as ‘expert’ in social media use for research scope, although in some cases they have accounted for significant Web 2.0 experiences.

As explained in details in the next section about the Sampling strategies, we have scheduled all the interviews across three subsequent timeframes, occurring from March to July 2013, taking into account the informants' diaries. Interviews were initially planned with a frequency of not more than one daily session for a maximum of three weekly sessions, in order to allow some early reflections by listening to audio-recordings. However, it happened to us to concentrate four interviews in one week and (in two cases) even two interviews in one day, due to the participants' busy schedules or their unexpected commitments. For instance, in many cases we have re-scheduled even three times the interviews' dates, especially when the interviewees had to combine work or family commitment and only occasionally attended the university department. In four cases (in the Italian sample) the research participants, truly willing to contribute to our doctoral research, asked for the Skype interview's option to overcome their time constraints, whilst additional two Italian interviewees asked for the same options because abroad for a research stay. By the way, whenever the Skype option was applied, we were confident that the webconferencing room represented a usual workplace for the interviewees rather than a novelty. Coping with such time constraints was even more complicated across the UK university, where part-time PhD students usually attend the university department or library only on Fridays or Saturdays. However, all the UK interviewees agreed to be interviewed in person, in an office room or in the devoted ‘talking areas’ within the library. Finally, it can be said that the curiosity about the topic of our doctoral research and the availability to help a PhD colleague has represented a clear advantage to us in the recruitment of the interviewees. The continuing shifts in the schedule notwithstanding, we have generally grouped the interviews according to the different subject areas: thus, the interviews to the PhD researchers in Humanities and Social Sciences across the Italian universities were undertaken in sequence before

those occurring with the PhD researchers in the similar subject areas at the UK university. Grouping interviews this way let us to better focus on specific conventions and behaviours characterizing the different subject areas and to draft early considerations regarding the goal orientations of the individuals in their digital engagement, when facing similar scholarly work practices. Furthermore, this way of proceeding in data collection matches the GT logic of the constant comparison, according to which, as example, we have been able to compare accounts of behaviours and opinions received from PhD students of different age range but enrolled in doctoral programs of the same broad subject areas.

During the interviews we have taken some occasional, short notes, combining handwriting and the subsequent use of a word processor. For instance, during the interview we were used to manually annotate just a few key words (e.g. “25 y.o., ‘traditional’ PhD student, high self-confidence, res. assistant in a CoP, non SM user”), in order to keep eye contact with the interviewee and show our attention to the account. Just after the interview we have proceeded digitizing some early, succinct comments (e.g. “Typical good course taker in Education seamlessly moved to the doctoral program. Enjoys the apprenticeship model of her PhD and tends to rely on the local scholarly practices as self-consistent”). These rough notes have enabled us to better elaborate the subsequent early memos and have provided suggestions for comparing interview cases. As an example:

“The interviewee stresses the continuity between university degree program and doctorate as typical in the area of Education. From ‘good course taker to doctoral candidate’ (Lovitts, 2005). The young interviewee experienced a smooth transition from being a university student to being a PhD student. Her PhD work is a piece of empirical inquiry framed by the theoretical approaches developed by the leading research group which she is part of. (Comparison needed e.g. with a mature PhD student, with a professional background but enrolled in a PhD in the same subject area)”.

We have also considered some practical aspects of the interviewing process, in order to assure technical quality and reliability (Kvale & Brinkman, 2009, pp. 177-187). Firstly, all the interviews (included those undertaken via Skype) were audiorecorded using one iPod Touch, using the software application ITalk, which has enabled us to set up different level of audio quality, according to the diverse environmental conditions (e.g. noise in background, open space, interviewee’s volume of voice) we might encounter. Moreover, the application has enabled us to directly save a copy of each recording to the devoted Dropbox folder. Additional copies of each audio recording were also saved both in our laptop and on an external hard disk, devoted to the PhD research’s materials. At the very beginning of each interview we recorded details such as date, time, place, name of the interviewee, university and subject area. We have usually listened at the single

recording just after doing the interview, in order to check audio quality and take some early notes to write down our personal reactions and any *in nuce* ideas drawn from the event. We have listened to a total of 1.192 audiorecorded minutes and for each interview we have taken decision about what it was worth transcribing. In fact, following the GT tradition (Strauss, 1987), we have transcribed what was functional to the research questions, giving value to manageability of the interview data. Thus, we have manually transcribed verbatim the whole interview by one week from the date in which it took place: the texts produced in Word format were preliminarily skimmed and highlighted in places (using 'bold' function in the word processor), in order to mark 'in vivo' codes appearing of interest for further analysis. Thus, we have imported the transcribed texts in .rtf format in Hyperresearch for data analysis. It is worth noting that the individual transcribed texts were sent to the interviewees for any amendments and integration.

6.3 The sampling strategies

As clarified in Chapter 2 (section 2.5.1), we have adopted the sampling strategies as an instrument that "supports the constant comparative method of analysis" (Patton, 2002, p. 239). We have guided and adapted over time our sampling strategy according to what is already known and what is needed next, aligning the validity criterium of "maximising variation" (Larsson, 2009) to the GT line of reasoning for testing "tentative ideas" (Charmaz, 2008, p. 472) through gaining rich data. In this logic, we have designed three subsequent cycles of individual interviews (Tables 38, 39 and 40) across different university contexts: the first cycle as the preliminary exploration of the Italian PhD students' views; the second cycle as the opportunity for comparing views between Italian and UK PhD students; the third cycle across the Italian universities as the field for assessing and further expanding the 'theory' arising from the findings. We have kept consistency in our sampling strategy, persistently using the Italian and UK convenience samples provided by the e-surveys' findings to draw the purposive samples of individual doctoral e-researchers to be involved in the interviewing process. This approach has implied advantages and disadvantages: on the one hand we have been able to build our selection on the preliminary 'interview' represented by the responses given by the survey participants. This has allowed to elicit interview participants also on the basis of the comments released, beyond their demographics characteristics. This has opened up the opportunity for recruiting potential 'enthusiasts' and 'skeptics' of the open Web for research, including also the 'negative' cases as a means for further understanding the phenomenon of the PhD e-researchers, in line. On the other hand, using this approach has occasionally implied some misinterpretation of what the participants had written in the e-survey (e.g. overemphasizing their social media use), whilst the adoption of a 'snowball sampling' approach, based on the word of

mouth or the direct acquaintance with the informants, would have perhaps enable us to reduce this kind of mistake, although with the danger of a less varied sample. Regarding the Italian e-survey, the sampling phase was initially facilitated by the high number of the respondents (123) who stated their availability to be involved in the subsequent interviewing process. The consistency and variety of this initial sample firstly has suggested the opportunity to consider for the purposive sampling a range of subject areas, in which different modes of ICTs appropriation are at work (Fry & Talja, 2007). Moreover, the sampling strategy took into account some key elements arising from the e-survey. The equal distribution of the respondents across the three year (the typical duration of a doctoral program in Italy) has enabled us to consider the involvement of PhD students in different developmental phases of their doctoral journey (Gardner, 2009), in which diverse needs for (digital) support arise (Zaman, 2010). The great prevalence of the age range 25-30 was supplemented by a significant presence of 'non traditional' PhD candidates (12% are 31-35 years old and 6% are over 35), who were likely to have a different perception of their 'identity-trajectory' (McAlpine & Amundsen, 2011) and a varied attitude towards tools and practices in the open Web. Furthermore, initially some organizational features internal to the various doctoral programs have been considered as possible influencing factors in digital engagement: for instance the 'isolated mode' versus the collaborative work practices; the opportunities provided by well-structured PhD programs, versus those provided by the loosely structured PhD programs. Thus, on the basis of the sample of potential volunteer interviewees and taking into account the need for scheduling a doable timeline for the interviews, we have taken main decisions as regards to: a) select interviewees from the different university contexts being involved; b) select different subject areas in which diverse uses of subject-related technologies are or are not at work; c) select interviewees within the same subject area (where possible), but in different phases of their doctoral journey (at least one interviewee at the beginning – in the first or second year - and one at an intermediate/advanced level of PhD achievement); d) consider some instances of 'non traditional student' (e.g. >35 and working student) where the sample allows that choice; e) identify at least one subject area in which the interviewees can be selected across the three Italian universities. Considering these needs, interviewees were initially selected on the basis of the expectations of information content they were likely to provide (Flyvbjerg, 2004, p. 426), by analyzing their responses in the questionnaire. However, the actual response rate of the potential interviewees contacted to organize an interview significantly affected the recruitment of the interviewees and to a degree prompted a rethinking of the sampling strategy. For instance, it was not doable to involve three interviewees in the same subject area across the three Italian universities, as initially designed. In fact, in the first 'call' for interviewees - across the three Italian universities - 9 survey respondents (researching in the areas

of Social Sciences, Education, Architecture and Design, Information Technology, Medicine and Humanities) did not reply at all to our invitation. Moreover, one PhD student asked to be interviewed via Skype but actually she has neither logged on at the agreed time nor has replied to our further invitation. Likewise, we have tried to assure to a degree gender equality, but the prevalence of women among the potential interviewees, especially in subject areas such as Social Research, Education and Humanities has created a bias toward female interviewees. Below we summarized in Table 38 the characteristics of the PhD students actually participating in the first cycle of interviews, occurring between March and April 2013 across the three Italian universities. In the table below, in the column ‘Characteristics’ it is indicated the status of full-time or part-time student: in fact this information is drawn from the occurred conversation with the interviewees but it does not match a formally recognized status in the respective university. Where present, the professional experience is highlighted, because such a condition is likely to enable technological work practices which might or not influence the perception and use of the social Web to support doctoral activities. Likewise, we have thought that also the experience of research stays abroad can represent an opportunity for being exposed to new kind of digital engagement or more widely to diverse modes of being researchers.

Table 38.

Profile information of the participants in the first cycle of 8 interviews, undertaken across the Italian universities.

UNIVERSITY*	SUBJECT AREAS	AGE RANGE	PhD YEAR	Characteristics
UniBicocca	Education (Edu_1UB)	25-30	1st	Female. Full time student. No experience abroad. Integrated in a research community of practice. Face-to-face interview.
UniBicocca	Social sciences (SocSci_2UB)	31-35	3th	Female. Full time student. Previous professional experience as a researcher. Integrated in a research community of practice. No experience abroad. Face-to-face interview.
UniBicocca	Education (Edu_3UB)	>35	3th	Female. In fact part-time student. Teaching experience (practitioner researcher). No experience abroad. Skype interview.
UniMi	Humanities (Foreign Literatures) (Hum_1UM)	31-35	3th	Female. Full-time student. Experience abroad. Skype interview.
UniMi	Humanities (Foreign Literatures) (Hum_2UM)	25-30	1st	Female. Full-time student. Experience abroad. Face-to-face interview.
UniMi	Medicine (Med_3UM)	25-30	2nd	Female. Professional experience. Student working as a researcher. Skype interview.
PoliMi	Architecture & Design (Arch_1PM)	25-30	2nd	Male. Full-time student. Intensive experience abroad as integral part of his PhD research. Face-to-face interview.
UniBicocca	Social sciences (SocSci_4UB)	25-30	2nd	Female. Full time student. Neither professional experience or experience abroad. Face-to-face interview.

**Legend of the acronyms: UniBicocca (UB) = Università degli Studi di Milano Bicocca; UniMi (UM) = Università degli Studi di Milano; PoliMi (PM) = Politecnico di Milano. The number before UB, UM and PM indicates the position of the interviewee in the sequence of the interviews in that specific university context.*

The same sequence of online questionnaire and individual interviews was replicated across the Institute of Education, University of London. This extension of the data collection has provided us with the opportunity for undertaking triangulation in space (Denzin, 1989) regarding qualitative

data, by comparing interview data related to Italian and UK PhD students. We remind that there are multiple differences among the Italian and the UK PhD programs, since they refer to different traditions and approaches to doctoral education: for instance, in the UK there is a variety of typologies of doctorates (full-time/part-time; academic/professional) addressing a large number of in-service professionals. As a consequence, the expected demographics of the doctoral researchers being interviewed differ, with a prevalent number of ‘non-traditional’ students, who mostly have to self-fund their doctorate. Moreover, we have explored dispositions toward the digital of a group of PhD students enrolled in one UK institution specialized in Social Research and Education postgraduate programs. These peculiarities have made us able to compare entire interviews and specific statements released by the UK PhD students with their Italian peers enrolled in subject areas sharing similar work practices such as Social Sciences, Education and Humanities, whereas the other interviews to the Italian doctoral researchers in STEM subject areas have worked as ‘contrast case’. As shown in the previous Chapter 5 (see section 5.4.2), data collected from the UK e-survey has returned a varied sample of respondents in terms of research strands, age range and year of the PhD program. This variety has provided us with the additional opportunity for exploring the views of PhD students located in a unique doctoral context (being shaped by the regulations and educational approach of one Doctoral School), where diverse research cultures (e.g. Economics versus Pedagogy) are likely to suggest different modes of being researchers. In particular, the availability of 20 potential interviewees has enabled a fairly wide choice for the subsequent interviewing process. However, since 5 potential interviewees in fact have not confirmed their availability when contacted, the articulation of the sample was further re-considered, on the basis of the actual respondents. Eventually, as shown in Table 39, the drawn sample of nine interviewees was comprised of participants researching in doctoral programs included in Social Research area as well as approaching Pedagogy or Humanities problematics.

Table 39.

Characteristics of the participants in the second cycle of 8 interviews, undertaken across the UK university.

UNIVERSITY	SUBJECT AREAS	AGE RANGE	PhD YEAR	Characteristics
IOE	Economics of Education EconEdu_1IOE	25-30	1st	Male. Full time, international student. Scholarship awarded. Face-to-face interview.
IOE	Educational Psychology EduPsy_2IOE	<25	1st	Female. Full time, home student. Scholarship awarded. Face-to-face interview.
IOE	Music Education MusicEdu_3IOE	>35	3rd	Female. Full time, international student. Professional experience, practitioner researcher. Face-to-face interview.
IOE	International Development IntDev_4IOE	31-35	1st	Female. Part-time, home student. Self-funded doctorate. Face-to-face interview.
IOE	School Education EduSchool_5IOE	>35	3th	Male. Part-time, international student. Self-funded doctorate. Face-to-face interview.
IOE	Sociology of Education SocEdu_6IOE	31-35	2nd	Female. Full-time, home student. Self-funded doctorate. Face-to-face interview.
IOE	Psychology and Child development EduPsy_7IOE	>35	1st	Female. Full-time, home student. Professional doctorate. Face-to-face interview.
IOE	Higher Education HE_8IOE	>35	2nd	Female. Part-time, international student. Professional, self-funded doctorate. Face-to-face interview.

**Legend of the acronyms: IOE = Institute of Education. The number before IOE indicates the position of the interviewee in the sequence of the interviews in that university context.*

Considering the participants who accepted to be interviewed, we have been able, for example, to compare the case of one 25 years old Italian PhD student in Education (Edu1_UB), developing her doctoral dissertation along with undertaking complementary activities in the local community of practice to one comparable PhD student's profile (Edu_Psy_IOE) enrolled at the UK university. The same kind of comparison was applied to mature PhD students in Education and Social Research. Once completed the interviewing phase across the UK setting, we have started to design the third cycle of interviews, across the Italian universities, with the aim to assess the conceptualization of digital engagement arising from the data analysis of the previous interviews.

Thus, we have set out to identify informants in Education and Social Research areas to discuss further the themes highlighted by their colleagues and, as a contrast, to explore further the views of PhD students in techno-scientific doctoral programs.

Table 40.

Characteristics of the participants in the third cycle of 10 interviews, undertaken across the Italian universities.

UNIVERSITY*	SUBJECT AREAS	AGE RANGE	PhD YEAR	Characteristics
UniMi	Social sciences (SocSci_4UM)	25-30	3rd	Female. Full time student. Current professional experience as assistant researcher and experience abroad. Face-to-face interview.
UniBicocca	Social sciences (SocSci_5UB)	31-35	3th	Male. Full time student. Integrated in a research community of practice. Experience abroad. Face-to-face interview.
UniBicocca	Education (Edu_6UB)	>35	3th	Male. Full-time student. No experience abroad. Integrated in a research community of practice, with significant teaching activity. Face-to-face interview.
UniBicocca	Information Society (InfoSociety_7UB)	25-30	2nd	Female. Full-time student. Researcher in digital settings. No experience abroad. Skype interview.
PoliMi	Engineering (Eng_2PM)	25-30	2th	Male. Full-time student. Experience abroad. Face-to-face interview.
UniMi	Computer Science (CompSci_5UM)	25-30	2nd	Male. Full-time student. No experience abroad. Isolated mode of working. Face-to-face interview.
UniBicocca	Biotechnologies (BioTech_8UB)	25-30	2nd	Female. Full-time student. Student working in a research team. Face-to-face interview.
PoliMi	Engineering (Eng_3PoliMi)	25-30	2nd	Male. Full-time student. Intensive experience abroad as integral part of his PhD research. Face-to-face interview.
PoliMi	Engineering (Eng_4PM)	25-30	2nd	Male. Full time student. Student working in a research team. Skype interview.
UniBicocca	Information Society (InfoSociety_9UB)	31-35	2nd	Female. Full-time student. Professional (librarian, community manager). Researcher in digital settings. Skype interview.

**Legend of the acronyms: UniBicocca (UB) =Università degli Studi di Milano Bicocca; UniMi (UM) =Università degli Studi di Milano; PoliMi (PM) =Politecnico di Milano. The number before UB, UM and PM indicates the position of the interviewee in the sequence of the interviews in that specific university context.*

The intended implication of the sampling strategies of the interviewing process has been enabled the extended exploration of the emergent phenomenon of the PhD e-researchers across two European university contexts, from the perspective of individual research participants. However, it can be said that the sampling strategies adopted reveal a bias toward the subject areas of Education and Social Research, due to the preliminary selection (in a logic of convenience sampling) of one UK university specialized in postgraduate training in those research areas. This limitation of the interviews has however allowed to add depth rather than breadth in discovering some evidence of the opportunities and challenges of the PhD e-researchers working in a few specific areas, across diverse contexts.

6.4 Data analysis process

The interviewing process has provided us with rich qualitative data drawn from the individual interviews' transcripts. Following Charmaz (2006), we have approached the coding process as comprised of two main phases: *initial coding* and *focused coding*, followed by a final phase of *theoretical coding*, where we have elaborated an integrated conceptualization of data. We have considered that there is 'messy' terminology adopted by the diverse grounded theorists (Birks & Mills, 2011), that eventually underlies a substantial overlapping among the terms 'code', 'concept' and 'category'. In fact, in GT all the data analysis process leads to discover 'concepts', understood as any descriptive or explanatory idea (Holloway, 2008) arising from data. In this sense, the term 'concept' equates the generic term 'code'. Otherwise, the term 'category' (Holloway, 2008) points out a group of particularly relevant related concepts (named 'focused codes' in Charmaz's terminology), being selected through a filtering action. On the contrary, here the term 'theme' merely highlights the chunks of content in which data are grouped, in relation with the substantive area of enquiry. This use of the term differs from thematic analysis, where it assumes an analytical meaning. We have systematically tried to highlight the tension among any contrasting concepts subsumed under categories, in order to do justice to the richness of data. However, we have neglected to describe the supposed 'properties' of the categories, that would assume to identify inherent attributes of each category "according to a constitutive sliding scale" (Gibson & Brown, 2009, p. 137). We concur with these authors that the measurability of qualitative codes is questionable and we hold that it is more appropriate to proceed per code trees, including the arising polarizations of concepts. As a general data analysis procedure, we have applied the iterative logic of constant comparative method, in order to note emerging patterns (Holton, 2007). In particular, we have developed the following steps: first, we have analyzed the single interview transcript

sentence-by-sentence to uncover themes (e.g. ‘doctorate context’), key concepts (e.g. ‘attitudes towards social media’) and any ‘in-vivo codes’ (e.g. ‘email/skype enough’). In this initial phase, we have drawn attention to key incidents (e.g. ‘in that MIT seminar I learnt how to use Twitter for research’), conditions (e.g. full-time or working PhD student) and contextual factors (e.g. competitive research environment, peer support as a key factor), taking into account the basic foci of initial coding in GT (Birks & Mills, 2011). Secondly, we have grouped the interview statements in themes and sub-themes and have investigated them for similarities and differences. This was an iterative process: we have coded one piece of data (i.e. one whole interview or an answer to a specific question in the interview) and compared it to other pieces of data (i.e. other interviews/statements/category). At times coding new data changed our way of understanding the phenomenon we were observing. At other times coding new data confirmed our perspective in understanding what we were observing. We went into the process multiple times, until no new concepts emerged (Morse, 2007) and data could be said to be saturated. In this process, we have grouped conceptually analogous statements and labelled them under categories and their related focused codes. For instance, we have grouped and compared all the statements related to the sub-themes ‘key spaces/key places’ / ‘peer support’ / ‘forms of assistance’ and then we have identified the broad category of ‘Belonging to a local context’ as arising from the tension between the focused codes ‘Feeling a sense of place’ and its opposite ‘Feeling a sense of displacement’.

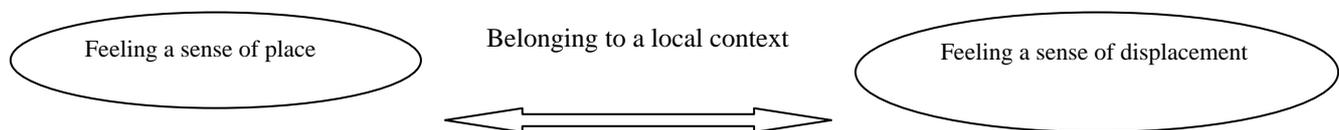


Figure 49. The category ‘Belonging to a local context’ and its sub-codes.

Subsequently, we have reanalysed the categories being generated, by comparing them to other categories and related focused codes, on the ground of common analytical focus: for instance, we have compared the category ‘Belonging to a local context’ to the category ‘Going digital’. Thus, we have further scrutinised them for any analytical concepts leading to enlight diverse orientations endorsed by the interviewees as individuals or as groups across digital spaces. Once completed the intermediate coding phase and thus identified the main categories and related focused codes, we have let them converge toward the core theoretical concept of *creeping along* (see Figure 51) expression of the basic process of PhD researchers’ digital engagement. From this achievement onward we have proceeded at a more abstract level, with the analytical examination of the core theoretical concept in its dimensions and polarizations. The product of this endeavour was the articulation of the Digital Engagement Variation framework, aiming at suggesting a more explanatory instrument to frame the phenomenon being researched.

In the coding process we have taken into account the use of ‘anchoring’ approach (Sapford, 2011, p. 133), in which the code lists take into account the context of the questions and anchor themselves in the topic under investigation. Moreover, we have followed the recommendation of “eliciting all forms and types of occurrences, valuing variation over quantity” (Morse, 1995, p. 147). This allowed to preserve the richness of data and to highlight also incidental and negative comments which subsequently appeared to be comparable across the IT and UK interview statements. At the very beginning of data analysis, we have undertaken an early coding draft, using the transcripts of the first two interviews (Edu1_UB and Edu2_UB), in order to acquire familiarity with the coding process and exercising writing memos. After this pilot phase, all data was imported and coded in Hyperresearch 3.2 firstly sentence-by-sentence and then grouped thematically. We have started to practice the use of Hyperresearch first by re-coding the open comments drawn from the Italian questionnaire, and the first cycle interviews. Then we directly coded in Hyperresearch the open comments of the UK questionnaire and the second and third cycles of individual interviews. For each (IT and UK) interview a single ‘case’ was set up in Hyperresearch, within a unique ‘study’ (i.e. research project) named ‘PhDeresearchers’. Thus, for each interview a coding sheet was created and filled out with the ‘attribute codes’ (Saldana, 2011), related to the personal information of the interviewee and the logistic details of the occurred interview and subsequent transcription. Then, the interview transcript was fragmented in chunks, each of them related to the specific questions of the interview protocol. It is worth noting that we have decided in places not to include in the analysis a few excerpts of the accounts arising from the interviews because unrelated to the focus of the study (i.e. the individual agency of PhD students attempting to combine institution-led and self-organized learning ecologies). In fact, two participants spoke in details about personal issues (i.e. illness, family problems) interfering with their doctoral experience: whereas to a degree this kind of information helped to frame two difficult cases of doctoral experience, too specific details might create issues of confidentiality and appeared to be not useful for the purpose of the analysis.

As regards to the interview data in Hyperresearch, from the very beginning personal information (i.e. real names, email and/or phone number) of the research participants were kept confidential, using the devoted function. The cases were grouped in Italian and UK cases and further grouped under broad subject areas (e.g. Social Sciences). However, as the analysis advanced, the need for new aggregations emerged: for instance, subject areas such as Social Sciences and Education could be grouped because of similar work practices and compared to an analogous group organized with the UK interviews. The coding process for all the individual interviews produced an overall list of 221 codes (including 40 focused codes), each one associated to one or more chunks of text selected in

the transcripts. Moreover, annotations were added to code references whenever we have considered a specific code as likely to lead to more abstract codes. For instance, the code ‘key space/key places’ was annotated as follows:

“Individual/shared, assigned/temporary, physical/virtual spaces that the PhD students can access in university. These spaces become places when they are closely intertwined with crucial activities in becoming researcher (e.g. collaborating in the organization of a seminar). Along with the codes ‘contiguity with other researchers’ and ‘peer support’, it contributes to generate the focused code ‘feeling a sense of place’, where the notion of space is intended as permeated of identities (Massey, 2005) and where formal and informal interactions overlap”.

In this initial phase of the coding process we strived to maintain the richness of data by detailing variety of the given statements, rather than considering the frequency something was stated across the transcripts. This was justified by the opportunity to value also single, isolated ‘gems’ opening perspectives that might become key in developing a theory explaining the phenomenon under investigation. During the data analysis process we have applied the practice of sketching maps by hand and, when we have felt the need for further assessing the draft, using the free version of CMap 5.04.02 tool), Our aims were to a) gain an overview and take further decision in sampling and b) draft rough ideas about findings that could be expanded and supported by memoing activity. For instance, after undertaking the initial coding of the first cycle’s interviews (using Hyperresearch), we have drafted a rough map of the interviewees’ profiles, in order to consider a sub-set of issues related to the characterization of individual agency as one of the key components of the PhD students’ learning ecologies. Therefore, we have grouped and attempted to classify the personal attitudes towards ICTs and innovation, the influence of any professional background, any emergence of a more or less developed autonomy as future academics.

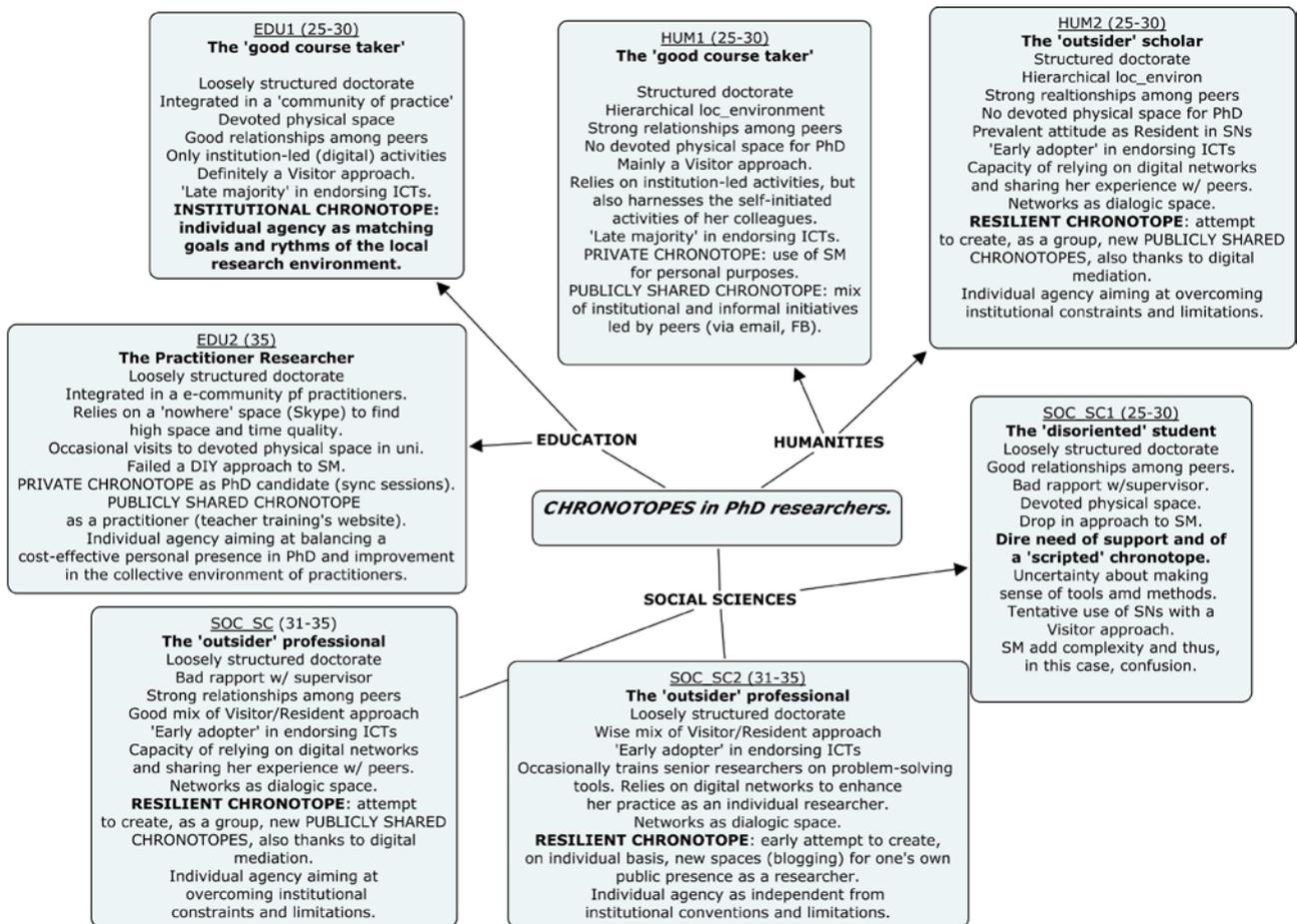


Figure 50. Example of map drafted after a group of interviews, to advance sampling.

Obviously, we have intended this kind of attempt as an iterative procedural exercise useful to think forward sampling strategies rather than as an achievement in the conceptualization of findings. In the specific case, we were aware of the inherent limitation of that early map, at a danger of oversimplifying the phenomenon under investigation. On the other hand, we have used CMap also to draw some higher order conceptualizations at certain points in time, especially when there was the need for matching findings arising from different themes. For instance, we have found interesting comparing, within the category 'Belonging to a local context', data subsumed under the focused code 'Feeling a sense of place' and its opposite 'Feeling a sense of displacement' to the mode for engaging in the digital of the individual PhD students. This has led to consider a variety of digitally-mediated behaviours and to draw the attention to the self-directed attitudes rather than the favourable conditions of a local context in grasping the motivations for engaging in the digital both as a group and as an individual. The associated memo has been used as material for the final draft of this chapter. Moreover, building on this kind of draft maps we have derived the explanatory tables through which we present the interview findings in the subsequent sections.

6.5 The interviewees' profiles

Aiming to familiarize the reader with the 26 participants' background (17 female and 9 male interviewees), this section will briefly account for the uniqueness of each interviewee in terms of undertaken digitally-mediated scholarly practices, respective local research contexts and personal dispositions towards information and communication technologies. This early overview offers at a glance the variety of experiences and situated contexts shaping the personal motivations and the digital practices of the PhD researchers, that will be further captured in the subsequent sections by highlighting themes. Among the interviewees' profiles the key informants are indicated, with the themes they particularly contributed to: the label of 'key informant' merely refers to the fact that multiple quotes from these interviews are reported in the chapter or unique relevant quotes are highlighted. The following profiles are exclusively based upon the interviewees' statements, taking care of privacy and confidentiality issues. Each of them is identified by the initial of the first name of the interviewee and, in brackets, by the acronym with which any quotes in the following sections are related to the specific interviewee. The same acronyms are indicated and fully explained in the respective Tables 38, 39 and 40 above reported. Likewise, we have ordered the profiles according to the temporal sequence of the interviews.

1. M.B. (*Edu_1UB*)

Female, 25-30 years old, intermediate phase of phd, Education. She states to feel herself integral part of the local research community of practice, where the attendance of the PhD room and the interaction with her supervisor and co-researchers constitute the fabric of her daily, face-to-face work practices. Email and webconferencing systems such as Skype perfectly fit the needs of her current research activity. In the capacity of teaching assistant she also adopt wikis, but only encapsulated within the institutional e-learning platform.

2. O. (*SocSci_2UB*)

Female, 31-35 years old, intermediate phase of phd, Social Sciences (key informant). She has had some previous experiences as a researcher and therefore feels enough self-confident to collaborate with well-established researchers in her local context. Likewise, she states a personal propensity to continuously complement more conventional and emergent sources of information for research purposes. She has being engaged in planning a pilot blogging activity over time, asking her friends (researchers) for some constructive feedback.

3. T. (*Edu_3UB*)

Female, >35 years old, advanced phase of phd, Education. She is a secondary school teacher and in fact has attended the doctoral program mainly at a distance, asking for some temporal extensions. Her core relationships occur with her supervisors via skype and occasionally with her peers in the

shared phd room. As a teacher and as a mother, she claims strong time constraints preventing her from harnessing the opportunities of the open Web. Moreover, she also accounts of unfortunate ‘do-it-yourself’ experiences with digital tools and the related need for an ICT support service.

4. G. (Hum_1UM)

Female, 31-35 years old, advanced phase of phd, Humanities subject area (key informant). She states a propensity to autonomously experiment with the open Web, especially to keep herself updated about her professional interests and to get some visibility as future researcher for the benefit of her group of peers in the doctorate and with the aim of overcoming a ‘silos’ approach in the local research work practices. She draws suggestions about digital engagement by observing the autonomy her peers are given in a research setting abroad.

5. S. (Hum_2UM)

Female, 25-30 years old, intermediate phase of phd, Humanities. Face to face meetings constitute the key mode in which activities such as dissertation chapters’ correction and methodological discussions occur with her supervisor and colleagues. She states to be not well acquainted with technologies in general and to mainly rely on the support coming from more tech-savvy peers. Her frequent research stays abroad haven’t had any influence on her approach to doctoral context and digital engagement.

6. F. (Med_3UM)

Female, 31-35 years old, initial phase of phd, Medicine (key informant). She combines her commitment in the doctoral study with her daily work as a researcher in a university lab, in particular as a member of a very small research unit. She occasionally tries to engage in research-related chats across social networks, on the advice of her supervisor.

7. P. (Arch_1PM)

Male, 25-30, intermediate phase of phd, Architecture (key informant). He has an extensive PhD student experience abroad across different countries and university contexts (including one year spent at the MIT, Boston). His doctoral research implies the consideration of new communication technologies matching new physical and social spaces. His digital engagement includes diverse attempts to enhance discussions among peers both in physical and virtual environments.

8. C. (SocSci_3UB)

Female, 31-35 years old, intermediate phase of phd, Social Sciences. She states to have experienced some serious problems, due to personal accidents and organizational shortcomings of the institution. She struggles to orientate herself among the research methods and instruments. She feels not to be enough supported by the faculty, but often relies on her peers when she ends up in

the shared open space. Her choice of digital applications is occasional and her use is temporary and generally said not satisfying for the specific needs.

9. C. (EduEcon_1IOE)

Male, 25-30, intermediate phase of phd, full-time, international student, Social Sciences (key informant). He really enjoys the challenging and supportive research context where he is developing his doctoral study. He is used to resident in social networks in order to take a break from study and interact with his friends. He states to have a very competitive nature, that also shapes his personal approach to social media: in fact, starting from the basic information received in the training session provided by the library, he aims to emulate his supervisor, who counts a number of followers in her twitter account.

10. Z. (EduPsy_2IOE)

Female, >25, initial phase of phd, full-time, home student, Education (key informant). She is the youngest participants across all the groups of interviewees. She definitely feels to be part of a thriving community of research practice and feels relaxed with social media in her everyday life. On the other hand, she states to have highly appreciated the mandatory ICTs training course provided by the local library, because it let her get acquainted with a range of options to adopt social media for research purposes. She aims to build on her initial blogging experience to construct a more defined digital identity in an advanced phase of her phd.

11. F. (MusicEdu_3IOE)

Female, >35, intermediate phase of phd, full-time, international student, Education (key informant). She has a professional background as a Music teacher in an open university: her interest in social media just derives from the need to enable her distance students to have a continuity of support and critical discussion, beyond the constraints of the institution-based e-learning platform. She is very careful of separating private and public (as a researcher) uses of digital networks and to manage a few accounts that can be sustainable and productive at the same time.

12. L. (IntDev_4IOE)

Female, 31-35, intermediate phase of phd, part-time, home student, Education (key informant). She currently works as a secondary school teacher and focuses on an international development project in her doctoral research. She mainly relies on twitter to be updated about research and policy reports in her field. She states not to be enough self-confident to write blog posts and in general to have an active presence across social media, even if many among her peers in the research network run blogs and regularly post on twitter.

13. M. (SchoolEdu_5IOE)

Male, >35, initial phase of phd, part-time, international student, Education. He works as a teacher in an international boarding school and cultivated his professional experience across different European countries. He feels comfortable with general purposes social networks, both to stay in touch with his relatives and friends and to start conversations with potential research participants. However, he is reluctant in attributing too much importance to the open Web as a venue where the educational relationship can take place.

14. Hr. (SocEdu_6IOE)

Female, 31-35, initial phase of phd, home student, Education. Her research interest focuses on Music Education. She mainly study at home for her research, currently works as a teacher in a primary school and only occasionally goes to the university to monthly meet her supervisor, borrow book from the library or attend seminars. She is aware of the potential of the digital networks for recruiting research participants and collecting informed opinions about her research topic. However, she also states to be reluctant in engaging in social networking and blogging for research purposes, due to time constraints and the need for separating her intensive online engagement for work and neighbouring interests and her mode of study for the doctorate.

15. Hs. (EduPsy_7IOE)

Female, >35, initial phase of phd, part-time, home student, Education. She is undertaking a professional doctorate and is being trained to be an educational psychologist. She states to be more concerned about the risks of social media in education rather than interested in harnessing these media to build her profile as a professional awarded of a phd. She acknowledges the relevance of the open Web as an ever-updated repository of information, but she is convinced that face to face relationships will keep on counting more in educational sector.

16. S. (HE_8IOE)

Female, >35, initial phase of phd, part-time, international student, Social Sciences. She has a long-standing professional background as a senior research manager in an Italian university and states to feel herself at home in the structured context of the professional doctorate. She is enthusiastically impressed by the range of the methodological and technological training opportunities and support available to the PhD students. Her focus on European higher education administrative staff as research participants in her phd makes it fundamental and exhaustive the use of skype and email to carry out the interviews and keep her contacts with other higher education staff.

17. V. (SocSci_4UM)

Female, 31-35 years old, just completed phd, Social Sciences. She currently has a temporary contract as a research assistant in the same university where she achieved the phd. Her social media use appears to be occasional and not particularly valued for future research work. However, she

acknowledges that just thanks to the open Web she was able to leverage the acquaintance with a well-established scholar in a previous research stay: she currently works with him on a research study at a distance, independently from her supervisor.

18. G. (SocSci_5UB)

Male, 25-30 years old, final phase of phd, Social Sciences. He spent most of his doctoral journey abroad and intensively used the digital networks to stay in touch with his friends, apart from the curation of his own academic profile and the participation in a few online groups of interest related to his research topic. As a co-author and moderator of a collective, professional blog he experienced the negative sides of the open online discussions: this has prevented him to date from keeping on posting in digital networks. By the way, after being awarded the phd, he aims to newly contribute in some digital network specialized in his topic and bridging between research and activism.

19. (Edu_6UB)

Male, >35 years old, advanced phase of phd, Education subject area (key informant). He has a professional background as a teacher trainer and currently plays a role as a teaching assistant along with undertaking his doctorate. His research interest in Philosophy of Education provides him with a solid critical approach towards social media. At the same time, he has piloted a series of youtube lectures just to experiment with such a format of interaction with a 'generic' audience, independently from his local research context.

20. A. (InfoSociety_7UB)

Female, 25-30 years old, intermediate phase of phd, Social Sciences area (key informant). Her doctoral research is concerned with gender issues and digital identity: as a consequence, her attitude towards social media is said to be closely affected by her commitment of following teenagers' behaviours across social networks. She clearly reveals the anxiety of losing control upon the fragments of digital identity she is spreading in the open Web. She claims the need to further reflect among peers upon social media as differently interwoven over time during the doctoral journey.

21. C. (Eng_2PM)

Male, 25-30 years old, intermediate phase of phd, Engineering. He undertakes his study in an internationally renowned university lab, focusing on the interplay between engineering and surgery techniques. He is comfortable with social media in his spare time, especially for organizing events or uploading the recordings of his band's music performances. However, he is concerned about the lack of a systematic information flow among the researchers working in his lab and hopes for any form of social networking website which could cover this gap.

22. E. (CompSci_5UM)

Male, 31-35 years old, intermediate phase of phd, Computer Sciences. He works in a complete isolation from his colleagues, apart from the scheduled threshold events of the doctorate. He regularly use digital networks such as Research Gate and some LinkedIn groups to interact with further experts and gain visibility as an early career researcher. This daily practice is in alignment with other researchers' in his local context.

23. G. (*Biotech_8UB*)

Female, 25-30, intermediate phase of phd, Biotechnologies. She feels herself to be integral part of a small research group engaged in a project aiming to produce some patents. She does not consider herself either as keen of social media or in general tech-savvy, whereas she accounts to have a good attitude in manually coping with any broken lab equipment. She hopes for an improvement of the communication flow among the research groups in her local context and for any training opportunities treating the issues of 'being researcher', including some information and directions for using social media to build one's own academic profile.

24. F. (*Eng_3PM*)

Male, 25-30 years old, intermediate phase of phd, Engineering (key informant). He have drawn advantage from experiencing some research stays across diverse university contexts and countries. He states that the 'isolated mode' of working by the PhD researchers is taken for granted by the institution and this prevent young researchers from using the open Web beyond the opportunities for literature searching facilities. He aims to better self-organize his presence across social media, by attempting to draft a blog as a hub of his multiple experiences and threads of research interests.

25. A. (*Eng_4PM*)

Male, 25-30 years old, intermediate phase of phd, Engineering. He mainly relies on institutional digital resources and seems not to be familiar with social media use, apart from some occasional leisure activities.

26. V. (*InfoSociety_9UB*)

Female, 31-35 years old, intermediate phase of phd, Social Sciences (key informant). She was trained as a librarian and currently works as an online community manager in an academic context. She manages an active presence across a range of social media, both in the capacity of a professional and as a PhD student research purposes. At the same time she is disenchanted about the claimed liberating power of social media. Her stance is very critical towards the stillness of the academic environment, from which she has not been receiving the expected cultural inputs, including less hierarchical work practices, in alignment with the suggestions coming from the open Web.

6.6 The interview findings: current academic practices and trajectories in the digital

This section presents a selection of the interviewees' statements that shed light on their current academic practices and related trajectories of engagement with digital tools and environments. In the perspective of convenience and theoretical sampling strategies depicted in Chapter 2, this section in particular reveals behaviours and opinions gathered from Italian and UK PhD students researching in Social Research, Education and Humanities areas, and highlights further comparison with Italian doctoral candidates working in STEM subject areas. The interview data are firstly presented under four key themes represented by the following 'active terms' (Charmaz, 2006): *Shaping the scholarly activities*, *Engaging with the 'digital'*, *Thinking the open Web* and *Musing upon social media training*. The theme 'Shaping the scholarly' refers to the primary engagement of the PhD students within the sphere of the institution-led ecologies, implying analog or digital spaces and tools to carry out activities such as searching materials, networking and sharing research. The theme of 'Engaging with the digital' concerns the different orientation endorsed by individual doctoral students making sense of concurrent digital opportunities. It implies a major or minor involvement of the personal ecologies (Andrews & Haythornwaithe, 2011), to a degree overlapping or competing with institution-led learning ecologies. It is dependent from the interplay between the effort to comprehend what is and what is not 'scholarly' and the endeavour for ICTs appropriation. The theme 'Thinking the open Web' is related to the diverse stances stated by the PhD researchers, figuring out the extent to which the networked practices and venues currently affect or may affect their doctoral journey and even their being researchers in the next future. Finally, the theme 'Musing upon social media training' reports the opinions stated about the opportunity that institutional initiatives provide advice and support to enable and improve the use of digital networks and services by the newer researchers. In the logic of constructivist grounded theory, the following account is intended to return a collective narrative (Charmaz, 2006) of the process of digital engagement in doctoral journey rather than fully accounting for the lived experiences of a sample of individual PhD researchers. Thus, particular attention is drawn to reveal commonalities and differences across statements, under the form of opposite stances and to highlight any negative and unique cases that are likely to let gain further insights on the interpretation of data.

Table 41.

Description of the four main themes and the related main categories and focused codes in tension arising from the interview data.

Theme	Category	Focused codes	
<p>Shaping the scholarly in the digital Reaping the benefits and coping with the issues of practicing scholarly activities in the digital.</p> <p>Sub-themes: <i>Searching materials, Networking, Sharing research, Discussing research issues.</i></p>	<p>Taming the tools.</p> <p><i>Struggling between convenience and exploration in sifting the choices and adapting the uses of the Web 2.0 tools.</i></p>	<p>Pursuing convenience/Crossing boundaries in undertaking digitally-mediated academic activities.</p>	
<p>Engaging with the digital Self-organizing personal ecologies in the interplay with institution-bounded spaces, forms of assistance and open Web opportunities.</p>	<p>Going digital.</p> <p><i>Moving to the digital by defining a stance with respect to spaces, socialization and time.</i></p>	<p>Negotiating online spaces as a group (compared to Feeling a sense of Place/ Displacement).</p>	<p>Creating Complementary/ Alternative spaces.</p>
		<p>Negotiating online spaces as individuals (seen as dependent on or independent from Feeling a sense of Place/ Displacement).</p>	<p>Uptake/Non uptake of the digital. Taking it for granted/ Exploring. Being pragmatic in keeping control/ Being afraid of loosing control.</p>
		<p>Evolving in the digital over time.</p>	<p>Individual/ Institution as a starter; Individual-based/ Group-based influence for a strategy.</p>
<p>Thinking the open Web Reflecting on what the open Web really means for one's own experience as a doctoral researcher and how it is likely to impact on future scholars.</p>	<p>Making sense of the open Web.</p> <p><i>Defining reasons why the open Web is likely/unlikely to be integrated in the future of research work.</i></p>	<p>Irrelevant for the established researchers/ Relevant for the newer researchers.</p>	
<p>Musing upon social media training for research Reflecting on the extent to which the institution should provide support and advice about social media for research purposes.</p>	<p>Learning the digital.</p> <p><i>Highlighting the roles of self-directed and guided training to gain expertise in the digital.</i></p>	<p>Relying on individual/group initiative/ Relying on institutional advice and support.</p>	

6.6.1 Shaping the scholarly in the digital

Data included in this theme have contributed, along with the findings drawn from the e-surveys, to provide a response to the research question related to the actual social media practices of doctoral students (see Table 2). However, in this chapter the analytical focus is on understanding the dispositions of the interviewees regarding the digital tools supporting the academic activities rather than surveying the actual uses (see Chapter 8). The PhD students being interviewed across the Italian and UK samples appear to move carefully and slowly along the digital opportunities provided by the open Web to support scholarly tasks. The activities actually undertaken appear to be characterized by the category of ‘Taming the tools’, but with two opposite directions, thought in a continuum of practices: ‘Pursuing convenience’, where the attitude is closer to the need for expanding existing practices and ‘Crossing boundaries’, where the experimental approach is more evident and thus the likely impact on crafting one’s own academic identity. In particular, four broad areas of digitally-mediated academic activities stand out as sub-themes from the interviewees’ accounts, as permeated of expectations and reluctance regarding the use of unconventional open environments: Searching materials, Networking, Sharing research and Discussing research issues. In an early classification (Table 41) we have located the aforementioned sub-themes under the two sub-codes ‘Pursuing convenience’ and ‘Crossing boundaries’. However, the tension between the two sub-codes is more relevant than subsuming specific activities in a fixed manner. For instance, ‘Searching materials’ in the open Web is closer to a conventional scholarly approach when it deals with a follow-up of retrieving resources in the local library, but it challenges the conventions when it encompasses tinkering modes for accessing information for current research topics or sifting trusted people as social filters across digital networks. As expected, if conventional activities in the digital, such as searching materials and networking, underly diverse criticalities, the emergent scholarly tasks in the open Web mainly raise more concerns than the awareness of likely benefits.

Table 42.

The dyad of focused codes within the category ‘Taming the tools’ and related to the four digitally-mediated academic activities.

Taming the tools <i>Struggling between convenience and exploration in sifting the choices and adapting the uses of the Web 2.0 tools.</i>		
Pursuing convenience	vs	Crossing boundaries
Sub-theme: <i>Searching materials</i>		Sub-theme: <i>Sharing research</i>
Moving seamlessly among institutional and open access databases and repositories. Emerging use of social media when the research topics are current. Personal trust is the key for relying on social media for literature searches.		Research-focused social networking sites may raise reliability issues. Sharing research is not a common practice in certain research areas. Sharing the method being applied (e.g. code) along with own publication may be rewarding.
Sub-theme: <i>Networking</i>		Sub-theme: <i>Discussing research</i>
Face-to-face comes first, online contacts follow up. Email keeps on being paramount, social networking is creeping. The ability to cross social media to build networks of contacts over time starts to be developed on individual basis. The word of mouth works as an effective prompt for online networking in techno-scientific areas.		PhD researchers occasionally join discussions in research-focused social networks enabling threads of debate. Issues of audience (researchers vs non researchers) are being highlighted in research discussions in open environments.

Searching materials

Searching for relevant literature is said to be the academic practice in which both the Italian and UK PhD students smoothly move across the institutional and self-organized resources. Many Italian PhD students across a range of disciplines use it as the first access portal to the scholarly publications and shift to the institutional website only to bypass the walled gardens of the publishers’ venues. Most interviewees have to reflect to mentally distinguish among fee-based and open access database resources: for them these materials are merely ‘available online’ and are more accessible and easy to manage than those located in physical, departmental libraries. However, occasional or regular uses of Google Scholar are closely dependent on the research topics: for instance, PhD students in techno-scientific areas intensively use Google Scholar to access journal articles, whilst researchers in Medicine manily rely on specialized databases such as PubMed or PlosOne. In Humanities the need for consulting monographies makes it less useful to use this search engine. For instance, a doctoral researcher in Humanities (Hum_2UM) working on an early 20th

century's author occasionally finds it useful to browse Google Books to 'taste' new publications, since she has necessarily to rely on the works' critical editions (unfoundable online) for her research. The UK interviewees state to access first the institutional library services and then, as a second choice, to complement the searches across the open search engines and the social media they are acquainted with:

"For me it's not a matter of social media or not... I try to get information, for instance when I need to find something for my thesis I just first go to the IOE library and search research journals that are trustful sources. If I don't find what I am searching there, I go to Google, sometimes Scribd or again Facebook, where you can download articles and reports. *The first venue is the university library and only if I don't find enough resources I expand the search across social media*" (MusicEdu_3IOE).

Studying current research topics makes it convenient becoming well acquainted with general purpose social networking sites (e.g. InfoSociety_9UB) and organize systematic news feeds:

"I think the amount of information I can access is hugely valuable also on Facebook and on the Twitter accounts I am following...I have a link to a lot of big organizations I need to pay attention to for my research and so when they post new articles or new issues they want to discuss often they post on FB and come up in in my news feed. Otherwise I should get to their webistes... This can save a lot of time" (IntDev_4IOE).

The importance of the social filter in sifting materials on Twitter is also highlighted, as a unique case, by an Italian interviewee:

"I found it relevant on Twitter the mode for accessing information...it is assured by a person I choose to follow, it's not automatic. Instead of starting from scratch...you can rely on a non-automatic curation of information, mediated by people who you have confidence in, they have a good reputation...in this sense it differs from Facebook, where hints are more generic and occasional" (Arch_1PM).

The boundaries between the activity for searching materials and networking tend to blur and create new temporary contiguity between young and established researchers:

"Just being involved in discussions asking questions as I did on ResearchGate, I became aware of materials in contexts that I was not aware before...so I think it can be really useful even if I have not much to offer yet. I mean, I joined ResearchGate because I was looking for a paper...and I had to log on before having access to the paper... it's handy, because there are papers on there, normally I have to pay for that, there if you follow them they follow you and so...it's not awkward asking them 'Can I have a copy of this paper?'. In

terms of searching for papers, I think it's more finding things are there that you haven't known before... (EduPsy_2IOE).

However, this mode for contacting academics via social media still finds reluctant the early career researchers.

Networking

The function of the open Web as a 'network amplifier', as emerged among the Benefits in the e-surveys' open comments (see Table 16), also resonates in the interviews, where the research participants show their perplexities between the use of formally acknowledged and informal communication tools to contact new experts. Email is in fact generally viewed as the formal channel for scholarly communication that is likely to collide against the more informal and direct ways usual in the social networking sites: "I have never contacted anyone in Academia.edu...it seems to me too 'invasive' against email" (Hum_1UM). This need for separating the communication channels resonates in the UK interviews:

"To contact new experts I use email because I think emails are a formal way of approaching...if I just use social media...it's just like opening, don't know...It's like...I use the same way people approach me and that's how I start...put in up any relationships. Email first, because it's more 'private' and then... Of course, it depends on the situations: for instance, that professor I accepted to become 'friends' in FB...he had read one of my posts on Facebook, wrote to me a private message saying he was interested in keeping in contact about my research project...and we continued the conversation through email and exchanging texts" (MusicEdu_3IOE).

Moreover, the most spread attitude for networking implies the use of online communication tools as a follow up of the acquaintances started face to face or at least suggested by trusted people:

"I admit that the most relevant contacts started from a co-presential meeting...I have hardly contacted someone without meeting him/her in person before. At times, someone has suggested to me some names and I retrieved them online and contacted them, but in fact there was the 'word of mouth' first...*an early transition through some level of personal trust*" (InfoSociety_7UB, emphasis added).

However, there is also who is especially interested in findings new voices online, has the capacity of moving across the digital networks with a critical approach and is inclined to learn how to behave in the open environments through a series of trials and errors:

"I spend a lot of time on FB, there is so much life running there...I have to say that I have never had a professional relationship in a research-focused social network, such as Academia.edu...this seems to me more an open archive... I have never had any interaction

among peers there. Rather, I have used more generalist social network such as FB to contact people who I was interested in...because there they are more open to collaborate” (InfoSociety_9UB, emphasis added).

If this mode of undertaking networking activities directly in online venues stands out as an individual initiative in Humanities and Social Research subject areas, among the interviewees in techno-scientific subject areas this behaviour is likely to be considered ordinary stuff of everyday life for a researcher, whenever such behaviour appears to be a tacit convention in the local context.

“My work is very solitary...nobody works on my topic in my department. So, I follow some interest groups on LinkedIn and in Research Gate: I found some interesting papers and contacted three-four authors. And on reversal, someone contacted me via social network, asking for additional information about my research...so, I regularly update my profile in these social networks. I have to say that this is taken for granted here...both my colleagues and well-established researchers do the same, it’s a common practice here”(CompSc_5UM).

However, the individual may occasionally move to general purpose digital networks whenever the opportunity to stay in touch with a specific researcher comes up:

“My supervisor suggested to me Research Gate...he was already there, and also other researchers of my institute are on this social network and in LinkedIn as well...it is fairly spread as a practice but, you know, we don’t waste too much time there, and... yes, I sometimes use Facebook, that I started to use because of the contact with an Iranian researcher” (Med_3UM).

Sharing research

The uncertainty in sharing one’s own research beyond the formal channels of academia is undoubtedly a predictable attitude among the PhD researchers, due to privacy, copyright and legitimisation issues already revealed by the open comments (see Table 17). The Italian interviewees mainly report example of *non* adoption of social networks for sharing research, whilst the UK participants particularly discuss problems when using blogs and twitter. Across all the interviews, a certain variation occurs in the diverse attempts for keeping control of the dissemination of one’s own research production. For example, the fear of being overexposed in informal venues is coupled to a scant acquaintance of what is the real level of communication enabled by some research-focused social networks:

“I haven’t opened yet an account on a research-focused social network because...indeed, for instance, in Academia.edu there is no control, everybody can enroll and everybody can write ...I am not convinced...maybe I could post my research interests, what I am doing in the doctorate, but that’s all, at least at the beginning...but I would never upload my articles,

even my published articles, because it would be easy to copy them without crediting the author...at least this is my current idea of these venues”(Hum_2UM, emphasis added).

Elsewhere, the missing adoption is justified by the lack of a shared practice in the ‘academic tribe’ to which the PhD student belongs:

“I have a profile in Academia.edu but...I have never uploaded an article of mine, in theory I could do it but...indeed I am not pushed to do that...we architects differ from designers in this need for self-promoting our work” (Arch_1PM).

Also in techno-scientific subject areas the prevalent attitude is to be ‘consumers’ of shared research rather than to disseminate one’s own work:

“*So far I haven’t be able to apply the logic of sharing in social networks...I know that there is a close relation between PubMed and Research Gate and often I receive timely notifications of papers just added in PubMed but, don’t know, I would prefer that someone else mentioned a paper of mine rather than directly sharing it in Research Gate or other similar spaces*” (Med_3UM, emphasis added)

A different attitude is suggested when the mindset is inclined to think the open Web with an ideology-driven approach:

“*For me open access has always been a core idea in my way of thinking...why do we do research?...to share it. I run a blog...indeed I don’t write so much there...With a low sense of shame I uploaded those ‘style excercises’, I mean the mandatory assignments in the doctorate...I put them online because I had to re-qualify myself against my origin as a librarian towards a different world...*” (InfoSociety_9UB).

Otherwise, sharing research materials may not result as a personal habit, but the word of mouth may convey the awareness of what can easily be done in the open web with a prospective advantage:

“I mean, they share in a blog or such informal things the code they have previously developed to draw the data they have published in a research paper...Somewhere there are other codes for that specific task, but if I find an available code with the included directions I will be likely to use that shared code and then to cite the related paper rather than starting from scratch and developing a new code on my own...so, this behaviour can really be rewarding” (CompSc_5UM).

Daring academic writing directly in informal venues such a blog is even more complicated and scaring, as it clearly emerges from the UK interviewees:

“I have started a blog, but I realize that blogs are very puzzling...it’s not only about time...it’s quite demanding, in the sense...because, *we have to produce this thesis, we have to claim that it’s original work and I am just afraid that, ok, if I put something there and*

makes it public before I do my things, how original this is gonna be, ...things like that”
(MusicEdu_3IOE).

The uncertainty in undertaking even an occasional blogging activity persists also when the interviewee can directly observe some lived examples of social media practices:

“I have friends in national governmental organizations...from an international development work I did previously...some of them are quite good online... they post on Facebook, Twitter...One runs a blog for her university and she keeps asking me to write something...I started writing three times but I am very scared to give it to her because when it’s there I can’t change it! I don’t understand what the rules are, I don’t understand what the writing style is meant to be and what kind of ...it’s a very different style of writing, academic writing. I don’t feel anyone has really guided me and I need guidance” (IntDev_4IOE).

The task of sharing research appears to be daunting also when a tentative twitter adoption is applied, with the underlying expectation to gain an immediate visibility:

“I am skeptical about these things, especially twitter...it does not work as it should...it is hard to build up followers. Also my supervisor has an academic twitter and she has all together about two thousands of followers... mainly organizations in education policy. That’s works. Going to conferences, meeting people talking to me...I think this allows to build your followers. I am very critical on twitter because it takes much time to be effective”
(EconEdu_1IOE).

Here the availability of a fast and easy means such as twitter creates the momentaneous illusion of getting fast results as well. A totally different attitude emerges when there is confidence in what the digital networks can provide in terms of social life and continuing exchange of ideas.

Discussing research issues

Whereas only one PhD student in Social Research (InfoSociety_9UB) states to mainly find hints for her research across Facebook boards, very few accounts emerge about discussions attempted in research-focused social networking sites, where Research Gate appears to especially enable interaction:

“I was involved in a discussion in ResearchGate. You know, in your profile you can ask questions. I asked a question... It’s about evolution... how children are cognitively be able to back up concepts...not if right or wrong but about improving understanding...it sparked some heated debate on my page, yes/no, people for and against it, educators said what should be done...For me it was interesting to see how researchers are looking at scientific concepts all around the world. A guy sent to me a personal message asking to review his

book for him. Maybe I have been lucky! For sure I find Research Gate more useful than Academia.edu” (EduPsy_2IOE).

A certain sense of surprise about the occasional, positive experience occurred in Research Gate is also revealed in the following account, where the received advantage seems stronger than the personal propensity towards social media:

“There is a thing that you can ask questions and receive answers which might solve part of your research problems, because some researchers somewhere are working on a similar project...in principle all that might produce a collaboration in the future. It seems to me more useful than other social networks” (Med_3UM).

However, in more open environments, such as twitter, the issue of the undefined audience arises again, as well as in the open comments received in the online questionnaire. The opportunity for discussing research topics in twitter is indeed mentioned only in one interview, and is posited as problematic because it enables merging the types of participants and the levels of communication:

“These means are very fast and also allow to generate some...mini-discussions. But the risk of trivialisation of the topics is high. I can’t remember who said this but...there is a difference between a journalist who knows loads of thing on the surface and the researcher who is more accurate when speaking...*This difference blurs on twitter, I mean the difference between reporting a thing and...the weight of a statement...it’s very useful to report something, but I can’t stand that an issue is going to become a journalistic issue, whilst in a research field the same issue could have a dramaticly different value*” (Arch_1PM, emphasis added).

6.6.2 Engaging with the ‘digital’

The theme ‘Engaging with the digital’ is concerned with the kinds of dispositions stated and the actions undertaken by the PhD researchers in the digital, taking into account the relationships between self-organized and institution-led learning ecologies. In particular, this sub-section accounts for the interplay between the sense of ‘Belonging to a local context’ and the capacity of ‘Going digital’ by negotiating online spaces as a group or individuals. Moreover, it gives some evidence from the interviewees’ narratives that digital engagement may evolve over time.

Negotiating online spaces as a group

In the interviewing process we have observed that some research participants have characterized their going digital by positioning themselves as ‘gatekeepers’ to open environments on behalf of their local group and promoting the creation of an online space to improve mutual support and self-empowerment. In this sense, we can identify a relationship between their ‘engaging with the

digital' and the different sense of belonging to the local academic context. These PhD students seem to think the spaces negotiated in online venues as complementary or alternative opportunities, motivated by the situated contexts and supporting diverse goals. The negotiation may occur among peers or between the individual PhD students and their supervisors. Anyway, these examples reveal the need for embedding the online space in the social context of one's own doctorate, by going online together as a group, rather than exploring new settings for scholarly interaction in a wider research community.

Table 43.

The comparison between the category ‘Belonging to a local context’ and the category ‘Going digital’, as highlighting collective forms of negotiation of online spaces.

Belonging to a local context			Going digital	
Focused codes	Examples		Focused codes	Examples
Feeling a sense of place Feeling to belong to a local ‘academic tribe’ (Beecher & Tower, 2001).	“We share a room is with the PhD students of my doctoral program...usually a small minority is used to be there regularly. There was also an intensive information exchange during the mandatory courses, after that each of us have taken individual routes” (Arch_1PM).	may lead to	Creating complementary online spaces	<i>Enhancing peer interaction:</i> “I have tried to develop a collective blog, together with with two, three people but it has failed after a while. At the beginning we have also organized some brainstorming sessions that raised great enthusiasm, but not more than that” (Arch_1PM).
	“We doctoral students haven’t any physical space where to meet and so we are forced to keep in touch through email, mostly through email...we have succeeded on creating a sense of community, anyway” (Hum_1UM).			<i>Gaining visibility as newer researchers:</i> “We have created a collective Facebook page to provide information on the research activities we PhD students develop at the department” (Hum_1UM).

Focused codes	Examples		Focused codes	Examples
Feeling a sense of displacement Feeling not comfortable or even ‘lost’ in the local academic context.	“There was no PhD program’s website, officially we didn’t exist in any place” (InfoSociety_7UB).	may lead to	Creating alternative to local constraints	<i>Negotiating with the institution:</i> “We have proposed to run on our own a collective blog, as a substitute of an official site but...they said No” (InfoSociety_7UB).
	“The first year was...the vacuum for me working student. I would have liked to have a support group from the very beginning, it’s the key” (Edu_2UB).			<i>Negotiating with the supervisors:</i> “Things got better when we agreed with my tutor to schedule regular Skype meeting: for me it has been the real place where I feel part of the doctorate” (Edu_2UB).

Interview data gives evidence of some iterative trials in the digital both to set up a shared environment in the lack of an institutional space or to supplement the forms of scholarly

socialization available in the physical or virtual university spaces. At times the aim is to expand scholarly discussions among peers and go beyond the institutional e-learning platforms set up as repositories of materials and administrative procedures. In other cases, the intent is to overcome cultural and institutional constraints and create a public online space in which the newer researchers can mark their presence. However, these attempts are reported as unsuccessful or having a short lifespan. In some cases the self-organized initiative is stopped by some institutional constraints or develops despite the presence of any institution-led service.

“I tried to start a collective blog together with two or three people but the pilot failed after a while. At the beginning we also organized a brainstorming session through a focus group with peers...everybody told me ‘Great, really great!’, but in reality nothing happened...I also tried to organize some informal, face-to-face meetings among peers. But we easily get dispersed...or we feel not ready enough to present something to our peers or are afraid of compromising the ‘supposed’ originality of our own research” (Arch1_PoliMi).

Otherwise, the negotiation of an integrative online space may also stem from an agreement among the individual doctoral student and her supervisors/mentors, in order to meet the work/familiar constraints of a specific phd candidate:

“I have agreed the scheduled use of Skype with my supervisor...I can schedule periodic sessions with my tutor, my senior supervisor, a research methodologist who helps me...I find those sessions fundamental...you have to be concentrated there, to focus on the topic to be discussed...you know, you have a specific goal in such sessions...we can share documents, I can show my data...I can access in parallel to a range of resources and devices, including my iPad. (Edu_2UB).

The space/time synchronicity enables this PhD student to harness a peculiar quality of time for interacting with her supervisors and advance in her phd. Sometimes, the lack of any shared space (physical or virtual) among the doctoral students may act as a springboard for some spontaneous initiatives aiming to face local issues, such as the ‘veto’ on recognizing collective initiatives run by students and the separation in ‘silos’ among the well-established researchers belonging to similar but distinct research strands.

“There was no doctoral program’s website...officially we didn’t exist in no place...so we felt the need to have a space to gain visibility and publicly show the research studies we were doing. We proposed to make up for the lack of a website, a devoted space... by running a collective blog of the doctoral program, but... for bureaucratic reasons they said ‘No’” (InfoSoc_2UB, emphasis added).

The influence of a consistent motivation helps to sustain the interaction in a group of PhD students penalized by a local context that is said not to encourage research bonds. The ‘private’ channel of email allows the group to keep effective contact, whilst the public venue of a generalist social network lets them to be visible as future researchers, by disseminating the achievements of their early career.

“We doctoral students haven’t any physical space where to meet and so we are forced to keep in touch through email, mostly through email...I think we have succeeded on creating a sense of community, anyway. We have an institutional e-learning platform, but it’s empty indeed, no discussion there... nobody has ever written in the forum there...too ‘institutional’ ...email is far better for communicating among us. But we also use Facebook among peers: we have created a collective FB page to provide information on the research activities we develop at the department (Hum_1UM).

However, in the same local context the opportunities for sharing perspectives among peers seem to create *per se* a self-contained place and fulfill all the needs for communication and support, thus making it pointless any further online space:

“We have some informal meetings among doctoral students of the different cohorts and have also heated discussions about the adopted methodologies. Maybe a collective blog could support these discussions over time, it might be useful in long-term perspective but... it would require much time, who would really take care of it?” (Hum_2UM).

In the accounts above reported, the initiatives for creating an alternative, informal online space are undertaken independently from the senior researchers and the benefits of the group seem to prevail on the pursuit of any individual advantage.

Negotiating online spaces as individuals

The negotiation of the online spaces with other peers or faculty arise from the interviews as a reaction dependent on the different perception of the own local context. Otherwise, such negotiation may derive from the clear exploratory attitude of an individual PhD researcher: “I can say that I don’t go on the web because I feel that something is missing in my doctoral activities. It’s my attitude”(SocSci_2UB). In fact, applying the same comparison between the sub-codes ‘Feeling a sense of place’ and ‘Feeling a sense of displacement’ to interviewees stating an individual-related initiative, we have observed that the behaviours may significantly change, irrespective of their sense of belonging to the local academic context.

Table 44

The comparison between the category ‘Belonging to a local context’ and the category ‘Going digital’, as highlighting uptake or non uptake of online spaces at individual level.

Belonging to a local context		Going digital
<i>Feeling a sense of place</i>	<i>may lead to</i>	<i>Uptake or non uptake of the digital</i>
“The PhD room is really a great place: you may not to be able to do such thing, but you can ask your deskmate for advice” (Edu_1UB).		“I have to confess that I don’t really use social media...neither in my everyday life, I do prefer face to face encounters. We don’t need them in our research group, we meet . Email, and sometimes Skype, are enough” (Edu_1UB).
“I am quite lucky because I have an office...I share it with people at psychology department ... our facilities are great... it’s nice to have access to all of them...likewise, I am doing a lot of statistics...they provide me with the software I need ...in terms of scheduling with my supervisors they are very regular. I don’t feel I need more of that, I think I have enough. Definitely I feel to be part of a community of practice, of something bigger” (EduPsy_2IOE).		“Things like Facebook... I am starting to really not like...the more I think of it the more I think it’s quite a pity of vanity, it’s all about you, your status, your pictures, your...me, me, me. Whereas Twitter ...I aim to be there...is purely academic.. I don’t have any friends on twitter, neither I am interested in celebrities at all. It’s purely academic searches relevant and communicate my research” (EduPsy_2IOE).
“Everyday we meet early in the morning and review the state of the art of the current projects, share the tasks and such things...the PhD work smoothly sneaks in such daily routine” (Med_3UM).		“I’m not very keen of social media but, yes, I have accounts in a range of them...I find it ResearchGate particularly useful...you put there your topics and can keep in touch with experts internationally” (Med_3UM).
<i>Feeling a sense of displacement</i>		<i>Uptake or non uptake of the digital</i>
“We have always struggled to have a physical place where to meet and occasionally work...peer support has always worked well but...really I have never felt comfortable with all that” (InfoSociety_9UB).		“I blessed wi-fi and my iPad. I used iPad for searching useful materials on the Web and contact new people across digital networks” (InfoSociety_9UB).

However, drawing attention to the interviewees striving to endorse the digital in their doctoral activities, we have observed a range of stances arising from concrete practice. We have subsumed them under two dyads of sub-codes: ‘Taking it for granted’/‘Exploring’ and ‘Being pragmatic in keeping control’/‘Being afraid of losing control’.

Table 45.

The most relevant focused codes within the category 'Negotiating online spaces as individuals'.

Negotiating online spaces as individuals			
<i>Focused code</i>			<i>Focused code</i>
Taking it for granted			Exploring
Examples			Examples
<i>The open Web as "ordinary stuff of life" (Shirky, 2008, p. 86).</i>	<p>"Social media use, the use of the web in general is embedded in my everyday activity, it naturally happens. For me it's difficult to split analog from digital activities, to imagine something different" (SocSci_2UB).</p>	vs	<p><i>Taking initiative to expand scholarly opportunities through exploration.</i></p> <p>"Across the Italian universities I have hardly found some relevant studies on my topic... but in this task Academia.edu helped me a lot to make my research possible, to broaden my theoretical and methodological perspectives, through the notifications of papers marked by the keywords I had selected" (InfoSociety_7UB).</p> <p>"It was enough to launch on the internet some requests...I mean, across some Facebook groups or LinkedIn groups and I could receive some good inputs from the professional communities of librarians and online community managers" (InfoSociety_9UB).</p>
<i>Feeling to be in the digital as integral part of being researcher.</i>	<p>"I don't know why I've started to use social networks, maybe because I study foreign languages and literatures...so I am prompted to explore things outside...or maybe that's a natural evolution for Humanities researchers in general" (Hum_1UM).</p> <p>"For sure also in technoscientific areas many researchers are there, in digital networks, it's another venue, that's all" (CompSci_5UM).</p>		<p><i>Exploring as a primer to understand how to behave in the digital.</i></p> <p>"I think that exploring these tools is the primer...you have to spend some time across them before deciding what to do with them" (Edu_6UB).</p> <p>"Through trials and errors I have understood that they accept you if you take part in their networks" (InfoSociety_9UB).</p>
<i>Cont.</i>			<i>Cont.</i>

<i>Focused code</i>		vs	<i>Focused code</i>	
Being pragmatic in keeping control			Being afraid of losing control	
Examples			Examples	
<i>Adopting social media as prompted by practical needs.</i>	“I have never liked social media because I really prefer face-to-face... I’ve started using them when I needed it, because of my research...a distance learning thing” (MusicEdu_3IOE).		<i>Fear of losing control of one’s own time management.</i>	“I have accounts in a range of social media but I can’t use it...they distract me from what I must do” (Edu_2UB). “I’m disappointed with Twitter, it takes too much time to be effective” (EconEdu_1IOE).
<i>Sifting tools for defined purposes</i>	“Essentially, for me research-focused social media is useful to get me a job or get my research into the world” (EconEdu_1IOE).		<i>Fear of losing control of one’s own self-representation online.</i>	“My true fear is not to be able to manage the kind of representation of myself that is there”. “I am scared about blogging, because what is written there...you can’t cancel it!” (InfoSociety_7UB).

A ‘Taking it for granted’ approach stands out as an orientation where analog and digital, and to a degree private and public are thought as entangled and constitute for the individual an ordinary way for exploiting agency:

“Social media use, the use of the web in general is embedded in my everyday activity, it naturally happens. For me it’s difficult to split analog from digital activities, to imagine something different. I don’t know...for instance, all that is related to my doctoral project is uploaded in Dropbox...when I read something I often go on YouTube and look for any videolectures taken by the author... It’s my personal style, my attitude over and over again going on the web for searching resources, even if I keep on looking for face to face discussions”(SocSci_3UB, emphasis added).

Just the tendency of relying on the digital for searching and studying materials on the one hand prompts enthusiasm for the ready-to-use retrieval instruments (Med_3UM), which enable the researcher to manage large numbers of publications. On the other hand, it produces some adaptation issues, related to the practice of reading texts online. The velocity of access is in fact perceived as a problematic textual practice (e.g. SocSci_3UB; Hum_1UM), where the attention span seems to be compromised with respect to the more traditional, analog way of reading texts: “if I can’t touch it, if I don’t manually write down some notes I am not be able to memorize the stuff I read, it seems to me that I am not even able to understand it.”(Hum_1UM).

Particularly across most of the UK interviews, the motivation for using social media for research appears to be grounded in real, practical needs:

“I have never liked social media because I really prefer face-to-face...I have never really needed it I’ve started using them when I needed it, because of my research...a distance learning thing... I have students spread all over Brazil and this moment I need to keep in contact... I wanted something they informally could use and kept in contact with them. *It’s not because of my personal proposal that I started using other social media*” (MusicEdu_3IOE).

The issue of lagging behind in the ever-changing digital environments emerges among the Italian interviewees as characterized by at least two attitudes: self-limiting one’s own networked participation, due to individual-based constraints and ‘Being afraid of loosing control’ of one’s own digital identity when attempting to mark an academic online presence.

“I have accounts in a range of social media but *I can’t* use it...I know, they let it circulate new knowledge, but people write to you and you have to give some timely replies...no, too dispersive for me. In my case they distract me from doing what I *must* do. I have to find a balance. I have to choose. This is also true for email” (Edu_2UB, emphasis in original).

On the contrary, the fear for loosing control of the disseminated fragments of one’s own academic profile, as clearly expressed in the following quote, results to be more important than the risk of lagging behind in digital engagement:

“I opened accounts both in Academia.edu and in Research Gate and in a bunch of other social media because...for exploring them and, yes, for a sort of ‘bulimia’...*I have to say that I am really anxious about that...I am afraid of not cultivating all these environments. My true fear is not to be able to manage the kind of representation of myself that is there, across the digital networks, rather than lagging behind, missing something in the digital...*”(InfoSociety_7UB, emphasis added).

Making the digital behaviour evolving over time

The digital engagement may evolve over time, where individual and/or institutional agency are at work at the very beginning and a preliminary strategy may develop due to individual endeavours or to the influence of the local context.

Table 46.

The most relevant focused codes drawn within the category 'Evolving in the digital over time'.

Evolving in the digital over time			
<i>Signs of change in the digital practices during the doctoral experience.</i>			
<i>Focused code</i>		<i>Focused code</i>	
Individual initiative as a starter		Institutional advice as a starter	
Examples		Examples	
<i>Stating the individual initiative as the starter.</i>	<p>“At the very beginning I didn’t feel the need for using the digital networks... then I have started on my own to attend further realities such as LinkedIn, Academia.edu just to contact further experts, now I follow a range of interest groups in Facebook” (Hum_1UM).</p> <p>“In the questionnaire I had written down that I intended opening a blog...and now I am actually uploading the early sketched posts in the blog I have decided to open” (SocSci_3UB).</p>	<i>Acknowledging the initial influence of the institutional advice and support.</i>	<p>“Definitely the institution was a key influencer. I didn’t know that Research Gate existed. Otherwise you know these things just by fluke or because someone telling you. Now I am more aware of it” (EduPsy_2IOE).</p> <p>“I got the idea in the first introductory session of my PhD at IOE...they advised us to mark ourselves and use Twitter to let know what we were writing” (EconEdu_1IOE).</p> <p>“The workshop opened a new world to many. Then, some have started blogging, others have given up after a while” (InfoSociety_9UB).</p>
<i>Building on previous, also occasional experiences with the digital</i>	<p>“The major evolution occurred in Boston, at MIT...it was interesting both listening to the panels and following the comments spreading across social networks...it was the first time I seriously used Twitter” (InfoSociety_7UB).</p> <p>“I spent one year at the MIT...you know, there everyone use social media and all the technologies...they design them, they invent practices, so, I learnt a lot in this sense. Then I tried on my own, also for a research interest linked to my doctoral project” (Arch_1PM).</p>		

Individual-based strategy		Influence of the group/local context	
<i>Sketching an individual-based strategy for social media use in research.</i>	“My supervisor told me something about ResearchGate and then I had a try...not yet a proper strategy, but I have found a rewarding way of reaping some benefits” (Med_3UM).	<i>Acknowledging the relevance of the group/local context in the adoption/non adoption of social media.</i>	“I am using my friends as guinea pigs to better understand what kind of reactions my blog posts are likely to produce in a targeted audience...my friends too are researchers. To date I haven't defined a real strategy...maybe I should write in English, I'll decide it later. If I make it, probably the blog will become the core place where make my online activities converge” (SocSci_3UB).

Some interviewees provide clear accounts of an evolution over time of their digital engagement and, in some cases, also of the construction of a tentative strategy:

“There has been a sort of evolution from the start of my phd...at the very beginning I didn't feel the need for using the digital networks...my activity was limited to the bibliographic searches...as a whole I relied on the tools provided by the institution...then *I have started on my own to attend further realities such as LinkedIn, Academia.edu just to contact further experts, now I follow a range of interest groups in Facebook*” (Hum_1UM).

In another two examples drawn from the UK context, the change over time is seen in the perspective of the current and future phases of the doctorate that influence the modes, attempts and aims of the digital engagement, starting from the opportunity provided by the institution:

“*Definitely the institution was a key influencer. I didn't know that Research Gate existed. Otherwise you know these things just by fluke or because someone telling you. Now I am more aware of it.* At the moment for me the core value of the open web is being aware of what is out there ...right now is about knowing what's currently going on in a particular sector of education, on a particular group of people and what they are thinking of science ... whatever. So, at the moment the core value is that right information comes to you and... searching for it. I think as I have more publications, more materials to disseminate, this will change to dissemination. *Definitely I aim to start my blog again, but...seriously this time. Talk more about my research, my experience.* I know I have to be more established, have more published papers before setting up my website, with all my publications. *Having a domain just about you and your work...I think it's the best place to go. Instead of using so different social media as I do at the moment...*” (EduPsy_2IOE, emphasis added).

“I got the idea in the first introductory session of my PhD at IOE...they advised us to mark ourselves and use Twitter to let know what we were writing. And so, now I had my first paper out I twitter it to...tell it my friends. Sooner or later I will set my hashtag sending things to organizations in educational development and to let them aware of what I am doing” (EconEdu_1IOE).

Elsewhere, in the narrative a different degree of uptake of digital activities is similarly highlighted, but here the interviewee gives value to the social presence of peers as key ‘critical friends’ supporting the pilot of a research blog thought as future ‘hub’ of digital activities:

“About increasing my networking I am lagging behind, I admit...But in the questionnaire I had written down that I intended opening a blog...and now I am actually uploading the early sketched posts in the blog I have decided to open...I am using my friends as guinea pigs to better understand what kind of reactions my blog posts are likely to produce in a targeted audience...my friends too are researchers. To date I haven’t defined a real strategy...maybe I should write in English, I’ll decide it later. *If I make it, probably the blog will become the core place where make my online activities converge*” (SocSci_3UB, emphasis added).

Otherwise, the individual-based digital engagement may move to a collective (even if temporary) action to find a new motivation:

“When I started the doctorate I decided to start a blog too...I felt the need to re-position myself from my professional background towards new kinds of scholarly expertise and so...with a low threshold of shame, I admit...I uploaded the assignments I was doing in the first year of the phd. Then, we as a group tried to organize a collective blog, to improve the exchange of ideas...at the very beginning we put a good energy in this pilot blog but it had a short life... each of us was quickly engaged in our own research project and so...” (InfoSociety_9UB).

In other cases, the change is related to new kinds of rapport with social media as vehicles for networking and is revealed by a transition from email to Facebook to contact new experts:

“I have to say that I have often undervalued Twitter as regards networking. Indeed at the very beginning...I carried out lot of communication through emails...because I acknowledged to email the due formality to start contacting new researchers. This at the beginning...now I contact and keep in touch with a bunch of experts also in Facebook” (InfoSociety_7UB).

The condition of being integrated or not in a local research community seems to have some influence on the likely uptake of new tools. The interviewees who feel themselves as core members of a local community of research practice, either in Humanities, Social Sciences or in techno-

scientific subject areas account for a shared conservatism in using communication tools. As an example:

“There has been no evolution in using digital tools. We don’t need them. Word of mouth works so well...we all in the research group meet here every day, also informally. So email...and skype when someone’s abroad, are enough. We use wikis with the students, in our teaching activities, but embedded in the e-learning platform” (Edu_1UB).

These PhD students are usually involved in daily work practices in bounded contexts and are part of a self-contained ‘research cell’. However, sometimes in such contexts the occasional suggestions from the supervisor along with the individual initiative produce an exploratory approach to digital networks (Med_3UM). On the contrary, where the role of the individual PhD researcher is loosely defined, the evolution over time of one’s digital behaviour may account a story of continuing displacement and critical approach to the local research training context. Here the opportunity to access other online spaces is iteratively pursued, in order to build a self-organized learning alternative to the local research training context:

“The first year was...really, really boring for me. I blessed wi-fi and my Ipad, that saved me... While attending the mandatory courses I personally experienced what I read about the ‘digital natives’: ‘I’m not listening to the teachers at all, I’m just getting bored!’. Except from a couple of professors, I was in a nineteenth century educational scenario. So, *I used my Ipad for searching useful materials while was physically supposed to attend a number of pointless basic courses. After a while, I decided to enroll in a mooc about social network analysis, just to overcome the gaps of the formal research training...*”(InfoSociety_9UB).

This stance stands out in the average of responses describing one’s own attitude towards social media: here, the peculiar self-confidence of the interviewee stems from her being well acquainted with the open Web, as matured in her professional experience as a digital librarian and then as a community manager. Moreover, interestingly she likens her stance to digital natives’, by drawing attention to the old-fashioned formats (and content) of the university teaching she mostly experienced.

6.6.3 Thinking the ‘open Web’

This subsection is concerned with the overall idea that the PhD researchers have about the open Web and its convenience as complementary or alternative source and venue for scholarly activities. The interviewees were invited to reflect on what the open Web really means in the doctoral experience and whether it is likely to have an impact on them as future researchers. The interviews’ statements vary between the criticalities linked to the scant diffusion of social media in local

research contexts and the potential for affecting the state-of-the-art at an individual and collective level. The whole account returns a tension (Table 47) between the substantial *Irrlevance* (or limited relevance) of the open Web for the current academic workpractices and the established academics and the *Relevance* (at least in principle) of the open Web for the newer researchers struggling with the endeavours for raising their voice and crafting their positions, overcoming the shrinking budgets and the constraints of local academic cultures.

Table 47.

The most relevant focused codes drawn within the category ‘Making sense of the open Web’.

Making sense of the open Web			
<i>Defining reasons why the open Web is likely/unlikely to be integrated in the future of research work.</i>			
Focused code			Focused code
Irrlevance for established researchers			Relevance for newer researchers
Examples			Examples
<i>Thinking the open Web as currently irrelevant for research work practices.</i>	<p>“Ok, social media is part of normal life but it has nothing to do with research, or it’s mixed with other stuff” (MusicEdu_3IOE).</p> <p>“I believe academics are still suspicious on these themes, the idea of wasting time wins...it’s true, you waste time, but to collect later” (SocSci_3UB).</p>	Vs	<p><i>Crowdfunding as opportunity for newer researchers.</i></p> <p>“The idea of a start-up can be easily applied to research fields in higher education...thanks to the open web you can do fundraising, loads of things” (InfoSociety_9UB).</p> <p>“In a medium/long-term you could produce a draft idea in an informal context such as a blog, start attracting interest, discussions and progressively transform it in a funded research project” (Edu_6UB).</p>
<i>Thinking the open Web as relevant only in relation to the nature of the research field and project.</i>	<p>“I think the open web has itself many resources for enabling the construction of a professional track...and many resources for inquiry per se, in particular if the researcher selects some topics dealing with digital technologies” (InfoSociety_7UB).</p> <p>“My current research is an Internet-based small-scale project: it’s literally ‘done on Skype’” (HE_8IOE).</p>		<p><i>Expanding opportunities for self-learning.</i></p> <p>“I attended an open course from Yale and one from Stanford...I was interested in... what are the underlying concepts... for instance, what complexity theory means for economics” (EconEdu_1IOE).</p> <p>“I decided to enroll in a MOOC just to overcome the gaps of the formal research training” (InfoSociety_9UB).</p>

<p><i>Relying on disciplinary cultures for developing one's own reputation on the open Web.</i></p>	<p>“We sociologists are more... ‘shrewd’, because we realize that it is necessary to be there” (SocSci_3UB).</p> <p>“We architects differ from designers in the need for sel-promoting our work” (Arch_1PM).</p>		<p><i>Providing individual or groups of newer researchers with opportunities to disclose their voices.</i></p>	<p>“It’s not only important how many publications you have but also how many people are aware of your work, are interacting with your work” (EduPsy_2IOE).</p> <p>“I have done an experiment in You Tube...I have set up a short series of video lectures on a topic of Philosophy of Education and I uploaded them”. “We set up a Facebook page to get visibility to our doctoral work, to show that we are serious researchers” (Edu_6UB).</p>
<p><i>Acknowledging constraints grounded in local academic cultures.</i></p>	<p>“My impression so far is just...individualism in my engineering research field...every doctoral students follow their own route. Personally, I have never been encouraged to do teamworking, to share my work with other colleagues...you are just expected to focus on your project, that’s all” (Eng3_PM).</p> <p>“These tools are hardly used, they should being used more” (Med_3UM).</p>		<p><i>Providing a chance for overcoming questionable habits in local academic cultures.</i></p>	<p>“I think that via Web a more ‘open’ mode of evaluation enables a continuing comparison. This way also a young researcher could really compete in such an open competitive system” (Edu_2UB).</p>

Many among the interviewees share the opinion that social networking technologies currently are far from being a key influencer in the researchers’ worklife. The opacity of the open Web appears as problematic and tends to prevent academics from a wider adoption:

“There are a lot of publications about triviality of everyday life in social media...ok, it’s part of normal life but it has nothing to do with research, or it’s mixed with other stuff. I think we have...there is lot of experimenting, there are a lot of possibilities, perhaps in the future... I think social media are likely to affect our profiles as researchers... perhaps in a very few years, all these blogs for example will be considered as trustable sources of information” (Edu_3IOE, emphasis added).

Here the awareness of the marginal role currently assumed by the Web 2.0 ecology is coupled to the call for a direct responsibility of the individual early career researchers to build a critical uptake. However, in the same subject area and context a clear stance stands out, acknowledging the extent

to which the open Web can already support the young scholar in raising one's own voice in a competitive academic world:

“I think if anything... it [the open Web] may be necessary for currently being in an academic institution, especially if you want an academic career ...going applied can be quite bureaucratic...*you know your place is in a chain...more activities are attributed to your supervisor rather than to you...only if you have publications you let your name emerge,* even if there are so many boundaries to disseminate your research. *It's not only important how many publications you have but also how many people are aware of your work, are interacting with your work. You should be more free to disseminate your research beyond the boundaries of the institution...to a degree*” (EduPsy_2IOE).

Elsewhere, a possible, real advantage for the group of peers is advanced, where gaining visibility as newer researchers means being able to somewhat force the local conservative constraints:

“I think the open Web can help to overcome certain conservative constraints...it provides us young researchers with an opportunity, it's not a solution. *We set up a Facebook page to get visibility to our doctoral work, to show that we are serious researchers* and that our aim to organize a doctoral seminar...this idea was strongly hindered by our faculty, you know ‘You are novice, you want to dare it on your own...you are not able to...’” (Hum_2UM, emphasis added).

Among the Italian interviewees, especially in Social Science, Education and Humanities areas, often the nature of the research topic is said to be paramount in determining the degree of relevance of the digital networks in order to develop one's own reputation:

“I think there is a close link between the use of the Web instruments and the nature of your research field. I think that this topic and my identity as a researcher will be interwoven to these media. We sociologists are more... ‘shrewd’, because we realize that it is necessary to be there” (SocSci_3UB).

“Two diverse facets come to mind: the researcher doing research online and the researcher self-representing online. I can't prescind from these both...*I think the open web has itself many resources for enabling the construction of a professional track...and many resources for inquiry per se, in particular if the researcher selects some topics dealing with digital technologies*” (SocSc_4UB, emphasis added).

More general motivation for current reluctancy of academia is also sketched, contrasting with a perspective of self-empowerment:

“These means should be used more, they are hardly used...practicing academic writing, communicating with a less educated audience, trying to write a post with something

significant... All that enables you to grow up as a researcher, even if it is difficult to see the boundary between to say or not to say...I believe academics are still suspicious on these themes, the idea of wasting time wins...it's true, you waste time, but to collect later..." (SocSci_2UB).

However, the condition of isolation in which the PhD students mainly develop their own research is seen (especially in techno-scientific subject areas) as a contextual factor narrowing the potential use of social media to specific, practical functions:

"My impression so far is just...individualism...every doctoral students follow their own route. Personally, I have never been encouraged to do teamworking, to share my work with other colleagues...you are just expected to focus on your project, that's all...at most you could share your work by publishing papers and then disseminating them across digital networks. So, dissemination above all, I can't see any different perspective for the open Web for research, nothing more than this" (Eng_3Poli, emphasis added).

Elsewhere, the open Web is instead said to enable the individual researchers to activate parallel tracks for research practice, beyond the constraints of the formal contexts. In the case of a young researcher in Social Sciences, the key advantage of such opportunity is being able to work independently from one's own advisor:

"I am currently collaborating with a professor from the Stanford University, where I attended a six-months research stay...we share our papers on Dropbox and meet via Skype about once a month to review the work. Some time ago he just made me notice: "Have you ever thought that only ten years ago all that was not possible this way?". Indeed, I had taken for granted this thing, but it's true...it's a great, new opportunity. And...you know, I didn't rely on my advisors at all! I managed this thing in complete autonomy" (SocSci_4UM).

In another example, the activation of the parallel track is explicitly concerned with the intent of piloting a mode for making sense of one's own digital presence as future academics:

"I have done an experiment in You Tube...I have set up a short series of video lectures on a topic of Philosophy of Education and I uploaded them...because the cultural influences of ICTs are the focus of my research topic, a theoretical topic, but I also teach classes here and... I wanted to combine these things in a sort of real life experiment, just on my own...so I tried with You Tube, I had watched many video lectures there and so...it was really interesting, I have received a bunch of comments and some short conversations has developed" (Edu_6UB).

The open Web is also seen as a source for expanding one's own knowledge building (Info_Society_9UB; EconEdu_1IOE), where MOOCs (Massive Open Online Courses) seem to play a key role:

“I attended an open course from Yale and one from Stanford... Biological evolution from Yale and Statistics mechanics from Stanford. What are the underlying concepts... for instance, what complexity theory means for economics... The idea was to in depth understand concepts and to try to transfer these concepts to economics” (EconEdu_1IOE).

A key perspective arising from the interviews is concerned with the ‘convenience’ of the open Web for early career researchers, regarding the opportunities for recruiting research participants, *raising one's own voice* and *crowdfunding* one's own research projects. Sometimes this thread focuses on the use of a defined ‘super-tool’ (e.g. Skype), that seems to solve all the current practical problems; sometimes such an opinion is articulated in sketched reflections on the same role of the young researchers that across the digital networks . For instance, the basic opportunity of conducting research online constitutes an immediate benefit experienced by a PhD student who is working in the higher education sector and is researching topics related to university management:

“My current research is an Internet-based small-scale project: it's literally ‘done on skype’ in the sense that it could have been impossible, unaffordable to interview the research participants face to face across the European nine universities being involved.” (HE_8IOE).

Here the current advantage of doing research online is intertwined with the perspective of applying the same effective communication modality to one's own professional work practice, once accomplished the doctoral journey. It is worth noting that in the UK interviews the acknowledgement of the affordability of the open Web for a range of research activities is associated to the anxiety to be ‘good enough’ at harnessing these opportunities to build the showcase of a future academic career:

“My key concern is that as a self-funded student I need to work even harder to promote myself because I can't say ‘I have this very prestigious scholarship’... I have some of this, some of these studentships that have opportunities around and... because I have to work for myself and I need to promote myself even more, also through social networks... at least these are my ideas” (IntDev_4IOE).

The focus is on the need for assuming the personal responsibility of getting the most from one's own doctoral journey, also through networked practices.

Across the Italian interviews, the theme of the shortage of resources lets it arise an underlying tension between well-established and early career researchers. In fact, if a generation gap – between PhD and well-established researchers – can be identified in the motivations prompting the adoption

of unconventional means for knowledge production, communication and dissemination, this seems to be characterized by a dramatic difference in funding opportunities rather than in a diverse propensity to the 'digital'. In the accounts of some interviewees who occasionally 'speak on behalf of their peers', the very low number of well-established researchers using social media for research would be mainly motivated by a desire of increasing own visibility, as a complement of their more conventional networking activity. On the contrary, the new generation of researchers primarily feel oppressed by the shrinking funding resources in academia and look at the open Web as a likely, affordable mode for escaping from such constraints, although the lack of a proven method is apparent:

"Now we talk and talk a lot about start-up companies in the digital. Indeed the idea of a start-up can be easily applied to research fields in higher education...thanks to the open web you can do fundraising, loads of things...the key issue is to reinvent the dynamics of fundraising, gaining visibility, harnessing these opportunities that enable you, if you do well, if you are among the best competitors, ... this enables you to get results that otherwise you could never get, due to the rotten mechanisms of academia. The problem is that most of us often haven't understood yet how these channels really work" (InfoSociety_9UB).

They start to think of the open Web as a venue where to highlight their own original ideas in order to draw stakeholders' attention and funding.

"The open Web might be an interesting opportunity just because there is a chronic scarcity of resources...in a medium/long-term you could produce a draft idea in an informal context such as a blog, start attracting interest, discussions and progressively transform it in a funded research project (...). Instead, well-established researchers are more likely to use it to gain visibility" (Edu_6UB).

Finally, someone also draws attention to the potential of the open Web for disrupting certain criticable dissemination practices, in order to improve the critical assessment of the research outcomes and enable a more fair competition across academics of all ranks:

"It happened to me to read an article of a well-known Italian pedagogist: I saw this article published everywhere, with slightly different titles but the same, exact article, across a range of research journals. Ok, this way of increasing publications is easy but totally unfair...I think that via Web a more 'open' mode of evaluation enables a continuing comparison and therefore redundancies are limited and this kind of bad behaviour is likely to disappear. This way also a young researcher could really compete in such an open competitive system" (Edu_3UB).

6.6.3 Musing upon social media training

The interviewees' statements oscillate between the individual's initiative and commitment necessary in adopting social media and the need for grounding in socially-constructed opportunities the start and development of these tentative approaches.

Table 48.

The most relevant focused codes drawn within the category "Learning the digital".

Learning the digital			
<i>Highlighting the roles of self-directed and guided training to gain expertise in the digital.</i>			
Focused code		Focused code	
Privileging Individual initiative		Relying on Institutional advice/support	
Examples		Examples	
<p><i>Claiming for a 'do-it-yourself' approach.</i></p>	<p>“These things strongly depend on your personal attitude to experiment with digital tools, on your forma mentis I believe, and of course on the practical needs correlated to your research project” (SocSci_3UB).</p> <p>“In my opinion we make it ourselves, we don't wait for someone telling us 'Do this, don't do that' in these things...as I said, it was enough getting a cue from my supervisor” (Med_3UM).</p>	vs	<p><i>Calling for basic information provided by the institution.</i></p> <p>“I would ask for a... 'vademecum', a general how-to guide about all the tools, and in particular on social media for research” (Edu_2UB).</p> <p>“We need we are shown some examples that are effective...people who have effectively built profiles online and because I don't know how to start looking and I am aware you can spend hours and hours looking for these things and don't know who is the best” (IntDev_4IOE).</p>
<p><i>Hoping for systematic discussions among peers to develop critical thinking.</i></p>			<p><i>Considering social media training in the wider call for being trained about 'how to be a researcher'.</i></p> <p>“I have received no information about that. Indeed...there is a total lack of basic training about 'being researcher'...how to write a research project...what kind of instruments you could and should use, how to relate to other researchers...not only social networks therefore, but all that would be useful” (Eng_2PM).</p> <p>“I would like something teaching you how to build your own career, also using social media” (Biotech_8UB).</p>

<p><i>Feeling skeptic about the real capacity of the university to organize a social media training for researcher.</i></p>	<p>“The competence they have about such things is very old-fashioned here and... it’s hard to imagine some formal training on these issues” (Hum_1UM).</p> <p>“The training they provide here it’s not a methodological thing, the focus is only on ‘dissemination’. This is a key limitation, I think” (Arch_1PM).</p>		<p><i>Focusing on the need for developing one’s own academic profile in order to craft one’s own position.</i></p>	
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Interview data reports a few explicit calls for some forms of training related to social media for research. In fact, the provided suggestions show a great diversity of opinions, according to the different subject areas but also depending on the degree of self-confidence of the individual respondents towards the digital, based on their previous experiences:

“I would ask for a...’vademecum’, a general how-to guide about all the tools, and in particular on social media for research. How this specific tool is to be used, reason why it is worth a try, etc...Then, everyone will be able to build one’s own strategy. I think a face-to-face session could be useful as a start...above all for an inter-generational initiative” (Edu_2UB).

However, there is a general agreement on the need for receiving some basic information on social media for research as a necessary springboard for developing some overlooked soft skills:

“You know, we Italians are identified with the ‘do-it-yourself’ attitude, we could tinker everything but...at least you should be informed of what exists, what the open Web is about... I mean.... A guide could be useful to encourage using social networks in research... you need some directions to know what currently exists, to be aware of the various functions, how you can use it...for instance, how to build your online profile for a future job...this kind of skills is more and more required now” (Biotech_8UB).

Where some form of support (e.g. under the form of a workshop) is provided, this kind of initiative is generally appreciated in any (Italian and UK) contexts, even if some limitations are highlighted:

“For many topics we are studying there isn’t an assessed body of knowledge and the related routes to be followed and tools to be used and so...I have to acknowledge that my doctoral program has the merit of organizing a sixteen hours course addressing these tools and themes of social media for research, from Google Scholar onward” (InfoSociety_9UB).

“We have something here...there is a course named ‘Going public’, in which there is an emphasis on the opportunities for being published also across informal, digital networks. It is organized within the Design doctoral program...you know, designers need to build their own e-portfolio of works...but every PhD students is allowed to attend this course. I could have attended it but...*it’s not a methodological thing, the focus is only on ‘dissemination’*. *This is a key limitation, I think*” (Arch_1PM, emphasis added)

Even in the Italian university contexts where social media are endorsed at an institutional level the claim refers to a more general need for training about soft skills:

“Personally, *I just barely know digital networks such as Academia.edu and ResearchGate, I am aware that they are there, but it’s not enough...I have received no information about that*. Indeed...*there is a total lack of basic training about ‘being researcher’*...how to write a research project...what kind of instruments you could and should use, how to relate to other researchers...not only social networks therefore, but all that would be useful...it would be worth a few sessions...otherwise we may achieve that by chance, via word of mouth” (Eng_2PM, emphasis added).

In fact, the need for a more comprehensive training making it clear the tacit conventions of academia constitutes a shared concern across diverse disciplinary areas:

“During the doctorate, above all in the first years, I would like something teaching you how to build your own career, also using social media...everything is made of non scripted laws which you can only learn through the experience. I don’t think of a central service by the university, but something organized by your graduate school or the local library” (SocSci_4UM).

As a contrast, in the UK context it emerges that the digital practices is not only guided by training but also aligned to the institutional engagement toward social media, encouraging the PhD researchers to do the same:

“The IOE has formal and informal virtual environments... they have a blog, a twitter account. *They are very keen that people are on social media. They definitely support you they encourage you to be online*. They make it compulsory anyway at the start...There is a compulsory session to attend, run by the library. I went to this session. I found it the best session I have ever had...because it was so useful. You know, I was grown up with all this... surrounds me but I still didn’t know what is out there. Such a great opportunity I was glad to have a compulsory session to attend” (EduPsy_2IOE).

However, it has to be said that within the same context other PhD students had a different training path (because working and/or international students), they did not attend the course training and

seem to be fairly indifferent to social media use for research. Otherwise, initial basic information is not enough to undertake a complex scholarly activity such as blogging. This leads to state: “I don’t know what the rules are...I don’t feel anyone has really guided me and I need guidance” (IntDev_4IOE).

It is worth noting that also when the local context provides some advice on social media, the impact in the mid-term may not be straightforward:

“The social media session I attended in the department... made me ‘bulimic’. I mean, I activated a lot of accounts across various social networking sites. But, after a while, I realized that on my own I wasn’t really able to cope with all that in a meaningful way. A follow-up would help at a certain point in time” (InfoSoc_7UB).

This resonates with some suggestions coming from one UK participant, calling for a more strong guidance and more comprehensive accounts of good practices in the open Web:

“It’s one thing to tell us we need to do it but... if you don’t feel confident about how ...or how much you should be doing or the best way to do it ...you could spend a lot of time and don’t get it right or not be going effective...I think a lot of people interested in the session went in more details about how to buy-in a domain for a website, this kind of skills, I don’t know... *We need we are shown some examples that are effective...people who have effectively built profiles online and because I don’t know how to start looking and I am aware you can spend hours and hours looking for these things and don’t know who is the best. You need someone who tells you ‘so this is a pretty good example’*” (IntDev_4IOE, emphasis added).

At times, some doubts are revealed about the appropriateness of a formal research training on these issues, whereas the individual attitude towards ICTs seems to play a more important role:

“Sometimes it seems to me a lost fight in this local environment...it comes to mind the session taken by the librarian last year...the comments were so negative...too long, boring, pointless session...I suspect that formal training, classroom-based training does not work in this kind of things. *This thing strongly depends on your personal attitude to experiment with digital tools, on your forma mentis I believe, and of course on the practical needs correlated to your research project*” (SocSci_3UB, emphasis added).

Other respondents stress on a clear skepticism about the ICT training initiatives that could be carried out in their formal research context:

“It would have much sense if the university took care of that, if it provided opportunities for training on the digital networks, but I’m afraid of an impromptu approach in treating these things. *I guess these opportunities wouldn’t be taught by ‘real’ experts and therefore the*

results might be misleading. The competence they have about such things is very old-fashioned here and... it's hard to imagine some formal training on these issues. For sure we really need at minimum a couple of sessions about how to publish your cv, how to create your networks of scholars..." (Hum_1UM, emphasis added).

The interviewees in techno-scientific subject areas generally tend to take for granted the personal capacity to deal with the open Web tools. They are more inclined to require more focused information about real examples of good practices rather than calling for a specific ICT training:

"In my opinion we...we do it ourselves, we don't wait for someone telling us 'what to do and what not to do' in these things...as I said, it was enough getting a cue from my supervisor... you go there in any social networks focused on research and see how many researchers are there, what they are doing... the word of mouth is so fast across digital networks...perhaps it would be pointless thinking of specific training sessions. On the contrary, being updated about the different uses that researchers make of social networks...this might be more useful" (Med_3UM).

Among some Social research and Education interviewees, the need for developing critical thinking on these themes clearly arises and figures out a sort of collective reflection on the move, where the sense and the practice in the open Web changes as the doctoral project evolves:

"I think there is a lack of debate about these things, a lack of awareness...as a first step I would suggest...to highlight a facet of our work, the relationship between research and social media which is becoming more and more important...I would like to discuss it among us doctoral students and young researchers...beyond things like 'someone uses them better, someone else uses them badly'...it would be interesting discussing on knowledge production, going beyond 'build your own profile', 'use these specific resources'. What I would like much... *I would like to discuss about the tools but about how these tools are actually adopted and the extent to which social media can interplay with your own research activity and the construction of an academic profile*" (InfoSociety_7UB, emphasis added).

In this line, someone else suggests to interrogate ourselves about the emergent nature of these tools rather than to apply the linear logic ("first learn, then apply") of an ICT training approach. This change of perspective is likely to open up to unanticipated objectives and unexpected outcomes:

"We should free ourselves from a mere utilitarian logic like...'I run a research blog to get this'...BUT 'I am running a research blog and I am observing what's happening'...after, only after that I am able to realize if the blog has been functional to my initial objectives or if it enabled me to meet any objectives which I hadn't either thought of from the very beginning...so, it's hard to me providing a definite response on these tools. They can be

useful but we need to understand what technology uses they produce...*these tools have the potential to be very 'generative' but we need to reflect on the real practices and their inherent, partly unanticipated consequences*" (Edu_6UB, emphasis added).

6.7 Conceptualizing the digital engagement variation

The previous section provided a detailed presentation of the interview results framed under the four main themes of 'Shaping the scholarly in the digital', 'Engaging with the digital', 'Thinking the open Web' and 'Musing upon social media training'. For each theme a series of sub-themes were selected and focused codes were highlighted in the boxes located at the beginning of the sub-sections. The trajectories of the doctoral students using the open Web for research purposes appear as being unfold cautiously and slowly in the directions they undertake across institutional and self-organized spaces, in the development of digital engagement over time, in the endorsement of diverse kinds of sociability, in the degrees of disclosure of diverse facets of one's own digital identity, and in the endeavour of coping with institution-led and self-organized learning ecologies. We argue that the observed digital engagement of the PhD researchers is better understood as a shifting movement across states of student agency comprised of multiple experiences and goal orientations. Aiming at abstracting a common understanding of data, we have identified the core theoretical code of *creeping along* (Figure 46), in order to capture the PhD researchers' digital engagement in its continuous re-positioning across the interstitial spaces of the scholarly communication practices. More precisely, in the theoretical code of *creeping along* a group of features of digital engagement coalesce, as arising from interview data. Digital engagement results to be *emergent*, encompassing contingent, 'buffering' processes, since it builds on established and untested academic practices; *shifting*, since it has not characteristics of stability across spaces and time; *intentional*, since it embeds at least tentative goal orientations, even when there is a lack of any preliminary strategy; *negotiated*, since it is nurtured by individual and collective, personal and institutional stances; and *conflictual*, since it is always subject to intricacies of tensions between the self-organized and the institutional, the group and the network, the local and the 'elsewhere', the convenient and the uncharted.

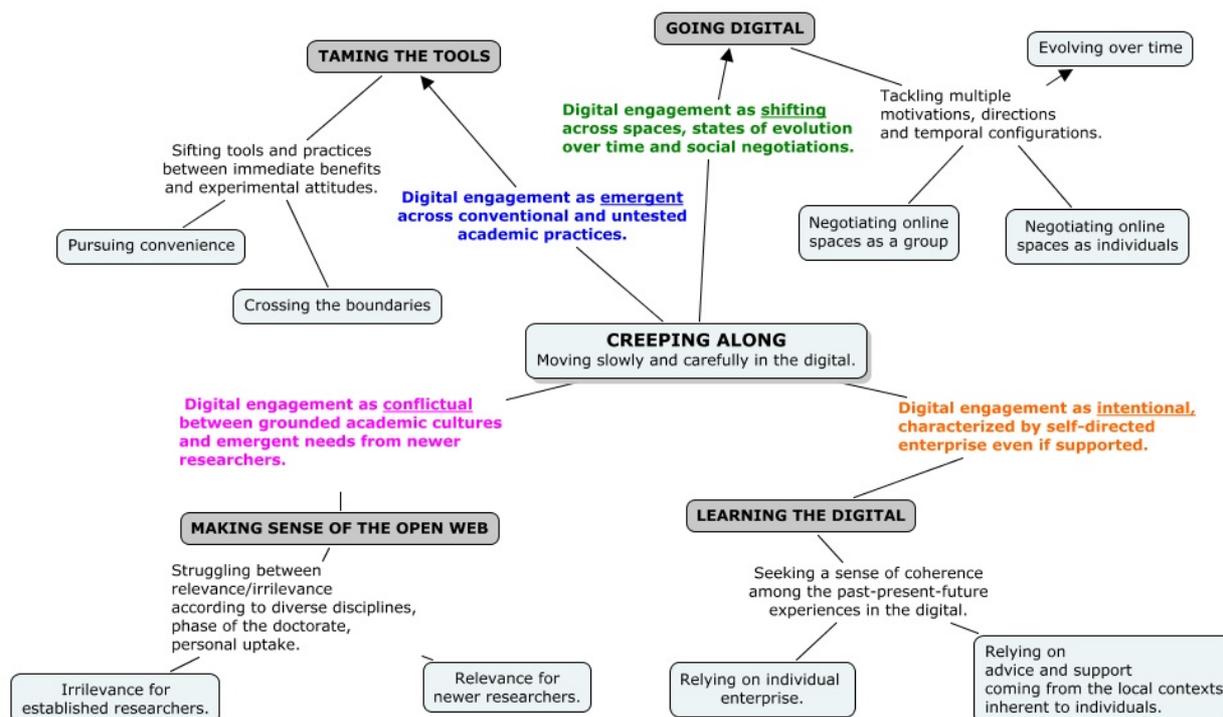


Figure 51. The map of the categories that coalesce into the theoretical concept 'Creeping along'.

Following this reasoning, we have re-analyzed interview data looking at to a plausible articulation of the theoretical concept *creeping along* to obtain a more complex understanding of how digital engagement in essence occurs among the researched PhD students. Thus, we have advanced a mode for conceptualizing the variation patterns of digital engagement in terms of *dimensions* and *polarizations of dispositions*. For this purpose, we have identified a set of theoretical concepts converging to the core concept of *creeping along* and organized in a framework apt to map out the statements of the PhD e-researchers being investigated in our sample. The elaboration of such a framework is grounded in data as well as is guided by the theoretical stance discussed in Chapter 4, thus with a focus on the capacity of the individual PhD students to develop trajectories across institution-led and self-organized learning opportunities, through shifting time and spatial practices. In this sense, it step forward compared to the goal orientations arising from the e-survey data, since it states multiplicity and contingency as constitutive of digital engagement. In fact, the DEV framework, as explanatory of the core concept of *creeping along*, is seen as the interplay of six variable dimensions (Figure 52): Space, Time, Socialization, Digital Identity, Stance and Tensions. *Space* refers to the ways of dealing with physical and digital spaces experienced by the doctoral students for research purposes; *Time* is related to the prevailing conditions of stillness or evolution in which digital engagement is revealed; *Socialization* considers the extent to which the individual or the group play a role in prompting and shaping digital engagement; *Digital identity* explores the degrees of disclosing of the academic self in the online presence; the dimension of *Stance*

encompasses the whole disposition of the individuals towards the open Web for research purposes; the *Tensions* relate to the underlying relationships between institution-led and self-organized practices. Each dimension is entangled with the other ones and is in turn characterized by one or more sets of polarizations, seen as extremes in a continuum of practices and attitudes. The Figure 52 provides an overview of this framework, whilst the Table 49 explains the meanings attributed to the identified dimensions and polarizations in the framework.

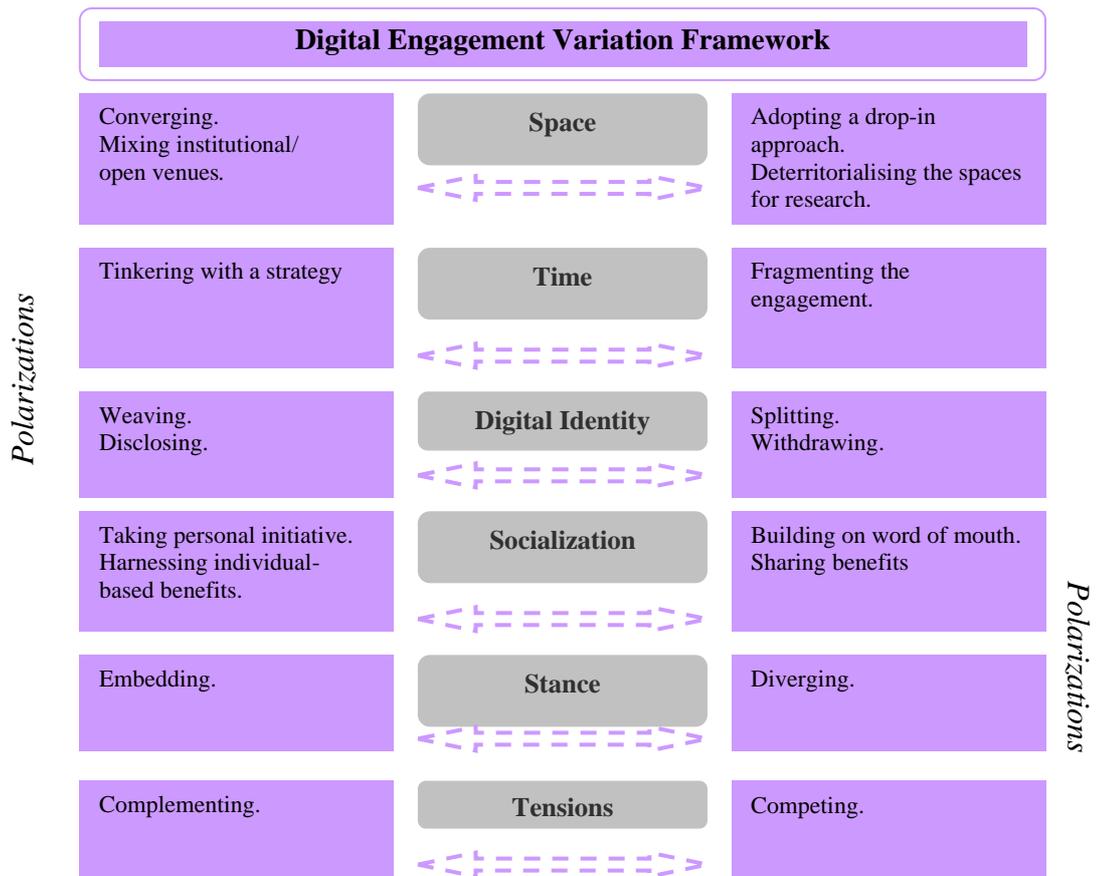


Figure 52. An overview of the six dimensions and the related polarizations included in the Digital Engagement Variation Framework.

Table 49.
The Digital Engagement Variation framework in details.

The Digital Engagement Variation (DEV) Framework		
Space <i>Ways of dealing with digital spaces.</i>		
<p style="text-align: center;">CONVERGING</p> <p>Aiming to optimize the use of digital spaces by identifying a convenient hub for multiple channels of activities.</p> <p style="text-align: center;">MIXING INSTITUTIONAL/OPEN VENUES</p> <p>Overlapping institutional and open venues when striving to developing scholarly skills (e.g. networking).</p>	<i>Versus</i>	<p style="text-align: center;">ADOPTING A DROP-IN APPROACH</p> <p>Hanging out across new digital spaces, occasionally prompted by personal curiosity and/or by word of mouth.</p> <p style="text-align: center;">DETERRITORIALISING THE SPACES FOR RESEARCH</p> <p>Moving from the institution-bounded spaces towards open spaces to undertake scholarly activities.</p>
Time <i>Stillness or evolution in digital engagement.</i>		
<p style="text-align: center;">TINKERING WITH A STRATEGY</p> <p>Attempting to design a track in one's own digital engagement, by reflecting on past experiences and figuring out future improvements.</p>	<i>Versus</i>	<p style="text-align: center;">FRAGMENTING THE ENGAGEMENT</p> <p>The digital engagement is comprised of isolated events, where the intentionality is close to a sense of 'playing it by ears' rather than to 'setting goals'.</p>
Digital identity <i>The degrees of disclosure of the academic self in the online presence</i>		
<p style="text-align: center;">WEAVING</p> <p>Crossing boundaries between academic and private/professional digital identity.</p> <p style="text-align: center;">DISCLOSING</p> <p>Revealing one's own identity as newer researcher is part of a tentative strategy for putting one's own reputation emerge.</p>	<i>Versus</i>	<p style="text-align: center;">SPLITTING</p> <p>Keeping distance from personal to academic digital identity.</p> <p style="text-align: center;">NOT DISCLOSING</p> <p>Partially disguising one's own identity as newer researcher, aiming to open up multiple ways of being online.</p>

Socialization		
<i>The role of the individual or group in digital engagement.</i>		
<p>TAKING PERSONAL INITIATIVE Starting and adjusting the adoption of new tools/environments prompted by own personal curiosity or needs and building on extra-academic experiences.</p> <p>HARNESSING INDIVIDUAL-BASED BENEFITS Engaging with the digital networks implies taking personal advantage of the potential of the open Web mainly as efficiency enabler and network amplifier.</p>	<i>versus</i>	<p>BUILDING ON ‘WORD OF MOUTH’ Starting and adjusting the adoption of new tools/environments prompted by the word of mouth occurring in the local academic context (among peers or from established researchers).</p> <p>SHARING BENEFITS Engaging with the digital stems from a collective need of creating a shared space where the doctoral students can gain visibility and develops their own reputation.</p>
Stance		
<i>The personal disposition toward the open Web for research purposes.</i>		
<p>EMBEDDING Attempting to integrate emergent digital practices within the unwritten conventions of scholarly communication, also responding to any institutional pressure in this sense.</p>	<i>versus</i>	<p>DIVERGING Attempting to shape one’s own digital behaviour according to original self-motivation rather than following any external/institutional pressure.</p>
Tensions		
<i>The relationships between institutional and self-organized practices</i>		
<p>COMPLEMENTING The open Web is likely to play an ancillary role, to complement and in places expand existing practices.</p>	<i>versus</i>	<p>COMPETING The open Web constitutes the uncharted territory apt for searching alternative modes for knowledge dissemination and building reputation.</p>

6.7.1 Space

The dimension of *Space* considers the engagement of the PhD researchers in the digital venues and any relations with analog spaces. Two set of polarizations are identified:

Converging versus *Adopting a drop-in approach* and *Mixing institutional/open venues* versus *Deterritorialising the spaces for research practice*.

Table 50.

The dimension of Space and its polarizations.

<i>Space</i> <i>Ways of dealing with digital spaces.</i>		
<p style="text-align: center;"><i>Converging</i></p> <p>Aiming to optimize the use of digital spaces by identifying a convenient hub for multiple channels of activities.</p> <p><i>Mixing institutional/open venues</i></p> <p>Developing scholarly skills (including teaching) across institution-based spaces for research practice (e.g. email; e-learning platform) and online environments.</p>	<p><i>versus</i></p>	<p style="text-align: center;"><i>Adopting a drop-in approach</i></p> <p>Approach to digital spaces characterized by hanging out in new venues, occasionally prompted by specific research needs and/or by word of mouth.</p> <p><i>Deterritorialising the spaces for research practice</i></p> <p>Moving from the institution-bounded spaces towards open spaces to undertake scholarly activities.</p>

In some cases, it is evident the tendency for make the digital practices converge on one place, in order to maximize the benefits, for instance in activities such as: design and pilot a blog (SocSci_2UB; EduPsy_2IOE; InfoSociety_9UB); select and become resident in one social networking site (Hum_1UM; SocSci_4UB; InfoSociety_7UB); use twitter to be updated about one’s own current research topic (Arch_1PM; Edu_4IOE). This clear directionality emerges also when one specific communication tool (e.g. Skype) is elicited as the venue where key events in doctoral research process (e.g. meetings with the supervisors; contacts with research participants) take place: “I find these sync sessions fundamental...I focus only on that topic and can show my data, exchange documents, and use other devices, including my iPad”(Edu_2UB); “My research project is literally ‘done’ on Skype...I recruit and interview my research participants, I talk with my supervisor at a distance when I am not in London...I think Skype is the appropriate tool through which higher education staff can work today”(HE_8IOE). It can be said that a converging approach may occur when a space (or a tool) is made place, that is it embeds “a sense of being with others” (White & LeCornu, 2011).

On the other hand, hanging out in a range of online venues (e.g. “I opened my account in Academia.edu, Research Gate, Linkedin, Twitter and in a bunch of other social media

because...for exploring them and, yes, for a sort of ‘bulimia’”, InfoSociety_7UB) results to be a common practice, where the occasional needs are the prompt for accessing the sites: “I don’t go to Research Gate and other social media for the sake of it, but I go there when I need to”, Edu_Psy_2IOE). The two orientations are not mutually exclusive but they may co-exist in the approach of the same individual towards different tools: “I use Twitter as a purely academic social media, but I can’t help exploring other tools, just to have a go and check whether they can be somewhat useful now or in the future” (Arch_1PM). Moreover, a prevalent *drop-in approach* may evolve towards a *converging approach* where any kind of convenience is identified: “I started to attend further realities such as LinkedIn, Academia.edu just to contact further experts, but now I focus my activity on following a range of interest groups in Facebook...” (Hum_1UM). Whilst a ‘converging’ approach may be questioned, due to unanticipated difficulties (e.g. “I have become very skeptical about twitter because it doesn’t work as it should...it takes much time to be effective”, EconEdu_1IOE). The drop-in approach is observed when a first-level, exploratory phase of familiarisation with social media for research and with a specific research topic occurs, when “it is important to know how much is out there, not only dissemination”(Edu_Psy_1IOE). On the other end, the converging approach is enacted where the acquired experience enables the researcher to take a considered choice and go more in depth in using one kind of online space, in relation with one’s own needs at a point in time: “Having a domain just about you and your work...I think it’s the best place to go to. Instead of using so different social media as I do at the moment...” (Edu_Psy_2IOE). A converging approach may be revealed as a frustrated aspiration, where the interviewee feels not to be supported by the local context: “I couldn’t find one key online place that was really useful for me, for my research...I tried a range of tools but I haven’t managed to make sense of them...I need a guide, I need more information...I have never heard of most of the tools listed in the online questionnaire” (SocSci_4UB). On the other hand, another interviewee just shifting across different online venues reveals the awareness of the flexibility needed to manage online networking: “I find some interesting profiles in Facebook, so I ask them for ‘friendship’, but they don’t reply...Then I receive an email asking me to join in LinkedIn...you have to follow them...I have understood that they credit you if you are part of their network”(Info_Society_9UB). Considering the academic activities actually undertaken online, it is also possible to map out them according to the polarizations between *Mixing institutional/open instruments* and *Deterritorialising the spaces for research*. The activity of searching for literature

encompasses the more frequent overlapping between institutional (digital library) and open instruments (Google Scholar, Google Books), as emerged across most of the interviews, where some participants state to additionally draw content from the social networking sites. In a middle range position, online networking keeps on mainly relying on the private channel of email, perceived as ‘institutional’ and non invasive means for formal communication, mainly used as a follow-up of a face to face early meeting. However, social networking sites (SNS) are starting to provide the PhD students with new spaces of contiguity with established researchers: some interviewees in Social Research in particular show tentative approaches to networking via SNS: “This year I have broadened my network of contacts, new experts and peers, thanks to my attendance in Facebook” (InfoSociety_9UB); “At the very beginning I mainly used email...now I contact new experts directly via Facebook” (InfoSociety_7UB). Whereas those interviewees researching in STEM areas are likely to have more chance than peers in other disciplines to adopt research-focused SNS as a legitimated extension of the formal venues for sharing published research, starting discussions and getting literature updates (e.g. Med_3UM; CompSc_5UM). Otherwise, the attempt of *Deterritorialising* the activity of the group of peers results as originated by a local problem such as the division in silos of the research groups (Hum_1UM; Hum_2UM) or by the lack of physical space devoted to the doctoral students (InfoSociety_7UB). Such attempt is related to the need for colonizing new, non institution-led spaces in order to be collectively acknowledged as researchers: this implies an effort for publicly sharing their own pieces of research (InfoSociety_7UB) rather than sparking online discussions, that is said to be difficult to be enacted (Arch_1PM). In this sense, the PhD students involved in these pilots feel solicited to come out from the ‘comfort zone’ of email communication towards a more open environment, to demonstrate that “we are serious researchers” (Hum_1UM).

6.7.2 Time

The dimension of Time considers the past-present-future orientations of the interviewees with respect to digital engagement. Focus is on the degree of stillness or evolution over time arising from the digitally-mediated scholarly practices. The identified polarizations are *Tinkering with a strategy* and *Fragmenting the engagement*. In the former, the behaviour tends to make sense of one’s own online presence by setting any medium-term goals and sometimes sketching an initial project to be developed. In the latter, the tendency is instead to acquire enough flexibility to surf across the opportunities, on the basis of occasional needs.

Table 51.

The dimension of Time and its polarizations.

<p>Time <i>Stillness or evolution in digital engagement.</i></p>		
<p><i>Tinkering with a strategy</i> Attempting a design in one’s own digital engagement, by reflecting on past experiences and figuring out future improvements.</p>	<p><i>versus</i></p>	<p><i>Fragmenting the engagement</i> The digital engagement is comprised of isolated events, where the intentionality is close to a sense of ‘playing it by ears’ rather than to ‘setting goals’.</p>

This kind of approach allows the interviewees to build spaces over time, with a future-oriented attitude that projects these pilots beyond the temporal limits of the doctorate, leading to create niches where scholarship can develop and gain visibility. Building a strategy across social media may be perceived as the natural progression of the critical thinking skills being developed during the doctorate. Otherwise, it may be linked to the need for overcoming the liminal zone between the professional and the academic identity:

“I run a blog...indeed I don’t write so much there...With a low sense of shame I have uploaded those ‘style excercises’, I mean the mandatory assignments in the doctorate...you know, *I started this blog because I had to re-qualify myself against my origin as a librarian towards a different world...*” (InfoSociety_9UB).

Building a strategy may imply the convergence on one project rather than on one place: for instance, one PhD researcher working on a distance learning research project (MusicEdu_3IOE) focuses on Facebook and Hangout to create an informal and accessible environments with her research participants, enrolled as graduate students in a music training online course. The interviewees endorsing a *Tinkering with a strategy* orientation carry out tactic adjustments to achieve the objective. For instance, they may reduce redundancies to attract potential followers on one place: “My aim is blogging but...seriously. In the meanwhile, I have started to point from twitter to my profile in Research Gate and I give my twitter account at the end of my presentations, it’s easy” (Edu_Psy_2IOE). Or they may cautiously approach the issue: “I have been writing some draft blog posts and I have asked my friends, who are researchers, to help me with some feedback” (SocSc_3UB). In other cases they may provide support to enable a successful experience: “I have organized trial sessions in Hangout with my students...I wanted that they felt comfortable with the tool” (MusicEdu_3IOE). Another kind of strategy is concerned with setting up in social media a ‘push’ approach in order to select and receive relevant content and reduce time investment.

On the other hand, *Fragmenting the engagement* implies a sense of ‘using the spaces’, in a logic of permanent exploration of tools and environments to be harnessed according to the current needs to be met. The most common practices refer to a ‘trial and error’ approach where the occasional attempts are useful to understand what works and what doesn’t: “I used once the chat function in Facebook asking for help...I didn’t solve my problem, but I received support and encouragement. It happened one time”(SocSci_4UB). However, this kind of approach is not only sign of a somewhat improvised learning path. On the contrary, sometimes the individuals showing this approach as prevalent are able to develop complex events, such as a series of video lectures in You Tube (Edu_6UB) or a self-organized research collaboration at a distance via Skype and Dropbox (SocSci_4UM). However, these events appear to occur as self-contained episodes, not aiming at any kind of linear evolution over time. This kind of approach peculiarly proceeds per discontinuities and increases flexibility by diversifying the online experiences, rather than pursuing a certain coherence in social media behaviour, in order to achieve some advantages in terms of academic visibility. Thus, we argue that *Fragmenting the engagement* might be indicator of a subtler strategy, where spaces are shifting (as in the *Drop-in approach*) and temporal practices are emergent, that is are based on temporary assemblages of consolidated (e.g. the expertise to teach a university class) and untested practices (e.g. the capacity of designing and delivering a video lecture and interacting with a generic audience via chat). This type of behaviour seems to enable the development of critical thinking about the digital through accumulating experiences, but at the same time it seems not to emphasize such incidents in a future uptake of the digital as functional to one’s own identity-trajectory as researchers.

6.7.3 Digital identity

We draw a general and pragmatic definition of ‘digital identity’ from a recent guide for academics written by academics: digital identity is defined as “the extent to which others can identify you online as a scholar” (Goodier & Czerniewicz, 2012). Thus, mapping online presence takes into consideration the attempts for disseminating (or not) intentional traces of one’s own scholarly activities.

Table 52.

The dimension of Digital Identity and its polarizations.

Digital Identity <i>The relationships between public and personal (private/professional) digital identity.</i>		
<p><i>Weaving private/public presence</i> Crossing boundaries between institutional and private/professional identities in the digital.</p> <p><i>Disclosing</i> Revealing one's own identity in the digital as a newer researcher is part of a tentative strategy for shaping one's own reputation.</p>	<p><i>versus</i></p>	<p><i>Splitting private/public presence</i> Keeping distance between personal and academic digital identity.</p> <p><i>Not disclosing</i> Partially disguising one's own identity in the digital as a newer researcher aims to open up multiple ways of being online, not necessarily linked to 'being researcher'.</p>

Building on the interview data, the dimension of digital identity can be understood according to the polarizations of *Weaving/Splitting private/public presence* and *Disclosing/Not disclosing one's own online presence*. *Weaving* the private and public facets of online presence may stem from the deliberate decision to focus on one's own academic identity ("I don't make distinction between my private and public presence online, because my being online is mainly 'academic'", SocSci_2UB) or may emerge at a point in time due to the same needs of research ("My research is about teenagers' behaviours online and so my online presence has more and more matched my activity as a researcher", InfoSociety_7UB). *Splitting* private and public identities may be related to an overt form of ICTs appropriation, enacted by pragmatically organizing the digital spaces and related activities: for instance (e.g. MusicEdu_3IOE), a doctoral researcher can use Twitter for private messages, Hangout for contacting research participants and Facebook to stay in touch with her communities of interest. In other cases, the *Splitting* approach merely occurs because the interviewees do not consider any area of potential conflicts in maintaining parallel threads of digital identity, for private and public (academic) purposes. For instance, the respondents who carry out regular and even intensive activity for leisure across social media (e.g. Eng_4PM and EconEdu_1IOE) show similar behaviours attempting to combine their private online presence with the academic one. As they do in the physical spaces, they seamlessly shift from an online space to another as they change activities: they go to Facebook to organize events with friends and go to You Tube to upload the musical performances of their own band, as well as they consult Google Scholar to find the last published articles or access Research Gate to ask questions on a research issue. In this case, the transition from personal to academic uses (and

reversal) of the open Web is quite smooth and the participants state to easily ‘change their hats’ when accessing the digital networks in ‘academic mode’. In fact, here the concern for disclosing only the “acceptable fragments of identity” (Veletsianos & Kimmons, 2013) tends to be low, because the access to social media is occasional and mostly motivated by the need for searching materials and additional training resources.

Otherwise, the *Weaving* approach may explicitly embed the aim to take together the traces disseminating online in order to expose one’s own identity as a researcher. Thus, the online activities for extra-academic purposes are reduced at a minimum (e.g. using twitter to stay in touch with the relatives at a distance, in MusicEdu_3IOE), whilst the attention is concentrated on gaining benefits as early career researchers. This way, also the potential conflicts among the diverse facets of one’s own digital identity are made lower and *Disclosing* the academic profile becomes sustainable because it is optimized also in terms of time management.

However, where the interviewees have to take responsibility both as newer researchers and as professionals in the educational sector, *Splitting* one’s own multiple digital identities assumes the value of a moral imperative and implies the need for controlling the levels of disclosure the PhD researchers are allowed to maintain. In particular, all the interviewees who work as teachers share similar concerns as regards to the non appropriate requests of ‘friendship’ online they may happen to receive from their students across the social networks.

Furthermore, a *Not Disclosing* approach might be also related to a deliberate rejection. In fact, the participants stating to be intensively engaged online in a range of online activities related or not to their research interests may choose to not disclose at all a digital identity as doctoral researchers, preferring to mark a difference between personal (private and professional) and academic activities online. This interviewee provides us with a clear example of that:

“I use FB a lot to stay in touch with friends and organize music events... and I use youtube a lot for work, because I teach Music in a primary school, but... *I haven’t yet a profile in social networks for research...I have no time indeed...I know that blogging is what I should do but ...you know, I have my job, I have the phd to do, I have many email accounts to manage and also internet searches to do...so, I spend a lot of time online...I definitely prefer to read materials, to work on my research rather than writing a blog...*”(SocEdu_6IOE, emphasis added).

This suggests the issue of the saturation of online engagement, where not disclosing one’s own digital identity as researcher derives from a considered choice about time constraints and

immediate benefits rather than on any uncertainty due to lack of familiarity with social media. A middle range position is represented by the case of those PhD students nimbly moving across the private/public boundaries in the use of the open web. Sometimes, the use of one selected tool (e.g. Skype, HE_8IOE) allows to bound a comfort zone where the friendly contacts with the colleagues or the more formal dialogues with the supervisors can be undertaken within a ‘private room’.

On the other hand, whatever approach is endorsed by the interviewees, managing one’s own online presence marked as ‘academic’ may raise the concern for being correctly identified by a potential audience: “I added a ‘H.’ between my first and family name because there is an omonymous...a researcher in Economics area with the same name and I am afraid of being confused with another person!”(EconEdu_1IOE); “I have thought a lot if I had better adding or not my second name in the publications...publishing with some different names might be an issue over time”(InfoSociety_7UB).

6.7.4 Socialization

We have observed that the digital engagement is usually socially negotiated: it results to stem from previous incidents occurred in other contexts or (more rarely) be generated from faculty’s suggestion or formal training, rather than being a personal trait of an individual who have a peculiar propensity towards experimenting with new technologies. The dimension of *Socialization* appears to oscillate between the polarizations of *Taking personal initiative* and *Building on ‘word of mouth’* and between *Harnessing individual-based benefits* and *Sharing benefits*.

Table 53.

The dimension of Socialization and its polarizations.

Socialization <i>The role of the individual or group in digital engagement.</i>		
<p style="text-align: center;"><i>Taking personal initiative</i></p> <p>Starting to adopt new tools/environments prompted by own personal curiosity or needs, building on previous basic training and/or on occasional digital hints observed in extra-academic contexts.</p> <p style="text-align: center;"><i>Harnessing individual-based benefits</i></p> <p>Engaging with the digital networks implies taking personal advantage of the potential of the open Web as efficiency enabler and network amplifier.</p>	<p><i>versus</i></p>	<p style="text-align: center;"><i>Building on ‘word of mouth’</i></p> <p>Starting to adopt new tools/environments prompted by the word of mouth occurring among peers and/or in one’s own local academic context.</p> <p style="text-align: center;"><i>Sharing benefits</i></p> <p>The need for engaging with the digital networks stems from a collective need of creating a shared space where the doctoral student can gain visibility and develops her own reputation.</p>

Some among the interviewees state to have sufficient self-confidence to trial tools and new practices on their own. They even advance that training on these themes may not be appropriate:

I suspect that formal training, classroom-based training does not work in this kind of things. It strongly depends on your personal attitude to experiment with digital tools, on your *forma mentis* I believe, and of course on the practical needs correlated to your research project" (SocSci_2UB).

Most of times they are individuals able to draw hints from other contexts it happened to them to attend. Such experiences provided them with opportunities for academic or professional socialization: for instance the PhD student quoted above could observed the use of a blog in an international research project. A long student experience abroad has enabled another interviewee (Arch_1PM) to enact an exploration of social media to support his research proposal. If needed, they are able to prompt word of mouth in their local context (e.g. promoting the use of Dropbox among the well-established researchers). The most consistent online initiatives tend to be directed to augment the benefits of the local group of peers, by organizing activities such as opening a Facebook page to let it gain visibility beyond a local context where no space (physical and metaphorical) is given to young researchers (Hum_1UM); or moving from an individual-based to a group-based blog to share works in progress (InfoSociety_9UB). Among the Italian interviewees, socialization in fact appears to be a generally acknowledged form of reaction against the gaps or inertia of the institution. As an example, negotiated actions may also include adjusting efficient solutions together with the spontaneous collaboration of faculty. For instance, an agreement among a PhD student in Education (Edu_2UB) and her supervisors allowed a regular use of Skype to substitute the face-to-face meetings that would be not workable for the PhD researcher, due to work and family reasons. As an additional example, a PhD student in Architecture accounts of his pilot to start a collective blog to enhance scholarly discussions, in a local context where face to face interaction is intensive, but the use of social media is said not to be common practice (Arch_1PoliMi): interestingly he involved his peers through the instrument of the focus group, to enable the collective design of the blog platform. However, the initial enthusiastic endorsement of the group quickly declined, lacking any kind of personal incentive. The weak durability of these attempts notwithstanding, it is worth noting that even if a previous negative experience occurred during the doctorate, the choice of contributing to a collective blog (Arch_1PM; Info_Society_7UB; Info_Society_9UB) seems to underly the assumption

that self-authoring in the digital should emanate from the research group's knowledge production rather than relying on the idea of an individual-centric notepad: "For me blogging makes sense only if you join a research/activist group and contribute to develop discussions, to let ideas circulate" (SocSci_5UB).

The local community as bearer of conventional practices is certainly determinant in shaping individual digital behaviours: among the UK interviews, it is evident the pressure from the context to do networking as integral part of one's own doctoral journey, whilst among the Italian PhD researchers this need vaguely emerges, and mainly as a self-directed impetus, especially thinking of one's own professional life after completing the doctorate. We also consider the forms of academic socialization that are likely to develop across the digital networks: whereas the most spread attitude firmly relies on email as the main formal (and private) channel to contact new experts, often as a follow-up of face-to-face acquaintance, some examples of networking via research-focused social networks occur. In particular, asking questions and taking part in short discussions in online forums and communities become daily practices when these types of activity are shared among the researchers in a local context (Med_3UM; CompSci_5UM). More rarely, the lonely PhD researcher dares the adventure of interacting with unknown people. Only in one case a systematic engagement across the general purpose social networks is pursued, where networking is interwoven to the development of research topic and professional discourses at the same time. However, in most cases trust in these unconventional ways for networking is accidental and derived from individual-led, random experiences. For instance, it is significant that where the attempt results to be successful, the interviewees show a genuine surprise: "Maybe I was lucky!"(EduPsy_2IOE); "Don't know, maybe I was lucky, but Research Gate seems to me more useful than other social networks" (Med_3UM). Even these successful episodes seem therefore not to be grounded in a collective awareness about how to behave in open environments and the role of the chance encounters.

6.7.5 Stance

The dimension of Stance considers the level of the personal uptake of the open Web for research purposes. Its polarizations indicate directions towards an *Embedding* versus a *Diverging approach*, where in the former any creative mediation to include the digital into the current scholarly practices is sought, whilst in the latter the endeavours lead to ideally contrast the mere 'academic domestication' of the open Web towards small, tentative trials of innovation.

Table 54.

The dimension of Stance and its polarizations.

<i>Stance</i> <i>The level of personal uptake of the open Web for research purposes.</i>		
<i>Embedding</i> Attempting to integrate emergent digital practices within the unwritten conventions of scholarly communication, also responding to any institutional pressure in this sense.	<i>versus</i>	<i>Diverging</i> Attempting to shape one's own digital behaviour according to original self-motivation rather than following any external/institutional pressure.

The Embedding approach primarily refers to tracking a path over time, to create a place where building something, whilst the Diverging approach is closer to orientating oneself in an expanding space, aiming to temporarily shape a place/tool and then go on exploring further.

On the one hand, in the *Embedding* approach the interviewees draw advantage from aligning their engagement in the open Web to the needs of the individual PhD students at a point in time (e.g. searching materials, communicating one's own research, interacting with other experts, gaining visibility, etc.). This pragmatic approach implies a consideration of the digital as a contingency supporting the "identity-trajectory" (McAlpine & Amundsen, 2011) as an instrument for increasing control in solving practical problems and crafting one's own future position. In fact, we have mentioned in the other dimensions of the DEV framework some behaviours converging towards one place, adjusting over time personal niches of being online, weaving own activities to let it emerge a unique profile as new scholar, taking cue from external contexts and/or the local group of peers to carry out an individual initiative. As a whole, these aspects tend to compose a stance aiming at maximizing the benefits by building in the digital to support the early steps of a research career. On the other hand, a *Diverging* stance is reflected in those opinions leaning on keeping on an exploratory approach across the social media uses, although the individual has achieved a good self-confidence. Unlike the Embedding stance, in the Diverging approach the potential directions endorsed are multiple and not necessarily pointing to build and enhance an academic profile. We have mentioned in the other dimensions some behaviours adopting a drop-in approach in a range of spaces, fragmenting the digital engagement in isolated events, sharing benefits of being online, without any particular concern of disclosing one's own presence as

‘academics’. As a whole, these aspects tends to compose a stance aiming at constructing the conditions for a permanent experimentation, rejecting any pre-defined objectives:

“We should free ourselves from a mere utilitarian logic like...’I run a research blog to get this’...BUT ‘I am running a research blog and I am observing what’s happening’...after, only after that I am able to realize if the blog has been functional to my initial objectives or if it enabled me to meet any objectives which I hadn’t either thought of from the very beginning” (Edu_6UB).

Sometimes, this stance is endorsed when the PhD researchers, as individuals or as a group, feel to be penalized by their local context. For instance, the open Web is cautiously thought as a means helping to “force some conservative constraints” (Hum_1UM), even if it is not said to be a solution. In another case, digital engagement constitutes an opportunity to undertake activities in open contrast to the flaws of the local research context:

“I used my iPad for searching useful materials while was supposed to attend in person a number of pointless basic courses. After a while, I have decided to enroll in a mooc about social network analysis, just to overcome the gaps of the formal research training...I believe I will not enroll in any formal training course anymore, I promise” (InfoSociety_9UB).

In an intermediate position, a diverse stance can be related to those opinions (among the interviewees in Humanities, Social Research and Education) highlighting a mild interest in social networking for research, even if social media are integral part of their non-academic activities.

It can be said that they are digitally acting as ‘sleepers’, postponing or withdrawing from any kind of significant commitment with social media for research purposes, struggling with time constraints, although they allude to ‘what I should be doing’. This resonates with the goal orientation ‘Waiting for the mainstream’ previously highlighted in the discussion of the e-survey’s open comments.

6.7.6 Tensions

Many tensions underly the relationships between the shaping of the scholarly practices as bounded in the local institution/subject area/academic cultures and the disposition of the individual newer researchers. They can be framed under the polarizations of *Complementing* and *Competing*.

Table 55.

The dimension of Tensions and its polarizations.

<i>Tensions</i> <i>The relationships between institutional and self-organized practices</i>		
<i>Complementing</i> The open Web is likely to play an ancillary role, to complement and in places expand existing practices.	<i>versus</i>	<i>Competing</i> The open Web constitutes the venue for searching alternative modes for knowledge dissemination.

A first tension regards the role of the institution in including or excluding the open Web in/from the life of doctoral students. The contingent provision of a basic training about social media for research offers an obvious advantage to the PhD students in the early phase of their doctorate and is likely to prompt a commitment for including social media as a complement in their daily activity.

On the other hand, the attempt by the university of proposing a space for online networking is likely to be neglected by the community of users:

“We have a social networking platform at the Poli (called Bleep)...it was intended as the evolution of the institutional e-learning platform... it is possible both to exchange materials and interact among peers or with faculty. Indeed there is no discussion at all in the new platform, just some exchanges of teaching materials, as in the previous online platform. Definitely “going social” is up to individuals” (Arch_1PM).

Similar accounts are retrieved across diverse subject areas (e.g. “We don’t communicate among peers in the e-learning platform, it’s too ‘institutional’. Email is far better”, Hum_2UM) and encompass the rejection of any institutional attempt to invade the sphere of the PhD students communication: “They shouldn’t tell us how much we should be using social media. They should just inform us that such things exist”, CompSci_5UM).

Here we remind the tensions between the sub-codes ‘Relying on individual initiative’/Relying on institutional support’, where a contrast appears evident between the acknowledged opportunity of receiving initial advice and support from the local research context and need of intending digital networks as space of autonomy. Moreover, another important source of tension is related to the relationship between the endeavours of individual doctoral students to embed specific modes of knowledge production as inherent to their research field and the over-emphasis of social media for communication and networking. What in places re-emerges in the interviews’ statements is a creeping judgement of

‘irrelevance’ on the open Web, seen as quite marginal in the process of producing an enduring record in defined research fields:

“We don’t need social media, but there is another group researching media in education...for them such things matter” (Edu_1UB).

“I think that the relevance of the open Web depends on your research field and topic and...on the local context too” (Hum_3UM).

“Social media has not something to do with research...it’s mixed with other stuff” (MusicEdu_3IOE).

In this sense, the open Web may be in competition with the core issues experienced by the doctoral students in their apprenticeship. This sense of ‘otherness’ with respect to the ‘scholarly’ is particularly apparent whether the local context is seen as a self-contained ‘spaces of enclosure’ (Edwards & Usher, 2008) for research practices. In such cases, the open Web may be viewed as redundant by a PhD researcher immersed in a research-bounded place (Edu_1UB) that has the characteristics of a community of practice, but on the other hand it may not succeed to provide a distant student with a real alternative solution to her sense of displacement “I have to say that I’ve never thought of asking for help out there, across digital networks, when I felt lost at the beginning of my doctorate” (Edu_2UB). Elsewhere, across techno-scientific areas, the PhD researchers who are given an occasional suggestion (from their supervisors or other faculty) look for the online venues that their ‘academic tribe’ has started to colonize (e.g. a devoted group in LinkedIn, a thread in Research Gate) as a complement of the conventional scholarly communication practices. However, a peculiar form of this kind of contrast between means for knowledge production and distribution is identifiable in terms of technology literacies. On the one hand, the specialized literacies needed to use a complex technical equipment fundamental for the research practice; on the other hand, the more generic (but differently complex) literacies required to adopt digital devices and social media:

“I managed to repair an incubator, a key lab equipment here...I made it on my own, I am very proud of that, but, I admit, I can’t use an iPhone...touch the screen, enlarge the image with two fingers...no, I am not comfortable with all that, I feel a bit old-fashioned...I see many graduate students who are so fast and comfortable with their smartphones, they use many social media, but...they are not able to use a basic device to weight the chemical components, really, they can’t push the ‘tare’ button on the device...there is a divide between us” (BioTech_8UB).

Otherwise, where the research topic is aligned with the modes of knowledge production enabled by the open Web “there may be a very close connection between the development of your research themes and the construction of your academic profile online” (InfoSociety_7UB). However, an informed use of social media for research is also said to open up alternative opportunities for the individual PhD researchers to raise their own voices against the “bureaucratic thing” of the formal channels, because “often the work is attributed to your supervisor rather than to you [...] it is important how much you publish but also how many people interact with your work”(EduPsy_2IOE). Furthermore, the open Web is again seen as competing against academia when it enables the individual to seek for relevant contacts and content without which the investigation would be impossible:

“It was enough to launch on the internet some requests...I mean, across some Facebook groups or LinkedIn groups and I could receive some good inputs from the professional communities of librarians and online community managers. This led me to identify new spaces to develop my research discourses against the formal academic spaces that instead...discouraged me in doing such research” (InfoSociety_9UB, emphasis added).

None of the research participants state to have discussed, even occasionally, about social media for research with their supervisors or other faculty. However, local academic cultures can significantly affect the way the PhD students engage with social media. The UK interviewees agree that their local context seem to generally encourage self-empowerment and state that “They are keen that you go online”(EduPsy_2IOE). Otherwise, some Italian participants (in particular in Social Research) clearly stress the commonplace custom of keeping a low profile as a guarantee of being accepted as early career researchers:

“A colleague of mine has become well-known in popularizing labour policies...he posts a lot across social media, but...I have to say that such things are contrasted...you are likely to become a dartboard for other people’s irony...here being competitive is never seen as a good thing” (SocSci_5UB).

“They don’t judge you well if you try to stand out, you know, you had better keeping a low profile...likewise in social media...they don’t use them and so...you are not encouraged to use them”(SocSci_4UM).

In such climate, curating an academic presence in the open Web is likely to be cautiously undertaken as a self-initiated activity, because this attitude might be perceived as competing

compared to what is expected as appropriate behaviour from an early career researcher. Elsewhere, in techno-scientific areas, a digital presence is often aligned with current practices shared among established researchers (e.g. “A lot of researchers of my department are there in Research Gate, so it’s commonplace”, CompSc_5UM). However, the lack of attention toward the transversal skills of ‘being researcher’ (Eng_4PoliMi) is likely to produce a low awareness of what the PhD students can achieve by crafting their online presence. Furthermore, among the Italian interviewees the open Web is again seen as competing against academia when it is said to have the potential to provide young researchers with a (loosely defined indeed) way for surviving the shrinking budgets that prevent them from accessing university as future researchers.

6.8 Conclusions

This chapter has reported the findings drawn from the individual interviews to a total of 26 Italian and UK PhD students, selected across four university contexts during three cycles of one to one interviews. The digital practices and dispositions accounted by the participants have been thematically grouped and categorized at an intermediate and theoretical level. We have firstly drawn the theoretical concept of *creeping along* from the intermediate phase of data analysis and have further articulated it across the six dimensions of the Digital Engagement Variation framework (DEV), arising from the re-analysis of the interview data. These interview findings are understood as the narratives of 26 varied individuals rather than a representative sample of researchers striving to reap the benefits of the Web 2.0 ecologies. However, the results have highlighted some variation patterns in the digital engagement of individual doctoral researchers: such empirical and theoretical achievements will be further assessed in the final focus groups, seeking for the theoretical saturation of data (Morse, 2007). In fact, the PhD e-researchers investigated in the interviewing process result moving along the scholarly practices in the digital slowly and carefully, stepping forward more easily where they feel to be in a comfort zone and at danger of withdrawing whenever they realize to enter an uncharted territory. If this *creeping along* in the uptake of Web 2.0 ecologies is generally characterized by discontinuity in the selection of spaces and by non linearity of digital engagement, at least two clusters of orientations can be identified. Some among the interviewees tend to cut out for themselves a niche for adopting new practices, aiming at adding contingent benefits to their doctoral experience or starting to craft their position as future researchers. Others are more inclined to accept the challenge of the vagaries of the digital and explore it seeking for a critical approach that is likely to shape in essence their

'being researchers' in the next future. In terms of digital trajectories, it can be said that at times the tendency is to align motivations and adapt practices to institutionally scripted learning ecologies. Otherwise, the tendency is to diverge from what institution-led ecologies suggest as legitimate academic behaviours and dare some unconventional pilots in the digital, relying on one's own self-organized learning ecologies. In terms of space/time configurations, the former attitude is more open to encapsulate the choice of spaces and any tentative evolution over time as efficiency enablers of the doctoral activities (e.g. more quickly and effectively retrieving materials) and as an add-on of the conventional scholarly practices (e.g. digital as a network amplifier). At the opposite, the latter attitude leans toward an intentional surfing across digital spaces and an ostensible stillness that seems to neglect any tentative strategy of going digital as newer researchers. Indeed here the orientation is more aligned to the construction of an independent line of action in the digital, where the individual seeks, at one's own pace and without an explicit goal, for alternative modes for being researcher, beyond the unwritten rules of academia. It is worth noting that these distinctions between seemingly opposite behaviours to a degree are a simplification of a more complex oscillation, that is better thought as a permanent dialectic in a continuum of opportunities, as represented in the DEV framework. In fact, the two aforementioned trajectories in the digital may coexist in the same individual and emerge at different points in time, may be prevalent in an individual or collective approach to the digital, may assume different relevance with respect to issues of academic/professional identity, may be influenced by the local context as well as the subject area's conventions. The DEV framework also suggests to re-locate the Goal Orientations (Pioneering, Coping, Waiting for the mainstream and Rejecting) drawn from the e-surveys' open comments under the dimensions of Space, Time, Socialization, Digital Identity, Stance and Tensions as shaping the PhD researchers' digital engagement. Located in situated contexts experienced by specific individuals, such Goal Orientations can be re-thought as temporary strategies of resilience, as immediate reactions to the change introduced by the Web 2.0 ecologies in the formal track of the doctoral journey. This perspective will be investigated more in depth and discussed in the next chapter.

On the other hand, it is worth underlining that the conceptualization of digital engagement as suggested by the DEV framework is not intended to be generalized to all the PhD e-researchers, because it is intentionally grounded in data generated from samples of individuals situated in specific university contexts. In fact, the accounted practices and

dispositions, as socially and historically situated, result to be specific to bounded research contexts, personal situations, phases of one's own doctoral journey, presence of ICTs training and influence of external/professional settings. Isolating from these intricacies a set of practices and assuming that these belong to 'types' of digital learners is at danger of freezing certain behaviours enacted by certain individuals at a point in time and arbitrarily generalize them (Gourlay, 2014). On the contrary, the DEV framework helps to overcome an approach per typologies of digital-savvy PhD researchers and to open up a holistic approach for better understanding the trajectories that the doctoral students are likely to enact in the digital, building on the personal level of ICTs appropriation achieved at a point in time, the tacit scholarly conventions of their local 'academic tribe' and the original image of themselves as newer researchers that they are developing. In the subsequent Chapter 7 the aim is to further assess and expand the outline of the trajectories in the digital and the conceptualization of the Digital Engagement Variation in the light of collective discourse enabled by the focus groups. Building on the responses received in this phase of the interviewing process, the focus groups will particularly explore the relationships between the individual PhD researchers and the local and external pressures in the uptake of the digital, as emerging in terms of tensions and personal stances. Moreover, the focus groups have been designed to add further examples of actual online practices and to gain better understanding of the connections among the current digital engagement, the training needs about the digital and the idea of the open Web in the PhD researchers' emerging learning ecologies.

CHAPTER 7

THE FOCUS GROUPS: ASSESSING THE DIGITAL ENGAGEMENT VARIATION

7.1 Introduction

This chapter reports and discusses the findings of the four focus groups carried out across four different university contexts (3 in Italy and 1 in the UK) between November and December 2013. These focus groups have constituted the final phase of the data collection process (see Table 7): such a technique was adopted in order to cross-check the findings of the individual interviews, to collect additional examples of scholarly practices in the digital and assess the Digital Engagement Variation (DEV) Framework emerged from the previous interview data analysis (Morse, 2011). Thus, we have designed and organized the focus group protocol on the basis of the emerging theory related to the trajectories of the PhD students acting in the digital, and therefore we have sought for an in-depth understanding of the variation patterns of digital engagement arising from the previous interviews and coalescing into the theoretical concept of *creeping along*. Furthermore, we have approached the focus groups as a form of member checking (see section), since the aim was to apply a constructivist stance in the assessment of the DEV framework. For this purpose, we have shared selected interview findings with the research participants, asking them for comments, clarification or divergent views that could confirm or challenge the core concepts advanced in our early interpretive endeavour of digital engagement. Thus, we have drawn the attention to question the main polarizations of the DEV framework through a group discussion, rather than to exploring new topics in the substantive area being researched. As for the individual interviews findings (Chapter 6), we have grouped the results of the focus groups under the four themes of ‘Shaping the scholarly in the digital’, ‘Engaging with the digital’, ‘Thinking the open Web’ and ‘Musing upon social media training’. Then, we have matched them with the dimensions and polarizations of the DEV framework, presented and discussed in the previous chapter. The focus group data have allowed us to assess and enrich the DEV framework with additional polarizations and behavioural trajectories in the digital. In fact, we have designed the protocol of the focus groups to better explore the tensions between approaches such as tinkering with a strategy and coping with occasional needs, taking personal initiative and relying on the word of mouth, using the open Web to complement or contrast their own becoming researchers, calling for an initial social media training or

learning forward a ‘do-it-yourself’ solution. Likewise in the interview data analysis, we report the focus group data highlighting comparison among the PhD researchers’ views across different broad subject areas and local contexts, where in particular similarities and differences were made clear between the Italian and the UK participants. More in general, the collective discourse at work in the focus groups has enabled us to better understand the potential of PhD student agency in the digital and to confirm and further articulate the motivations related to the uses or non use of the open Web for research purposes. These achievements, along with a more extended map of digitally-mediated academic practices, add insights functional to the research question related to the actual adoption of the open Web on the part of the PhD researchers. Furthermore, this conclusive phase of data collection has contributed to provide valuable hints about the implications for research training that we will discuss in Chapter 8.

7.2 The focus groups: protocol and organization

The protocol of the focus group stems from the consideration of the critical points to be assessed in the DEV framework. However, the focus groups have represented the most complicated phase in data collection process from an organizational standpoint, due to the difficulty for recruiting groups of PhD students at a scheduled date and time, without using any form of incentive. On the other hand, we have found the focus groups’ events as particularly rewarding per se, since we have been able to observe at work in unique sessions different approaches to digital engagement and as a consequence to better grasp the practical implications of the Web 2.0 ecologies for the future work practices of the newer researchers.

7.2.1 The focus group protocol

We have drafted and revised the focus group protocol in English language: only when the final version was assessed (see Appendix z), we have arranged also an Italian version (see Appendix Y). While constructing the protocol, we have followed a suggested progression from general to specific (Krueger & Casey, 2009), starting for an opening question thought as a serendipitous icebreaker and going on with both engagement questions, where the participants have been asked to read list of items and comments some of them, and ‘think back’ questions, where the participants have been involved in reminding personal experiences and reflect on specific characteristics of digital engagement (e.g. the role of socialization in the uptake of the digital). In fact, we have submitted to the participants attention a synthesis

of findings drawn from the e-surveys and in particular from the individual interviews. Then, we have asked to compare their personal experience and stance with respect to peers' uses of the open Web and opinions about the ways for understanding the potential of the open Web and what the institutions should or should not be doing regarding social media training for research. By proposing the extreme positions arising from the individual interviews (e.g. the role of personal initiative and the role of the group of peers in prompting the adoption of digital tools), we have wanted to provoke the elaboration of more decisive stances enabling the understanding of motivations and drawbacks in the uptake of the digital. The first version of the protocol was comprised of nine questions and related probes to be used when needed. However, after reviewing the draft with our supervisors and further discussing it with our IOE tutor, we have simplified the wording of the questions and reduced the schedule to the number of eight questions (Table 56), in order to limit the duration of the focus group within 90 minutes. It is worth noting that in the formulation of the question six we have built the metaphor of the 'shed of tools' (White & Le Cornu, 2011) as one of the possible interpretations of the Web in the PhD students' digital engagement.

Table 56.

The questions and related objectives and probes comprised in the focus group protocol.

Objectives	Questions	Probes
Further exploring the 'image' of the open Web as enhancing, functional or irrelevant to research activities, adding to the opinions emerging from the e-surveys and interviews.	1. What does it come to mind when you think of Web 2.0/social media and research activities? Just one adjective/noun phrase.	Do you remember any particular event?
Exploring the perception of any 'significant difference' between conventional and emergent modes for knowledge communication, through the lens of the most popular academic activities undertaken in the open Web by doctoral researchers.	2. What are the most rewarding activities you have actually undertaken in the open Web for research purposes?	
Further exploring legitimization, copyright or privacy issues that prevent PhD students from adopting certain online practices because they go beyond the scholarly conventions.	3. What are those doctoral activities you would never do online, in open environments?	Why would you never do these activities online?

<p>Searching for individual-based or context-bounded factors of support for starting and keeping an emergent digital behaviour. Checking the extent to which the adoption of new tools is prompted by individual agency or by 'social presence' of peers.</p>	<p>4. How do personal curiosity and peer recommendation influence your early explorations of new digital tools/spaces?</p>	<p>How do you think that individual capacity and peer support can also help you to be persistent in using these tools over time? What about shadowing a young/senior researcher?</p>
<p>Assessing motivations of the doctoral students' digital engagement, as grounded in isolated events or as steps in a sketched intentional path.</p>	<p>5. 'Occasional, practical needs' are said to be the more frequent reason why your peers start to use social media for research. Have you ever thought of any ways for better organizing and making sense of your 'trials and errors'?</p>	<p>What are the reasons why a 'drop-in' approach is so popular?</p>
<p>Testing the orientations of doctoral students towards a functional or a developmental approach to social media for research.</p>	<p>6. Do you think of the open Web more as a shed of tools to enhance efficiency of prescribed tasks or as a space for independent scholarly activities?</p>	
<p>Further exploring what 'doing research in the open' practically mean for a doctoral student.</p>	<p>7. Your peers have provided in the interviews a variety of perspectives about the opportunities the open Web can add to research work of doctoral/early career researchers. Among their expectations:</p> <ul style="list-style-type: none"> a) the open Web provides alternatives to research funding to early career researchers; b) the open Web improves critical assessment of research results, through open peer review and discussion; c) the open Web helps to force the conservative block of the current constraints in local academic contexts; d) the open Web suggests parallel routes for networking and collaboration; e) the open Web can mutually reinforce physical and virtual mobility; f) the open Web can expand one's own knowledge building, by providing additional training opportunities. <p>Do you endorse any of these statements or would you add a different perspective?</p>	<p>Could you provide some examples you have found inspiring?</p>
<p>Exploring further the tensions between the 'institutional' and the personal ecologies, through the lens of the forms of advice/support suggested by the interviewees.</p>	<p>8. Your peers have provided in the interviews a range of suggestions and critical views related to the needs for doctoral students to receive advice and support about social media for research. Among them:</p> <ul style="list-style-type: none"> a) The need for Providing how-to guides with basic information on tools and recommended uses. b) The need for Sharing information on significant examples of social media uses across different research areas. 	<p>To sum up, to what extent your institution/local research context should intervene to provide advice and support?</p>

	<p>c) The need for Learning how to build your own profile online, for future academic or professional positions.</p> <p>d) The need for Organizing recurring opportunities for discussing among peers how social media use change as the doctoral research evolves.</p> <p>e) The need for Assuming an exploratory approach to social media for research rather than selecting among pre-packaged objectives and ways of use, as they are likely to arise from ICTs training sessions.</p> <p>f) The only productive advice would be discussing over time this kind of things with my supervisor.</p> <p>h) No training is necessary, everything depends on your personal propensity towards new media.</p> <p>i) Some training sessions would be useful, but no trust in institutional choices.</p> <p>Do you endorse any of these statements or would you add a different perspective?</p>	
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7.2.2 The sampling strategy

The sampling strategy applied to the focus groups has been aligned to the aim of cross-checking the themes and categories arising from the previous interviewing cycles through letting collective discourse emerge (Morse, 2007), by involving small groups (3-4 people) of participants. To this purpose, we have mainly involved the same research participants in the one-to-one interviews, in order to meet the recommendation of iteratively interviewing research participants (Charmaz, 2006). Thus, we have firstly re-contacted all the 26 interviewees inviting them to the focus groups in the respective university contexts. In particular, the objective was to carry out focus groups with the participation of at least some among the key informants of the individual interviews. However, although many have stated their willingness to contribute to the last part of our data collection, a few among them have succeeded on giving their availability, due to PhD commitments (e.g. research stay abroad, engagement in data collection, etc.). In order to facilitate the participation, we have sent the invitation at least three weeks in advance and have suggested different dates and time, whilst the selected locations were always nearby the potential participants' department. All the focus groups were thus organized in face to face modality. However, in one of the Italian university settings (Politecnico of Milan), where the recruitment of participants appeared to be particularly difficult, we have attempted to organize an online focus group (Gibbs, 2012)

as an alternative to increase participation, but the subscription to this opportunity was anyway scant. Facing such hurdles, we have also contacted additional ten potential participants per university setting, drawing from the e-surveys' databases. At the end, only in the UK focus groups all the three participants had taken part in the previous individual interviews, whereas in the focus groups undertaken across the Italian university settings the samples was also comprised of new participants. However, the selection of new participants has always aimed at involving PhD students of the same subject areas of the individual interviews' participants, in order to enable uniformity in the composition of the focus group. In particular, we have considered that, despite the disciplinary differences, participants researching in areas such as Humanities, Philosophy and Education are likely to have similar work practices and individual-based attitudes toward the digital. On the contrary, PhD students researching in Medicine, diverse strands of Engineering and Science are more likely to rely on a collective uptake of the ICTs. In principle, we have tried to involve PhD students of different disciplines and in different phases of their doctorate, to enable diversity of opinions during the discussion. In Table 57 we have reported essential demographics helping to locate the focus group participants in their respective contexts. The acronyms adopted are arranged according the following logic: Int = Interviewee, A, B or C points out when the interviewee has started talking for the first time compared to their peers; FG = Focus Group and the numbers 1, 2, 3 or 4 indicate the sequential order of the diverse focus groups; finally, UM = University of Milan, UB = University of Milan-Bicocca, IOE = Institute of Education, PM = Politecnico of Milan.

Table 57.

The participants of the four focus groups.

University	N° participants	Acronyms	Age range	PhD year	Subject area
UniMi	3	IntA_FG1_UM	>35	3°	Humanities
		IntB_FG1_UM*	25-30	2°	Medicine
		IntC_FG1_UM	25-30	1°	Philosophy
UniBicocca	3	IntA_FG2_UB*	25-30	2°	Social Science
		IntB_FG2_UB	25-30	1°	Science of Materials
		IntC_FG2_UB	>35	3°	Education
IOE	3	IntA_FG3_IOE*	>35	2°	Music Education
		IntB_FG3_IOE*	>35	1°	Higher education
		IntC_FG3_IOE*	31-35	2°	International development
PoliMi	4	IntA_FG4_PM	25-30	3°	Design
		IntB_FG4_PM*	25-30	2°	Engineering (Ecology modeling)
		IntC_FG4_PM*	25-30	2°	Engineering (Computer Science)
		IntD_FG4_PM	25-30	1°	Engineering (Information Engineering)

**The research participants labeled with an asterisk have also taken part in the individual interviews.*

7.2.3 The focus groups' process and data analysis

In the organization of the focus groups we have taken into account the logistical, ethical and technical issues necessary to facilitate a comfortable and respectful event to occur both for the participants and the researcher (Krueger & Casey, 2009). Thus, considering the low numbers of participants for each focus group, we have put a particular attention to the negotiation of the locations with the individual universities, since “greater polarizations of opinions was observed in a small room” (Stewart & Shamdasani, 2007, p. 31). Thus, we have been able to obtain access to relatively quiet rooms, reserved for the duration of the focus groups, where the participants could take place around one small table enabling interaction. We have applied to the focus group process the same ethics protocol previously adopted for the individual interviews, as defined in the Methodology chapter (see section 2.8.1): we have preliminary clarified to the potential participants the scope, content and privacy and confidentiality issues related to the focus groups and I have confirmed their right to withdraw from the interviewing event at any time. We have sent an email invitation to all the potential

participants at least three weeks before the proposed dates of the focus groups. In the invitation message we have clarified that this collective interview was thought as an opportunity for sharing the results of the individual interviews and to further assess the achievements and reflect on possible practical implications regarding digital literacies of PhD researchers. We have informed the potential participants that the duration of the focus group would have been of 90 minutes at maximum. Actually all the four focus groups were completed within the planned time, with a total of 340 minutes of audio recording. As well as for the individual interviews, each participant could read and sign the release form related to the informed consent, before the start of the group interview. In the conduct of the four focus groups we have applied the one interview protocol aforementioned, but we have also taken into account that “the interview guide is only one part of the research instrument; the group itself and the moderator are also part of the research instrument” (Stewart & Shamdasani, 2007, p. 66). We have used the protocol as a canvas on which performing the group discussion and we have used the planned sequence of questions to give rhythm to the conversation, and sift some probes already included in the protocol, when appropriate, to challenge the participants to go more in-depth in their opinions. However, we have left the conversation naturally flow, allocating more time when the discussion nicely developed, allowing the cancellation of some probes. Sometimes, different probes have produced more discussion than the main question, in diverse contexts: for instance, in the UK focus group when asking about the opportunity for shadowing a young/senior researcher to learn going digital; across all the Italian contexts, the probe about the appropriate social media training from the institutions let it arise a range of divergent comments. At times, we have also introduced some ‘clarification probes’ (Rubin & Rubin, 2005, p. 167), in order to gain a better understanding of the motivations being stated or to expand examples. In order to support three questions (n. 2, 7 and 8 in Table 43) we have distributed some printed material, enabling each participant to read at one’s own pace lists of items before responding. We have concluded each focus group by inviting the research participants to add personal comments: in particular, the participants in the second focus group have hoped for a more definite engagement of their institution about social media for research as part of a wider training provision for the newer researchers.

Like the individual interviews, the focus groups were recorded only in audio mode, using the ITalk software application (set for the best audio quality) with the Ipod Touch. The audio files have been immediately saved to the devoted folder in Dropbox and then in our laptop

and in the external hard disk where all the PhD stuff was collected. We have listened to each recording just after the focus group's event, in order to better fix in our mind the lived experience of the collective conversation and take notes by hand of any remarkable occurrences. The individual focus groups were transcribed within one week from the event, following the same approach and procedures defined for the individual interviews. We have sent the transcripts of the focus groups to the respective participants in order to listen to any amendments and integration. No participant has sent any comments about the transcripts. Approaching the data analysis we have borne in mind that "unit of analysis is the collective perspective" (Gibbs, 2012, p. 189). In fact, the scope of the focus groups data analysis has been to cross-check findings with the previous achievements drawn from the individual interviews, in order to seek for saturation of data and assess the DEV framework through new insights. To this purpose, the transcription process has been focused on the responses providing answers to the questions posited in the protocol, neglecting any complementary, even if short, threads of discussion developing during the focus groups and reporting issues related to the practicalities of the doctoral experience in a local context. Thus, the manageable size of the transcripts has allowed us to manually undertake the initial coding and then to organize the result in chunks of information to be subsumed under the four main themes already indicated for the individual interviews. Within these themes, we have proceeded with the comparison among the statements collected across the diverse focus groups. Then, we have compared the responses arising from the focus groups and the correspondent responses, if any, arising from the individual interviews. This process has enabled us to check if new themes and concepts arise (Morse, 2007) from the further perspective of investigation. For instance, the comparison of the data generated around the theme 'Shaping the scholarly in the digital' both in the focus groups and in the previous individual interviews has enabled us to confirm the interplay between the focused codes Pursuing convenience and Crossing boundaries when considering the accounted academic activities such as searching for materials.

7.3 The focus groups' findings: current academic practices and trajectories in the digital

The approach followed in the focus group protocol aims to persuade the research participants to value their experiences in the digital rather than merely accounting for their academic practices in the open Web. Therefore, the arising results more clearly return the struggles of

the individual PhD students in coping with the digital, beyond providing further examples of digitally-mediated activities, confirming what has previously emerged from the e-surveys and the individual interviews. Thus, the focus groups have provided new opportunities for comparing empirical findings and for scaffolding the achievements of the DEV framework.

7.3.1 Shaping the ‘scholarly’ in the digital

Under this theme, the research participants have been asked to point out the core value assigned to the open Web in research tasks and to account for rewarding experiences related to defined scholarly activities being developed in the digital. The given responses resonate both with the individual interviews’ statements and with the open comments received in the e-surveys. The participants show a cautious and generally occasional uptake of the digital facilities, matching the stance of *creeping along* the scholarly practices and particularly aiming at reducing any side damages while crafting their own reputation in the local academic context. Their efforts in taming the tools while undertaking specific academic activities can be analytically framed under the focused codes of *Pursuing convenience* and *Crossing the boundaries*, where the interplay between the two is dependent on the degree of control the individuals want to keep in their online presence.

Table 58.

The most relevant focused codes related to the dimension of Stance.

Stance		
<i>The overall position about going digital as newer researchers.</i>		
Focused code		Focused code
Pursuing convenience	vs	Crossing boundaries
Sub-theme: <i>Searching materials</i>		Sub-theme: <i>Sharing research</i>
Seamlessness between institutional and open services. Blurring distinctions between Web 1.0 and Web 2.0 services.		The open web is said to widen the opportunities for going published and sharing one's own published research, beyond the conventional channels. The practice of sharing papers is the starting point to sketch a digital identity as a researcher and to build a network of contacts.
Sub-theme: <i>Networking</i>		Sub-theme: <i>Sharing works in progress</i>
Face-to-face comes first, online contacts follow up. Questioning the effectiveness of a 'compulsive' online networking activity for research purposes.		Thinking of sharing works in progress only within the relationship with the supervisors. Taking into account ethical issues of sensitive data. Sharing data in the open may be pointless without the related interpretation.

Searching materials

The augmented facilities for literature searching derived by the various combinations of Web 1.0 and Web 2.0 services provide all the interviewed PhD researchers with an ever-expanding set of resources directly functional to the scholarly purposes of the PhD students. This constitutes the clearest evidence of a seamless activity between institution-led and personal ecologies.

As previously noticed in the open comments of the e-surveys, expressions such as 'accessibility', 'speed' and 'availability of varied materials' are recurrent also in the focus groups, with an additional stress related to the unprecedented advantages for exploring new research themes and keeping on updating in competitive scientific fields.

“For me...I would say that the open Web is...opportunities, work instruments which are fundamental, very useful...access to research materials. For sure they enable you to speed up searching activities and to improve the access to stuff that otherwise you couldn't get. Additional materials that you would never find...for example, 80% of

the stuff I am using for my research are articles available via Google Scholar and other open search engines...”(IntB_FG2_UB).

“Accessibility...speed of reaching the available sources of information...in my case for example...you are writing an article, you need a citation...you can immediately retrieve it...I can't imagine how they could manage all that some years ago, before the web...I mean in the Medicine field, where new publications continuously come out... it's really difficult to be updated. (IntC_FG1_UM).

The task of searching research materials is also undertaken using Twitter, generally neglected in its potential for networking:

“Because lot of my research is very current and so what's happening on the news over time changes and you have to pull it together, then I follow several organizations on Twitter and I find it very useful for alerting me that there is something new I have to read...to my shame...I have a twitter account but I quite follow others' work...”(IntA_FG3_IOE).

Sometimes a draft time-saving strategy is also outlined:

“For Twitter I have set up some filters with some key words on Twittdeck and so I don't need to sift posts for hours as someone does...I go in, check within the filters and go out...ten minutes, that's all, this is my activity on Twitter, I search for materials, links, etc...I have managed to find some interesting stuff thanks to the appropriate key words...”(IntB_FG4_PM).

Networking

Unlike the literature searching facilities, the opportunity for networking online is confirmed to be more problematic for an early career researcher, because the tensions analog/digital and institution-led/self-organized are at work:

“I would add ‘building networks of contacts’...the web can help, but the personal acquaintance, the face-to-face contact always come first...*Your network of contacts maybe can't be constructed exclusively online, but the ‘digital’ can be the means to keep on collaborating and then it becomes fundamental*, from email to sharing articles...to exchanging materials”. (IntB_FG1_UM, emphasis added)

The attendance of social networks makes it raise new organizational issues that seem not to be really faced:

“For me Facebook is a mess of personal contacts and some pseudo-academic contacts who...you never know how to manage...also LinkedIn, it's included in the long list of

personal profiles set up but never really curated, used...you know, sometimes I update it because I am notified such thing 'X asked for your contact', then I log in, if I want I add something, but I don't use it really"(IntA_FG2_UB).

However, the hectic effort to gain visibility and contact new peers and experts is being questioned in its own right, as not always really productive for the research work:

"I need to have focus, purpose...the use of these things is like 'Ok, I tried, I know how to use it...if I want to use that I can just start a sort of circulating and people start responding...because it's like... *I have already a network...It's not a large network but it's a network I know I am going to respond...I don't need putting something over there and have no responses...some people get anxious because they post something and think 'they don't like it' and they feel frustrated...I really don't care about that...*" (IntC_FG3_IOE, emphasis added).

These perplexities about the feasibility of doing networking exclusively online can also be related to the spiralling effort required by the online discussions which may or may not be rewarding:

"I find it very tiring following forums or discussions on Twitter or Facebook...don't know...at a point in time the discussion becomes a 'black hole' on FB...so, I avoid such discussions on FB...indeed, the construction of a network of contacts mainly develops as a follow up of acquaintances started face to face. For example, I frequently ask a lot of people for friendship on LinkedIn, but usually they don't accept me because they they haven't got to know me! So, it's fundamental getting to know them before..."(IntB_FG4_PM, emphasis added).

Sometimes, the use of institutional email is said to be smoothly integrated by the attendance of research-focused social networks, where unplanned discussions on research issues may develop:

"Also for me email is crucial...Loads of email, every day...you know, we organize some multi-centre studies, so we have to keep contacts with everybody involved...recently I was also involved in Research Gate, where they share published articles. I daily receive some notices like 'The researcher you follow has just published this paper'. So, *you are updated in real time about the scientific production...not by a friend of yours, but by a scholar in the same research field you are working on. And also, often these questions come up...if I can match this with the theme 'discussing research issues'... because there are people of a same research*

field and...someone asks a question about your work and then a totally different thread of discussion may develop” (IntC_FG1_UM, emphasis added).

Elsewhere, a research-focused social network constitutes the core venue for sharing one’s own papers and attracting the attention of new experts: if any, seeds of a future collaboration are further leveraged via email:

“Me too...I use Academia.edu for sharing my research papers...indeed, this is the only reason why I use social networks...I do like checking who access my page, sometimes from India, Africa...it’s nice! For my network of contacts I use email, with people I am familiar with or people who anyway I have previously got to know...sometimes it deals with people who have read one of my articles...they contact me and from then onward communication flows via email...this is the activity I run across the social networks, it’s about and across my published papers”(IntC_FG4_PM).

In this case, the online construction of one’s own reputation as a researcher to a degree goes along with a contextual networking activity, where the open venues help to create the opportunity for an early contact.

Sharing works in progress

Among the participants, the research works in progress are generally considered in the comfort zone of the relationship between the apprentice and the supervisor:

“The activity I wouldn’t do it’s...practicing academic writing [in the open Web]...I do it with my supervisor, when we co-author a paper we have a kind of, and... it’s like... implicit that was... practice in academic writing when I submit a chapter and I am given corrections... I wouldn’t think of doing that with all the community of researchers...unless we co-author with them”(IntC_FG3_IOE).

The hypothesis of sharing works in progress also raises questions related to the real advantages of disseminating data sets and to submit raw data to an untargeted audience, without the necessary critical support:

“I wander ‘Why should I share my data online?’. If I put something completed, I mean a published thing, it is easier to be read by everyone. If I share some numbers in tables, which for my work are paramount, but for all the others require an interpretation, otherwise they are pointless, don’t know why I should do this...the research work is the product of a professional work, of a rigorous process, with all the

sources, data. On the contrary, when the work is complete, ok, but before...”(IntA_FG1_UM).

“One thing is to publish some numbers in a table...another thing is to publish the sources of information, as in my case, with the sensitive data of the patients. I would never published data from our research before the study is published...I mean, this is not to say that I would never published data because I am ‘jealous’, but because I don’t know who this data will be submitted to”(IntC_FG1_UM).

Publishing and sharing papers

Despite the concerns aforementioned, the open Web is said to be experienced as a scholarly venue when providing some unprecedented opportunities for publishing and sharing one’s own papers, also in well-established disciplinary domains:

“I would also say: amplifying the opportunity of being published...

Academia.edu is a website acknowledged as fairly reliable for sharing research papers...among researchers in philosophy we also have PhilPapers...and then loads of websites where you can publish scholarly articles with ISSN and open to everybody”.

(IntB_FG1_UM)

The response reveals an accurate selection of the open Web spaces in order to find not only the venues recognized as ‘academic’ but also those acknowledged within a specific disciplinary culture. However, the choice about when starting to share and whether it is worth crossing the boundaries between formal and informal mode of knowledge dissemination is far from being straightforward:

“Sharing published papers is something I intend to do but I haven’t done yet, also because it’s so strange when you are doing a phd...it’s so new, ‘ok, I can’t published yet, can I refer to those things I put in my blog or whatever I don’t even...?’ Put things in my blog is just an example...It’s so time consuming... There are some things I am interested in that I intend to do, but later on”(IntC_FG3_IOE).

A further unfold example clearly highlights an opportunity of gaining visibility that the early career researchers could harness, since the open Web can easily help to contrast certain organizational drawbacks of the conferences’ industry.

“I am just back from China, where I presented one paper about the ‘experimental’ part of my PhD dissertation...the conference’s organization was awful, everything

overlapped...even the keynote speakers' sessions...in short, when I presented my paper there were five people in the room, only five!...I was really upset, I had come from the other side of the world, I spent a lot of money...so, *back home I uploaded my preso on Slideshare, my paper on Academia.edu, I shared the news on Facebook, Twitter and LinkedIn...all that 2 days ago...this morning I woke up and found one message sent by Slideshare: 425 visits to my preso in two days! I also received some comments...I was so grateful, so glad, you know, after such hard work...if these tools didn't exist I would be really, really frustrated!*" (IntB_FG4_PoliMi, emphasis added).

7.3.2 Engaging with the 'digital'

Engaging with the digital constitutes the core theme around which comparing the findings of the focus groups with the dimensions of Digital Identity, Socialization and Time identified in the DEV framework. The aim is to check the kinds of polarizations arising from the collective discourse about digital engagement.

Table 59.

The most relevant focused codes related to the dimension of Digital Identity.

Digital Identity <i>Going digital by defining a stance with respect to digital identity.</i>		
Focused codes	vs	Focused codes
Not Disclosing an academic identity	vs	Disclosing an academic identity
Underevaluating the opportunities for self-defining an online academic profile. Difficulty of disclosing one's own 'being a researcher', trying a balance between private and public discussions.		Gain visibility at the right time in the doctorate. Questioning active/passive, reactive/proactive behaviours. Taking one's own responsibility in disclosing an academic identity to pay back all the experts sharing relevant conten on the open Web.

The research participants share the fear of losing one's own scholarly reputation just while one is striving to be acknowledged as a scholar:

"The likely risk might be...you have a good idea, you start publishing something in a discussion forum or similar platforms...but over time you realize that the route you endorsed is not really 'appropriate' ...and then...to a degree you 'have damaged' your own name...'ah, he was following that route, he hadn't understood anything' ... You have to build a solid basis first...before...you'd better be silent!" (IntA_FG1_UM).

Elsewhere, the risk of overexposure is related to the current emphasis attributed to an active, participatory behaviour depicted as the positive one and contrasting other kinds of attitudes, being generally considered in a negative light:

“All this discourse of Web 2.0 or Web 3.0, whatever...that we are co-creators...and when we access resources that people just use them...and *this is considered passive, but it's the way we feel comfortable and not because I feel we are really passive, because I think it's a very active attitude looking for journals, looking for such things...*I think, in my case, I am afraid of exposing myself and I understand when I try to link...’ok, look for everything, that’s interesting, perhaps there are people with similar interests and go, and follow and disseminate’. I understand the criticism about being passive or whatever, but I think it’s also a matter of don’t want to be exposed rather than being passive” (IntB_FG3_IOE, emphasis added).

The contrast between what it is claimed to be active versus passive digital scholarly practices is here criticized, and a form of self-defense is alluded, even when several and compelling inputs come from the local environment. However, a sense of personal responsibility emerges through comparing one’s own current digital engagement to others’ contributing attitude:

“I think I profit a lot from people that share their papers, that’s why I think I have to contribute, to pay back, so it’s really something I really want to do but I haven’t done so far!”(IntC_FG3_IOE).

Moreover, it is also acknowledged that scholarly behaviour in the digital is likely to change during the phd, due to the increasing self-confidence acquired by the individual doctoral student:

“I certainly know people who blog, so I guess something in-between...they are quite academic blogs... some friends who run ‘Oxford Democracy’ in Africa...they are young researchers at different stages of their research around the world... so, I was asked to do any kind of academic writing, but...I am still too nervous to put my ideas somewhere where I can’t pull them back. I am still working on...it’s too early!”(IntA_FG3_IOE).

It’s interesting to notice the diverse dispositions of the interviewees toward examples of said ‘digital champions’, if any, in their academic contexts. At times some successful practices directly observed may be inspiring in approaching a future digital strategy:

“On twitter he has almost 10.000 followers and every year some universities fund him for participating as a speaker in three or four conferences. So, this is a lived example for me...I intend to do something like that, but not now! (IntA_FG4_PoliMi).

Table 60.

The most relevant focused codes related to the dimension of Socialization.

Socialization <i>Going digital by defining a stance with respect to socialization.</i>		
Focused codes		Focused codes
Relying on word of mouth	vs	Taking personal initiative
Taking cue from occasional suggestions to start a digital exploration. Relying on digital-savvy peers to reduce mistakes and waste of time in selecting tools and environments. Considering peer recommendation as necessary but not sufficient condition to deal with the digital.		Getting by alone because of the lack of ICT training. Prompting the use of ICTs in one’s own context because generally keen on technology.

Across the involved university contexts and across the disciplines’ clusters which the participants belong to, the ‘word of mouth’ (among peers and less frequently between the PhD students and their supervisors) appears to be a powerful means for starting the use of a new application or running any kind of social media practice affecting scholarly activities.

“I have to say that for me the ‘word of mouth’ is the key. As an example, also for Research Gate my supervisor sent to me some directions and then I opened an account. Indeed, I admit, I don’t use it much...at most I receive via email a lot of news, inputs, I go there and access the material, but...*it’s the same for Linkedin...and for Google Scholar...the thing ‘my own citations page’ ...all that came to me via word of mouth... With PubMed is different, here my personal curiosity plays a role, even if the topic is not so close to my research interest...the use of databases for searching any materials non closely related to my work...in this I am very curious...instead, searching for social media... I am less curious, but they are there and sometimes I use them*” (IntC_FG1_UM).

“For me it’s mostly peer recommendations...I am not hugely interested in technology in terms of ...I cannot get excited in all the exchanging and developing ...it’s too fast and I feel I can hardly find enough time to go social on my own and so I follow people usually saying ‘use this, try this, it’s really good’ or saying ‘seriously please, go on Facebook, can you do this?’ ...so I use recommendations...”(IntA_FG3_IOE).

In this second contribution, the adoption of word of mouth tends to become systematic rather than occasional and figures out what can be defined a 'push' modality of getting useful resources versus a 'pull' modality, where the personal and original initiative plays a role. The 'pull' modality is in fact shared by those interviewees stating to have a personal curiosity towards technology issues and to play a role as ICTs 'early adopters' in their respective research groups:

“For me the personal initiative is the key...also because in my group very few people use social media for research...*some has started using it just because I have provided them with some advice*”(IntB_FG4_PM).

“For sure personal curiosity is the key...I have my list of educational tools that I regularly check and update...there is always something to try...and, yes, the word of mouth with my colleagues...*it's up to me usually prompts the start of the word of mouth among my peers...*' use Prezi rather than PowerPoint', 'try Dropbox that is useful for that' and such things”(IntB_FG2_UB).

However, these socialmedia-savvy PhD students tend to present their social media activities as actions of explorers rather than as of advanced users' and account their experiences as tentative and as opportunities stemming from some occasional events. On the other hand, in university contexts where the networked practices are to date neglected as academic practices, the individual propensity is said to be the main motivation for a current social media uptake:

“If in the next future social media will become integral part of researchers' work practices everybody will learn to use it. If the university too tried to provide this to enhance the understanding of how it works, hot to optimize its use...it would be great. Otherwise, you know, there is who is more interested, who is less...Me too...*if the university lags behind in prompting interest and use of social media in doctoral students and researchers...then personal attitude is still the key.* In my opinion now for everybody personal attitude is the key, having a look at social media...who's attempting to use it...who shares one's own publications, finds contacts because he/she has a personal propensity to do that. Other people don't do it...because it's not shared practice and therefore one can't easily find any actual benefit (IntC_FG1_UM).

The availability and social life of any shared space also plays a key role in enabling a supportive environment, as already highlighted in the individual interviews. Across the

Italian university contexts, the information exchange and the opportunity for being supported are said to develop in physical locations such as PhD rooms:

“People is inclined to think of us researchers in humanities as... bounded in a monastery’s cell...instead, *we share a lot our thoughts and problems with peers when attending our open space at the department...information and opinion exchange is continuous, as well as mutual support for technological issues or for selecting a new tool...*the advice from the senior researchers on these things is rare, but...to tell the truth it is often more accurate” (IntB_FG2_UM).

Moreover, the spontaneous and informal help coming from individual faculty, administrative staff and peers is said to constitute a core value of the Italian universities, whereas the formal support provided by the bureaucratic apparatus is mainly perceived as lagging behind with respect to the real needs of the students:

“As for everything, also for methodological and technological training and support, where the ‘institutional’ is always late, the agreement for finding practical solutions is always possible as well as the opportunities to learn how to use any tool or practice any research method, thanks to the willingness of people around you, either professors or colleagues” (IntB_FG1_UM).

However, peer recommendation and support are only occasionally useful. They are believed to be too accidental and inadequate to effectively help the PhD students with the methodological and technological issues considered as a whole:

“Peer support is a good thing but it’s not enough! The presence of the PhD students is discontinuous, for examples in these weeks many of my colleagues are abroad for their research stay... You need a stable reference point, available when needed... you can’t waste time every time looking for someone who can help you when you are in trouble!” (IntB_FG2_UB).

“A friend of mine recommended to me both ResearchGate and LinkedIn, I had a look but...I need something more consistent in order to persuade some senior researchers to use these digital networks as a group” (IntC_FG2_UB).

Otherwise, in the UK focus group the participants detail the several training opportunities and facilities they are provided with, as regards to the different use level of a defined software applications as well as specific research methods. Moreover, the mutual support among PhD students is said to be likely to spark across digital networks, among unknown peers sharing similar problems:

“When you mentioned support... I think it’s quite important as well...I have noticed particularly in my friends who are towards the end of their phd... *you see them boosted by...you know, ‘I’ve got another chapter to finish’ and see how people respond them...it’s like they are in separate rooms across the world but they feel they are doing the same thing and can talk each other for the next couple of hours!”*(IntA_FG3_IOE, emphasis added).

To sum up, the potential of the digital networks for providing moral encouragement during the phd endeavour seems to be appreciated as an add-on of peer support, but never as a replacement the institutional support locally provided.

Table 61.

The most relevant focused codes related to the dimension of Time.

Time <i>Going digital by defining a stance with respect to time.</i>		
Focused codes		Focused codes
Surfing across opportunities	vs	Aiming at a strategy
Getting content as much as possible, potentially relevant for one’s own research. Sifting resources and searching for contacts on the basis of occasional needs. Self-controlling one’s own level of digital engagement to keep a sustainable pace.		Considering a social media strategy as ‘wishful thinking’, because of time constraints. Postponing some social media practices (e.g. curating an academic profile in a research-focused social network) to a more mature phase of the doctorate.

The challenge of setting any kind of social media strategy for a PhD researcher is particularly evident in the UK focus group, where the interviewees recognize the continuous inputs and training support provided by the institution, but anyway struggle to make reasonable plans to manage a digital presence in the open Web. It is interesting to notice that even if peer recommendation plays a key role for all the participants, the identification and the actual influence of any observed champion of social media use for research is more controversial:

“I can’t really think of anyone as a model except...I know people who tweet a lot and people who post on facebook a lot...I am not sure that all package worth...I know people read all the websites linked to the different projects, all the media streams... linked together... I think it’s really overwhelming. I think if I had time to spend I would spend for an article, to have a conversation with someone, I think (IntA_FG3_IOE).

“I am thinking of two people that...one is a lecturer in the...I don't remember which university here in the UK, she is supervisee here at university, but she write books, runs a blog...when I visited her blog I found it updated, very informative, very academic as well, but she doesn't put everything because she has also journal papers...and I think 'Wow, I want to do that, I want to be able to do this' but...I am not this sort of...but, I really admire people able to do that (IntC_FG3_IOE).

Focusing on a sustainable digital engagement, a reactive rather than proactive approach to social media for research seems to prevail in everyday work practice, as it is highlighted in this shared statement:

“I think I would like to have a plan, I would like to have a strategy, but I suspect that in reality it would be only reaction to...I can't wee any longer use than to solve these needs I have...*I would love to have a long-term plan, a kind of thing 'I like to do this, I like to do this', but with everything else is going on, I think...I probably develop reaction to...contingent issues*” (IntA_FG3_IOE, emphasis added).

However, there is also who firmly claims the right to overlook the external expectations for an intensive social media use and prefers to adapt the tools to own research needs and specific phase of the doctoral journey:

“When I like something and have time I post it, while I focus on what I have to do and I also try to use social media and also technology just for fun...so, I try, learn and then... *for my use and as a researcher I think that it's going to continue like informal and according to my needs, when I have time and when I feel that...* I go and such... because loads of things are popping up, so, I think all this kind of things should be plain”(IntC_FG3_IOE, emphasis added).

Otherwise, it seems to be more difficult for the Italian interviewees accounting for some examples directly observed and surfing across the opportunities results to be the most shared approach. However, an isolated, enthusiastic narrative of a successful example of social media strategy emerges, with the awareness of commitment and long-term investment necessary to achieve it. It figures out a positive influence on a professional reward that goes beyond the duration of the doctorate and the boundaries of academia.

“A friend of mine...he is a phd student in Design too, but not in Italy...he has being run a blog and made it have a bunch of opportunities thanks to his blog...he was even invited at some conferences as a key note speaker...a dream for me! But it took five-six years to build it, he started from his master thesis...then he bought the domain, he

spent some money too...he started to study web design...he managed to create his own niche of content, and currently he spends two hours every day to outline contents...then he designed a community and invited other colleagues to write on his blog...so, much work but it was really, really successful...on twitter he has almost 10.000 followers and every year some universities fund him for participating as a speaker in three or four conferences. So, this is a lived example for me...I intend to do something like that, but not now! (IntA_FG4_PM).

Whereas the above example is intended as an unfold path that is worth tracking after completing the dissertation, another case reports a failed attempt to run a blog, including a clear acknowledgement of the reason for this failure:

“I haven’t started yet to set a strategy, indeed I have always postponed the problem...For example, in a blog the editorial line is everything, you need a clear perspective to apply, you need to know what to write and in what sequence...I started to write a few blog posts but they were things so disparate, there was no clear discussion thread...and so I have quitted for now...I have some funding problems to face first” (IntC_FG4_PM).

7.3.3 Thinking of the open Web

To what extent does the open Web make sense for the PhD researchers? The unsolved dialectic between a view of the open Web as a ‘shed of tools’ (White & LeCornu, 2011) or as a space for undertaking independent activities as scholars underlies the whole theme of ‘Thinking the open Web’, indirectly shedding light both on the dimensions of Space and Stance, that will be discussed in the section 7.4. In the current presentation of findings we concentrate on identifying the most significant tensions. Among the focus group participants, the *Tensions* (Table 48), previously highlighted by the one-to-one interviews (see section 6.6.3) are confirmed, counterposing opportunities and challenges of the digital for the newer researchers. At times, the open Web seem to constitute a loosely defined opportunity for expanding one’s own agency as future academics. It returns a sense of freedom for the individual that is not undermined by the lack of legitimation and shared adoption in the academic contexts. Otherwise, the accounted picture reveal serious concerns about the external pressures conditioning the same role of researcher rather than one’s own mere digital behaviour. It is worth noting that often, as shown in Table 48, the *Tensions* arise from the statement of the same individuals, striving to identify both advantages and drawbacks.

Table 62.

The most relevant focused codes related to the dimension Tensions.

Tensions <i>Defining reasons why the open Web is likely/unlikely to be integrated in the future of research work.</i>				
Focused code			Focused code	
Relevance for newer researchers			Challenges for newer researchers	
Examples			Examples	
<i>Thinking the open Web as the “explosion of the sources of information”.</i>	“Under certain respects today we are on the top...we are the first researchers in the history of academia to access such amount of information...and to know if someone in Japan is doing our same research” (IntA_FG1_UM).	vs	<i>Acknowledging a greater responsibility for newer researchers.</i>	“This is a problem and an opportunity...because in the past nobody knew if someone was doing the same thing you was doing...” (IntA_FG1_UM).
<i>Thinking the open Web as a “space for independent activities”.</i>	“I think I would agree about the view of the [open Web as a] space for independent activities...I am just trying to get through about that [...] it’s not just a series of tools that I reduce to a kind of ‘do, I need to do’” (IntB_FG3_IOE).		<i>Coping with external pressures.</i>	“I feel there is a pressure to go to some creative profile that doesn’t exist yet and where I have to mix something outside everything I do with my supervisor and the institution” (IntB_FG3_IOE).
<i>The open Web as a ‘weave’ of research contacts.</i>	“I would say ‘reticulation’, ‘weave’...even if it may appear redundant...I mean, it is both a mode of thinking and a mode to relate to other subjects” (IntB_FG2_UB).		<i>Acknowledging the need for literacies of networked practices.</i>	“When you hang out in social networks you have to behave differently, because if you go there and right away introduce yourself as a ‘researcher’... some unpleasant things may happen, you know...because it is a more horizontal context” (IntB_FG2_UB).

In fact, in all the undertaken focus groups it took some time to get responses from the participants about what kind of scholarly activity they would never do in the open Web. The following statement can represent a common stance among the interviewees:

“As a tendency, I am not used to share what is whirling in my head, you know, but...I don’t really prevent me from doing anything online, whatever” (IntC_FG4_PM).

However, some ethical scruples emerge as regards to the need for respecting people, even if the engagement in the open Web deals with somewhat counteracting a conservative approach in the local academic context:

“It wouldn’t be only what not to do as a phd student but I think a kind of netiquette...we have to behave well in the net, so things like copyright, privacy, ok, you have just to have respect, regardless you are or not a phd student... if I use well the networks you have to respect your colleagues. This values even if you want to contrast some conservative, authoritative stances...I agree, they may have abused their authority in some cases, but you should constrast them keeping on respecting them, also in online environments” (IntC_FG3_IOE).

The most considered and shared opinions report the open Web as challenging the current modes of knowledge production and collaboration, at least in two diverse meaning: as unlimited repository of content and as a network amplifier.

“In my opinion, *the Web is the explosion of the sources of information*. It’s becoming difficult...I mean, it’s becoming both interesting and exciting searching for materials, but it is also difficult surviving in such a system...I mean to be able to read all that is being produced within a discipline. *Under certain respects today we are on the top...we are the first researchers in the history of academia to access such amount of information...*and to know if someone in Japan is doing our same research. This is a problem and an opportunity...because in the past nobody knew if someone was doing the same thing you was doing...”. (IntA_FG1_UM, emphasis added)

Elsewhere, the acknowledgement of the nature of the open Web as a ‘weave’ of new kinds of research contacts is coupled to a sense of a (to date) missed opportunity for academia:

“I would say ‘reticulation’, ‘weave’...even if it may appear redundant...I mean, it is both a mode of thinking and a mode to relate to other subjects...because *when you hang out in social networks you have to behave differently, because if you go there and right away introduce yourself as a ‘researcher’... some unpleasant things may happen, you know...because it is a more horizontal context*. As a contrast, it comes to mind how academic institutions are still underdeveloped, as infrastructures...I mean, they are scared, overwhelmed by a sense of insecurity and they are not currently coping with this thing, with these new spaces providing new kinds of opportunities...” (IntB_FG2_UB).

Once again, the two visions of the open Web as a magmatic repository of knowledge and as a networking space emerge from the interviewees. In the former vision the open Web is to a degree appreciated but also scared because it adds unanticipated challenges to the individual's research work. In the latter, the open Web is seen as fostering a different conception of academic work and scholarly relationships. But in everyday practice these modes of using the open web to sift relevant resources or to start research bonds adds concerns and requires new forms of control:

“You expose yourself because either you feel you have to do due to a kind of pressure... but it's also a space where you get tools and share things, so if you find a balance, if you are not a borderliner...we are there and we have hold the responsibility, because I think: ‘Who really reads when I am going to publish?’ I know I freak out when I receive emails such as ‘Someone is following you’, oh, my god, why do you follow me? But we also think it's an open space and we also get things and share (IntC_FG3_IOE).

The opinions particularly resonate each other between Italian and UK doctoral students when the attention is drawn to the external pressures pushing PhD researchers to become social media users:

“We, future researchers, when we will access the new university we will use these tools and find them useful...currently there is already someone who is able to use them efficiently and has managed to gain some visibility...even to get a more thorough reputation...someone was also able to find a job position abroad...but this is the *new* university. The old one does not include all that. Therefore here...there are two worlds colliding here...people of the old academia, well-established scholars who will never be interested in doing that and in learning about that...and we who will be forced to do it, to learn to use it” (IntB_FG1_UM).

However, it is worth noting that whilst in the Italian context this pressure is viewed as a scripted future, in the UK context it emerges as a currently experienced issue, leading to the claim for re-drawing the agreement between the student and the institution:

“I think I would agree about the view of the [open Web as a] space for independent activities...I am just trying to get through about that, but ... there is a mixed discourse towards... always the positive and creative...*sometimes there is a lot of pressure to do that as well...it's not jut a series of tools that I reduce to a kind of ‘do, I need to do’...but I feel there is a pressure to go to some creative profile that doesn't exist yet*

and where I have to mix something outside everything I do with my supervisor and the institution, so I think this space is not necessarily seen just as a great place to get excited and creative and... I feel anxious about that...I think there is now a kind of discussion coming through that...’if you don’t do that you’ll never get an academic job...If you don’t do that you’ll no more be published... because when you submit something you should have an online profile, otherwise people don’t know who you are, and put lot of pressure on your own topics... I think I find it as an extra-layer pressure I was not aware when I started my phd”. (IntA_FG3_IOE, emphasis added)

The above statements raise agreement about the opinion that “in the end *we have to do that, it’s not a kind of self-initiated activity because of pressure*” (IntC_FG3_IOE, emphasis).

In the last question of the focus group protocol, one of the statements reported from the previous individual interviews received controversial comments in the Italian focus groups. The discussed statement hopes for the open Web can improve and expand the opportunity for peer reviewing research. In one focus group the opinions are polarized towards a likely and natural evolution of the knowledge dissemination model:

“I agree with this statement, it’s a good thing...it seems to be a realistic objective, that is already present in the things...look at the tendency of the open access research journals” (IntC_FG2_UB).

On the contrary, in another focus group this sparked harsh criticism, because it was interpreted as a call for an additional, even extra-academic evaluation process:

“I think that researchers are currently over-evaluated, continuously evaluated, 80% of academia today deals with a range of evaluation...and then, evaluated by who? The last thing I hope for is that a petrol pump attendant can judge my research work!” (IntA_FG1_UM).

Elsewhere, the same possibility to undertake ‘open peer reviews’ was questioned by highlighting the issue of confidentiality of the pre-print scholarly production:

“I am inclined to think that the open Web can improve the diffusion of the research findings, but in the peer review process sensitive materials and researchers’ reputation are at play, because papers are not printed yet...the peer review processes which I have taken part of were definitely closed for this reason. Just after the publication these materials can be disseminated and in this the open Web helps a lot...”(IntB_FG4_PM).

What instead seems to be recurrent and marked with a positive stance are the unexpected opportunities the Web provides the doctoral students with, particularly as regards to generic skills such as academic writing:

“It often happens to me that I find some online resources related, for instance, to ‘how to write a literature review’, that I can immediately applied to my dissertation...I continuously learn this way” (IntC_FG4_PM).

In some cases there is an explicit reference to previous attendance of open online courses, which contributed to cover a methodological gap or offered some additional venues for discussing research problems:

“I was sent this pointer to a website of a university based in London, which provided a free online course about ‘how to write research papers in scientific subject areas’, what to do and what not to do...it was like a course, but you did it on your own...but there was also a collective forum and you could write to a Japanese colleague who was also enrolled in the course and exchange also more general information, beyond the course topics. Participating in these online courses, open to everybody, I find it a good opportunity for my personal development” (IntC_FG1_UM).

It is worth noting that the concern about the non specialized audience addressed across the open Web is often present in the participants’ opinions, as previously noticed in the e-survey’s comments and the individual interviews:

“Sometimes, it happened to me to discuss research problems online, but in general it is not easy finding the appropriate contexts...even if in these recent massive online courses there may be a few researchers among the participants, and some reserved contexts where you can discuss these issues, to a degree...I was enrolled in three of these courses, are related to topics close to my research...but only in the third one on ‘Videogames and learning’, run by renowned experts, there is a lot of discussion, and one forum devoted to researchers is going to be opened” (IntB_FG2_UB).

The theme of crowdfunding research draws at times interest also in the focus groups, but with a skeptical view of its feasibility:

“In my opinion we are in a period in which these things are still possible...getting alternative funds would be great but in downturn time the open Web can hardly help you ...all that works when thriving companies ask universities to do research or if there are audiences somewhere who are interested in what we are producing.

Something already exists, thinking of start-ups founded upon a core research idea...”
(IntA_FG1_UM).

In the UK focus group, in particular, direct experience of the ongoing experiences (in educational development) is reported:

“I am interested because I spent a lot of time searching for what was available, since traditional sources for research funding are declining and in particular in some fields that are becoming common places...but when I searched for that I found there are some early stories of crowfunded projects, but there are still some big barriers also in charity organizations... you should go with individual fundraising, *I think we are slowly creating some genuine alternatives...indeed this is an old discourse...talking about the web to talk about what academia to be...*” (IntA_FG3_IOE, emphasis added).

7.3.4 Musing upon social media training for research

The question inviting to reflect upon the different opinions on social media training arising from the individual interviewees has required some time to produce considered answers in the focus groups. This was not only due to the several options which the participants were invited to read on the available printed material, but also because they are not used to expect training on these themes. The discussion has actually drawn the attention to the general lack of training related to soft research skills in the Italian doctorates, whereas the research apprenticeship mainly relies on shadowing a senior researcher. This issue was clearly posited by one interviewee from the Humanities area, but the other participants agreed on his words:

“This is true for the web as well as for the whole doctoral organization...nobody, neither in your previous path as a university student...*nobody takes care to teach you how to do something...when you want to write a research article, they tell you ‘Write it!’*. *When you have to teach a lesson for the first time, they tell you ‘Teach them!’* ... or whenever you have to play a role as a newcomer examiner, it’s the same. It’s like when you used to take your exam and they told you ‘Please, give an answer on this and this!’ So, your personal attitude first and...anyway, good masters...”

(IntA_FG1_UM)

However, it is worth noting that also when some training events are scheduled in the phd, this does not seem to fully meet the recurrent need for support and advice from the doctoral students:

“Indeed in my first year I attended a one-day workshop where they showed us Zotero and a bunch of other instruments but... for many reasons, I haven’t immediately applied what I was taught in the workshop... you know, you have to do a lot of things to start your project...and so I forgot everything. So, if there was a person in charge of that...or an online platform for information exchange... a list of key, useful things...I need to do this and someone could tell you ‘use this’, ‘try to do this thing’, so we would be able to use these tools much more...” (IntA_FG2_UB).

As a whole, the most agreed view considers the need to integrate the social media use in a more general approach to research methodology and soft skills:

“We have a training initiative about communication for PhD students in Design...very basic...things such as ‘create an account on Twitter’, ‘open a research blog’, but overall much about ‘how to do a powerpoint presentation’ for absolute beginners, redundant to me. Instead we have never seen Academia.edu, ResearchGate...very basic indeed...By the way, I would like to add firstly some training about how to design your methodology and consequently how to search for the pertinent sources of information...and then a section devoted to how to build a network of contacts and how to use a platform for sharing what you have selected, then disseminating the research results...the training should work at different levels” (IntB_FG4_PoliMi).

From the UK focus group two different opinions arise: one calling for a more thorough guide in providing real-life examples and the second claiming the individual’s autonomy in self-motivating one’s own being online as researchers:

“The first point, basic training and information provided by the institution, this already exists here. What I mainly got from the IOE so far about social media is that I should be doing it, in terms of websites and tools being suggested. Look at good theses, look at this website that person has done...because some people are good in some fields, others are just come through. Examples like that, I would find more useful if someone teaches to me step by step how to use this tool or whatever. I would find it really useful to have relevant examples I can work out” (IntA_FG3_IOE).

Unlike the step-by-step guide advocated, an opposite view is in fact more inclined to slow down the pressure for ‘digital activism’ surrounding the PhD students, who might be distracted from the main objective and motivations of their research:

“You have to be self-motivated to be online...this pressure to feed all the time, this need to have always a motivation, you have to be intrinsically motivated in your

journey, so stop thinking how people are looking at me. We are so vulnerable about what people think, but...we are doing a phd because we have to build up critical thinking..."(IntC_FG3_IOE).

Thus, according to this view, curating an online presence might cause an excess of attention toward audience's opinions across social networks and might produce unexpected needs for additional performance as communicators on the part of researchers in formation.

7.4 Assessing the Digital Engagement Variation

In this section the findings drawn from the focus groups are framed under the six dimensions of the Digital Engagement Variation framework, in order to assess with further examples the conceptualization devised in the previous chapter and, where needed, to expand and challenge it.

7.4.1 Space

The focus groups has enabled us to better highlight the relationships between academic activities and used online spaces. In fact, the group discussions draw attention to the use of the open Web as a space for one primary academic activity, to be undertaken in a complementary or contrasting mode with respect to the current conventions, focusing on one place or hanging out in a range of spaces.

Table 63.

The dimension of Space and its polarizations, as assessed in the focus groups.

<i>Space</i> <i>Ways of dealing with digital spaces.</i>		
<p style="text-align: center;"><i>Converging</i></p> <p>Aiming to optimize the use of digital spaces by identifying a convenient hub for multiple channels of activities.</p> <p><i>Mixing institutional/open venues</i></p> <p>Developing scholarly skills (including teaching) across institution-based spaces for research practice (e.g. email; e-learning platform) and online environments.</p>	<p><i>versus</i></p>	<p style="text-align: center;"><i>Adopting a drop-in approach</i></p> <p>Approach to digital spaces characterized by hanging out in new venues, occasionally prompted by specific research needs and/or by word of mouth.</p> <p><i>Deterritorialising the spaces for research practice</i></p> <p>Moving from the institution-bounded spaces towards open spaces to undertake scholarly activities.</p>

The opportunity to carry out a classic academic activity such as sharing published research may for instance find a privileged venue in alignment with the scholarly conventions:

"I use Academia.edu for sharing my research papers...indeed, this is the only reason why I use social networks...I do like checking who access my page, sometimes from India, Africa...it's nice!" (IntC_FG4_PoliMi).

“I would also say: amplifying the opportunity of being published...

Academia.edu is a website acknowledged as fairly reliable for sharing research papers...among researchers in philosophy we also have PhilPapers...”(IntB_FG1_UM).

In the latter quote, a research-focused social network is recognized as a new ‘academic’ venue for personal showcases whilst a discipline-specific space might reveal the tendency of some ‘academic tribes’ of reproducing online the same disciplinary boundaries and legitimated places grounded in conventional academia. On the other hand, the use of a range of online venues may underly a sophisticated use of social networks in dissemination activity, even if in isolated events, whenever the traditional channels of scholarly communication fail in providing PhD researchers with a real acknowledgement and visibility of their work:

“The conference’s organization was awful, everything overlapped...even the keynote speakers’ sessions...in short, when I presented my paper there were five people in the room, only five! [...] so, *back home I uploaded my preso on Slideshare, my paper on Academia.edu, I shared the news on Facebook, Twitter and LinkedIn...all that 2 days ago...this morning I woke up and found one message sent by Slideshare: 425 visits to my preso in two days! I also received some comments*” (IntB_FG4_PoliMi, emphasis added).

Otherwise, networking in open online environments is confirmed to be a problematic area for doctoral researchers, both as difficulty to identify a core venue where the networking activities can converge and to make sense of an ever expanding network of contacts. These issues might be linked to needs of digital literacies, but also include a deeper criticism affecting the same value of doing networking online for research. In fact, individual efforts may easily be dispersed across spaces that are hardly managed for a networking purpose:

“For me Facebook is a mess of personal contacts and some pseudo-academic contacts who...you never know how to manage...also LinkedIn, it’s included in the long list of personal profiles set up but never really curated, used...you know, sometimes I update it because I am notified such thing ‘X asked for your contact’, then I log in, if I want I add something, but I don’t use it really”(IntA_FG2_UB).

Moreover, the issue of the size of one’s own network of research contacts is advanced as a guarantee of a sustainable and productive participation in the network itself:

“I have already a network...It’s not a large network but it’s a network I know I am going to respond...I don’t need putting something over there and have no

responses...some people get anxious because they post something and think ‘they don’t like it’ and they feel frustrated...I really don’t care about that...”

(IntC_FG3_IOE, emphasis added).

This statement leads to consider the extent to which spaces in the open Web can be made places, that is *loci* of real academic socialization, in the experience of doctoral students: the above view seems to focus on the relevance of the bounded research group rather than on the expanding power of a digital network mainly based on the mechanism of ‘followers’. This leads to consider the extent to which the focus groups’ participants understand the open Web as a whole mainly as a ‘shed of tools’ (White & Le Cornu, 2011) or as a space where building research bonds.

7.4.2 Time

The oscillation between the polarizations of *Tinkering with a strategy* and *Fragmenting the engagement* can also be found in the group discussions, with a prevalence of the latter.

Table 64.

The dimension of Time and its polarizations, as assessed in the focus groups.

Time <i>Stillness or evolution in digital engagement.</i>		
<p style="text-align: center;"><i>Tinkering with a strategy</i></p> <p>Attempting a design in one’s own digital engagement, by reflecting on past experiences and figuring out future improvements.</p>	<i>versus</i>	<p style="text-align: center;"><i>Fragmenting the engagement</i></p> <p>The digital engagement is comprised of isolated events, where the intentionality is close to a sense of ‘playing it by ears’ rather than to ‘setting goals’.</p>
<p style="text-align: center;"><i>Keeping up</i></p> <p>Attempting to be up-to-date in digital practices applied to research communication.</p>		<p style="text-align: center;"><i>Lagging behind</i></p> <p>Feeling late in the uptake of the ever changing digital landscape.</p>

“I would love to have a long-term plan, a kind of thing ‘I like to do this, I like to do this’, but with everything else is going on, I think...I probably develop reaction to...contingent issues” (IntA_FG3_IOE).

The interviewees primarily appear to quickly learn and store digital behaviours that nonetheless they intend to enact only in a more mature phase of their becoming academics: “I am still too nervous to put my ideas somewhere where I can’t pull them back. I am still working on...it’s too early!”(IntB_FG3_IOE). In the UK focus group the orientation to the future of the digital engagement is particularly characterized by an assumption of responsibility towards the contributors in the open Web:

“I think I profit a lot from people that share their papers, that’s why I think I have to contribute, to pay back, so it’s really something I really want to do but I haven’t done so far!”(IntC_FG3_IOE).

In the focus groups a new polarization more clearly emerges, underlying the tension between the context and the individual: *Keeping up* and *Lagging behind*, where the former refers to an endeavour of catching up as suggested by external pressures, whilst the latter refers to the diverse feelings of being late with respect to the ever changing digital landscape. *Keeping up* is an attitude prompted either by the local institution, whenever social media training is provided (“They tell you that you should be doing that”, IntB_FG3_IOE) or by the wider academic context, in which early career researchers have to learn promoting themselves to survive (“we young researchers will be forced to use these tools“, IntB_FG1_UM). *Lagging behind* includes diversified attitudes and motivations: for instance, firstly, a sense of feeling ‘guilty’ as an individual, because of lack of time and need to define other priorities (e.g. “I haven’t started yet to set a strategy, indeed I have always postponed the problem... I have quitted for now...I have some funding problems to face first”, IntC_FG4_PoliMi). This feeling generally underlies some tentative strategy for getting content as much as possible, potentially relevant for one’s own research. Secondly, a sense of consciously lagging behind because ‘not everything worth the trouble’, leading to sifting resources and contacts and above all self-controlling own level of engagement. Thirdly, a polemic sense of being late because of the lagging behind of the institutional support and advice, leading to in fact relying on a few, Web 1.0 tools (email, institutional websites, library databases) and occasionally being told of Web 2.0 opportunities.

7.4.3 Socialization

The role of self-directed disposition toward exploring the digital in its own right results to be hardly spread compared to the function of the group of peers (and more rarely, of well-established researchers) in providing hints and concrete support for daring new practices in the open Web.

Table 65.

The dimension of Socialization and its polarizations, as assessed in the focus groups.

Socialization <i>The role of the individual or group in digital engagement.</i>		
<i>Taking personal initiative</i> Starting to adopt new tools/environments prompted by own personal curiosity or needs.	<i>versus</i>	<i>Building on 'word of mouth'</i> Starting to adopt new tools/environments prompted by the word of mouth occurring among peers.

A few interviewees state to play a role as 'technology stewards' (Wenger et al., 2011) in their local context, through self-directed activities: "it's up to me usually prompting the start of the word of mouth among my peers... 'use Prezi rather than PowerPoint', 'try Dropbox that is useful for that' and such things" (IntB_FG2_UB); "some has started using it just because I have provided them with some advice"(IntB_FG4_PoliMi). However, *Taking personal initiative* is also acknowledged as the only current chance to not relinquish these opportunities just because they are not yet shared practices: "if the university lags behind in prompting interest and use of social media in doctoral students and researchers... then personal attitude is still the key" (IntC_FG1_UM). On the other hand, most of the participants relies on the *word of mouth* within their local group/context to receive advice for trying new digital services, even when their local institution provides them with an initial methodological support:

"For me it's mostly peer recommendations... I am not hugely interested in technology in terms of ... I cannot get excited in all the exchanging and developing ... it's too fast and I feel I can hardly find enough time to go social on my own"(IntA_FG3_IOE).

It is worth noting that the interviewees hardly state to be particularly keen on social media for the sake of them: they rely on the word of mouth just to reduce distraction and waste of time in the effort of keeping up with new communication technologies. On the contrary, the personal initiative is naturally taken when it deals with freely searching for discipline-specific research materials:

"it's the same for LinkedIn... and for Google Scholar... the thing 'my own citations page' ... all that came to me via word of mouth... With PubMed is different, here my personal curiosity plays a role, even if the topic is not so close to my research interest..."(IntC_FG1_UM).

The group of peers is said to be fundamental as a starter for using new tools also in Humanities ("when attending our open space at the department... information and opinion

exchange is continuous, as well as mutual support for technological issues or for selecting a new tool”, IntB_FG2_UM), where the profile of scholar is traditionally associated to an idea of isolation (“People is inclined to think of us researchers in humanities as... bounded in a monastery’s cell...”, IntB_FG2_UM). If peer support may play a role in overcoming the institutional flaws, it might be considered a sufficient form of assistance to meet the technological needs of an uncertain PhD student (IntB_FG2_UB) or a springboard to prompt the shared adoption of a research-focused social network among faculty (IntC_FG2_UB).

7.4.4 Digital identity

The issue of building an academic identity in the digital appears to be more a source of concern than an affordable opportunity for the newer researchers. In particular, the relationship with any hypothetical ‘models’ of digital scholar is subject to objection regarding its influence.

Table 66.

The dimension of Digital identity and its polarizations, as assessed in the focus groups.

Digital Identity <i>The relationships between public and personal (private/professional) digital identity.</i>		
<i>Disclosing</i> Designing the disclosure over time of one’s own online persona to state an academic presence.	<i>versus</i>	<i>Not disclosing</i> Avoiding to intentionally plan the disclosure of one’s own online persona as future researcher.
<i>Emulating digital champions</i> Looking at a directly observed example as inspiring for a future strategy of digital engagement.		<i>Keeping distance from digital champions</i> Showing a critical approach to examples of digital researchers directly observed in real life.

The main concerns related to this dimension tend to converge toward a vision of academic identity as mainly negotiated in ‘private’ academic writing trials occurring between the PhD students and their advisors: “it’s like... implicit that was practice in academic writing when I submit a chapter and I am given corrections... I wouldn’t think of doing that with all the community of researchers...unless we co-author with them” (IntC_FG3_IOE). The commitment of *Disclosing* academic identity online in fact implies the risk of too early exposing the weaknesses of one’s own scholarship. At times, a clear risk-averse attitude is shown, preventing the PhD student from a regular writing activity in the open:

“The likely risk might be...you have a good idea, so start publishing something in a discussion forum or similar platforms...but over time you realize that the route you had endorsed is not really ‘appropriate’ ...and then...to a degree you ‘have damaged’ your own name” (IntA_FG1_UM).

Moreover, the recurrent assumption about ‘passive’ (e.g. searching material) against ‘active’ (e.g. writing posts in social networks) behaviours is openly contested because it hides a deeper issue of disclosing identity:

“All this discourse of Web 2.0 or Web 3.0, whatever...that we are co-creators...and when we access resource people just use them...and *this is considered passive, but it’s the way we feel comfortable and not because I feel we are really passive, because I think it’s a very active attitude looking for journals, looking for such things [...]* I understand the criticism about being passive or whatever, but I think it’s also a matter of don’t want to be exposed rather than being passive” (IntB_FG3_IOE).

Not disclosing online identity as newer researchers may therefore represent a form of protection of one’s own reputation, whenever social media expertise is applied to a range of academic and non academic activities but is deliberately not adopted to be ‘resident’ (White & LeCornu, 2011) in social networks for research purposes. In line with this dynamic *Disclosing/Not disclosing*, it is interesting to highlight the extent to which the PhD researchers state to consider their being digital in the tension between two approaches that we name *Emulating digital champions* and *Keeping distance from digital champions*, where the former refers to the aim to shape one’s own digital behaviour on a real life, observable example, whilst the latter tends to reject any defined model of digital behaviour. As in the individual interviews in places some examples drawn from other professional or university contexts are said to be inspiring, likewise in the focus groups the observation of good practices over time prefigures a possible future strategy to be endorsed:

“I think there is a stage in-between you see people blogging with other people incredibly well...researchers blogging with research assistants and research teams and eventually they take over...I have discovered blogs that I have followed for many years and eventually there are people who became some guest stars and they started to write their own posts... there’s quite a nice step in...!” (IntA_FG3_IOE).

Following a model is likely to facilitate the uptake of the open Web for research, because the PhD student is made clear of any defined benefit can be drawn after following a tracked path of engagement, that was previously successful for others. However, the most diffused attitude tends to critically consider the directly observed examples of the so called “digital hyper-activity”:

“I can’t really think of anyone as a model except...I know people who tweet a lot and people who post on facebook a lot...I am not sure that all package worth...[...] I think

it's really overwhelming. I think if I had time to spend I would spend for an article, to have a conversation with someone, I think (IntA_FG3_IOE).

This leads to consider that 'good practices' of digital engagement in the open Web are hardly transferable among individual PhD researchers, although a repertoire of examples (as claimed in the individual interviews) could constitute an excellent springboard to start exploring. In the light of these statements, moreover, a sort of 'technology steward' (Wenger, White & Smith, 2009) is claimed as helpful with the issues of initial advice and support in a local group of peers, but digital engagement is mainly understood as a highly personalized matter, dependent on the relevance and pace one wants to impose on own digital academic presence. However, it is worth noting that, apart from a few exceptions ("A friend of mine has become a very successful blogger...", IntA_FG4_PoliMi; "A friend of mine is really skilled in using Research Gate", IntC_FG2_UB), the Italian interviewees generally report a scant adoption of social networking technologies in their academic contexts: "we can't see any example of 'social media savvy' among our peers or established researchers"(IntA_FG1_UM).

7.4.5 Stance

As well as from the individual interviewees, also across the focus groups a tension emerges between the polarizations of *Embedding* (taming the digital to be functional to one's own becoming researcher) and *Diverging* (adapting the digital to multiple, even unexpected purposes), sometimes revealed in the same individual.

Table 67.

The dimension of Stance and its polarizations, as assessed in the focus groups.

<i>Stance</i> <i>The level of personal uptake of the open Web for research purposes.</i>		
<i>Embedding</i> Attempting to integrate emergent digital practices within the unwritten conventions of scholarly communication, also responding to any institutional pressure in this sense.	<i>versus</i>	<i>Diverging</i> Attempting to shape one's own digital behaviour according to original self-motivation rather than following any external/institutional pressure.

On the one hand, the *Embedding* approach implies a tentative rationale in using tools in the open Web to reap clear benefits (e.g."I set up key words in Twitdeck to draw relevant content: I check it for about ten minutes every day, not more than this", IntA_FG4_PoliMi); and includes the aspiration to have a plan, based for instance upon a lived example of

successful practice: “I intend to build a good blog, a successful blog, I have seen this is possible...my friend is my ‘digital champion’...even if it takes much time to work well” (IntA_FG4_PoliMi). Such disposition does not exclude the occasional activities aiming to solve immediate problems (e.g. quickly disseminating the paper in a range of online venues in order to contrast the disappointment for a presentation in an empty conference room). These initiatives help acquiring expertise and confidence in the possible rewarding modes of social media adoption for research. However, the endeavour of endorsing the *Embedding* approach may be lived as a failed intent when it is unable to configure any plan: “I am afraid I mainly develop reaction to...contingent issues” (IntA_FG3_IOE). Such feeling reveals an explicit anxiety absorbed by the local context, because “if you don’t do that you’ll never get an academic job...If you don’t do that you’ll no more be published... because when you submit something you should have an online profile, otherwise people don’t know who you are”(IntA_FG3_IOE).

On the other hand, a *Diverging* approach implies attributing more relevance to the sustainable and reasonable behaviour for a newer researcher than to ‘what you should be doing’:

“When I like something and have time, I post it, while I focus on what I have to do and I also try to use social media and also technology just for fun...so, I try, learn and then... *for my use and as a researcher I think that it’s going to continue like informal and according to my needs, when I have time and when I feel that...* I go and such... because loads of things are popping up, so, I think all this kind of things should be plain”(IntC_FG3_IOE, emphasis added).

Here intentionality is directed toward free exploration rather than toward the endorsement of any explicit goal orientations: “I think I’ll keep on this way...exploration, occasional activities...some blogging, for instance...uploading some papers in Academia.edu...but I want to leave all the possibilities open”(IntB_FG4_PoliMi). To sum up, those participants showing a prevalent *Diverging* disposition do not seem to underly an intention of withdrawing from a more considered digital engagement. On the contrary, they tend to approach the digital at their own temporal pace and following personal curiosity to experience new spaces rather than relying on what is ideally expected from a ‘digital researcher’. Serendipity seems to play a role against planning a celebrated ‘winning’ digital behaviour characterized by persistent online ‘residency’ and networking activity, both leading to augment personal reputation.

7.4.6 Tensions

The self-directed practices undertaken in the open Web are not generally perceived as *Competing* with respect to the usual scholarly conventions. Issues of legitimation seem not to affect the digital choices of the PhD students, as claimed in this agreed statement: “I don’t really prevent me from doing anything online, whatever” (IntC_FG4_PoliMi). An individual-led social media activity where there is a cautious disclosing of one’s own academic identity is in fact perceived as *Complementing* the scholarly conventions.

Table 68.

The dimension of Space and its polarizations, as assessed in the focus groups.

<i>Tensions</i> <i>The relationships between institutional and self-organized practices</i>		
<i>Complementing</i> The open Web is likely to play an ancillary role, to complement and in places expand existing practices.	<i>versus</i>	<i>Competing</i> The open Web constitutes the venue for searching alternative modes for knowledge dissemination.

However, the uncertainty about what is and what is not allowed causes some perplexities: “it’s so strange when you are doing a phd...it’s so new, ‘ok, I can’t published yet, can I refer to those things I put in my blog or whatever I don’t even...?’”(IntC_FG3_IOE). Moreover, the need for new digital literacies is clearly advanced, by acknowledging the cases in which the social practices differ in academic and open Web environments:

“[...] when you hang out at social networks you have to behave differently, because if you go there and right away introduce yourself as a ‘researcher’... some unpleasant things may happen, you know...because it is a more horizontal context”
(IntB_FC2_UB).

However, the dynamics *Complementing/Competing* becomes more articulated when we look at the external pressures aiming to shape the digital behaviours of the PhD researchers:

“Sometimes there is a lot of pressure to do that as well...it’s not jut a series of tools that I reduce to a kind of ‘I do, I need to do it’...but I feel there is a pressure to go to some creative profile that doesn’t exist yet and where I have to mix something outside everything I do with my supervisor and the institution... so I think this space is not necessarily seen just as a great place to get excited and creative and... I feel anxious about that” (IntA_FG3_IOE).

Thus, whenever an acceleration is said to be impressed by the local context for developing one's own 'being digital as academics', the interviewees find it bewildering and to a degree *Competing* against the embedded pace for becoming researchers. All that is in fact thought as unexpected with respect to "what I was aware when I started my phd" (IntA_FG3_IOE). Elsewhere, among the Italian interviewees researching in Humanities and Social Research areas, the external pressures are said to mainly come from the wider context of the changing academia, where the early career researchers "will be forced to use these tools" (IntB_FG1_UM), unlike well-established scholars. The PhD researchers feel a sort of obligation to accept digitally-mediated scholarly practices that are seen as closely linked to values encouraging market-driven competition. Such practices are likely to "produce monsters" (IntB_FG1_UM), illustrated in those researcher's profiles almost exclusively devoted to fund raising via online networking. Otherwise, in techno-scientific areas the progressive introduction of social media to complement the ways for communicating and sharing research tends to be taken for granted, without any particular concern about the role of researcher: "If in the next future social media will become integral part of researchers' work practices, then everybody will learn to use it" (IntC_FG1_UM). *Complementing* the open Web in doctoral activities is also pursued through harnessing additional opportunities for enhancing one's own methodological expertise enrolling in MOOCs or joining research discussions. The arising need for learning the digital as becoming acquainted with the appropriate social practices seem to be combined with the acknowledged opportunities of learning in the digital, by seeking integrative training paths that contribute to assemble 'do-it-yourself' curricula.

7.5 Discussion: the assessed dimensions and polarizations of the DEV framework

We have adopted the focus groups as a means to cross-check the individual interviews' findings and above all to confirm and expand the achievements related to the DEV framework, as outlined in the previous chapter. Drawing the participants' attention to the key contrasting points (e.g. open Web as a source of information or as a venue for academic socialization) has enabled us to highlight the extreme positions and to produce a more nuanced repertory of polarizations of orientations in the digital, according the six identified dimensions.

DIGITAL ENGAGEMENT VARIATION (assessed)

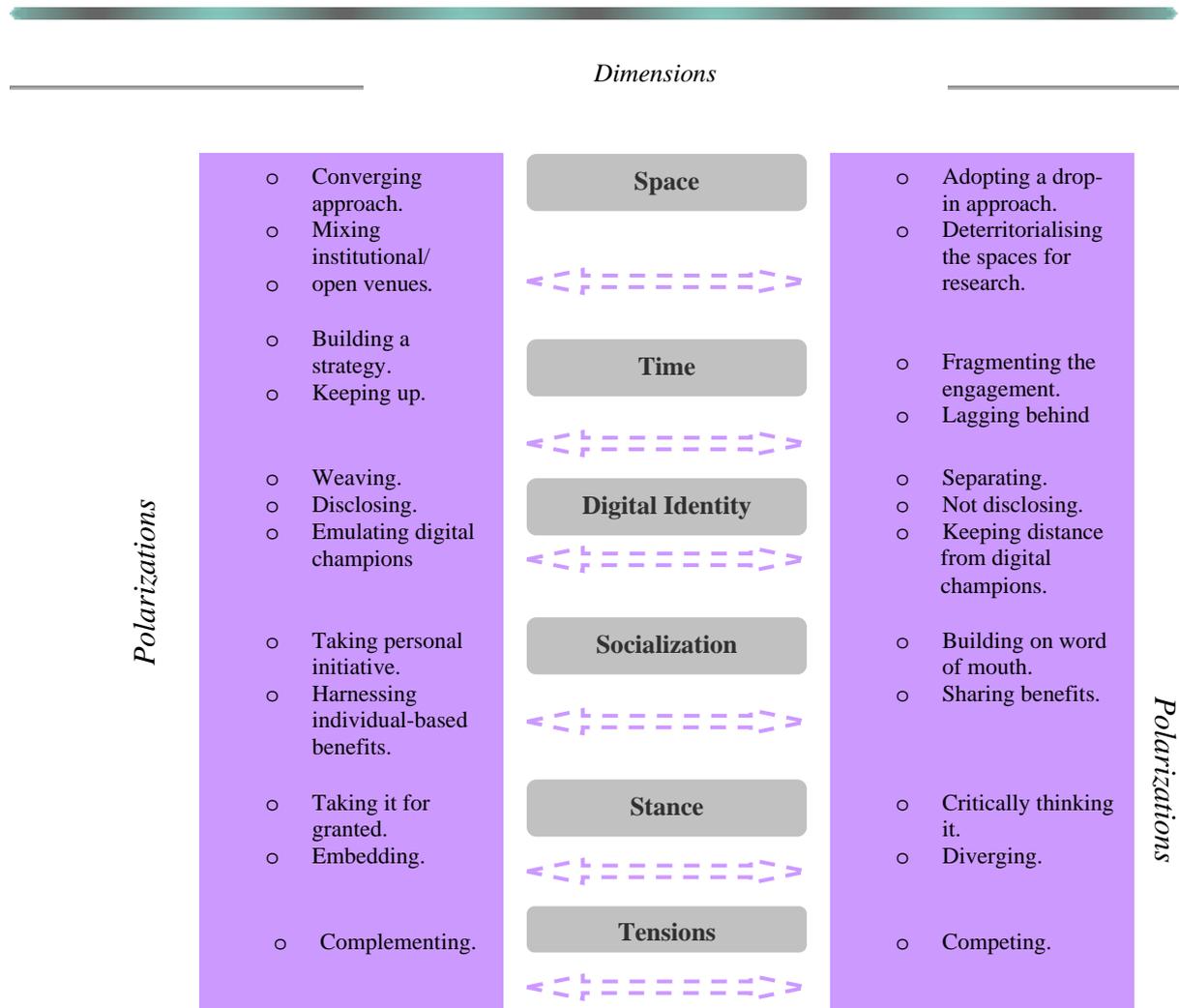


Figure 53. The main characteristics of the DEV frameworks as assessed after the focus groups.

The dimension of *Space* (Table 69) is introduced in the focus groups by the question asking an opinion about the view of the open Web seen as a ‘shed of tools’ (White & LeCornu, 2011) or as a space for undertaking independent activities on the part of the newer researchers. Such tension underlies the whole discussion related to the actual digitally-mediated practices, but also exceed toward the struggling definition of a clear stance (*Embedding* versus *Diverging*) toward the open Web. We can confirm that the *Drop in* approach, that is surfing across digital opportunities, rather the *Converging* approach, represents the most frequent disposition, irrespective of the university contexts, the subject areas and the stated level of acquaintance with the ICTs. The PhD students are likely to shift across a range of software applications they come along and this movement seems to imply an early and primary explorations of the digital as an ensemble of instruments, where also any social networking site may be used as a mere tool for sifting relevant material. Thus, they easily tend to converge to one online venue when this appears to be somewhat rewarding, but only rarely they cross the boundaries of the mere convenience and live the digital as a space where interacting and share stuff. However, they appear to acknowledge the ambivalent function of the open Web, but are consciously inclined to postpone its endorsement as a space for scholarly activities, because a critical reflection on what it is worth undertaking in the digital is said to be still immature and needs to be tailored to the individual researchers. In the individual interviews we have discussed the dimension of *Time* (Table 70) as mostly displayed across the polarizations of *Tinkering with a strategy* and *Fragmenting the engagement*. In the focus groups we have more clearly observed the newer researchers stating the difficulty to devote time even to a tentative strategy on networked practices that are not yet at the heart of the scholarly communication. *Fragmenting the engagement* represents therefore a sustainable tactic for keeping control on the ephemeral and occasional experiences one PhD student may come along with in the digital. On the other hand, for some the desire to reciprocate the efforts for disseminating relevant resources constitutes an incentive to endorse a more consistent digital initiative in the next future. Such aim resonates with similar statements received in the e-survey’s open comments and collected among some Italian participants in the previous interviewees. However, this tension toward a more participatory approach is generally not linked to any aims of keeping up with the always changing provision of digital tools. Indeed the dialectic between the polarizations *Keeping up* and *Lagging behind* suggests the inherent struggle on the part of the individual PhD researchers

to not be trapped in a scripted pace of ICTs adoption that does not match a real need and does not enable reflection. In this sense, *Lagging behind* may represent a form of resilience

The dimension of *Socialization* (Table 71), oscillating between the polarizations of *Taking personal initiative* and *Building on word of mouth* is also confirmed in the focus groups' narratives. However, if the one to one interviews have also returned the accounts of collective initiatives attempting to go digital, in the focus groups the individual struggle for coping with the digital is particularly highlighted. At times, a few personalities state to rely on one's own personal curiosity to seek for digital novelty and pilot short-time experiments, as well in the individual interviews we have listened to a few accounts of PhD students (in Humanities and Social Research areas) keen on exploring the digital for a genuine interest in likely new frontiers of knowledge production and dissemination. More frequently, the individual agency assisted by peer recommendation emerges as the only line of resilience toward the uptake of the digital, in academic contexts where in their experience the open Web keeps on being neglected in scholarly communication practices. However, it is worth noting that to a degree the informal driver of the word of mouth equates the dispositions of the individual PhD students across all kinds of contexts, because it constitutes that social environment where the development of different states of digital literacies (Sharpe & Beetham, 2010) may occur.

The dimension of *Digital Identity* (Table 72) as analyzed in the individual interviews (see section 6.5.3) has been reported as animated by the inherent tension between the line of desire of gaining visibility and reputation as newer academic and the fear of being overexposed and even wasting time in the digital. The focus groups expand on that and show us the extent to which the academic identity the PhD students decide to disclose in the digital is shaped both by individual agency as well as by contextual drivers. In fact, the construction of an academic digital identity not only rely on the capacity of the doctoral researchers to be self-directed, but depend on a number of co-factors such as the situated contexts (i.e. formal PhD program, disciplinary culture) where the individuals research and study, the priority given to the professional or academic goals while undertaking the doctorate, the influence of live 'best practices' being observed, the personal feelings about keeping control of one's own identity and the chance encounters that may inspiring for future change in the uptake of the digital. For instance, the uncertainty of the future role of the newer researchers is related to financial sustainability of academia but also affects the same mechanisms of knowledge production and distribution. The focus groups' participants - especially in Humanities, Education and Social research - feel to be projected in an uncharted territory where

quantitative evaluation criteria are paramount and the individual need to gain visibility tends to become the key for surviving in academia. In this sense, the necessity for scholars to disseminate their own work on as many venues as possible (LSE Public Policy Group, 2011) is perceived as coupled to a concept of academic identity understood as “neo-liberal, branded self” (Stewart, 2012) or “academic quantified self” (Lupton, 2013). This condition is likely to induce a sort of “commercial imperative” (Friesen, 2011) in the adoption of social media for scholarly practices. It is worth noting that this kind of sensitiveness also emerges from the UK focus group, but mediated by the institution’s influence. In this case, the university is said to implicitly require an unanticipated commitment on the part on the PhD students in terms of networked scholarly practices. In fact, here the attention is drawn to the increasing pressure by the institution so far the doctoral researchers adopt social media, in the light of their nebulous future as academics. This implies a sort of new kind of engagement “that I was not aware when I started my phd” (IntA_FG3_IOE) and even leads to consider social media practices as “non self-initiated, just because of pressure” (IntC_FG3_IOE). These kinds of concerns however appears to be mitigated among the PhD students researching in techno-subject areas, where the focus on digital identity and related personal responsibility is replaced by a pragmatic ‘following the tribe’, seeking their own way in the digital joining occasional discussions in online venues already colonized by well-established researchers in their subject areas.

The dimension of *Stance* (Table 73) weaves with the polarizations of Embedding and Diverging, as related to the disposition to interpret the open Web as integral part of the endeavour for crafting one’s own profile as a newer researcher. The individual interviews have provided hints to understand the range of goal orientations to more or less align the open Web to one’s own doctoral journey’s tasks. The focus groups better give evidence of the underlying dialectic between the two polarizations. They return a storyline of discomfort between what is perceived as suggested behaviour in the digital and the freedom to adapt one’s own disposition to personal stance and practical needs. For instance, a clear objection relates the dichotomy of a said ‘active’ behaviour, characterized by the participation in social networking sites to gain visibility and craft reputation versus a ‘passive’ attitude (IntC_FG3_IOE), where the prevalent activity is searching for relevant content. Among the UK participants it is shared the belief that the tacit conventions of academia currently seem to require from the early career researchers a high level of engagement in social media, where the stress is posited on personal branding and networking and the informed endeavour for

seeking relevant materials is undervaluated. Likewise, a 'reactive' (selecting tools when needed) versus a 'proactive' (planning social media use over time) stance (IntB_FG3_IOE) is said to be sustainable and flexible, where the practice to craft tactic solutions in the digital when needed is prevalent compared to the tendency of designing a long-term strategy for building one's own online profile. In this sense, a Diverging approach seems more aligned to an attitude claiming a right to independently choose the extent to which Embedding the open Web is rewarding and 'doable'. This discomfort also provides a warning on any rushed attempt to celebrate one type of digital engagement as positive, neglecting that more complex strategies may be enacted, when a basic competence in using digital facilities is shared. This kind of discomfort also resonates, although with diverse nuances, with the contrasting views reported by the Italian research participants between the Web understood as a 'content repository' or as a 'network', mirroring the opposite endorsement between Web 1.0 and Web 2.0. The view of the open Web as an ever expanding repository of content, as previously emerged from the e-surveys' findings, meets the consensus of all the interviewees, even if with some problematic areas. The so called "explosion of the sources of information" (IntA_FG_UniMi) is said to be an epoch-making opportunity to new researchers, because it broadens access to previously unreachable materials, but also a challenge, since it produces an overwhelming commitment for accurately sifting the online resources and causes an unprecedented exposition of researchers to global assessment and competition. However, other voices stress the relevance of the participatory nature of the open Web, that is likely to be neglected in academia. They highlight a deeply defensive approach to the open Web shown by a certain group of well known researchers, who are said to be even proud to accentuate – as public intellectuals - the negative aspects of the networked environments rather than to acknowledge the nature of the open Web as a 'weave' (IntB_FG2_UB) where interlacing relationships. This kind of attitude is said to prevent well-established researchers and their students from committing themselves for dealing with new topics, new modes for researching, new roles as scholars. Someone also alludes to the conjecture that just this kind of prejudicial rejection of a changing academic environment is likely to contribute to the permanence of the Italian universities in the rear positions in the international rankings (IntB_FG2_UB). It is worth noting that in the case of participants from humanistic areas at times the level of discourse seem to be closer to an intellectual view than based on any consistent live experience of the digital. On the other hand, the Italian interviewees in the focus groups coming from engineering, design and scientific areas more often account of

their first hand experiences and show a more pragmatic approach to the current changes in academia. They see the emergent tools as an incremental component of a digitally-mediated academic landscape that is already ‘ordinary stuff of everyday life’ (Shirky, 2008, p. 86) in academic practice and is likely to evolve over time. New environments open up venues to discuss specific topics as well as to receive updates on the published articles in a specific field or even to pilot modes for recruiting research participants. However, the interviewees also suggest that the individual commitment in adapting networked practices for scholarly objectives stops shortly to produce change if it is not supported by an institutional commitment to cross the boundaries of the local research contexts.

The dimension of *Tensions* (Table 74) as underlying the relationship individual/academic context has been enriched in the focus group by the contrasting views on the necessity of an institutional support for social media training and by wider concerns regarding the same role of the newer researcher in the changing academia. We have reported that the research participants refer to the alternance between a call for an ‘institution-led social media training’ and a ‘do-it-yourself’ approach when learning the digital. We had drawn from the individual interviews the extent to which an initial information overview and/or basic training provide the PhD students with an undoubtable advantage to approach social media for research. However, some doubts has been highlighted in techno-scientific areas and in some university contexts about the actual capacity of the institutional bodies to provide a tailored training for researchers. In the focus group the interviewees are more inclined to stress the need for autonomy in the individual choices of tools and dispositions in the digital, at times preferring to negotiate a shared adoption with peers or faculty, when needed. Whereas the Italian focus group interviewees keep on being divided (according to diverse subject areas) between who call for institutional support and who claims a ‘do-it-yourself’ approach in social media for research, the UK interviewees seem to be in a subsequent phase of digital literacies, where the need for ICTs appropriation (Sharpe & Beetham, 2010) lets it perceive the interference of the institution in the personal endeavour of adapting the digital to situated academic practices. Despite their genuine appreciation of the potential of the open Web for their professional interest, the UK participants see it as implying a sort of new kind of engagement “that I was not aware when started my phd”(IntA_FG3_IOE). This even leads to consider social media practices as “non self-initiated, just because of pressure”(IntC_FG3_IOE), being aware of coping with external motivations.

Furthermore, the tension between the relevance that the open Web assumes for the newer researchers compared to the well-established academics, as previously arising from the individual interviews, is here again revealed with a deeper contrast. In fact, the participants of the focus groups let it emerge a strong sense of feeling ‘in-between’ the university of the past, matching the senior academics’ experience, and the so called ‘new university’, which is still to be interpreted and co-constructed. On this theme, two different and irreconcilable positions – skeptic versus confident toward the digital in academia - emerge among the interviewees in the focus groups, especially among the Italian participants researching in Humanities, Education and Social Research areas. On the one hand those who actually endorse the idea of their mentors that something essential is missing in the current university, whereas some decades ago the ‘masters’ could still stand out and marked their own exemplar path that the young researchers could follow. Their supervisors “don’t need to use this kind of networked venues” (IntA_FG1_UM) because they are already well-established in their research area, whilst they, as researchers in formation, are somewhat forced to take care of her own ‘personal branding’ against the uncertainty of the future. On the other hand, those who believe that the university is lagging behind in critically harnessing the digital networks, even if it is acknowledged that today what counts as ‘scholarly’ is to be clearly defined yet. These positions remind the tensions discussed by Cornelissen, Simons and Masschelein (2007) between the nostalgic attitude towards a notion of university as a public institution acknowledged in its capacity to contribute to the historical development of society, and the current, ever changing commitment towards the definition of university as a network of opportunities and services, where the acquisition of ‘general skills’ by doctoral students play a key role.

Table 69.

Summary of the assessed sets of polarizations attached to the dimension 'Space' with related examples, drawn both from the individual interviews and focus groups.

Space <i>Ways of dealing with digital spaces.</i>				
Polarization	Examples	vs	Polarization	Examples
<p><i>Converging</i></p> <p>Aiming to optimize the use of digital spaces by identifying a convenient hub for multiple channels of activities and/or focusing on one primary activity through which approaching the open Web.</p>	<p>Focus on piloting a blog, becoming resident in one social network, harnessing one social network to draw updated content, selecting a primary communication tool to undertake formal and informal sessions.</p>		<p><i>Adopting a drop-in approach</i></p> <p>Approach to digital spaces characterized by hanging out in new venues, occasionally prompted by personal curiosity and/or by word of mouth.</p>	<p>Opening accounts in a range of social media: 1) "for exploring them at the very beginning and, for a sort of 'bulimia'"; 2) for uncertainty, not being able to properly manage them, and thus keeping on shifting the attention; 3) to consciously practice one's own ability to build on the opportunities of the diverse media.</p>
<p><i>Mixing institutional/open venues</i></p> <p>Developing scholarly skills (e.g. networking) across institution-based 'spaces of enclosure' (Edward & Usher, 2008) for research practice (e.g. email; e-learning platform).</p>	<p>Searching for literature as encompassing frequent overlapping between institutional (digital library) and open instruments (e.g. Google Scholar, Books, Twitter, Academia.edu).</p>		<p><i>Deterritorialising the spaces for research</i></p> <p>Moving from the institution-bounded spaces towards open spaces to undertake scholarly activities.</p>	<p>Attempting to close any existing gaps by colonizing new, self-organized digital spaces (e.g. a collective page in Facebook) in order to be individually or collectively acknowledged as researchers.</p>

Table 70.

Summary of the assessed sets of polarizations attached to the dimension 'Time' with related examples, drawn both from the individual interviews and focus groups.

Time <i>Stillness or evolution in digital engagement.</i>				
Polarization	Examples	vs	Polarization	Examples
<p><i>Tinkering with a strategy</i></p> <p>Attempting a design in one's own digital engagement, by reflecting on past experiences and figuring out future improvements.</p>	<p>a) Carrying out tactic adjustments to progressively achieve consistent objectives such as running a research blog, constructing an academic profile across social networking sites.</p> <p>b) Prefiguring a strategy on the basis of any observed example of successful practice.</p>		<p><i>Fragmenting the engagement</i></p> <p>The digital engagement is comprised of isolated events, where the intentionality is close to a sense of 'playing it by ears' rather than to 'setting goals'.</p>	<p>a) Digital engagement as "reaction to contingent issues", due to time constraints.</p> <p>b) Fragmenting the engagement as the only behaviour to be enacted in initial and intermediate phases of the doctorate.</p>
<p><i>Keeping up</i></p> <p>Attempting to be up-to-date in digital practices applied to scholarly communication.</p>	<p>This behaviour results to be suggested by the local context or by the wider academic environment: in both cases the pressure addresses the need for making young researchers more visible.</p>		<p><i>Lagging behind</i></p> <p>Feeling late in the uptake of the ever changing digital landscape.</p>	<p>a) a sense of feeling 'guilty' as an individual, because of the amount of time needed to harness the several opportunities of the digital landscape;</p> <p>b) a sense of consciously lagging behind because 'not everything worth the trouble';</p> <p>c) a polemic sense of being late because of the lagging behind of the institutional support and advice.</p>

Table 71.

Summary of the assessed sets of polarizations attached to the dimension 'Digital Identity' with related examples, drawn both from the individual interviews and focus groups.

Digital identity <i>The degrees of disclosure of the academic self in the online presence</i>				
Polarization	Examples	vs	Polarization	Examples
<i>Disclosing</i> Revealing one's own digital identity as part of a tentative strategy for putting one's own academic profile emerge.	a)Progressively revealing one's own original voice by increasing dissemination of published papers in the digital. b)Paying attention to be correctly identified online as a researcher (e.g. avoiding ambiguity in real names). c)Attempting to keep control of one's own traces disseminated online as a researcher.		<i>Not disclosing</i> Partially disguising (or does not disguise at all) one's own digital identity as a newer researcher.	a) Not disclosing as a form of self-defense of one's own reputation, against the risk of being early over-exposed. b) Not disclosing as a critical reaction against the techno-cultural pressures imposing a unique profile of digital researcher, rather than opening up multiple ways of being online.
<i>Being inspired by digital champions</i> Looking at a directly observed example as inspiring for a future strategy of digital engagement.	Taking cue from a friend/colleague to start designing one's own online profile (e.g. learning to build a successful blog by emulating a real life example).		<i>Keeping distance from digital champions</i> Showing a critical approach toward examples of digital researchers directly observed in real life.	Expressing esteem toward peers acting as super-users of social media for research, but thinking of these champions' behaviour as not fitting their own purposes and sustainable pace in the uptake of the digital.
<i>Weaving</i> Crossing boundaries between institutional and private/professional digital identity.	a)It may include a deliberate decision to converge on developing one's own academic identity in the digital engagement, for instance reducing extra-academic online activities. b) It may refer to an emerging need to overlap one's own profile as a generic online user with the profile as researcher in online settings.		<i>Splitting</i> Keeping distance between personal and academic digital identity.	a)It may be merely related to a pragmatic organization of the online spaces (e.g. for private and academic purposes); b)it may be a consequence of a personal lack of concern in managing a double online presence for leisure and for research purposes; c)it may stem from the need for rigidly controlling one's own online identity as educators and researchers.

Table 72.

Summary of the assessed sets of polarizations attached to the dimension ‘Socialization’ with related examples, drawn both from the individual interviews and focus groups.

Socialization <i>The role of the individual or group in digital engagement.</i>				
Polarization	Examples	vs	Polarization	Examples
<p><i>Taking personal initiative</i></p> <p>Starting to adopt new tools/environments prompted by own personal curiosity or needs.</p>	<p>a) Having enough self-confidence to carry out a trial and error approach for new tools and practices;</p> <p>b) starting the word of mouth about digital tools among peers and/or faculty in the local context;</p> <p>c) acknowledging that the ‘do-it-yourself’ approach is commonplace in one’s own disciplinary culture;</p> <p>d) feeling that personal initiative in experimenting with new tools is the key when the institution is lagging behind.</p>		<p><i>Building on ‘word of mouth’</i></p> <p>Starting to adopt new tools/environments prompted by the word of mouth occurring among peers.</p>	<p>a) Drawing suggestions from external professional or academic contexts to start specific social media activities for research;</p> <p>b) relying on the advice and support provided by one’s own local context to start any social media activity for research;</p> <p>c) relying on peer recommendation for sifting tools.</p>
<p><i>Harnessing individual-based benefits</i></p> <p>Engaging with the digital networks implies taking personal advantage of the potential of the open Web as efficiency enabler and network amplifier.</p>	<p>a) Benefiting from getting relevant content for one’s own research;</p> <p>b) getting responses from experts by starting occasional threads of discussion in research-focused social networks;</p> <p>c) creating new contacts by extending networking activity across social networks.</p>		<p><i>Sharing benefits</i></p> <p>The need for engaging with the digital networks stems from a collective need for creating a shared space where the doctoral students can gain visibility and develops their own reputation.</p>	<p>a) Curating a collective page on a social network to gain visibility as a research group;</p> <p>b) designing a collective blog to enhance peer discussions;</p> <p>c) piloting a collective blog to overcome the lack of an official space for the PhD researchers;</p> <p>d) promoting the use of a tool for group working in one’s own local context..</p>

Table 73.

Summary of the assessed sets of polarizations attached to the dimension ‘Stance’ with related examples, drawn both from the individual interviews and focus groups.

Stance <i>The level of personal uptake of the open Web for research purposes.</i>				
Polarization	Examples	vs	Polarization	Examples
<i>Embedding</i> Attempting to integrate emergent digital practices within the unwritten conventions of scholarly communication, also responding to any institutional and/or societal pressure in this sense.	Using the open Web to enhance existing practices (e.g. searching, networking, identity building, academic writing) and drawing additional advantages (e.g. getting more relevant content, more research contacts, gaining more visibility, practicing writing toward diverse audiences). It may be experienced as “what I should be doing” and in this sense as a not yet fulfilled requirement.		<i>Diverging</i> Attempting to shape one’s own digital behaviour according to original self-motivation rather than following any external/institutional pressure.	a)The open Web used to overcome the constraints of the local academic culture; b) the open Web used as a source for knowledge building against the limitations of the provided research training; c) the open Web experienced with a serendipitous attitude, with no pre-defined objectives and endorsing a self-directed pace of engagement.

Table 74.

Summary of the assessed sets of polarizations attached to the dimension ‘Tensions’ with related examples, drawn both from the individual interviews and focus groups.

Tensions <i>The relationships between institutional and self-organized practices.</i>				
Polarization	Examples	vs	Polarization	Examples
<i>Complementing</i> Living the open Web to complement and in places expand existing scholarly practices.	a)Seamless alignment between literature searching activities and the opportunities provided by the open search engines. b)Opportunity for expanding networking activity through interaction across research-focused social networks.		<i>Competing</i> Living the open Web as contrasting the lived experience of the current practices and as locus for alternative modes for being researchers.	a)The open Web as a venue for informal peer communication that can’t be bounded in the institutional services. b)The open web as source for alternative funding. c)The open Web as ‘other’ compared to the real mode for knowledge production in specific subject areas. d)Constrast between digital literacies needed to use a lab equipment and digital literacies required for effectively hanging out in the open Web.

7.6 Conclusions

This chapter has firstly presented the findings drawn from the four focus groups organized in so many university contexts involved in the present research. Secondly, it has discussed them

under the framework of Digital Engagement Variation, where the six dimensions of the DEV conceptualization were enriched with additional examples and, in places, refined with new polarizations. From a methodological perspective, the focus groups have worked as an effective member checking opportunity to assess previous empirical insights. Moreover, they have enabled us to involve the research participants in the same endeavour for better highlighting the oscillations of digital engagement for newer researchers. From a theoretical perspective, the focus groups have enabled us to assess the DEV conceptualization as a flexible, non prescriptive tool useful to map out the emergent trajectories in the digital drawn by the specific samples of individual doctoral students being investigated in this research. Moreover, despite the fact that the empirical findings cannot be generalized to the whole population of the PhD students, we hold that the DEV framework has the potential to be adapted to diverse samples of individuals shaping their digital engagement for educational, professional or scholarly purposes. The dimensions of Space, Time, Socialization, Digital Identity, Stance and Tensions can provide a starting point to explore individuals' digital engagement in the dialogue between institution-led and self-organized learning ecologies, rather than relating the capacity of acting in the digital only to inherent, personal attributes of the subject. In other words, the dimensions of the DEV framework help to consider that digital engagement occurring at a point in time as a transitional state of experience that is likely to change or blur according to a range of concurrent influencers and the emergence of new goal orientations for endorsing the digital. This contrasts the views aiming to fix typologies of digital learners, whereas the label of 'digital champion' is neglected in this study, because even in case of high self-confidence in digital engagement, the individual PhD students have drawn such capacity from previous experiences, peer support or chance encounters.

From an empirical perspective, the focus groups have helped us to better understand the controversial motivations and contextual pressures affecting the engagement of the PhD researchers with the 'digital' while they are striving to embed the scholarly conventions of their local research settings. Moreover, how digital engagement is being inflected seems to significantly depend on the mode of representation of newer researchers' academic identity in defined academic cultures and contexts. Thus, among the humanists and the educational and social researchers we have observed on the one extreme some doctoral students feeling to be obstructed in gaining visibility because this behaviour is considered not appropriate in their local academic context, and on the other extreme other PhD researchers feeling even an

excessive pressure for building an academic presence in the digital. On the other hand, doctoral students in techno-scientific areas are more inclined to neglect any issue of academic identity and to take for granted their participation across research-focused social networking sites, whenever such practice is shared among the well-established researchers in the subject areas. Moreover, the lines of resilience previously sketched (see Chapter 6) were further defined, along with the consideration of the multiple tensions coming from different sources and affecting the discourse of social media adoption on the part of early career researchers. In the next chapter all the findings drawn across the whole data collection process will be re-discussed in the light of the previous literature and matched with the research questions that have guided this study.

CHAPTER 8

CONCLUSIONS: REVIEWING THE PhD E-RESEARCHERS' TRAJECTORIES IN THE DIGITAL

8.1 Introduction

This conclusive chapter aims to weave the discussions developed in the previous chapters and related to the findings drawn from the e-surveys, the individual interviews and the focus groups undertaken in international university contexts. This further discussion is intended to provide considered responses to our initial research questions (Table 2), that we recall in their formulation:

- A. To what extent do the PhD students learn to become researchers using digital tools and environments in Web 2.0 ecologies?
- B. How can the trajectories carried out by the PhD e-researchers in emerging learning ecologies be conceptualized, as arising from the accounted practices and dispositions in the open Web?
- C. What can the qualitative findings tell us about the chronotopes activated in the emerging learning ecologies of PhD e-researchers?
- D. What are the tensions arising between institution-led activities and emerging self-organized learning opportunities of new PhD 'e-researchers'?

The purposes of the following sections are therefore to discuss the various empirical results and ideas stemming from our data gathering process and giving evidence, in sequence, of the descriptive outcome related to the Question A, by providing an informed collection of the current digitally-mediated practices undertaken by individual doctoral e-researchers; of the respective analytical outcomes of the Questions B and C, consisting in the conceptualization of the trajectories and the chronotopes activated by the PhD students in the digital. Finally, dwelling on the tensions underlying digital engagement (Question D), we set out to discuss the practical implications of the findings by drawing recommendations to doctoral education's stakeholders about informed initiatives to be embedded in doctoral research training, in a critical alignment with emergent networked practices in academia. A final paragraph wraps up the achievements of our research and provides hints for understanding the affordances of PhD students' emerging learning ecologies. Moreover, it addresses the limitations of this study and sketches the strands for further research to date identified.

8.2 Mapping the social media practices of individual PhD researchers

At the very beginning of this research we have stated that the topic of the dissertation focuses on the exploration of digital engagement of individual PhD researchers able to self-organize the use of Web 2.0 tools and environments to develop academic activities such as searching materials about emergent topics, doing networking with new experts, disseminating one's own publications, practicing scholarly writing, etc. Focusing on the relationship between individual PhD students and tools in the open, the results we have drawn show how the research participants interpret the 'digital' as a continuum of Web 1.0 and Web 2.0 facilities, where the 'social' dimension of the Web 2.0 ecologies is at times neglected or creatively adopted, in a tension between convenience and experimentation. However, considering that we have collected narratives of self-organized activities undertaken in the digital, we can state that a loosely defined interplay occurs between such activities and the unfolding of the doctoral journey. In fact, such interplay mainly relies on a cluster of random personal and environmental drivers rather than being grounded in any institution-led training on digital identities and researchers, in tacit conventions of local academic cultures or in the privileged rapport between the apprentice scholar and their supervisors.

This section re-considers the findings collected across the whole study and responds to the first research question: **A.To what extent do the doctoral students learn to become researchers using digital tools and networked environments?**

To this purpose, the baseline data related to the social media practices and drawn from the two e-surveys (see Chapter 5) are summarized and discussed along with the insights emerged from the individual and group interviews (Chapters 6 and 7), compared with relevant literature and viewed in the perspective of the nature of digital engagement previously conceptualized. The social media practices of the PhD researchers involved in this study are reported focusing firstly on the specific software applications used and secondly on the types of academic tasks carried out across online venues.

8.2.1 Approaching social media for research

We have achieved from the e-surveys that the Italian and UK PhD students participating in the study result to be usual adopters of social media as well as of more traditional web-based technologies in their everyday life. The 'personal ecologies' (Andrews & Haythornwaithe, 2011) of Italian and UK doctoral students appear to be populated by a variety of tools apt to communicate via audio/video, share content, get information and build web-based research

networks. However, in alignment with international studies (British Library/JISC, 2011), we can say that the PhD students involved in this research differently behave in different contexts and thus endorse a cautious approach to digital facilities in the open Web, whenever they focus on academic activities. It is worth reminding that the participants in the Italian and UK samples are enrolled in doctorates requiring full time or (in the UK) part time attendance component: the uptake of social media is reported wider when considering the still rare PhD programs at a distance (e.g. Petre, Minocha & Barroca, 2014). In our research, doctoral candidates appear to accurately ‘filter’ the wide range of tools they daily cope with, considering the discipline-bounded software applications and any technical equipment they are expected to adopt at a professional level at a certain point in time, for scholarly purposes. Their approach to social media is therefore pragmatic rather than pioneering, with a tendency (as in Meyer, 2010) to select a small number of efficient, reliable, ready-to-use tools that can make research practices more straightforward. The interviews have confirmed that there is no smooth transition from the ordinary uptake of social media in everyday life and their uses for academic purposes (White, 2013), even for the youngest PhD students:

“People of my generation are more... quick to jump on the bargain. Join this...people do it. But all the time people are not aware of what this good resource is [for research]. You have to realize, I suppose, you really need it and so you got it, this sort of thing” (Edu_2IOE).

Although our research does not encompass a focus on the claims and reality of the “digital natives”, we can say that in our study the age range does not result at all a predictor of a greater uptake of the digital. On the contrary, the younger the PhD students the higher the possibility that they are inclined to experience the local academic context as self-contained, avoiding seemingly pointless risks: “We don’t use social media, we don’t need it. We meet everyday, also informally, across the department and I closely work with my tutor on a lot of things. Email or Skype are enough” (Edu_1UB). The endeavour for rethinking one’s own digital engagement from everyday life’s goals toward academic needs is therefore a necessary condition for re-directing the adoption of general social networking sites for research purposes (Veletsianos & Kimmons, 2012). In this sense, the more mature students have some advantages, because they are likely to be exposed to a range of examples of digital engagement drawing from other academic or professional contexts. On the other hand, the institutional virtual learning environments devoted to the PhD programs are likely to remain confined to specific, bureaucratic functions, even when they embeds social networking

functionality: “They have created this social networking platform, called Bleep...to boost interaction among academics and students, but indeed it’s not more than a repository of documents...nobody writes there” (Arch_1PM). This effort for re-orientating digital engagement starts to be undertaken by adapting mundane technologies such as social media to the sophisticated tasks required by a research process. These efforts often combine personal initiative and peer recommendation and appears to be particularly influenced by occasional encounters/events or by the professional background and contexts experienced by the individuals. However, we have to consider that the ‘networked scholarship practices’ (Veletsianos & Kimmons, 2013) still represent an emergent, although increasing, habitus for researchers of all ranks in international university contexts (Moran, 2013, Nicholas et al., 2014, Manca, 2014). Not surprisingly, in the samples we have been able to draw both Italian and UK PhD students rely on the traditional channels of communication such as seminars and conferences to meet peers and get to know new experts in the research field. In particular, we have observed that the use of the open Web for building scholarly networks stops at 7,8% for the Italian at the UK survey respondents. As a whole, the qualitative findings arising from the interviews and the focus groups have allowed us to check and integrate (Table 59) the list of drivers we had proposed in the Italian and UK e-surveys (Figure 26 and Figure 46), accounting the range of conditions under which any tentative adoption of social media for research tasks is likely to be started by the individual newer researchers. The aim of this summary table is to report the extent to which such conditions are valued in live conversations rather than to suggest any kind of ranking in the drivers considered by the respondents.

Table 75.

Drivers enabling social media adoption for research purposes, as drawn from the whole data collection.

Drivers	Characteristics
Occasional, practical needs.	The most cited motivation in starting to use social media for research is related to the need for seeking efficiency enablers and network amplifiers, with an 'on demand' approach.
Basic social media training.	Building on the initial training provided by the local institution/research department is claimed as an undeniable, practical advantage for the newer researchers, who can also absorb the idea that social media are valued in the local academic culture.
Examples observed in one's own professional context.	Drawing from one's own professional environment some hints of digital practices to be applied to doctoral tasks.
Examples observed in other academic contexts.	Taking cue from the networked practices occasionally observed when one participates at a conference or during a research stay abroad.
Word of mouth.	Building on one's own supervisors' or peers' suggestions to adopt certain tool/social networks for a defined task.
Personal curiosity.	Starting the adoption of software applications in the open may be based on personal curiosity and self-directed practices toward ICTs. This rare attitude may be coupled to a kind of approach as a "technology steward" (Wenger et al., 2005) of the individual PhD students within the local academic environment.

Furthermore, although an analysis of the different university and research contexts goes beyond the scope of the present study, it is worth considering some key contextual factors emerging from the interviews which may influence the speed of uptake of social media for research.

Table 76.

Contextual factors influencing the uptake's speed of the digital by the newer scholars.

Influencers	Examples
Local academic cultures	A local academic culture may differently influence the digital uptake of the PhD students: for instance, in one context the stress may be on individual responsibility (“I am aware that I should be doing more networking”) whereas in another context the individual initiative is likely to be penalized compared to a conformity attitude (“If you do too many things on your own...this is likely to damage your reputation in the local context”).
Different ICTs appropriation across diverse subject areas.	In alignment with Fry’s (2007) framework, the newer researchers in hard sciences tend to rely on the digital practices shared among peers and with well known experts in the research field. On the contrary, in soft sciences the individual-based mode for ICTs appropriation may lead to self-initiated digital behaviours.
Work organization in local research contexts.	A close-knitting local community of research is more likely to be perceived by the newer researcher as a ‘self-contained’ research environment using well-established channels for knowledge distribution and networking. Unless the prompt to use emergent communication channels derives from suggestion within such community, the individual PhD student is less inclined to break conventions than a colleague located in a context where work practices and relationships among members are loosely defined.
Coverage of knowledge domain of the research topics.	The more the research topic is current (especially in soft sciences), the more the PhD researchers is likely to be open to look at alternative sources of information in the open Web.

Among the drivers, the provision of basic research training about social media was similarly ranked in the Italian and UK e-surveys in a mid position (see respectively Figure 26 and 46). Likewise, the lack of training has not received a high rate either among the Italian or in the UK questionnaire respondents (see respectively Figure 27 and 47). However, the actual availability of any form of basic social media training results to be very low in the samples of

interviewees. In fact, four out of eight UK interviewees, three out of eighteen interviewees in the Italian sample (two in Social Research and one in Design subject areas) state to have actually benefited from this kind of training delivered by their own institution. Therefore, for most interviewees it can be said that “many digital literacies are developed by learners in a trial-and-error manner without the direct support or advice of educational institutions” (White et al., 2012, project interim report, p. 3). Being informed by the institution about the opportunities available in the current digital landscape undoubtedly provides the doctoral researchers with a clear advantage, especially at the very beginning of their PhD journey. This kind of opportunity remarkably reduces the waste of time in random searching for useful tools/environments and suggests unexpected potential of social media also to enthusiastic users of social networks for non academic activities. Otherwise, in the majority of the interviewees who have not received any kind of advice, alternative opportunities are provided by peer recommendation or by the hints the PhD students may draw from other university or professional contexts they come along. However, it is a shared opinion among the interviewees that “self-motivation is fundamental”(Edu_3IOE) in crafting research-focused digital trials, where the ‘networked scholarship practices’ (Veletsianos & Kimmons, 2012) are far from being adopted in the involved academic contexts and neither are said to be a current topic of discussion among PhD students and supervisors. The role of individual agency in the initial uptake of the digital is therefore greater than the prompt of personal curiosity characterizing only a few personalities.

8.2.2 Adopting social media for research

As well as for the well-established researchers, the academic activities of the doctoral students involved in this research widely rely on the multi-function instrument of email, in alignment to what underlined in recent studies in the UK and in Italy (James et al., 2009; Petre, Minocha & Barroca, 2013; Esposito, 2013; Manca, 2014). In combination with document sharing environments such as Google Drive or Dropbox and web conferencing tools such as Skype or Google Hangout, the webmail services fulfill the researchers’ needs for communication, individual reflection, archive of documents, networking and collaborative working. The e-surveys organized at the start of this study have enabled us to list the tools in the open Web most frequently cited for academic scopes: Google Scholar, Wikis (reading mode) and Google Drive and likes in the Italian sample and Google Scholar, Blogs (reading) and Zotero and likes for the UK sample. However, it can be said that these triads, although composed of diverse tools, underly a similar approach to the open Web, where searching for

relevant and updated materials, reading alternative sources and augmenting efficiency of current academic practices constitute the main drivers in the selection of digital applications. More interestingly, we have observed in the whole interviewing process, irrespective of the samples and of the diverse subject areas, a more nuanced and complex approach in the selection of social media. In fact, we can say that, unlike previous research (Nicholas & Rowlands, 2011), the individual interviewees' choices do not converge on similar groups of tools, as for instance the triad Facebook-Blogs-Twitter identified by Zhu & Procter (2012) in a group of UK PhD students. Moreover, we have to take into account that the PhD students running a research blog and/or managing an account on Twitter or in any general purpose or research-focused social networks represent a small minority both in the Italian and UK e-surveys' samples (Table 61).

Table 77.

The adoption rate of blogs, research-focused social networks (SNs) and Twitter, from the Italian and UK e-surveys.

E-survey Sample	Blogs	SNs	Twitter
IT	3%	11%	8%
UK	8%	15%	23%

Rather, we can confirm that the personalized ways and the temporary configurations in which the doctoral researchers combine the social media for research purposes constitute one of the key features of their digital engagement in the open Web. The narratives collected across the individual interviews and the focus groups have enabled us to highlight a repertoire of self-organized uses of a range of social media (Table 62), where the tension between the need for supporting existing practices and the attempt for expanding opportunities is always at work and often does not match the social affordances of the single tools as defined in literature.

Table 78.

Examples of social media uses, as accounted in the individual interviews and focus groups.

The self-organized social media uses as reported by individual PhD researchers				
<i>Software applications</i>	<i>Supporting practices</i>	<i>Examples</i>	<i>Expanding practices</i>	<i>Examples</i>
Twitter	Searching for relevant and updated content.	<p>“I set up some key words in Twitdeck and check them daily for relevant content, but just ten minutes a day”.</p> <p>“I use twitter as a news feed, since I get updates from the organizations I follow there”.</p>	Finding additional opportunities.	“I have just presented a paper in a seminar just because I replied to a post in twitter and a short chat started with a researcher”.
Facebook	<p>Managing private/semi-private communication.</p> <p>Using Facebook to keep in touch with one’s own research participants.</p>	<p>“It’s my second email, just for private use”.</p> <p>“I use Facebook to keep in touch with my kids and with my former colleagues”.</p> <p>“I follow my research participants (female teenagers) on a range of social networks, but we agree to contact each other only via Facebook”.</p>	<p>Curating online presence as researchers.</p> <p>Recruiting research participants.</p> <p>Asking for help on emergent knowledge domains.</p>	<p>“We set up a public page in Facebook to make it visible our PhD research in foreign literatures, beyond the ‘silos’ of the local research groups”.</p> <p>“We are going to use Facebook to recruit participants for our Health program’s survey addressing teenagers”.</p> <p>“A lot of life runs on Facebook...it is enough to launch some requests there to receive loads of suggestions about my research topic”.</p>
Academia.edu	Disseminating published papers.	<p>“Academia.edu is acknowledged as a reliable venue for distributing research”.</p> <p>“I usually upload my papers on Academia.edu...indeed this is the only reason why I use social networks”</p>	<p>Starting research bonds.</p> <p>Finding relevant materials on emergent knowledge domains.</p>	<p>“Sometimes someone reads a paper of mine in Academia.edu and then contacts me. So a collaboration may start”.</p> <p>“In my national context I only found ‘rhetoric’ stuff about my topic...instead Academia.edu helped me a lot to broaden my horizons”.</p>

Research Gate	Receiving alerts on published research.	“You can receive notifications in real time if the researchers you follow have just published something there”.	Discussing research issues.	“I posted a question closely related to my research and just this sparked a heated discussion thread”.
Skype/Hangout	Supporting working PhD student/supervisors’ relationships. Supporting research work with students/research participants.	“I can schedule regular sessions via Skype with my tutors. Just focus on the topic. We can share documents, I can show my data” “I organize trial sessions in Hangout in order to make my research participants comfortable with the communication tool before starting the interviews”.	Expanding opportunities for doing research.	“My doctoral research is literally ‘done’ on Skype...I think this is the appropriate tool through which international higher education staff can work today”. “I was able to keep in touch with a distant researcher and start working with him on a new project just thanks to Skype and email”.
You Tube	Complementing the acquaintance of scholars with their online activities.	“I often look for any video lectures on You Tube when I am reading some stuff: it seems to me to somewhat get to know the author”.	Practicing teaching skills with an unknown audience.	“I realized on my own a series of videolectures on philosophical topics, which I uploaded in You Tube. I received some comments and discussed the topics with the audience for a while”.

Blogs	Blogging to practice academic writing.	“You know, it’s difficult to start writing for a doctoral dissertation, and a blog can really help you”.	<p>Blogging to state individual academic identity.</p> <p>Blogging to state a collective academic identity.</p> <p>Others’ blogs as a source of inspiration for future modes of being researchers.</p>	<p>“I am designing a research blog and piloting a series of posts...if I make it, this blog will reveal my identity as a social researcher”.</p> <p>“We started a collective blog because in our institution we didn’t exist anywhere as doctoral researchers”.</p> <p>“I have followed people blogging for years and at a certain point becoming star bloggers...it’s a nice way to step in”.</p>
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Twitter

The current Twitter use revealed by the e-surveys and interviews is scant and controversial, not matching what is claimed in recent literature about graduate students and early career researchers:

“Eager to create online portfolios and career-enhancing connections, they use services like Twitter to develop desirable professional personas and makes themselves more attractive in an increasingly competitive job market”(Singh, 2013, p. 3).

On the contrary, the interviewees mentioning Twitter generally account stories like ‘I had a look but I didn’t know what to do there’, highlighting a common difficulty in harnessing the networking potential of this tool. Also when the doctoral student have had the opportunity to watch ‘how Twitter works in some external settings (e.g. a conference abroad), they report statements like: “I have often undervalued the role of Twitter for networking”(InfoSociety_7UB). Thus, we can say that many interviewees appear to be ‘observers as non participants’ of the Twitter feeds of peers and experts, at times through a systematic retrieval of relevant content. This kind of adoption of Twitter results to be primary even when there is some effort to understand the nature of the means by joining mini-debates (Arch_1PM), where the difficulty to cope with a non specialized audience arises. The brave PhD students endeavouring to reach a wider audience of researchers are often not clear of any add-on value of Twitter compared to other research-focused social networks: “As soon as I have started to publish research articles I have started to disseminate them in Academia.edu

and via Twitter...to my friends! For now I can't see any benefits...over time, participating in conferences, maybe..."(EconEdu_1IOE). It can be said that Twitter keeps on being a rebus for many PhD researchers, although some occasional success is reported, as the contact enbaling the participation to a research seminar.

General purpose social networks

Facebook is the only general purpose social network in which almost the totality of the interviewees is enrolled for a range of purposes. Not surprisingly, it is very popular for supporting the limited spare time of the doctoral students, even if occasional idiosyncrasies are revealed :“I am starting to really not like...the more I think of it the more I think it's quite a pity of vanity, it's all about you, your status, your pictures, your...me, me, me” (Edu_2IOE). However, this social network also constitutes a valid venue for developing threads of discussions when the research topic is current (InfoSociety_9UB) and for recruiting research participants at a distance (Med_3UM). Facebook is being used “as a second email”(Hum_2UM) to manage private communication, as well as to keep contacts with the research participants (InfoSociety_7UB). In fact, the flexible way in which Facebook is adopted mirrors the extent to which the habitus of hanging out in social networking sites is affecting the way the ‘digital’ as a whole is thought and expected. For instance, a Facebook-like solution is thought as effective, whether a lack of communication is claimed in a local research context (Eng_4PM) or if an online environment for a research group is to be set (SocSci_3UB). In another case, the long-standing exploration and attendance of groups of interest in Facebook has sparked the idea of organizing a collective page of doctoral researchers studying international cultures (Hum_1UM), in the belief that a wider audience can be reached there rather than in the formal academic channels. In Facebook is also easy getting to know or keeping in contact with colleagues and new experts: “It happened to me to be present in Facebook for a while, thanks to an Iranian researcher whom I wanted to keep in touch with”(Med_3UM), but after early contacts occur, further rapport is likely to develop via email. As one of the interviewees states “a lot of life runs in Facebook” (InfoSociety_9UB), providing unexpected opportunities to those newer researchers hanging out there, just for fun, because they are researching a very current topic or because they join some form of social activism. Thus, in Facebook a useful contiguity may occur between the zones attended for recreational activities and the groups of interest where professional and research purposes may converge. Otherwise, the use of a profession-focused social network

such as LinkedIn, lets it emerge a prevalent attitude nicely described as “shop window” (White, 2014), where the main interest is to broadcast the strengths of one’s own résumé and expertise. However, also in LinkedIn, for some interviewees the word of mouth within one’s own ‘academic tribe’ is the key to discover “specialized groups of interest when you can ask questions and get opinions on your specific research topic”(CompSci_8UM). On the other hand, more importantly, it can be noticed a certain digital flexibility of the PhD students (James et al., 2009) to move across diverse social networking sites (even not ‘resident’ there), whenever they need to follow some experts or informants.

Research-focused social networks

As noticed across the e-surveys’ data, the participants working in Humanities and Social Science (but also in Design) areas seem to prefer Academia.edu, whilst those in medical or techno-scientific areas (including Engineering) tend to approach ResearchGate, or at least to name it as used by some of their colleagues. However, the assessment of these preferences per subject areas would deserve further research, whereas the opinions on one social network rather on another may significantly vary and reasons for engagement may change. Some hardly “think that Academia.edu is more than an open archive of texts”(InfoSociety_9UB), thus not suitable when interlacing professional bonds becomes a primary aim; others have chosen Research Gate just because “the authors I looked for were on ResearchGate” (EduPsy_2IOE) and then have randomly discovered its affordance for asking questions when they need to. The key concern stated by the interviewees is related to their weak commitment in configuring and updating their often multiple academic profiles sketched and ever updated in social networking sites. The issue of keeping control of one’s own traces in the digital becomes central when the individual’s expertise starts to be displayed on papers, presentations and other outputs. This require the additional burden to align and update the different venues because the potential scholarly audience is ‘mobile’ and can access the newer researcher’s profile from a range of entries rather than only through the conventional services for bibliographic searches. Otherwise, spending time in research-focused social networks is likely to more easily become integral part of one’s own way of being researchers when the academic culture to which the PhD students are exposed focuses on the curation of possible scholarly interactions rather than on building one’s own academic profile.

Web conferencing tools

Likewise in a previous study (Esposito, 2013), Skype results to be particularly popular among the Italian research participants. In fact, across all the interviews, web conferencing tools such as Skype and (more rarely) Google Hangout are said to play a role as ‘augmented email’: they enable at a distance the live student-supervisor sessions (Edu_2UB); make it doable contacting research participants (HE_8IOE); support international research project, along with Dropbox (SocSci_7UM). The widespread uptake of this genre of tools is mainly due to their capacity to perfectly fit existing needs for communication and collaboration, saving time and money: along with email, they constitutes loci for “formal dialogues” (Petre et al., 2014, p. 4), in alignment with a recent survey conducted in the UK. They are said to provide sufficient level of privacy and confidentiality, whereas the social networks are seen as always implying the risk of an overexposure of the research process. As one of the interviewees states: “Skype is the most appropriate tool through which higher education staff can work worldwide today”(HE_8IOE), combining research and professional purposes.

Blogs

Running a research blog has something to do with ‘performing self’: in this sense, a blog can reflect “the image of me as a researcher”(SocSci_4UB), but it implies a thorough commitment over time (e.g. “it took to him five-six years to build a successful blog”, IntA_FG4_PM) that is likely to go beyond the duration of any types of doctorate. On the one hand, in the e-surveys’ results, practicing academic writing in the open Web is most frequently rated as occasional in the digital tasks of the Italian and UK respondents (see p. xx and p. yy). On the other hand, in the interviews academic writing is mainly supposed to be developed in the comfort zone of the relationship between the PhD student and the supervisor(s) and not “in the open community of researchers”(MusicEdu_3IOE). Moreover, the PhD students orientate their online writing in the ambiguity of what is legitimated and what is not, in order to eventually submit an original dissertation. This uncertainty is coupled to the fear of publicly disclose things that one “can’t pull back” along with the incompetence about “what the rules are”(Edu_4IOE) for writing in the open. Furthermore, there is the awareness that building a research blog is something different from informal free writing and that “you need an editorial plan” (IntB_FG4_PM), unless you are at danger of producing occasional, disorganized notes. In this sense, there are examples of PhD students who state to proceed per trials and errors in shaping their own research blogs, by involving critical friends to improve the drafts and designing a personal website as a ‘hub’ for all the research

activities. Nonetheless blogs are occasionally said to become acknowledged scholarly outputs in the next future. Considering such complexities, running a research blog mainly constitutes a long-term perspective for the interviewees convinced to undertake this kind of informal academic writing. On the other hand, the genuine interest in group blogging shown by some interviewees in Humanities and Social research areas is a sign of a way of understanding blogs as “facilitating a conceptualisation of impact as the dynamic co-production of multiple knowledges” (Fransman, 2013). In this view, belonging to a research group assumes a greater relevance than attempting to individually raise one’s own unready research voice.

Discussing the narratives of the actual uses of social media by the research participants has enabled us to highlight the extent to which these tools are shaped in order to be absorbed in the current academic practices or work as springboard to enact self-organized experimentations. As a whole, it can be said that the doctoral students approach the social media for research purposes as guided by occasional needs linked to defined academic activities rather than for any kind of preference of peculiar expertise related to specific tools.

8.2.3 The digitally-mediated doctoral activities

The digitally-mediated academic activities particularly revealed in the interviewing process result to be generally carried out on individual basis (Table 4) and especially focus on searching literature, seeking research bonds, building reputation and improving self-empowerment.

Table 79.

Mapping individual-based doctoral activities actually supported by digital practices.

Focus	Doctoral activities	Tools
Searching relevant materials	Updating	Google Scholar, Twitter, discipline-based databases.
Seeking research bonds for future collaboration	Networking	Email, Facebook, research-focused social networks.
Building reputation	Disseminating	Academia.edu, LinkedIn, Twitter, blogs.
Self-empowerment	Discussing research issues	Research Gate, LinkedIn groups.
Self-empowerment	Pursuing personal development	MOOCs

It is worth noting that the participants in the study state to rely on institution-credited instruments rather than on Web 2.0 tools for tasks related to managing the research process, collecting and analysing research data. Unlike international studies state regarding researchers of all ranks and diverse subject areas (CIBER, 2010), Web 2.0 ecologies are not currently affecting the research workflow of these newer researchers, although a significant impact can be reported in the tasks of designing research projects (above all in searching for

literature) and in disseminating results. On the contrary, we have observed that a trial-and-error approach is applied to broad activities such as Updating, Networking, Disseminating, Discussing research issues and in the endeavours for Personal development. As summarized and discussed below, in these areas some clear attempts are enacted in the open Web along with a range of criticalities to be faced.

Table 80.

The shared understanding of the Updating activity undertaken in the open Web, with examples of accounted practices and related criticalities.

Updating		
Uptake	Accounted practices	Criticalities
The open Web is seen as an ever expanding repository of updated content.	<ul style="list-style-type: none"> - Seamlessly moving from institutional to open search engines. - Setting keywords to get content from social networks. - Using trustworthy people as 'quality filter' to sift content across social networking sites. 	<ul style="list-style-type: none"> - Dealing with an overwhelming quantity of information. - Struggling with quality issues.

A digitally-mediated, individual-based academic practice such as searching for literature is in fact expanded by networked activities such as following selected organizations on twitter (Edu_4IOE), putting defined tags in Academia.edu (InfoSociety_7UB), following scientists in Research Gate (Med_4UM), undertaken by some interviewees. It is not unfrequent that the PhD students in their accounted practices confound institution-bounded and open search engines and repositories: "I have access to everything on the Web, through databases such as Science Direct or Web of Knowledge and also Google Scholar...maybe I access Science Direct just because I am a PhD student...I don't realize that while I'm navigating" (IntD_FG4_PM).

Table 81.

The shared understanding of the Networking activity undertaken in the open Web, with examples of accounted practices and related criticalities.

Networking		
Uptake	Accounted practices	Criticalities
The open Web is seen as a 'network amplifier' rather than enabling building network from scratch.	<ul style="list-style-type: none"> - Using email as a primary formal channel to contact other researchers. - Combining face-to-face and/or email with social networking. - Contacting new experts via general purpose and research-focused social networks. 	<ul style="list-style-type: none"> - Struggling in creating 'critical mass' of followers. - Questioning the practical value of having a large network of contacts.

Networking is celebrated as the most accredited potential of the open Web for academics, but in fact it results to be difficult to undertaken by the newer researchers, in the belief that just networking across online venues implies breaking the boundaries of well established communication channels. As an example, contacting any expert via social network may be believed "more invasive" (Hum_2UM) than using email. However, there is awareness that across digital networks it is easier to informally contact and interact with experts in a defined field, even if they are scattered worldwide or perform senior positions in academia: "In a few weeks I have been building networks of contacts with a plenty of scholars (mainly well-established researchers) who otherwise would have hardly got to know" (open comments, section 5.3.4). Moreover, the boundaries between institutional and self-organized forms of networking are occasionally blurring, due to personal initiative. For all the research participants email keeps on constituting the core venue serving activities such as interacting with the supervisors, contacting peers and new experts and undertaking collaborative working. At times, the accounts let it emerge the explicit aspiration by some participants to emulate the online success of peers and senior researchers: "A friend of mine got 10.000 followers with his research blog" (IntA_FG4_PM); "My supervisor is an authority in her field and has also 2.000 followers on twitter" (EconEdu_1IOE). On the other hand, this disposition for networking in the open may be counterbalanced by the different kinds of pressures arising from the local contexts, where on the one hand curating an online presence is considered as a 'must' ("They tell you that if you don't do it you will not get an academic job", IntB_FG3_IOE) or as a sign of an opinionated attitude ("If you try to stand out by posting a lot...this is not appreciated", SocSci_6UB). Furthermore, the tendencies are splitted

between those who take for granted the opportunity for enlarging one’s own contacts in the open Web and those appearing skeptic on the likely reward of having an ever expanding network, in terms of concrete scholarly interactions: “To tell the truth I’ve already my research network, a small one, but it works...instead, I freak out when I realize that someone starts following me ‘Oh, my god, why are they following me?’” (MusicEdu_3IOE).

Table 82.

The shared understanding of the Dissemination activity undertaken in the open Web, with examples of accounted practices and related criticalities.

Dissemination		
Uptake	Accounted practices	Criticalities
The open Web as the venue where expanding the opportunities for being known as early career researchers.	<ul style="list-style-type: none"> - Uploading one’s own published articles in research-focused social networks in order to build academic profile. - Using general purpose social networks to disseminate micro-contributions. 	<ul style="list-style-type: none"> - Lack of selection criteria of social networks. - Lack of acknowledgement of research-focused social networks as reliable dissemination venues. - Issue of granularity of content to disseminate in the early phases of a doctorate.

In the e-surveys, Dissemination was highly ranked (Figure 48) among the academic activities that are likely to be benefited by the potential of the open Web. In fact, for many interviewees building an online reputation as researchers by configuring an academic profile and doing online networking, is mainly understood as a follow up of publishing research papers as ‘certified’ by accredited research journals. This view however implies that a consistent online presence would be possible only in the late phases of the doctorate, when it is likely to have produced early, accomplished research outputs. Moreover, it is worth reminding that the requirement of being published during the doctorate is not always present in the PhD programs’ rules. Thus, in those cases the visibility reachable through the online dissemination of the research production is likely to be postponed after the achievement of the PhD award. In the meanwhile, only in a few cases the PhD researchers choose to disseminate intermediate materials such as presentations, ‘half-cooked’ essays, working papers and research proposals. Moreover, whenever the PhD students disseminate ‘snippets’ of their scholarship across diverse online venues the sense of ‘vacuum’ and incompleteness is prevalent as well as the fear of not “keeping control of the representation of myself as a researcher”(InfoSociety_7UB). However, the emphasis on the dissemination activity is also seen as a reductive endorsement of the open Web, as influenced by the said dominant ‘individualism’ (Eng_4PM) of the academic environment, which would prevent the early

career researchers from considering a more holistic approach and a more open knowledge exchange across social networks.

Table 83.

The shared understanding of the Discussing activity undertaken in the open Web, with examples of accounted practices and related criticalities.

Discussing research issues		
Uptake	Accounted practices	Criticalities
Expanding the opportunities for occasionally discussing topics or aspects related to research issues.	<ul style="list-style-type: none"> - Asking questions in research-focused social networks (especially in Research Gate) or in thematic groups (e.g. in LinkedIn). - Joining short debates on Twitter. 	<ul style="list-style-type: none"> - Audience issue: difficult to know role and expertise of users in the open Web. - Register issue: not feeling comfortable alternatively shifting from a scholarly level to a layman’s register of discourse in online venues.

The task of discussing research issues in the open Web received in the e-surveys a low rank as a current practice. However, some interviewees account occasional attempts prompted by the suggestion of a supervisor (Med_3UM), by the free exploration of the functionalities of a social network (Edu_2IOE) or merely following a common practice in one’s own ‘academic tribe’ (CompSci_5UM). In the Italian e-survey’s open comments is stated that these digital tools “often provide with much needed feedback from peers”. On the other hand, being engaged in a research-focused conversation in a general purpose social network such as Facebook or Twitter may results somewhat bewildering for a doctoral researcher: the discussion may lead to a “black hole” (IntA_FG4_PM), producing a sort of annoying loop of opinions that stops short developing. Elsewhere, some find it difficult keeping a scholarly register in a social media discussion, whereas the layman (or journalistic) register iteratively challenges the effort by newer researchers to bear a certain depth and rigour in the online discussion (Arch_1PM). This kind of statement is also supported by a strong opinion released in the open comments: “the open Web’s value for critical discussion is equal to zero, if compared to scholarly literature” (open comments, section 5.3.4).

However, always in the open comments (section 5.3.4) it is hold:

“You can find cutting-edge and usually decent discussions. It is unlikely that in contexts when technical or methodological topics are being discussed, some users may intervene aiming to disturb or to add some superficial contribution”.

Table 84.

The shared understanding of the Personal development activity undertaken in the open Web, with examples of accounted practices and related criticalities.

Personal development		
Uptake	Accounted practices	Criticalities
Expanding the opportunities for fostering self-empowerment.	<ul style="list-style-type: none"> - Attending MOOCs to expand knowledge building on collateral topics. - Finding resources in You Tube or attending MOOCs to improve generic research skills (e.g. writing a research paper). 	<ul style="list-style-type: none"> - Struggling for finding niches devoted to researchers. - Occasional word of mouth is the only means to find relevant opportunities.

The potential attributed to the open Web for Personal development has got a significant high rate in the e-surveys (see Figure 28 and 48). Furthermore, some interviewees accounts relevant incidents, when that they have occasionally acted as self-improvers, harnessing informal opportunities such as the massive open online courses (named MOOCs) or video tutorials to complement their research training or to expand the nodes in their network of knowledges. Such events occurred irrespective of the level of support provided by the local research context. In addition, this behaviour may also be sign of an increasing multimodal way of learning, where studying on printed books is naturally linked to “searching in Youtube for any lectures given by the authors” (SocSci_3UB). Moreover, personal development may develop new perspectives on being researchers: in fact, accessing a MOOC may represent an unexpected opportunity to move from formal to informal register, where the “interaction with other people worldwide may develop lateral discussions on being researchers and a range of interesting things pop up and you learn that a different mode for being researcher exists”(Med_3UM).

8.2.4 Making social technologies visible/invisible

The self-organized social media practices accounted by the doctoral researchers reveal a firm capacity for a transmedial navigation, for nimbly moving from one tool to another one, rather than any peculiar preference or expertise in the application of a specific tool or digitally-mediated task. However, the endeavour on the part of these PhD e-researchers for establishing any forms of ICTs appropriation for research purposes deserves more attention. We argue that social media applications result to be generative just in the tension between their being taken for granted in everyday life (“ordinary stuff of life”, Shirky, 2008, p. 86)

and their being subject to critical scrutiny by the doctoral candidates when applying them to their doctoral experience. To this end, we could paradoxically reverse this well known statement about the ‘invisible technologies’: “The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it” (Weiser, 1991). Making the case of the PhD researchers, if social media have become commonplace to manage communication in leisure activities, irrespective of the age range of the users, these software applications show a new visibility when they are adopted to provide opportunities for research tasks. These tools require the PhD students are engaged in taming them both for supporting scholarly tasks or using them for experimenting and expanding research activities. Whereas the instrument of ‘email’ results to be embedded in scholarly practices, and in fact becomes ‘invisible’, the plethora of social networking technologies appears to be disturbing rather than disrupting the endeavours of the PhD students while becoming researchers. No matter if the local context actually provides the initial advantage of a basic training, being engaged in social media for research suggests the assumption of a personal commitment that may lead to an unexpected success (“Maybe I was lucky in Research Gate!”), provoke disappointment compared to own expectation (“My supervisors has 2.000 followers, but I was frustrated by Twitter, it takes too much time to be successful!”) or anxiety for a supposed due performance (“I know I should be doing more networking with my peers and other experts”). On the one hand, the individual PhD researchers may opt for making social software ‘invisible’ (e.g. relying on trustworthy people to filter additional content in social networks) and therefore perfectly embedding it in conventional academic practices. On the other hand, some traces of self-directed experimentation emerge (e.g. using You Tube to design a series of video lectures), where the reward is not immediate and the risk is high. We hold that it is interesting to reflect on this dyad of orientations *Making social technologies visibile/invisible* in its interrelation with the issues related to crafting one’s own academic identity. In fact, disclosing one’s own online presence may reveal the individual struggle to tame the tools and reflect on it, by discovering and partly reiventing their potential, beyond the mere immediate benefits they can provide. On the contrary, limiting the display of one’s own online presence may be linked to the pragmatic disposition to mould the selected tool to a ‘plug-and-play’ type of functionality, to meet specific, practical needs.

In the previous subsections we have accounted for a range of tasks undertaken in the digital and demonstrating different levels of complexity. However, we have to say that the use of

tools in the open Web by the PhD students, as resulted from our research, can hardly be related, at least directly, to the “identity-trajectory” (McAlpine & Amundsen, 2011) of the individual doctoral students, due to the ephemeral and often unplanned nature of the personal enterprise in the digital. It may happen that the doctoral students move from the use of the open Web for a pure “research management” scope to wider options of use according to a “research awareness” (Zaman, 2010). However, such move is likely to be a consequence of random choices and chance encounters rather than of a reflexive development of one’s own being researcher. On the one hand, at times the engagement at work in the digital pilots and the reflective efforts in making sense of them may be clearly considered as the premises of the construction of transversal competences such as networking, collaboration, problem solving and above all searching for relevant sources of information. On the other hand, we can state that the endeavour for self-organizing learning ecologies *per se* brings about a necessary, although impromptu, reflection by the newer researchers on their academic/professional identities, as their statements occasionally reveal.

However, to structure a more considered discussion on these aspects we should remind that the entanglements between the PhD students and the open Web are not limited to the socio-technical relationships being established with the digital tools. This leads to consider the complexity of digital engagement as conceptualized in its variable dimensions and polarizations.

8.3 The PhD e-researchers trajectories in the digital

At the very beginning of this study we have defined digital engagement as the ensemble of evolving trajectories the individual PhD students draw by making assemblages of people, resources and relationships to deal with a defined situation and at a certain point in time in their becoming researchers. Thus, digital engagement gives evidence of ecologies that deal with the boundary crossing activities between formal and informal contexts (Barron, 2006) and of the moves across ‘enquiry- and project-based’ and ‘self-organized’ learning (Jackson, 2013). The aim of our investigation on PhD students’ digital engagement has been to conceptualize how such trajectories in the digital may vary across a set of dimensions rather than generalizing empirical findings accounting the detailed behaviours of a group of individuals. Our intent has been to generate from a collective account a “convincing theory” (Morse, 2007) of how digital engagement occurs rather than build on the supposed ‘best practices’ of networked scholarship enacted by newer researchers. On the contrary, we have

strived to not state any value judgement: in informal terms, we have avoided to point out the ‘good, the bad and the ugly’ of digital engagement’s dispositions, by neglecting to categorize the accounted practices in ‘boxes’ of digital engagement and to crystallize them in personal traits of individual PhD students. In fact, we have thought it is more interesting to highlight the scholarly practices in the digital in their making on the part of newer researchers, approaching the emergent and transitional motivations, achievements and developments they show through their insiders’ voices. We have seen in the previous section how the relationship between the doctoral researchers and social media is characterized by degrees of digital flexibility across changing combinations of tools and environments rather than by iterative attempts to match the celebrated affordances of the ultimate ICTs. Conceptualizing the digital engagement variation, we have intended to gain insights on the extent to which the accounted digital practices are interlaced with the influence and the shaping of self-organized learning ecologies, across the diverse contexts the PhD students happen to dwell (Barron, 2006). The analysis of the trajectories in the digital has firstly led to the identification of the core theoretical concept of *creeping along* as evocative of the tensions performed by the doctoral researchers toward the Web 2.0 ecologies (Williams et al., 2011). Such tensions are characterized by discontinuity in the selection of spaces and by non linearity of individual’s engagement. Afterward, we have further articulated this core concept of *creeping along* in a cluster of dimensions and polarizations aiming to map out the ways in which digital engagement is displayed and is likely to develop. Thus, this section aims to re-consider the findings collected across the whole study and useful to respond to the following research question: **B. How can the trajectories carried out by the PhD e-researchers in emerging learning ecologies be conceptualized, as arising from the accounted practices and dispositions in the open Web?**

Before wrapping up and commenting the Digital Engagement Variation framework as the main achievement in conceptualizing such trajectories, the discussion in the following paragraphs is intended to give reasons of our rejection for defining typologies of digital learners, to re-think the initial definition of ‘PhD e-researchers’, to match the findings with the diverse modes for ICTs appropriation (Fry, 2006) across different subject areas and finally debate the fortunate metaphor of Visitors/Residents (White & LeCornu, 2011) in the perspective of conceptualizing online engagement.

8.3.1 The messy practices of digital engagement

The broad variety and complexity of the situated practices collected in the interviews has suggested the need for overcoming the temptation of defining a set of typologies of digital behaviours. The accounted practices and dispositions, as socially and historically situated, result to be specific to bounded research contexts, personal situations, phases of one's own doctoral journey, presence of ICTs training and influence of external/professional settings. Isolating from these intricacies a set of practices and assuming that these belong to 'types' of digital learners is at danger of freezing certain behaviours enacted by certain individuals at a point in time and arbitrarily generalize them. Thus, we concur with the following view:

The data do not support modelling approaches which seek to isolate and quantify this inherently messy, subtle, constantly shifting and fluent form of intimate engagement with technologies which involves constant adaptation and decision- making based not only on pragmatic considerations, but also emotions and identities. (Gourlay, 2014, p. 341).

In particular, the interviewing process has helped us to focus on the variation of digital engagement. We have worked to overcome the idea of PhD e-researchers as 'digital champions', whereas the set of goal orientations (Pioneering, Coping, Waiting for the mainstream and Rejecting) drawn from the e-surveys' open comments at a first sight might have suggested an early purpose to classify digital behaviours according to the individual propensity toward innovation (Rogers, 1995). In fact, these goal orientations have been better interpreted as temporary resilience strategies enacted by the PhD e-researchers, as we re-state later in this chapter. Otherwise, the interview data have returned some evidence that the same individuals may differently sift and experience the digital tools and environments according to the perceived expectations from the local academic culture, contingent needs in their scholarly activities and related goal orientations. As an example, one PhD researcher might be reluctant to share his own articles in Academia.edu because he is "not pushed to do so"(Arch_1PM) by the conventions of his local context, but he critically endorses Twitter to get content selected by the social filter of trustworthy people rather than using it to interact with other people on research issues. In another case, a PhD researcher may have a clearly disenchanted approach to the open Web for scholarly purposes ("It has nothing to do with research...it's mixed stuff", MusicEdu_3IOE), but as a practitioner researcher she experiments with some open venues with her university students playing a role as research

participants. Moreover, quickly attributing the label of ‘digital champions’ to individuals endorsing self-confident behaviours, such as regularly blogging about one’s own research or being resident in social networking sites, might overlook messy fears and anxiety that it would be worth disentangling in terms of digital literacies. For instance, the interviewees accounting for progressively building a research blog (SocSci_3UB) or being able to organize a collective publishing activity in a social networking site (Hum_1UM), at the same time may reveal to struggle reading online because “if I don’t scribble on it I can’t grasp it” (Hum_1UM) and “it’s like writing something on a post-it that you suddenly lose somewhere” (SocSci_3UB). Moreover, key incidents may occur, such as a received training (“They let me know that these tools exist”, Edu_2IOE), the influence of the ‘other’ contexts in which the individual has the chance to stay for a while (SocSci_6UB), occasional word of mouth among peers, that may variously affect the previous digital behaviours and transform some or even all of them. Such evidence to a degree questions our early label of ‘PhD e-researchers’ defined as individuals using social media to carry out activities such as preliminarily exploring new topics, searching for updated research materials, disseminating early findings, experiencing networking in digital spaces, improving their own personal development, critically discussing relevant issues and collecting and organizing inquiry data and the research project as a whole. The varied accounts of the interviewees making sense of social media for their scholarly activities partly match and partly challenge this tentative definition of ‘PhD e-researchers’. Indeed, if some among the activities listed above match the practices actually undertaken by specific PhD participants, thinking of a plausible correspondence between such online activities and the term ‘PhD e-researchers’ seems to be neither possible or useful. On the contrary, the idea of a plural meaning of this label, as arising from the interview data analysis, implies considering a range of expectations and conditions and underlies multiple adjustments and practical solutions that are likely to be enacted by the same individual doctoral student at different points in time and for different kinds of motivation. Thus the ‘PhD e-researchers’ do not match a specific category of digital-savvy individuals. On the contrary, they are more properly identified by the original trajectories they happen to self-organize in the digital (seamless between Web 1.0 and Web 2.0, discipline-related and mundane technologies), rather than by specific social media activities undertaken in the open Web. Furthermore, such trajectories are influenced by the relationship between the ‘scholarly’ and the ‘digital’ (Goodfellow, 2014) as understood across different research cultures. In fact, our findings reveal that there are differences in the

uptake of digital scholarship's practices according to diverse modality of ICTs appropriation inherent to diverse disciplinary areas. According to Fry's (2006) framework, on the one hand, researchers working in subject areas in which a systematic approach to ICTs use (e.g. Engineering, Medicine, Biotechnology in our sample) is prevalent, are more likely to assume stable, structured and shared digital behaviors, within a collaborative work asset. Under such a condition of ICTs appropriation, community and scholarly rules are stronger factors than individual subjects to determine adoption of new tools and new practices. We have seen that the interviewees researching in STEM subject areas are more likely to engage in a social media presence mainly when this behaviour is somewhat suggested by supervisors or it is a shared practice in the local context: "My supervisor suggested to me Research Gate and there I have found other researchers of my institute" (Med_3UM); "Using Research Gate or some LinkedIn Groups is a common practice here" (CompSci_5UM). Otherwise, it's rare that they take personal initiative ("I am thinking of running a blog to merge together the experiences I've been developing across three university contexts and my research fieldwork here in South Africa", Eng_4PM), even when they are well acquainted with social networking sites for leisure purposes: "I use Facebook for organizing events and to upload the recordings of our band's performances we make in YouTube, but...actually I've never thought of an academic use of it" (Eng_3PM). On the other hand, the interviewees in subject areas in which work practices tend to be more individualistic and approach to ICTs is generally molded in "ad-hoc localized manner" (e.g. Humanities, Education, Social Sciences), are more likely to occasionally assume highly autonomous digital behaviors and to pilot new tools and networked practices, at an individual level. In fact, attempts and creative solutions are often enacted by these PhD students, usually despite the lack of support of their local context and taking cues from personal experiences and/or examples observed in external settings. Among the self-directed PhD students in these subject areas, the concern of the extent to which it is worth disclosing their own academic presence online is more common than among their colleagues in techno-scientific disciplines and in places the underlying uncertainty seems to prevent them from a wider adoption of the open web. Therefore, being acquainted with the work practices and the local academic cultures of a defined subject area significantly contribute to shape the idea of academic identity and shed light on the legitimate channels through which developing it. However, being grounded in a defined subject area's work practices does not completely explain the diverse levels and quality of uptake of the open Web by the PhD researchers. We should also consider the type of engagement the individual

endorses in a more holistic perspective. We acknowledge that the approach of Visitor and Resident (White & Le Cornu, 2011) was inspiring to start examining the data of our current and previous research (Esposito, 2013), just because it stresses on the motivations for being online rather than defining an approach per typologies of digital learners (e.g. digital natives/immigrants) or focusing on the technical affordances of the specific tools. The idea that users' motivations oscillate between dealing with content (Visitor) and building relationships (Resident) helps to understand the tension between Web 1.0 and Web 2.0 modes of being online. More recently, David White (2014) on the Visitor/Resident continuum, where Tools & Stuff is represented as the main expectation by students to get a set of useful tool by the institution; Shop Window refers the desire of showing what one has being crafted and Space relates to the networking activity being developed across social media. If we examine the interview data through the lens of Visitor (the open Web thought as a 'shed of tools' for scholarly tasks) and Resident (the open Web as a place where developing research bonds) approach (White & Le Cornu, 2011), we could easily state that most of the interviewees show a prevalent Visitor approach, where "Visitors are users, not members, of the Web and place little value in belonging online"(White & Le Cornu, 2011). On the other hand, some participants demonstrate a clear attitude toward being Resident in the open Web as newer researchers, through individual or collective actions such as planning the construction of a blog, interacting with other experts across the digital networks or creating a space in a research-focused social networking site for one's own group of peers. Moreover, when we have analyzed our research participants' statements we have continuously found alternance and overlapping between a more functional (getting what I need at a point in time) and a more participatory (developing an academic profile by establishing contacts) approach to the digital. However, the intricacies emerging from the collected accounts are more numerous and go beyond the identification of all-encompassing individual attitudes either as Visitors or as Residents. They give evidence of the variation of the digital engagement across spaces and over time, of the role of the individual and the social influence, of the manifold tensions underlying digital behaviours and of the diverse identities (private/professional/academic) that the interviewees state to manage online. In terms of time, for instance, discontinuity may characterize a Resident approach endorsed by a PhD student aiming at building an academic profile in a social networking site, as well as a Visitor approach undertaken by a PhD researcher aiming at drawing relevant content by a Twitter feed may be systematic and long-lasting. Although the 'Visitors' and 'Residents' types of

online engagement are wisely thought as orientations in a continuum rather than as a binary polarization or as static attributes of individuals, we hold that the risk of reducing online engagement in typologies of digital users is always incumbent and that such conceptualization does not completely meet the need of capturing the complexity and the swinging nature of the digital engagement. This risk seems to be accentuated by recent developments (White, 2014) of the metaphor, where the heuristic of three ‘digital-practice boxes’ (namely Tools & Stuff, Shop Window and Space) has been located in the continuum Visitors/Residents. This seems to flatten the ‘box’ of Space to the only Resident behaviour, whereas we have observed in our data that the spatial image of the ‘shed of tools’ (previously suggested by White & Le Cornu) can similarly include forms of creative trajectories in shaping mundane tools for research purposes. We argue that being Resident across social networking sites results only one of the possible dispositions observed among our research participants rather than (tacitly) ‘the’ positive attitude of coping with Web 2.0 ecologies, toward which all the PhD researchers should ideally converge. More importantly, in our perspective the Visitor/Resident approach is too closely linked to a sociotechnical assumption, whereas our attention is drawn to a socio-cultural uptake of learning ecologies (Barron, 2006; Jackson, 2014), where the mutual influences of individual and contextual agency (Priestly et al., 2011) are at work. This perspective has enabled us to take into account the personal stances and the institutional constraints, the local and the specific academic culture, the socialization and the tensions in current doctoral practices in order to propose a representation of the ways in which digital engagement in essence occurs.

8.3.2 The dimensions of the DEV framework

The primary aim of the Digital Engagement Variation (DEV) framework is to make sense of the PhD students’ agency by conceptualizing the ways in which digital engagement in essence occurs. It is intended to provide a non prescriptive instrument helping to reveal - in a manageable manner – the variation patterns of the trajectories being developed by doctoral researchers while adapting their self-organized learning ecologies to scholarly purposes. Generated by the data gathered and analyzed in this study, the DEV framework has been firstly worked as analytical tool to map out the interviews and focus groups findings, and then to rethink the achievements drawn from the e-surveys’ open comments. Secondly, it plays a role as an early conceptual tool helping to theoretically think the empirical domain being investigated. Thus, it is close to data contributing to their aggregation and

understanding, but can be also functional to diverse levels of discourse, for instance opening up reflections on the chronotopes generated by the PhD e-researchers (see next section) or musings about the implications for research training (see next chapter). The DEV framework suggests that digital engagement is more usefully described considering a variable set of polarizations under different framing dimensions rather than relying on individual's online engagement orientations (e.g. Visitors/Residents) that tend to crystallize defined behaviours. The dimensions of Space, Time, Socialization, Digital Identity, Stance and Tensions are intended to be broad categories guiding the theoretical consideration of the socially and historically situated digital behaviours the research participants may display as individuals and as a collective set of people. However, such dimensions do not point out any directions of how digital engagement might be interpreted, but help to identify the types and pace of moves the individuals develop when they strive to create "synergies between participation in technologically mediated informal learning activities and more formal educational environments" (Barron, 2006, p. 198). If we have drawn *creeping along* as the core concept synthesizing the slow and cautious movement of the PhD e-researchers for making sense of the open Web in their doctoral journey, the six dimensions of the DEV framework have helped to disentangle motivations, key events, drivers and constraints variously affecting this creeping along. The trajectories of the doctoral students using the open Web for research purposes appear as being unfold cautiously and slowly in the directions they undertake across institutional and self-organized spaces, in the development of digital engagement over time, in the endorsement of diverse kinds of sociability, in the degrees of disclosure of diverse facets of one's own digital identity, and in the endeavour of coping with institution-led and self-organized learning ecologies. These dimensions therefore provide a starting point to explore individuals' digital engagement in the dialogue between at times complementing and at times competing learning opportunities, rather than relating the capacity of acting in the digital only to any personal propensity toward new technologies and any measurable ICTs competences of the subject. Thus, unfolding digital engagement is not reduced to the 'heroic' agency (Gourlay, 2014) of the individuals but is grounded in a cluster of socio-cultural dimensions contributing to disclose the emerging learning ecologies of the PhD e-researchers. In fact, the single dimension is thought as interconnected rather than bounded: it better supports the interpretation of empirical findings just in its interplay with the other ones. The specific digital engagement's dispositions that we have been able to capture during our data collection are merely understood as current states of experience which we have

approached (at least tentatively) through the insiders' voice, rather than any fixed display of what digital engagement definitely is for the research participants. This state of experience is in any case rooted in past events and open to future developments, where the influence of contextual factors and individual agency are always in play, in close connection. This view also affects the possible approach to digital literacies and research training, as we discuss later in this chapter. Moreover, we advance that just for these non prescriptive characteristics the Digital Engagement Variation framework might be applied to diverse empirical realms. To support this statement we turn back the six dimensions of Space, Time, Socialization, Digital Identity, Stance and Tensions, highlighting the extent to which each of them can contribute to an ecological approach to digital engagement in scholarly, professional and educational situations. *Space* refers to the ways of dealing with physical and digital spaces experienced by the doctoral students for research purposes. The 'networked scholarship practices' (Veletsianos & Kimmons, 2012) assembled by the PhD students investigated in our research suggest the struggle occurring when such doctoral researchers challenge the porous boundaries of the 'spaces of enclosure' (Edwards & Usher, 2008, p. 166) where the scholarly practices are being enacted by the well-established researchers and emulated by the researchers in formation. The orientations across spaces in the digital underly the endeavours for crossing boundaries by occasionally 'deterritorialising' (Edwards & Usher, 2008) spaces for research practice or creating comfort zones at the borders of the formal spaces of enclosures of one's own research community, for making sense of the digital converging on a main activity/objective or leaving all the possibilities open through surfing across opportunities. Furthermore, these social spaces are thought as permeated with identities (Massey, 2005), nourished by the chance encounters the PhD e-researchers happen to make, combining institutionally scripted and self-organized opportunities.

Time is related to the prevailing conditions of stillness or evolution in which digital engagement is revealed. In particular, such dimension gives evidence (see next section 8.4) of the interplay among the past-present-future digital experiences and related stances in rapport with the "identity-trajectory" (McAlpine & Amundsen, 2011) unfolding during the doctoral journey. In particular, the dimension of Time in this research considers the developmental strands of 'intellectual', 'institutional' and 'networking' (McAlpine & Amundsen, 2011) as many *loci* where the academic identity of the newer researcher takes shape, also through the digital practices. The oscillation between the tentative approach to a digital strategy or the choice of fragmenting the engagement opens up a track where channelling the varied

endeavours for producing knowledge, getting to know new experts and approaching the local academic culture. Likewise, the polarizations of keeping up with the ultimate tools and the lagging behind approach embeds different stances regarding the external pressures for shaping one's own digital identity as future academics across formal and informal contexts. *Socialization* considers the extent to which the individual or the group play a role in prompting and shaping digital engagement. This leads to consider 'social presence' (Garrison & Anderson, 2003) as a catalytic element to foster student agency in a social media age. As an example, focusing on the strand of the 'networking' activities in the doctoral experience, the PhD researcher might move across different kinds of aggregation, according to the transitions from Group to Network to Collective modeled by Dron and Anderson (2007). These transitional aggregations might include in-person meetings with peers combined with the use of a password-protected mailing list (Group), to the adoption of a Networking groupmind, through the use of an open and research-based digital network where building academic reputation. Finally, a move towards a Collective groupmind might occur, where practices such as updating on new publications and dissemination of one's own work go beyond the traditional communication channels, in favour of the open knowledge exchange. The open question is the extent to which the moves across these different groupminds should be prompted and critically supported by research contexts enabling new forms of academic socialization.

Digital identity explores the degrees of disclosure of the academic self in the online presence developed by the newer researchers. The overlapping zones between institution-bounded (e.g. in e-learning platforms) and self-organized profiles in social networking sites are peculiarly challenging for the PhD students, who are engaged in moving from being "good course taker to an independent researcher" (Gardner, 2009). They appear to struggle between a disguised and defensive (although not 'passive') approach to digital and an effort for assembling an early and unambiguous online profile as researchers. Otherwise, the practitioner researchers (i.e. teachers) show particular concerns about splitting professional, academic and private identities, striving to make visible only the "acceptable identity fragments" (Kimmons & Veletsianos, 2014).

The dimension of *Stance* encompasses the whole disposition of the individuals towards the open Web for research purposes. It represents a sort of synthesis in which the individual marks one's own interpretation of digital engagement through a concrete decision. The extreme but non mutually exclusive orientations of *Embedding* and *Diverging* identified in

the research participants' statements shed light on the possible alignments or disalignments of individuals' digital engagement with their becoming researchers. In a wider application, the dimension of *Stance* would imply the consideration of individual's emotions and personal history in the educational institution. In fact, it is linked to the individual capacity of resilience toward change and its analysis can provide insights for evaluating the uptake of a certain type of institutional intervention and suggesting further actions.

The *Tensions* relate to the underlying relationships between institution-led and self-organized practices. Considering the approach taken in the DEV framework, such dimension crosses all the other dimensions. However, in its own right it has an empirical value, helping to highlight the complementing and competing facets of digital engagement potentially producing agreement or conflicts between the institutional bodies and the individuals about social media behaviours.

As a whole, the six dimensions above reviewed provide as many broad and flexible frames to guide the investigation of self-organized digital engagement of individuals located in diverse formal contexts.

8.4 The chronotopes of PhD e-researchers emerging learning ecologies

In Chapter 4 focusing on the Theoretical Framework, we have endorsed the construct of 'learning ecologies' to highlight the processes partly or totally directed by the PhD students across diverse contexts and competing learning opportunities and the construct of 'chronotope' to intercept the shifting spatial and temporal orientations of the PhD e-researchers, in the endeavour for making sense of their digital engagement for scholarly purposes. We have included the view that "learning ecologies have spatial and temporal dimensions" (Jackson, 2013) and are activated by the personal agency of individual PhD e-researchers striving to assemble institution-led and self-organized opportunities. The trajectories they draw dealing with the digital are understood as chronotopic (i.e. space/time) movements, that is as intentional shifts across institution-led and self-organized learning ecologies, where the former refer to the engagement of the PhD researchers with the 'forms of assistance' (Luckin, 2010) provided by doctorate and the latter to their engagement in taming the informal digital spaces and resources for research purposes. This approach has informed our theoretical assumptions and has helped to give shape to the Digital Engagement Variation framework, through which we have mapped the trajectories arising from the empirical data of our research. Building on these trajectories in the digital, we aim to adopt

the holistic the notion of ‘chronotope’ (Bakhtin, 1981), to shed light on the ways through which the individual PhD students orientate their intentionality through a dialogical and productive ‘struggle’ with other subjects and multiple resources. Thus, we aim to use some among the varied meanings attributed to the Bakhtinian chronotope to metaphorically enlighten the core value of digital engagement as the capacity of the PhD e-researchers to act upon or being acted upon the opportunities of the open Web. In other words, we adopt the construct of chronotope to synthesize a possible image of the PhD e-researchers sampled in this research as historically and socially situated in the digital age.

This section aims therefore to re-consider the findings collected across the whole study and useful to respond to the following research question: **C. What can the qualitative findings tell us about the chronotopes activated in the emerging learning ecologies of PhD e-researchers?**

To this purpose, we consider the chronotopes emerging by relating the trajectories of digital engagement to the ‘identity-trajectory’ (McAlpine & Amundsen, 2011) in the doctoral journey and the resilient forms of ‘public, shared and publicly held chronotopes’ (Bloome et al., 2009) arising from the interviews’ statements.

8.4.1 The pace and disclosure of digital engagement’s chronotopes

We remind that the interview data framed by the DEV conceptual tool return an understanding of PhD researchers’ digital engagement as emergent, interstitial, intentional, shifting, negotiated and conflictual. As a completely self-organized endeavour, digital engagement of the PhD e-researchers appears to be mainly characterized by isolated events, transitional and loosely consistent objectives and temporary residency in the digital spaces. As a whole, we could state that, from the standpoint of digital engagement the doctoral journey of the PhD researchers in the digital age appears to better fit the literary image of the ‘road chronotope’ (e.g. applied in the road movies), where the main characters during their journey keeps on embracing the accidental opportunities they come along, the rather than of a type of romance (e.g. in Goethe’s work), where the ‘hero’ develops facing hardships and dead routes to get a further performing status. In the narratives of their digitally-mediated activities we have noticed that the PhD e-researchers assign great relevance to the chance encounters such as people suggesting hints, scholarly events where absorbing practices or self-directed initiatives to collectively going digital. These chance encounters are likely to not constitute as many stages of an itinerary of reflexive development in the uptake of the digital

for scholarly purposes. On the contrary, we think that these chance encounters contribute to build a track of digital engagement featured by a cyclic rather than a linear pace. The PhD e-researchers are therefore likely to undertake iterative, mostly unplanned attempts for making sense of a defined tool/environment and to find their way for an acceptable online presence as newer researchers. For instance, in their trial-and-error approach, the PhD e-researchers may firstly explore a digital space (e.g. Twitter) as entering in a 'shed of tools' (White & Le Cornu, 2011), for instance to sift materials, and at a next, unrelated point in time they may access the same space as a field for probing scholarly discussions. Also when the PhD e-researchers self-organize any sophisticated activities such as piloting a series of videolectures on You Tube or setting a collective research page on Facebook, these often remain isolated episodes without a perspective of evolution or further reflection. The dialectic between established and untested scholarly practices in the digital keeps on being in tension both at the initial and advanced phases of doctoral journey, beyond any occurring changes in the individual's goal orientations. Furthermore, this discontinuous and occasional kind of digital engagement also arises when the individual's orientation tends to converge toward a privileged space (e.g. a research blog; a profile in a social networking site) where attempting to build a 'niche of co-evolution' (Nardi & O'Day, 1999) of one's own becoming researcher and self-empowering as digital scholar. Moreover, we have drawn that the doctoral students who occasionally tame the digital spaces permeate them with traces of identities (Massey, 2005), that often cause opposite concerns about the opportunity for letting them converge in one, unambiguous academic profile. This leads to consider the extent to which the dispositions toward time and space arising from such chronotopes are actually shared with the local or global community of researchers and can be labeled as 'private, shared or publicly held chronotopes' (Bloome et al., 2009). We can be only indirectly relate it to the 'identity-trajectory' (McAlpine & Amundsen, 2011) of the doctoral researcher as scripted by the formal rules and threshold trials. However, we can relate the digitally-mediated activities actually carried out by the PhD students involved in this study with the developmental strands of 'intellectual', 'institutional' and 'networking' (cite) characterizing the 'identity-trajectory'. The highly frequent activity of searching relevant content on the open Web is inherent to the 'intellectual' strand and can be understood in alignment with the written and tacit rules sanctioned by the 'institutional'. Thus, we can say that this kind of activity is likely to be displayed in a 'public held chronotope', where seeking materials closely follow all the phases of the doctoral journey, being inflected according to the needs arising from the

specific research project. We do not state here that this opportunity to reach additional materials is certainly an advantage, because we have not investigated the filtering strategies applied by the research participants. Otherwise, we can say, building on the interviewees' statements, that seeking materials is thought as a creative task rather than as a 'passive' online presence and that posits minor concerns of digital identity to researchers in formation struggling to adapt themselves to formal and conventional constraints. We can make a different case for the (rare) blogging activity, closely linked to the 'intellectual' strand but in potential disalignment with the 'institutional'. In this case the trials underway are mainly thought as parallel activities compared to the schedule of the doctoral tasks and are likely to be performed as 'private chronotope' (in the stage of draft blog posts) or at least as 'shared chronotope' among peers for receiving feedback. Likewise, the occasional networking practices developed across digital networks are enacted as residual activities organized in a subsequent time after the networking activities made through the more traditional scholarly communication channels (e.g. conferences, email). Thus, online networking in the open Web tends to be at most configured as a 'shared chronotope' among peers rather a public demonstration of the capacity to start research bonds.

8.4.2 The resilient chronotopes of the PhD e-researchers

The variation of the digital engagement returns different self-directed orientations which give evidence of forms of resilience in PhD researchers: *staying afloat*, *pursuing convenience*, *embedding the digital* and *playing as a bricoleur*. Such orientations are respectively characterized by peculiar student agency, time and space perspectives and suggest diverse relationships between institution-led and self-organized learning opportunities. These two kinds of orientations provide an interpretation of plausible trajectories across the variation patterns of digital engagement rather than defining mutually exclusive and rigid typologies of behaviours endorsed by specific individuals.

The endeavours for self-organizing learning ecologies compliant or challenging the institution-led learning opportunities implies a degree of resilience, understood as an adaptive behaviour aiming to restate balance in a system coping with the changes. In our perspective, when enacting the digital engagement, the individual PhD e-researchers exploit their agency as *assemblers* of objectives, available resources and conventional and unconventional scholarly practices. This self-directed engagement however does not lead to any radical innovation of social practices. In fact, if changes may occur in academic social practices by

engaging with the digital, the investigated PhD researchers appear to be not necessarily *change agents*, or bearers of disrupting innovation in scholarly communication practices. In particular, in the interviews' statements "innovation is often mediated to fit with prior practice" (Elmore, 2004 mentioned in Priestly et al., 2012, p. 193) and forms of adaptation, resistance and creative mediation can be highlighted. In this perspective, the conceptualization of the digital engagement in terms of its inherent oscillation leans to provide insights on "the capacity of navigating across states" (Ross et al., 2013), understood as the diverse forms of resilience developed by the individual doctoral students, where resilience itself can be enacted as a reactive or proactive process (Rutter, 1987) and the 'risk' to be faced is represented by the uncharted territory of the open Web for research purposes. Thus, resilience in our study refers to the range of performances of student agency between acting upon and being acted upon the institutional forms of assistance and the self-organized opportunities in the open Web. In alignment with the phenomenon of digital engagement, we attribute to this 'capacity' a transitional and developmental status, characterized by discontinuities and emergency. The diverse forms of resilience have different goal orientations, more or less aligned to the scholarly conventions; or more dissonant and exploratory. However, we argue that resilience may move across different modes for reacting against the situated issues of the digital engagement, as self-confidence in one's own digital literacies grows. The forms of resilience we have drawn mirrors this view.

Table 85.

Forms of resilience in digital engagement and related Teleological and Dialogical chronotopes.

Forms of resilience	Goal orientations	Self-confidence	Chronotopes
Staying afloat	Surfing across tools without directions.	Low self-confidence ('lost in the digital') and scarce information.	Dialogical
Pursuing convenience	Coping with the digital day-by-day, aiming at solving occasional, practical needs.	Medium self-confidence, supported by peer recommendation.	Teleological
Embedding the digital	Aiming at outlining a strategy for an online presence as a researcher.	High self-confidence, supported by external/professional experiences and contexts.	Teleological
Playing as a bricoleur	Hanging out and lagging behind as deliberate	High self-confidence, supported by an intellectual uptake of the digital.	Dialogical

In fact, we have observed an early form of resilience that is closer to a state of *Staying afloat*, when the individual PhD researchers suffer from the lack of any guide or basic training and even have to cope with the shortage of basic information about social media use for research. Thus, they react with a fluctuating effort, oscillating between iterative accumulation and then early dispersion of resources which they do not succeed on making sense of. In this case the individual is likely to consider the support of the group as relevant but not sufficient to overcome the skills gap. In the form of resilience *Pursuing convenience* the individuals struggle to optimize the use of digital tools and networks to solve on demand practical, occasional needs arising from daily research practices. In this case the role of the group in which the learner is located is likely to have a relevant influence to support the individual efforts, for instance through personalized advice, pre-testing tools and arranging appropriate practices. In the form of resilience *Embedding the digital* the PhD researcher aims to build a strategy leading to the reward of an acknowledged digital reputation to be smoothly integrated to more conventional academic profile. An example of this kind of goal orientation is the engagement in designing and drafting a regular blogging activity or in managing the systematic task of building a profile in a research-focused social networking site. In this case, the aim is to align institutional services and forms of assistance and support in the open Web, to orchestrate one's own scattered practices in order to let them evolve over time. This approach tends to recognize a privileged place where to let the digital practices converge, in order to optimize time management and produce some visible gains. The prevailing attitude is to take control of one's own digital engagement by adding coherence and consistency to the undertaken practices. Sometimes, in this endeavour the individual PhD student attempts to involve her group of peers: here self-motivation is coupled to the need for a collective digital engagement helping to improve a defined situation (e.g. the need for overcoming a division in silos among the well-established researchers in the local context; the need for being cohesive as an emergent research group). The ICTs appropriation here at work also implies the willingness of constructing a progressive, full disclosure of one's own online profile: the main ambition is to compose the fragments of own digital footprint matching the academic footprint.

In the form of resilience *Playing as a bricoleur* the PhD researcher sets out to float across the uncertainty and the instability of the 'terra incognita' of the open Web, endorsing an intentional and consistent exploratory approach. In a sense of crossing boundaries of the

‘institutional’ in the ‘identity-trajectory’, this sketched strategy goes beyond the convenience, beyond shaping one’s own digital practice on the goal of a successful academic behaviour. In this form of resilience, hanging out and lagging behind constitute an original stance rather than a lack of knowledge and experience of the digital environment. In this case the PhD researcher claims the right and freedom of using or not using social media as an alternative to conventional scholarly communication channels, beyond the external pressures suggesting the imperative for ‘branding’ one’s own profile. This deliberate stance is based as well on a certain personal experience of the open Web and even stems from a critical awareness individually developed. The goal orientation seems to be not to have a pre-defined objective to meet in a mid-/long-term objective. The attitude seems to prefer the risk of losing one’s own control of the fragments of digital identity, in favour of gaining unanticipated outcomes through serendipitous activities. Thus, here resilience has also something to do with the degrees of freedom of the individual learner becoming scholar and is likely to open up niches of co-evolution of new practices/critical thinking rather than being only related to the ways of coping with contingent issues.

Considering the forms of resilience above identified, we can frame them under the variants of *Teleological* and *Dialogical chronotope* highlighted by a recent review (Bemong & Borghart, 2010). Following this essay, we understand *Teleological chronotope* where digital engagement is intended to converge toward a final target (‘telos’). It is evolutive and ideally linear, even if discontinuities, postponements and change of directions are always possible. On the contrary, *Dialogical chronotope* “consists in a network of conflicting situations and junctions that communicate with each other” (Bemong & Borghart, 2010, p. 7). In this chronotope, the synchronicity of digital engagement’s events is prevalent on its unfolding over time.

8.5 The tensions between institution-led and self-organized learning opportunities

As expected for researchers in formation, social media seems to put in more challenges than benefits to doctoral students self-organizing their digital engagement in their local academic contexts. Their endeavour for socializing into the ‘spaces of enclosures’ (Edwards & Usher, 2007, p. 166) of the research communities appears to be at times complementing and at times competing against the individual’s enterprise in the open Web. Thus, the PhD students are likely to prefer drawing parallel tracks (formal and self-organized) of their ‘identity-building’ developments rather than publicly exposing their own capacity as future researchers of

moving across the opportunities in the digital. Most of them, in a risk averse attitude, are inclined to postpone the challenges and tame the tools for drawing immediate benefits, pushed by the uncertainty related to the legitimation and the acknowledgement of the digital activities such as networking, dissemination and identity building. Thus, they are more inclined to create niches of co-evolution of digital and scholarly practices where the risk is lower, as in the tasks related to information retrieval, in which varied social media uses are at work, beyond the open search engines. However, some of them are also engaged in probing the open Web as a scholarly space through occasional pilots involving the exposure of one's own digital identity, in order to critically value the digital venues for a future uptake. In any case, they appear to think their engagement in the digital as peripheral with respect to the core activities undertaken in their doctoral journey, even when popular activities such as seeking for relevant materials are likely to significantly affect the way they approach their research projects (British library/JISC, 2011). Furthermore, they tend to claim their engagement in the digital as a private enterprise, as belonging to their personal freedom area, where the presence or lack of pressure by the institutional bodies should not interfere. These few notes lead to consider the tensions developing in the PhD e-researchers' emerging learning ecologies and setting the scene for potential contrasts between the individual's self-organized attempts and the institutional commitment in suggesting (or not) a scripted profile of digital learner.

This section just aims to re-consider the findings collected across the whole study and useful to respond to the following research question: **D. What are the tensions arising between institution-led activities and emerging self-organized opportunities of new PhD 'e-researchers'?**

The extensive data collection undertaken in this study has enabled us to gain insights on a range of tensions underlying the digital engagement of the PhD e-researchers. In the following paragraphs we will focus on the specular tensions of digital learners versus digital scholars, on the contrasting perspective of the 'institutional' and the 'individual' approach to the open Web. Finally, we build on the idea of the "impossible triangle" of 'scholarly', 'digital' and 'open' recently advanced by Robin Goodfellow (2014), to discuss, on the hints provided by our data, the peculiar situation experienced by the doctoral researchers in an academic world increasingly permeated by techno-cultural pressures (Veletsianos & Kimmons, 2013).

8.5.1 The tensions learner/scholar in the digital

In their digital engagement, the PhD e-researchers show the double-face needs as digital learners and future digital scholars. In general, irrespective of their research areas and university contexts, the doctoral students in the examined samples are hardly aware of the recent discourses about the epistemological and practical impact of the open Web on the changing scholarly practices (e.g. Weller, 2011). Thus, the trial-and-error approaches they happen to enact and the critical views they show in their statements are mostly the product of occasional personal reflections and short, direct or reported experiences in the digital. Building on the popular claims on social software as “ordinary stuff of everyday life” (Shirky, 2008, p. 68), they struggle in making sense of a cluster of possible networked practices that at times liken an improper interference in their becoming researchers, rather than thinking they “resemble to an academic world” (Haythornthwaithe, 2009). In their attempts, the newer researchers often find it demanding the reality check of using social media for research purposes. They tend to downsize the ideological hype surrounding digital networks as the new academic venues, in favour of more pragmatic and utilitarian choices. On the one hand, the newer researchers in soft sciences building knowledge through discourse are likely to be slowed by the concern of making mistakes or dare pilots that help them to acquire experience and self-confidence, beyond the success of the specific initiative. On the other hand, the researchers in hard sciences either embeds shared communication practices moving to social networking sites or merely set the issue aside, as irrelevant for knowledge production and distribution. The belief that the open Web deals with “mixed stuff” and that “you don’t know what the rules are there” constitutes a primary source of tension for individuals engaged in being accepted in the ‘space of enclosure’ (Edwards & Usher, 2007) of their research community. These enticing software applications in the open Web enable them to collectively and openly produce a generic type of knowledge whilst they are individually engaged in producing specialized knowledge; to discuss with a range of lay audiences while they are striving to be credited in the research community for their scholarly register; to act as pioneers in uncharted territories whilst they are usually expected to follow the ‘academic tribe’ in the local disciplinary culture which they are exposed to. They embed the ‘promise’ to be fast and easy-to-use versus the actual timespan and learning curve needed for reaping any benefits from social networking activities. More importantly, they suggest the logic of ‘followers’ and Web analytics in crafting one’s own academic profile versus becoming able to join the core interactions occurring in a real and bounded research group.

Our interview data have enabled us to highlight some sources of tension (Table 69) in the double nature of ‘good course taker’ and promising ‘independent researcher’ embedded in the PhD researchers.

Table 86.

The tensions experienced by the PhD students as learners and as scholars acting in the digital.

Sources of tension in the Digital Engagement of the PhD students (learners versus scholars)	
<i>Digital learners</i>	<i>Digital scholars</i>
Creating Discontinuity in the pace of digital engagement to enable focus and quality of time.	Managing the sense of Saturation in the tension among the personal/professional/academic digital engagement.
Endorsing institution-led and discipline-specific technologies.	Negotiating Conformity to the local academic culture of scholarly communication.
Need for controlling time of digital engagement.	Controlling the sense of Displacement in the tension scholarly/not scholarly communication.
Splitting Loci of engagement between private and public digital presence.	Testing new spaces of Contiguity with other experts.

As digital learners, some research participants intentionally limit their digital engagement to those digitally-mediated practices that can bring advantages to their condition of apprentice researchers: thus, regular and reserved online sessions create a *discontinuity* with respect to the ordinary, unplanned online interactions. They constitute the privileged channel where the relationship apprentice/mentor is enacted, in a specific space and time, enabling to increase the quality of interaction, neglecting all the forms of distraction. Occasionally, some praxis (more than concerns) for splitting the *loci* for being engaged across social media for private purposes and as digital learners in the doctorate. Thus, different accounts can be managed in a same social network or diverse environments are adopted for different circles of acquaintances. However, the early networking experiences in the digital sometimes induce these PhD students to ‘break the law’ of this strategy (e.g. moving from LinkedIn to Facebook), whenever the experts contacted online suggest them to interact in their favourite online venue.

As digital scholars, The interweaving of multiple audiences and speakers across open digital networks make it more exciting and difficult the commitment to keep the scholarly register one is striving to acquire. This may also produce a sense of displacement because it requires an effort for popularizing research themes that at times the newer researchers may reject as non appropriate. On the other hand, the opportunity to test new spaces of *contiguity* with other experts implies the challenge to sustain scholarly discourses in complete autonomy,

opening up new apprenticeship situations that can amplify the perspectives which a PhD researcher is exposed to.

8.5.2 The tensions between the ‘scholarly’ and the ‘digital’

At this point we could wonder the extent to which the PhD e-researchers investigated in our study can be labeled as ‘digital scholars’, in the definition borrowed by Weller (2011a) of ‘digital’, ‘networked’ and ‘open’ researchers. We can say that our research participants appear to be obviously well acquainted with the digital understood as the realm of unexpected and relevant resources in terms of scholarly materials and people as experts, peers; tend to be shyly ‘networked’ beyond the conventional channels of scholarly communication; and temporarily not allowed, as research students, to be ‘open’, since the expected originality of their own research should be mostly preserved. These characteristics are shared with academics of all ranks: it has to be considered that digitality is inherent to the ‘modes of knowledge production’ (Gibbons et al., 1994) of the diverse subject areas, whereas the uptake of networked practices is lowered by “importance that scholars place on the views of their peers, rather than a wider public audience” (Goodfellow, 2014, p. 9). In fact, the interviewing process has helped us to better understand the controversial motivations and contextual pressures affecting the engagement of the PhD researchers with the ‘digital’ while they are striving to embed the scholarly conventions of their local research settings. The ‘digital’ as emerging in the current, celebrated networked practices is said to imply a sort of moral obligation to develop an online presence on the part of the newer researchers along with institutions and research groups. Whereas we can concur that “social media are by no means a digital native phenomenon” (CIBER, 2010, p. 13), it is also true that the digital uptake at times clearly emerges from our findings as a discriminating factor between generations of researchers, in the way of approaching the ‘scholarly’ practices. The voices of the research participants return a strong sense of feeling ‘in-between’ the university of the past, which matches the senior faculty’s experience, and the so called ‘new university’, which is still to be interpreted and co-constructed and where the newer researchers realize the precariousness of their future. Thus, in an era of increasing shrinking budgets, crafting one’s own position also with the support of social media becomes a real survival strategy, so far tentatively grasped and cause of anxiety. On the other hand, it emerges some awareness that the new researchers are subject to additional pressure for early profiling their academic identity in the digital along with increasing the number of publications. The risk of being forced to follow

the emerging rules of the “academic quantified self” (Lupton, 2013) is at times perceived to be bewildering and affecting the quality of one’s own production. The more an institution suggests ‘how-to-behave’ in social media the more the newer researchers, beyond the initial advantage of a basic information, are inclined to experience such suggestions as external pressure that has nothing to do with their personal, to a degree original, endeavour for defining their ‘being researchers’. However, it is worth noting that in subject areas (e.g. Engineering, Design) where the PhD award opens up the doors of industries and companies rather than the ‘pure’ academic institutions, this drive toward gaining visibility tends to be taken for granted, as integral part of the construction of one’s own career. Whereas the Italian interviewees are divided between who call for institutional support and who claims a ‘do-it-yourself’ approach in social media for research, the UK interviewees seem to be in a subsequent phase of digital literacies, where the need for ICTs appropriation (Sharpe & Beetham, 2010) lets it perceive the interference of the institution in the personal endeavour of adapting the digital to situated practices.

In our interviewing process we have noticed that, irrespective of their subject area and university context, all the research participants have struggled while asked to express any view about the idea of ‘digital scholar’ as affecting their image as future researchers. The PhD students happen to undertake their digitally-mediated scholarly tasks immersed in local academic cultures showing more or less resilience toward the digital scholarship practices, plainly understood as the dispositions to generate and disseminate knowledge across the digital networks. This leads us to consider this kind of tension in the “matrix of digital scholarship resilience”, as recently advanced by Martin Weller (2011a), building on a previous work on resilience in the ecosystems (Walker et al., 2004). In the perspective of this matrix, both conservative motifs and drivers of innovation should be identified at governmental, institutional, disciplinary and individual level, in order to position the degree of resilience toward the digital displayed by the individual (newer) researcher. Although a comparison of national and university contexts is beyond the scope of this research, we can draw from our findings some elements of discussion that would deserve further research. As an example, we can build on the statements of research participants in Education and Social Research areas, being interviewed across Italian and UK universities. We have observed that the UK national environment has started to draw attention to the phenomenon, through longitudinal research (British library/JISC, 2011) and numerous training initiatives organized by individual higher education institutions. At an institutional level, the UK university

context being involved in our research is providing social media training devoted to the PhD researchers and an online advice service, set by the local library. On the contrary, in Italy to date there are not large scale research works and the scarce local initiatives are often limited to occasional workshops, provided only across the doctoral programs where social networking constitute a core subject of research. Furthermore, if the work practices in Education and Social Research, as aforementioned, mainly rely on an individual-based ICTs appropriation, there could be differences in the modes for understanding the academic identity and autonomy of the newer researchers. Thus, whereas the UK research participants feel themselves also too much pushed to early disclose their own profile as apprentice researchers, the Italian colleagues claim that an overexposure of their works and initiatives might even be counter-productive for a future career in their local context. It can be noticed that, despite different contexts present diverse enabling condition for endorsing networked scholarship practices, the sources of tension are varied but always in play. On the other hand, dwelling on examples drawn from a previous study (Esposito, 2013) and from the interview findings of the current research, we can state that the academic environment is never so overarching to completely prevent the individual newer researchers from undertaking their own experiences in the digital, even if as collateral and often unplanned. Thus, we could easily concur with Harley et al. (2010) that the doctoral researchers are unlikely to change scholarly practices just because they are engaged in absorbing conventions from the academic culture they are exposed. However, there are signs that just in the tension between these creeping, self-organized initiatives and the tacit conventions of the local academic tribe that the early career researchers can posit the premises for critically embedding the digitally-mediated practices as integral part of their scholarly communication practices. However, the stress on the scholarly communication practices leaves room to wander the extent to which the Web 2.0 ecologies can support and enhance the range of research tasks to which also the researchers in formation are subject. It comes to mind the opinion of ‘irrelevance’ of the open Web for research work, as recurrent across the e-surveys’ open comments, the individual interviews and the focus groups. Drawing from Goodfellow (2014), we concur that such judgement underlies the key issue that the open Web enables and suggests the doctoral students to collectively and openly produce a generic type of knowledge whilst they are individually engaged in producing specialized knowledge.

8.6 Implications for practice: hints for social media research training

The initial proposal of this doctoral research has taken cue from the contention that there are unheeded networked practices undertaken by niches of doctoral researchers in diverse disciplinary contexts that it is worth focusing on, because they are likely to highlight any gaps and weaknesses in current approaches to formation of new ‘digital’ researchers in academia. In fact, we believe that a focus on doctoral students can be of interest from an institutional standpoint, in order to outline prospective actions of academic literacies and to enable projects of innovative online communities of practices. Therefore, it’s not all about training the PhD students to effectively use social media to craft their position and sharing fragments of original knowledge. Participating in Web ecologies closely deals with building one’s own way of ‘being researchers’ even our online activities seem to be disguised after an ostensible ‘passive’ approach. In this sense, we think that our findings can be used to approach an informed discussion about what is worth suggesting to doctoral education’s stakeholders. The review of the main findings related to the initial four research questions has highlighted a series of empirical and theoretical contributions arising from this research and coalescing into implications for practice:

- *Social media uses.* The repertoires of actual adoption of tools in Web 2.0 ecologies drawn from our data collection have provided baseline data useful to probe digital flexibility, idiosyncrasies and creativity in the digital on the part of the PhD students. These repertoires could constitute *per se* a resource for doctoral researchers willing to compare or improve their digitally-mediated activities through new ideas and examples. Furthermore, this baseline data could reveal to the doctoral education’s stakeholders that “learning black market” (White, 2013), comprised of more aware of the the potential and criticalities We think that the fact that we have surveyed and interviewed doctoral students in two different national contexts add value and interest to these repertoires.

- *Digital engagement.* We hold that the major contribution in conceptualizing digital engagement in a logic of learning ecologies is to think of a networked researcher as a phenomenon to be captured in its emergence and transience in specific time-space configurations rather than to understand it as the result of the crystallized performance of defined digitally-mediated practices on the part of “super-users” of Web 2.0 ecologies. This is not to say that it is pointless to depict examples of excellence in digital scholarship worldwide as a source of inspiration for individual academics of all ranks and for newer

researchers in particular. However, we are convinced, as we have often underlined across our research, that endorsing the reduction in typologies of digital users is at danger of relying on a technological determinism that overlooks the interplay of the influencing factors and the unstability (across spaces and time) of the instances being researched. Otherwise, further investigating the variation of digital engagement across diverse contexts, subject area, academic cultures and individual uptake can return a more critical awareness of the phenomenon and spark. Our research participants indeed seem to embed the authentic sense of Web 2.0 as “evolving along with its users” (Brown, 2012). Although the margins of uncertainty are still large and are likely to cause anxiety and withdrawing, the uptake of Web 2.0 ecologies is slowly and cautiously creeping along the scholarly practices of the doctoral researchers.

- *Resilient chronotopes*. These achievements make the doctoral education’s stakeholders more aware that divergent dispositions toward the digital are likely to be enacted by doctoral researchers and to a degree should be encouraged, because these are attendant to a creative uptake of the digital for academic or professional purposes. The resilience strategies being developed by the individual PhD students provide hints to reflect on the part of doctoral education’s stakeholders on the critical literacies needed in different doctoral contexts, beyond the achievement of cross competences (Ferrari, 2014), included among the 21st century skills. Moreover, the diversity of opportunities captured and to a degree reinvented by our research participants in the open Web confirms our view of ‘digital literacies’ (Goodfellow & Lea, 2013) as social practices historically and spatially situated, rather than relying on a ‘deficit model’, usually underlied when they are labeled as ‘digital competences’ (Gourlay & Oliver, 2014).

- *Tensions*. Studying the tensions at work in digital engagement of sampled Italian and UK individual PhD researchers has enabled us to draw attention from the acontextual, socio-technical relationship between the subject and the digital tools toward the socio-cultural constraints shaping the uptake of the Web 2.0 ecologies (along with the individual agency) of the research students integrated in the specific ecosystem of doctoral education (Cumming, 2010). Thus, we have compared the hints drawn from the e-surveys’ open comments (drivers, inhibitors, criticalities and individual goal orientations) to the interview narratives accounting the nuanced motivations and the competing needs of the PhD students. A focus on tensions can facilitate an institutional approach to digital engagement in the line of the ‘partnership’ between university and students (JISC/HEFCE, 2009) that should enable a shared vision and

a reasonable policy. This approach could smooth dangers of difficult power relationships between the institutions and the students/scholars regarding the legitimate behaviours to be taken in the digital networks as higher education staff or the impact of an institutional social media policy among the stakeholders, as occasionally reported by recent episodes (e.g. Thompson, 2014; Berberi, 2014).

Considering the aforementioned achievements, we have drawn some lessons learned that we summarize in the following items:

- *Social media training for research should be local and global at the same time.* Any social media training activity to a degree should be negotiated with the doctoral students to be close to their real needs and expectations. It is necessary to take into account that they are peculiar higher education students, who feel to belong to their doctoral school or doctoral program rather than to the institution as a whole. Thus, a ‘generalist’ workshop organized by the central library, for instance, might not be positively accepted in a large university delivering tens of PhD programs in diverse subject areas. However, an initiative of social media training should also harness the actions undertaken by individual ‘digital scholars’ across international contexts to show the most varied repertoire of practices enabled but the Web 2.0 ecologies. Currently, most of our research participants demonstrate a very narrow view of what the open Web might provide to support and enhance scholarly tasks and entire research projects. Social media perfectly fits (but is not limited to) the dissemination of one’s own curriculum vitae when seeking for a job position, as many among our interviews state.
- *Basic training events are necessary but not sufficient.* A basic training event organized at the very beginning of the doctoral program makes a difference in the early uptake of Web 2.0 ecologies even by those doctoral students who feel willing to “jump to the bargain” because already comfortable with social media but need clear information about its academic uses. However, the perception and the usefulness of the open Web is likely to change over time “as our research evolves”: on the one hand, at institutional level a support likening a ‘guide-on-the-side’ is claimed as essential in its function of continuing practical (technical, legal and ethical) and methodological advice; on the other hand, a community-driven support is hoped, in terms of peer recommendation but also critical discussion focusing on the mutual influences between social media uses and research work. This combination of support

is likely to scaffold impromptu pilots and to raise individual and collective awareness about unanticipated issues that one researcher may happen to face in the open Web.

- *Dialogue between PhD student and supervisor is the key.* The research participants involved in this study state to have never had the opportunity to discuss, even momentarily, about the social media uses with their supervisors. However, they often remark that the suggestions coming from one's own supervisors are paramount and likely to be followed. A focus on the research dialogue between the two diverse online 'personas' of students and supervisors characterizes a recent guide distributed in the UK university setting, and emerges from discourses on e-supervision (e.g. Peña-López, 2013).
- *Social media adoption is strictly personalized.* The value of basic training and student/mentor relation notwithstanding, taming the social technologies is a personal matter. Thus, a varied adoption and use frequency of digital tools and practices should be expected, since this involves the whole stance of the individual toward the strands of 'intellectual', 'institutional' and 'networking' (MacAlpine & Amundsen, 2011). For instance, whereas some advance a call so far the culture of sharing should be taught in doctoral programs (Veletsianos, 2013), others remind the role of the individual choices:

Although 'socialization' in graduate training can have an impact on sharing practices, confidence about sharing is also a personal consideration linked to one's comfort level, research process, and sense that sharing early 'matters' in developing an idea" (Acord & Harley, 2013, p. 8).

To a degree, social media use can be understood as an exercise of academic freedom also when related to the newer researchers.

- *Different subject areas, diverse approaches.* The modes of ICTs appropriation typical of the broad disciplinary areas result to significantly shape the early approach to social networking practices. The individual-driven approach common among researchers in soft sciences and the group-driven approach of the scholars in hard sciences are likely to respectively produce a core attention about the issues of digital identity and the performing self and a more straightforward inclination toward seeking the contiguity with new peers and experts online. However, it can be said that such disciplinary influence is never completely binding for the individual PhD researchers. Doctoral students in soft sciences may self-organize a collective online

presence of peers to counter-balance a traditional division in ‘silos’ of the well-established researchers. On the contrary, PhD students in hard sciences, involved in highly structured research projects, may find a niche of personal development in scholarly discussions in digital networks or open courses.

- *The degree of autonomy released to the newer researchers affects their being digital.* The tacit rules for performing one’s own being newer researchers in a defined context can foster a more or less disguised attitude toward social media on the part of the individual subject. Obviously, not valuing these pioneering attempts is likely to push the habit of keeping them undercover and frustrate future individual enterprise in this line.

A coordinator of a PhD in media studies in an Italian university told us some time ago: “I know that many among our PhD students here use social media for their research, so what?”. Beyond the anecdotal note and differences of the local academic contexts and cultures notwithstanding, we are quite convinced that attracting the interest of doctoral education’s stakeholders toward the phenomenon of the PhD researchers’ digital engagement and the related training needs cannot be taken for granted. The perspective of systematically approach the theme and even planning an additional taught module might be considered as unnecessary, especially in ‘academic tribes’ where the contiguity with senior researchers (rather than a flexible program of research methods courses) keeps on being thought as the main route for becoming researchers. Furthermore, the skepticism related to embedding social media in research apprenticeship resonates with the challenging relationship between technology and educational institutions:

The limitations and affordances of technologies and education as an institution are constantly in play. Education seems to be in a constant race to catch up with technology, while claiming to ‘prepare’ people for the technological worlds they inhabit. (Edwards, 2012, p. 205)

As we have mentioned in the Introduction Chapter, criticism addresses current, individualized digital education, that appears to require “increased levels of self-dependence and entrepreneurial thinking on the part of the individual” (Selwyn, 2011, p. 13). In this view, social media might be the vehicle of such overarching model and at danger to flatten the diverse modes of being (newer) researchers in favour of one acceptable type of market-oriented academics.

An example of individualized form of digital education is represented by the general trend toward a ‘do-it-yourself (DIY) PhD’, as an expert in research training has wittily remarked in her blog:

As someone who is engaged in this DIY field with books, blogs and twitter, it seems pretty apparent to me that something is happening here and we (collectively) don’t know what it is. It’s largely outside the normative audit oriented training processes that Green and Lee were so concerned about. It’s a field which is fragmented, partially marketised, unregulated and a bit feral. But it’s big, it’s powerful, more and more doctoral researchers are into it, and it is profoundly pedagogical. (Thomson, 2014)

The online availability of an amount of open and fee-based resources covering the gaps of the local research training provision is likely to enable the progressive, parallel construction of a ‘hidden curriculum’, which doctoral education’s stakeholders should be aware of.

Considering such tensions, overlooking the techno-cultural pressures (Veletsianos & Kimmons, 2013) and the drawbacks and criticalities (Lupton, 2014) related to the scholarly adoption of social media is likely to invalidate any serious training initiative addressing the newer researchers and aiming at involving well-established academics. It is worth noting, on the other hand, that international bodies (e.g. LERU, 2013) suggest to draw attention to the development of those general skills where the informed use of the digital networks can play a role as a catalytic factor. In this line and taking into account the alignment of the Web 2.0 ecologies and values of openness embedded in the European Higher Education Area, we concur in considering that social media training addressing doctoral students should imply the key words of “guide, focus, organization, depth and cooperation, in a context of openness, accessibility and involvement” (Trincherro, 2014, p. 239, our translation).

Moreover, we agree with the aforementioned author that this kind of training addressing doctoral researchers finds just in the open Web its privileged venue, for instance under the form of MOOCs, that would introduce the PhD students to test in a guided manner the uncharted territory of digital networks.

8.7 Concluding remarks: the knowledge contributions of this study

This conclusive chapter has provided an extensive discussion of the findings drawn from the whole data gathering process and useful to generate informed responses to our initial research questions. At this point, we can identify the empirical and theoretical knowledge

contributions that this research has generated. First of all, we have added to the knowledge base of empirical studies revealing current and emergent digitally-mediated behaviours of doctoral students (James et al., 2009; JISC/BL, 2011; Zhu & Procter, 2012). In particular, we have produced the very first study of this kind across the Italian universities. Moreover, the comparison among individual Italian and UK PhD e-researchers has further validated the heuristic of digital practices we have drawn. We have probed that the very low percentages of the PhD students running research blogs, managing an academic profile in Twitter or in any research-focused social networking sites cannot be properly said to be a predictor of a 'passive' mode of digital engagement. Rather, we have collected a repertoire of digitally-mediated practices, aiming to support or enhance PhD work practices, ideally addressing doctoral education's stakeholders for further empirical research and policy interventions. Secondly, our contribution to theory development is mainly related to the concept of emerging learning ecologies. We have understood the emerging learning ecologies (Barron, 2006; Williams et al., 2011; Jackson, 2013) through the core process of digital engagement, where the individuals draw trajectories by assembling scripted and self-organized learning opportunities and shifting across space and time configurations. Thus, we have conceptualized such transitional trajectories in terms of variation patterns, by devising the Digital Engagement Variation (DEV) framework, where we can map out the individuals' orientations in the digital, as inflected and polarized according to the dimensions of space, time, socialization, digital identity, stance and tensions. In this view of digital engagement, we have rejected the ideas of defining a measurable scale of digital engagement and any fixed typologies of behaviours in the open web. Moreover, we have extended the same notion of digital engagement by expanding previous discussions (White & Le Cornu, 2011) and thinking it, though the DEV framework, in an ecological interplay of multiple dimensions and shifting states of experience. Thus, we have originally built on the notion of 'chronotope' (Bakhtin, 1981) to further reflect on the PhD e-researchers' trajectories in terms of resilience. In other words, we have conceptualized the dispositions across spaces and time drawn by the PhD e-researchers as resilient dispositions that return the extent to which they act upon or are being acted upon the open Web. To sum up, we have achieved the theoretical understanding of the affordances of PhD e-researchers' emerging ecologies as multi-dimensional and transitional trajectories intentionally undertaken by the individual and generating resilient chronotopes. These empirical and theoretical achievements have coalesced into implications for practice, where the analysis of tensions underlying the PhD students' digital engagement

has helped to ground in a wider set of issues the advantages and drawbacks related to any institutional initiative on social media research training. This leads to consider a possible 'partnership' between the PhD students and doctoral education's stakeholders as the necessary premise to understand the scope and the limitations of student engagement in a digital university and to negotiate collective and individual forms of networked scholarship practices in relation of current and prospective modes for 'being researchers'. As a whole, we can say that in the logic of constructivist grounded theory (Charmaz, 2006, 2014) we have explored the underresearch topic of the PhD researchers' online engagement by grounding the investigation in the patterns of PhD student experience in the digital, through an iterative dialogue established with the research participants, understood as 'partners' in the research process. Building on this dialogue, we have drawn an advancement in the conceptualization of digital engagement, where the risks for overgeneralizing findings (Clarke, 2007) have been mitigated by the empirical and conceptual boundaries of the situated contexts where the research has been conducted. The conceptualizing process adopted in generating theory has allowed to capture the collective experience of the PhD e-researchers, where the holistic lenses of 'learning ecologies' and 'chronotope' have helped to consider the peculiarity of the individual experience. Turning back the general goals we have stated at the beginning of this research (see section 1.1.2), we can say that our work has sought to contribute to two strands of research. Firstly, it has allowed to gain further understandings about the self-organized forms of digital education in university (Ellis & Goodyear, 2009; Andrews & Haythornthwaite, 2011), as a preliminary investigation to design new ecologies of research training in the current digital age, where being researcher is subject to peculiarly competing pressures. Secondly, it has generated new insights on the emergent digitally-mediated practices undertaken by the newer researchers, providing additional perspectives for discussing the development of the diverse forms of researchers' scholarship and engagement enabled by the open Web (Weller, 2011a, Veletsianos & Kimmons, 2012a; Greenhow & Gleason, 2014), in the changing landscape of digital university.

These achievement notwithstanding, in the following paragraphs we summarize the limitations of this study and suggest some hints for future research.

8.7.1 Limitations of the study

In the present dissertation work a series of limitations can be identified. First of all we are aware of the limitations of the collected findings, drawn from quantitative and qualitative data. We have intentionally approached the e-surveys undertaken across Italian and UK universities to draw non representative samples of the PhD students using resources from the Web 2.0 ecologies. However we have justified this choice, stating that we need to draw baseline data from an initial sampling, since the research topic resulted particularly underresearched (Charmaz, 2006). Moreover, our qualitative data is grounded in specific empirical settings being selected with a convenience approach rather than through a representative sampling strategy. However, we have posited great attention to select both ‘generalist’ (Università degli Studi di Milano, Università degli Studi di Milano-Bicocca) and ‘discipline-specific’ (Politecnico di Milano, Institute of Education) university contexts, in order to get a large spectrum of subject areas of doctoral programs and environmental conditions to select our research participants. Furthermore, qualitative data focuses on individuals’ statements rather than also relying on a systematic gathering of the contextual factors surrounding the individual participants. However, we are fairly acquainted with the empirical settings where selecting participants and have undertaken a preliminary group of informal interviews with the doctoral programs’ coordinators in order to have an overview of the organizational assets set by doctoral education’s stakeholders and as a consequence to better shape the e-survey and interview protocols. Moreover, the investigation has been developed through survey and interview research rather than including observation inquiry. However, we have justified the exclusion of observational methods (included in the very first version of our research proposal), because the initial sample has returned a very small minority of research participants providing details of their current ‘scholarly’ activity across digital networks. Thus, this study mainly relies on doctoral researchers’ voices: on the one hand this choice allows to collect first hand accounts from insiders of the instance being researched; on the other hand, the findings have been affected by the specific encounters that the researcher has stumbled upon. As a counter-measure, we have defined some selection criteria (i.e. subject areas, PhD year, Web 2.0 tools adopted, released open comments, etc.) in order to sift from the potential interviewees listed in the e-surveys’ data those participants who could provide us with relevant information on the topic and contribute to “maximizing variation” (Larsson, 2009) of the opinions of the sample. We are aware that the results of our research cannot be generalizable to the entire population object of study, according to

positivist tenets. However, at the start of this study we have state that our aim was exquisitely exploratory, given the current underresearched status of our research topic. In addition, the findings have been cross-checked through methodological triangulation and further matched with an iterative literature review. Moreover, the theoretical achievement of the Digital Engagement Variation framework is intended, in the spirit of the constructivist grounded theory, to work as a springboard for further empirical research, just because it has been generated from context-bounded data and co-constructed with the research participants. On the other hand, the interpretivist orientation of this study (endorsed in the choice of the constructivist grounded theory approach) might be subject to the common criticism that sees this kind of analysis as likely to be limited to micro-sociological settings and to overlook the influence of external factors on shaping situations (Cohen et al., 2007, p. 26). Indeed, the variety of the samples, drawn from different national contexts and the iterativity of data gathering process have been intended to mitigate the effects of such a danger, because they have enabled multivoicedness and a recursive cross-checking of the results. Finally, because of the requirements of doctoral dissertation, the data was coded and the themes identified in the data by one person and the analysis then discussed with the supervisors. This process allows for consistency in the method but fails to provide multiple perspectives from a variety of people with different expertise, as it is more likely to occur in any research teams. However, the opportunity to discuss the survey and interview protocols and the theoretical assumptions together with two experts located in UK and playing a role as tutors during our research stay has helped to overcome such limitation, adding further divergent views which we have had to cope with. On the other hand, once again, the planned involvement of participant in the final focus groups for checking main concepts and themes arised from early data analysis has aimed to make this risk smoother.

8.7.2 Future research

An emergent research topic as digital engagement of the PhD e-researchers can only be investigated on the surface in an exploratory study like this. A provisional set of different strands of future research can therefore be highlighted, taking into account empirical and theoretical scopes and implications for practice. First of all, further empirical investigation is needed to give evidence of the peculiarity of the academic cultures in local research contexts, as shaping the newer researchers' digital engagement. Moreover, in-depth case study research to be undertaken in diverse university settings could better enlight the differences and similarities of newer researchers' digital engagement across diverse national contexts, since

there is currently a lack of international research on this theme. Another strand of future research is foreseen in further theoretical explorations of the digital engagement dimensions and their interdependence, in order to scaffold the DEV framework and make it functional to an ecological approach to the individualized forms of digital learning. Moreover, dimensions and polarizations of digital engagement could be probed investigating different typologies of digital learners, involving participants from varied educational, professional and research fields. Additionally, further research exploring the forms of resilience developed on their own by doctoral researchers would enable to better inform the embedding of networked forms of scholarship in research training. To this purpose, considering a formal intervention from doctoral education's stakeholders, it would be interesting to carry out some longitudinal research, to probe the variation patterns of self-organized digital engagement observing their evolution over time as influenced by the institutional support. Finally, we draft an early research idea that looks at the likely convergence (in defined subject areas) of master/doctoral programs at a distance and with attendance component. We start from the assumption that the Web 2.0 ecologies (Williams et al., 2011) can be thought to a degree as great equalizers of the differences between being distant learners versus conventional postgraduate students in research degrees. In fact, both can benefit from the technological and social affordances of social software to make it more effective learning tasks and expand the opportunities for practicing their 'being researchers'. The intent is to draw the extent to which the distance learning research degrees programs can teach us to improve the critical adoption of the Web 2.0 ecologies on the part of research students enrolled in conventional programs.

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