Cooperation and game theory, free software or the #15m movement: Two examples for universities

Cooperation with no one in charge

It all started over a coffee in Luxembourg with Carmen, Secretary of the Court of Justice. We were talking about the controversy over the 'canón digital', a copyright tax that Spain levies on digital media. She made me see the strong connections between the strategy followed to bring the case before the Court, based on the work and experience of Doug Lenat, an IT expert at the University of Stanford, and so-called free software policy.

Truly, we were talking about a precedent.

At Stanford, Lenat was working on the Eurisko project, when he was invited to participate in the Traveller Trillion Credit Squadron, a war games programme in which different American universities competed. He used game theory and computer science to win in 1981 and 1982.

He thus taught us the importance of not going into a project or problem with preconceived ideas or prejudices. Not knowing the conventions can be a strategic advantage.

He also taught us that any finite set of rules (laws, administrative orders, customs, etc.) can only ever be an incomplete approximation of reality. Often, the path to victory lies outside the agreed social model that gave rise to it.

Finally, he showed us that any answer to a complex conflict is necessarily partial, questionable and subject to improvement. All inflexible ideologies are destined to fail. Every challenge can be approached with multiple strategies, and we never know beforehand which one is best, even when a given strategy has been used successfully in the past.

As ICT specialists, you no doubt remember that the early developers of the Linux kernel chose to follow a collaborative rather than a competitive strategy.

Of course, I've read Eric S. Raymond's book, *The Cathedral and the Bazaar* (1997). In it, he calls the free software development model the 'bazaar model'. This model is a unique contribution in 21st-century capitalist society and one that recently took on tangible form in the #15m street protests. Raymond contrasted the bazaar model with another software development model, which he called the 'cathedral model', based on the need for an architect in charge of a rigidly structured and hierarchical staff. According to Raymond, the cathedral model, which reflects the prevailing social structures, is the one used in the proprietary software industry.

Our nation-state past, born of the French Revolution, has eight main foundations: borders, currency/economic policy, language, flag, laws, property, army and labour. Likewise, this captive software has its *flags* (windows and apples), its *borders* (closed applications), *its own language* (designed with proprietary tools), *an army* (technical or legal mechanisms to beat the competition), *economic policy* (the fostering of a dynamic based on the purchase of updates and accessories), *a currency* (purchase-based activation codes), *property and laws* (terms of use designed to protect the owner's interests), and, finally, *labour* (any improvements or modifications made by users must be authorised and become the property of the software's owner).

Modern society thus has much in common with this type of software.

In contrast, according to Raymond, the bazaar model, that is, the collaborative programming model, can be summarised in three maxims:
- release new versions quickly and frequently and ensure that they fix the bugs in earlier versions and serve as test runs for subsequent ones;
- distribute responsibilities and tasks as much as possible; and
- be transparent to the point of promiscuity in order to stimulate the maximum degree of cooperation. In other words, scientific repositories must be free, open and available to all.

However, even when all three maxims are applied, the bazaar model is not always possible: *it can only succeed in an environment of peers who share the same objectives, work as a community and have access to the open code.*

The bazaar model has just one big defect: the difficulty of getting things off the ground when starting a project from scratch. People are always more likely to hop on a project's bandwagon when it has solid prospects than when it is still in the process of being developed by a small or overly heterogeneous group or a group whose members have wildly different levels of knowledge.

It is all a question of achieving a *critical mass*, of getting enough people on board.

In Raymond's view, the bazaar model is much more efficient. It ensures greater excellency of the finished software with less expenditure of resources, which alone would justify its mass application throughout society. What matters, though, above and beyond the quality, is that its *raison d'être* is **freedom from third parties and to share information**.

Freedom, understood as the bricks and mortar of the self-managed communities of users and developers that arise in such situations, is an unprecedented discovery. Freedom and the desire to share lead to total technological control over what is used. It is thus closely related to what has been happening in our city squares.

Unlike all previous revolutions, the #15m movement is not a revolution of people of letters. **It is a revolution of people of science.** The first tent set up in the first square was to shelter the communications equipment; the second, tellingly, was the legal tent. Just as tellingly, most members of the different communication committees are IT experts, sociologists, engineers, etc. In contrast, journalists, linguists, political scientists and lawyers have been excluded. We sit on other committees. In Barcelona, too, the legal tent was the second tent to be set up.

Some might argue that processes of cooperation are hardly new in advanced capitalism and that, in fact, they are an indispensable part of the organisational model, albeit one exclusively geared towards

maximising profit.

What free software brings to the world of ICT is clearly branded on the #15m strategies, where it greases the wheels of the prevailing model of cooperation with no one in charge. That is, the strategy used by the #15m movement is the freedom and sharing technique of the world of free software, what might be called the 'school of fish' technique.

There are no direct business, social or political interests pulling the strings and levers. There is no 'architect'. The #15m movement is widespread, ungovernable and free of any higher command. Moreover, the lack of such a higher command, of corporate or hierarchical control, seems to be a *sine qua non*: whenever such a command reappears, whether in the form of an interest group or a 'sympathetic' politician, whether in the guise of authoritarianism, police action or simple exploitation, the #15m model naturally produces antibodies.

No one gives orders, and no one takes them. And yet, people coordinate, organise. There are gurus, 'leaders', project managers, but they serve at their followers' pleasure: they do not command. The movement operates as a kind of 'gift economy', whereby the more one gives to the community, the more appreciated he or she is within it. The basis of this economy lies in the ease of communication between all members and in the lack of obligatory time or thematic commitments.

A telling piece of data: this is the first conflict in which more technology exists, and is used, in front of the police lines than behind them; this revolution has produced more images than all the conflicts of the 20th century combined. And virtually all these results are shared. The same is true of the knowledge.

No one can demand, there are no guarantees, and there is no money to offer as an incentive to work, even though some people do charge for their efforts or earn money, as the #15m community has never objected to the possibility that professionals might be remunerated for what they do. **This whole chaotic 'bazaar' of lists, hashtags and volunteer groups scattered across the Internet produces an inimitable knowledge bank,** with all the complexity required. Indeed, the developments and results that it has produced could never have been

achieved by even the most powerful company (in the case of software), university or country in the world.

Because the #15m community itself is already the most powerful company on the planet. In this context, my standard line about how 'today's hippie-punk is tomorrow's councilperson' is revealed as a great truth.

And that turns everything on its head: how universities manage information and what their mission is in this new society. In the immediate future, universities will be valued not for the information they harbour, which will always be richer and more extensive beyond their walls, but rather for their capacity to create *critical masses*, whether of knowledge research, skill-building, or networks of peers.

Game theory

How is this possible? Why do altruistic strategies beat selfish ones in the spheres of both free software and the #15m movement?

Because people are not simply trying to maximise their own profits as competitive capitalism teaches us. Because even the most pragmatic people cooperate as much as anyone else (albeit in ideologically appropriate ways).

The free software community itself has often sought to explain these phenomena through game theory. And, of course, the classic dilemma of 'the common good' versus 'a selfish attitude' is trumped by an axiom vaguely reminiscent of the 'prisoner's dilemma' found in game theory: **cooperation is also preferable from a selfish standpoint**. As with the prisoner's dilemma, this is not always obvious at first. Invented half a century ago by game theorists, the 'prisoner's dilemma' was used to study the concept of rational choice and to illustrate the conflict between individual and collective good.

According to traditional game theory, the best strategy is known as 'tit for tat': ***'I will cooperate as long as the other person does'***. It is also the simplest strategy; you begin to cooperate in the first move, and, from then on, you simply copy the other player's last move. Game theorists

believe that tit for tat has four key features common to successful strategies, which, together, make it the winner in all the tests conducted by the experts, beating out much more sophisticated and 'dirtier' strategies (selfish non-cooperation): **it is friendly, it is forgiving, it is not covetous, and it is compassionate.**

A friendly strategy is one in which the individual following it is never the first to be selfish. A forgiving strategy is one that allows revenge but has a short memory, that is, it does not hold grudges for past slights (revenge is taken swiftly against a traitor or selfish opponent, but thereafter the matter is considered water under the bridge). Of course, it is only technically, not morally, friendly, as nothing is ever simply written off.

Neither is tit for tat covetous, in that the individual does not seek greater compensation than that received by others and is happy if others receive the same reward as he has (in fact, tit for tat never wins a game; at most, it enables a tie with the opponent): in free software this means wanting everyone to have the same freedoms and chances as oneself. The same desire lies at the core of the #15m movement.

That it is more effective to be friendly and forgiving flies in the face of common sense and came as a complete surprise for the mathematicians, psychologists, economists and biologists who had studied the different strategies of game theory in depth. However, this conclusion, which opened up a new avenue of analysis, has been confirmed time and again in different studies and tests… and now in real life, too, through the #15m movement.

According to game theory, tit-for-tat individuals cooperate by creating small communities that, through their own internal communication and rapid communication with other groups, can quickly grow from small assemblies or local chapters to major global movements. In turn, the cooperation phenomenon generates positive feedback: as with free software, no one who reaps the benefits can stop promoting its use.

Thus, the community acquires and retains a somewhat proselytising tone (revolution, manifestos), in addition to a more or less generally held view that the model's strength and future depend quite directly on there being a great many people actively involved in its development.

This notwithstanding, the tit-for-tat model does not completely explain the model created by the #15m movement, at least, not exactly. Like free software, it is free even to those who do not cooperate (which lends it a strong ethical component). Additionally, although the terms of a copyleft licence allow anyone who so wishes to benefit from a piece of software, no one can appropriate it or use it to create proprietary software of his or her own (in the case of #15m, to found an 'Indignant' Party, say, to borrow the term so often used to describe the protestors).

The strategy of the #15m movement is both 'friendly' and 'forgiving'; however, unlike tit for tat, it is able to accommodate selfish strategies in its core without the need to expel them or avenge itself (except, perhaps, in cases in which the members perceive a genuine threat, such as violent and misguided police action, the Manichaean attitude of the media, or the modification of a legal framework that had been fully assumed and internalised, such as the Constitution).

At the same time, it embraces a parallel ethical and social approach, a form of altruism, that considers freedom and social cooperation to be the best ways to defend something that is good for everyone and finds incentives in things other than financial profit. In other words, it is not a story of 'altruists' and 'egoists', of 'good guys' and 'bad guys', which, like so many other supposed moral dilemmas, has been proven to be false and inapplicable. If you can forgive the comparison, what I am talking about is quite reminiscent of an innate characteristic of Catalans: our love of forming associations.

However, there is a deeper political question that is quite important and that clearly distinguishes the members of the #15m movement, namely: should human knowledge, and the services that it produces, be privatised? While for a certain pragmatic segment of the population, this is irrelevant, for others, those who advocate an ethical approach, it is a central and non-negotiable issue: universities must implement the new model or risk becoming obsolete.

The #15m movement, like software but unlike tangible goods, cannot be owned. It can be used (by joining it) by an indeterminate number of people without depriving anyone else of the chance to do the same.

That is the crux of the issue, of the difference, and also what leads to such diverse approaches to the #15m movement.

Game theory works at the statistical level and is based on unconscious algorithmic strategies that can just as easily be executed by machines or genes as by human beings. It does not apply moral or goal-oriented criteria, nor does it try to account for specific cases or people's individual incentives to cooperate or be selfish. Instead, it offers something more subtle and valuable: understanding of a process and a questioning of the capitalist and neoliberal myth, the myth of foul play and 'every man for himself', the myth that says that it is better for everyone to look out for himself and to tend to only his own private interests.

The conclusions drawn from game theory, while lacking any moral purpose, offer an optimistic and encouraging basis for a materialist ethic (as opposed to a moralist or religious one). Game theory, the #15m movement and free software could together spearhead a new myth, the myth of sharing, the myth of cooperation and mutual assistance. Together, they might herald the rise of the healthy notion that even when selfish people are in charge, the good guys (nothing to do with Christian kindness) will win.

However, there is also reason to think that, should the overly pragmatic and apolitical approach, that is, 'selfish cooperation', prevail, it will damage the free #15m community, which could ultimately be reclaimed by Hobbesian capitalism, along with its accumulated intellectual wealth (of cooperation and general social knowledge), and put to use in the interest of private profit.

As soon as the second battle has finished, others will emerge, which will be based on the coexistence of both trends, and they will claim that, as long as the selfish stance agrees to abide by the rules of the #15m movement, there is nothing to fear.

However, I repeat, this is not a story of 'altruists' and 'egoists', of 'good guys' and 'bad guys', which, like so many other false moral dilemmas, has long been proven inapplicable. The #15m movement cannot be owned, and this means that it can be enjoyed by an indeterminate number of people, with each one taking what he or she needs and

giving back what he or she has. It is multifaceted.

Nothing would have come of the #15m movement had it not been for a generation previously influenced by free software and the attitudes it teaches, such as sharing scientific and artistic knowledge. Unlike other revolutions, this one is not about bread, but rather cultural consumption and incomprehension of the disconnect between what is done and what is said (typical of science).

It must be noted that the first months of the #15m movement more closely resembled the launching of a new piece of free software than a proper political movement.

Those who once claimed not to care about politics have set up scale-model cities in the main capitals and spent two months administering them. They have learned to negotiate, administrate, manipulate and use their new skills to confront both their external and internal enemies.

They have set up a parliament, committees, police and even free legal assistance. And now they have fanned out to install their software in local delegations and neighbourhoods.

And with each new step, they share what they have learned. Thus, as long as they remain, and continue to follow the bazaar model, new versions or new software (Occupy Wall Street) will be created and the bugs in the old system (healthcare, evictions, mortgages) will be ironed out.

Josep Jover

In homage to 'No one gave me the right to join the #15m movement, and no one can take it away' **Pepe Giménez**