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Rational choice and neoliberal theories of the intellectual commons: A critical analysis

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abstract

Over the past twenty years theorizing about the intellectual commons has undeniably become a popular activity not only among scholars that deal with the dialectics between information/communication technologies and society but also among the wider scientific community. Rational choice and neoliberal theories of the intellectual commons are re-conceptualizations of the social intellect as the productive force of our intellectual commonwealth, albeit in a relation of complementarity or subsumption with capital. As emerging theoretical paradigms, both of these theoretical trends contribute to a strong theory of the intellectual commons, which eventually comes in contrast with the dominant notions of the social intellect that restrictively advocate the establishment of private monopolies over intellectual works. By deciphering contemporary shifts and dynamics in the ways we produce and distribute information, knowledge and culture, a strong theory of the intellectual commons is thus better placed to inspire and orientate social movements, recast agendas of policy-making and construct alternative narratives to existing socio-legal arrangements, which are capable of accommodating the potential of the intellectual commons.

Introduction

The intellectual commons are social practices of pooling together and managing in common intangible resources produced by sharing and collaboration within and among productive communities. At the same time, practices of commoning within the intellectual commons are not only restricted to the reproduction of resources, but rather constitute in their totality forms of life in common, i.e practices which constantly reproduce the communal relations upon which the

productive process is based. From such a processual ontological perspective[1], intellectual commons are viewed to be related primarily to intellectual, less than manual, work in terms of the production, distribution and consumption of information, communication, knowledge and culture. Since any productive intellectual activity is inevitably based to material objects of production, intellectual commons normally involve the pooling in common of both tangible and intangible resources.

The present endeavour offers a critical analysis of rational choice and neoliberal theories of the intellectual commons. The foregoing theoretical approaches, along with social democratic and critical perspectives[2], are considered to constitute the constellation of the diverse theories of the intellectual commons. The article focuses on the epistemological foundations, on the analytical tools in regard to social actors, social structures and the dynamics between them, on the normative criteria and, finally, on the perspectives on social change of these two theoretical trends. Hence, these theoretical families are classified according to their diverging perspectives regarding, on the one hand, the dialectical relation between the intellectual commons and capital and, on the other hand, the potential of the commons in general for emancipatory social change. In this light, rational choice theories offer a perspective of complementarity between commons and capital. On the other hand, neoliberal theories elaborate on the profit-maximising opportunities of the intellectual commons and further highlight their capacities of acting as fix to capital circulation / accumulation in intellectual property-enabled commodity markets. As a result, both of these theoretical approaches tend to reduce the potential of the intellectual commons to the improvement of the dominant capital-based mode of social reproduction, thus concealing their more radical potentialities towards commons-based societies.

1 Contrary to positivist resource-based definitions, which run the danger of reifying the commons and downgrading their social dimension, the processual approach followed in this article conceives of the commons in general and the intellectual commons in particular as sets of iterative social practices, i.e. communal institutions, and seeks out the base of their existence in productive human activity.

2 Social democratic and critical theories of the intellectual commons are examined in detail elsewhere (Broumas, 2017).

Rational choice theories of the intellectual commons: The commons as patch to Capital

Main question and methodology

Rational choice theories of the intellectual commons deal with the ways that individuals come together, establish communities and institute rules for the sustenance of intellectual resources or for the pursuit of desired outcomes on the basis of sharing and equality (Ostrom, 1998; Hess and Ostrom, 2007b: 42). In this light, rational choice theorists also examine how stakeholders in an interdependent situation self-organise in order to avoid social-dilemma situations within intellectual commons' communities, such as phenomena of free-riding, shirking or opportunistic behaviour (Ostrom, 1990: 29). Ultimately, they search for the reasons that lead to the success or failure of resource production / management systems within the sphere of the intellectual commons in order to synthesise appropriate frameworks which will ensure long-term viability (Frischmann, Madison and Strandburg, 2014: 11). Even though they belong to the field of collective action theory, in contrast to other traditions in the field, rational choice theories pay tribute to the previously neglected social phenomena of the commons as institutional sets for the governance of resources that are distinct from market- or state- based institutions (Ostrom, 1990: 1, 40-1).

In relation to methodology, rational choice theorists emphasise on the clarity and precision of definitions, concepts and arguments used, whereas they establish connections between them through rules of formal logic (Russell, 1945: 834). Furthermore, they tend to evaluate the intellectual commons according to consequential criteria, focusing on the degree of efficiency that the institutions of the intellectual commons exhibit in regard to the provision of positive outcomes for general social utility (Ostrom, 1990: 193, 195-205, Frischmann, Madison and Strandburg, 2014: 36-7). In terms of agency, rational choice theorists commence from a rational individualistic conception of human actors. From an epistemological perspective, rational choice institutionalism is a philosophical endeavour to render the basic tenets of methodological individualism compatible with the main empirical findings of institutional analysis and design. Hence, even though they commence from the rational individualistic conception of agency, rational choice theorists consider individuals as having complex motivations, which cannot be reduced to monetary incentives, whereas their productive activity is expected to be shaped both by economic and social factors (Ostrom, 1990: 183). Within this framework of analysis, market relations are conceived as being embedded in and empowered by interpersonal networks of loyalty and mutual recognition (Granovetter, 1992: 60). Rational choice theorists thus arrive at the conclusion that innovators are essentially placed in

interdependent situations, in which they are able to develop inclinations to reciprocity through the use of reason, as long as they have faith that their contribution will be reciprocated (Benkler, 2002: 369)[3]. In this context, homo reciprocans is considered as being the productive unit of the commons, who, while still serving her own interests, chooses to cooperate with the other members of the community in order to collectively pursue common long-term interests (De Moor, 2013: 94). Hence, social structures emerge from the bottom-up in the form of patterns of interactions, often crystallised in social norms.

Point of entry: Refuting Hardin's theory of the tragedy of the commons

For rational choice theories the starting point of theorising the commons is the refutation of Hardin's 'tragedy of the commons' theory. In the context of natural common pool resources Elinor Ostrom has proven that Hardin's tragedy is neither inevitable nor necessary and that the leviathan of the state or an all-encompassing application of the institution of private property are not the only alternatives available for the organisation of collective action (Ostrom, 1990: 8-20). Ostrom supports her devastating critique of the tragedy of the commons theory with concrete historical and empirical research, which shows that human communities have the capacity to resolve social dilemmas through self-organisation beyond the state and the market. This communal mode of resource production and management is the commons. Even though Ostrom accepts that common property may face the failure of overharvesting (Ostrom, 2010), she highlights that Hardin's narrative applies to specific social arrangements, in which: (a) common pool resources are openly accessible rather than managed; (b) stakeholders share little or no communication, and (c) stakeholders act only in their immediate self-interest and are unable to coordinate their behaviour in order to derive joint benefits (Hess and Ostrom, 2007a: 11).

Due to the fact that they are naturally non-rivalrous and non-subtractable, over-harvesting and crowding effects in relation to intellectual resources cannot apply at the stage of their consumption (Ostrom, 1990: 32). On the contrary, the social utility of intellectual resources increases the more they are shared. In comparing the overgrazing of open access pastures with software code, Eric Raymond observes that grazing does not reduce the availability of code, rather, he concludes, 'the grass grows taller when it's grazed on' (Raymond, 1999: 151).

[3] Nevertheless, Benkler distances himself from the rational choice framework on the grounds that it fails to 'give a complete answer to the sustainability of motivation and organization for the truly open, large-scale nonproprietary peer production projects' (Benkler 2002: 378).

Nonetheless, open access intellectual commons run the danger of a tragedy of under-production, when individuals abstain from production, because they expect that the outcome of their work will be used by free riders (Lemley, 2005: 1037-8), enclosed and commodified by market players (Hess and Ostrom, 2007a: 5), or of a tragic stalemate, when they delay putting their creativity / inventiveness at work, waiting for other users to invest first (Suber, 2007: 183), or they may lack resources of time, skills or money to contribute on a voluntary basis (Fuster Morell, 2014: 285). Apart from lack of provision of the resource itself, similar social dilemmas may also arise in relation to the supply of the necessary infrastructure and effort for its production, preservation or aggregation, such as in the case of digital libraries or repositories (Hess and Ostrom, 2007b: 48).

The institutional analysis and development framework

Rational choice theories have initially been developed by Ostrom and her collaborators for the scientific analysis of the natural commons. These theories have been consolidated in a detailed theoretical framework, termed as Institutional Analysis and Development (IAD). The method of research followed by IAD scholars progressively escalates from the thorough analysis of empirical phenomena to clear-cut theoretical conceptions about their qualities and causal interrelations. In particular, as a first step, the resource characteristics, community attributes and communal rules of the commons under investigation are examined. Next, the focus of analysis shifts to the action arena of the commons, along with its actors and action situations. Then, patterns of interaction among actors and the outcomes of commoning are elicited. Finally, abstract evaluative criteria are extracted in order to draw more general conclusions about the elements that contribute to the equity, efficiency and sustainability of commons' institutions (Hess and Ostrom, 2007a: 6).

In relation to the natural commons, Elinor Ostrom has distilled eight design principles as evaluative criteria for robust, long enduring, common-pool resource institutions on the basis of a large set of empirical studies (Ostrom, 1990: 90–102):

1. Clearly defined boundaries in place.

2. Rules in use, well matched to local needs and conditions.

3. Participation of individuals affected by rules in the modification of these rules.

4. Respect of the right of community members to devise their own rules by external authorities.

5. A system for self-monitoring members' behavior in place.

6. A graduated system of sanctions in force.

7. Access of community members to low-cost conflict-resolution mechanisms.

8. Nested enterprises, i.e. appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities organised in a nested structure with multiple layers of activities.

In the process of bringing intellectual commons under the lens of the IAD framework, rational choice theorists commence their argumentation by establishing an analogy between the natural environment and the public domain (Boyle, 1997; 2008). According to this analogy, just as ecosystems are shared resources necessary for our sustenance and well-being, intellectual resources in the public domain constitute our commonwealth and the basis for our future cultural and scientific advancement. Yet, unlike ecosystems, which are given by nature, intellectual commons are created from scratch. Hence, social arrangements within the intellectual commons are not only dedicated to the 'preservation' of the resource through egalitarian sharing mechanisms but also purport to establish the appropriate social terrain for its sustainable [re]production (Frischmann, Madison and Strandburg, 2014: 16).

Core concepts

Intellectual resources are as a rule non-rivalrous and non-excludable, feature zero marginal costs of sharing and bear a cumulative and aggregate capacity. Yet, intellectual resources are not produced out of thin air. Depending on the type of the resource, their production presupposes the existence of an appropriate material infrastructure, such as construction facilities, electronic communication networks and micro-electronics based equipment in the case of the digital commons (Hess and Ostrom, 2007b: 47). The ownership status and mode of governance of these secondary material resources often heavily influences the architecture of the intellectual commons as a whole (Fuster Morell, 2014: 285). For instance, free software developers primarily produce code but also establish repositories for such code, meet at hackerspaces, organise linux install fests and, in general, exchange views, ideas and values through online forums and bulletin boards, which all together form the specific hacker culture of each free software community.

Intellectual commons are also formulated around communities of commoners, who contribute to, use and manage the resource, govern its infrastructure and its productive process. Especially in contemporary digital communication networks, communities of the intellectual commons are manifested in various productive activities, such open hardware, open standards, free software, wikis, open scientific publishing, openly accessible user generated content, online content licensed under creative commons licenses, collaborative media, voluntary crowd-sourcing, political mobilization through electronic networks and hacktivism, internet cultures, and memes. These new intellectual commons communities have reinforced cultural and techno-scientific commons which amass the foundations of our civilization, such as language, collective history, ideas, beliefs, customs, traditions, folk art, games, shared symbols, social systems of care, knowledge in the public domain and all our past scientific and technological advancements.

The main building blocks of these communities are on the one hand a commonality between their members, which relates either to their cultural or scientific interests or their expertise (Frischmann, Madison and Strandburg, 2014: 16), and, on the other hand, the spur to contribute to a commonly shared goal of creative / innovative content. The capacity of the producer, consumer and/or decision-maker may be either dispersed to all the members of the community or concentrated to distinct groups within the community (Hess and Ostrom, 2007: 48). Consumers in their own capacity play a significantly less important role than producers in the realm of the intellectual commons and normally have limited or no direct rights in the decision-making mechanisms of the community. Alternatively, decision-makers come as a rule from the group of producers, without meaning that these two groups necessarily coincide. Finally, participation in intellectual commons' communities is contributed on a voluntary basis. This characteristic may result in hierarchical relations between resource-poor and resource-rich participants or even the de facto exclusion of the former from the community (Fuster Morell, 2014: 286).

Governance arrangements within the intellectual commons are imprinted on the applicable rules-in-use of the community. Rules-in-use are conceived as shared normative understandings between commoners, which shape the behaviour of the latter in the action arena and have the capacity to produce specific patterns of interaction and outcomes though monitoring and sanctioning mechanisms in cases of noncompliance (Crawford and Ostrom, 2005). Depending on their importance and hierarchical relation with each other, rules-in-use are categorised in three levels of regulation: operational [day-to-day level], collective choice [policy level] and constitutional [allocation of power level] (Hess and Ostrom, 2007b: 49). Rational choice theorists generally tend to apply Ostrom's eight design

factors in order to evaluate the robustness of different cases of intellectual commons (Fuster Morell, 2010; Frischmann, Schweik and English 2012). In relation to the first of these factors, i.e. boundary setting rules, it has been persuasively argued that boundaries in the information environment are necessarily social and cultural, rather than spatial, constructs (Madison, 2003; Ostrom, 2003: 132-134). On the one hand, access to common-pool-produced intellectual resources is regulated by communal norms or legal rules or a combination of the two. Copyleft licensing is the most common example of such types of rules. On the other hand, communally enacted licenses also determine the boundaries of the community, as assent to them constitutes the main prerequisite for participation (Frischmann, Madison and Strandburg, 2014: 34). Accordingly, other design factors, such as participatory decision-making arrangements, monitoring mechanisms, conflict resolution processes and nestled enterprises, are found in many robust, long-enduring intellectual commons' communities, showing that the central suppositions of the IAD framework are also applicable to a certain extent to the realm of creativity and innovation (Madison, Frischmann and Strandburg, 2010).

Rules-in-use are in dialectical relationship with action arenas, as both interrelate, act and counter-act, and, eventually, shape one another. Incentives of participants in action situations are particularly important for the determination of patterns of interaction (Hess and Ostrom, 2007b: 54). Outcomes of commons-based peer production are proposed to be classified according to the binary logic of enclosure / access to produced resources (Hess and Ostrom, 2007b: 58). Finally, Hess and Ostrom, suggest the following criteria for the evaluation of registered outcomes, which apparently enrich the strictly consequentialist cost / benefit approach of the IAD framework with deontological evaluations of the common good (Hess and Ostrom, 2007b: 62):

(1) increase of scientific knowledge,

(2) sustainability and preservation of resources,

(3) participation standards,

(4) economic efficiency,

(5) equity through fiscal equivalence, and

(6) redistributional equity.

The relation with commodity markets

Proponents of rational choice theories presuppose or imply a relationship of co-existence between the non-market commons-based peer production and commodity markets, thus refraining from a critical analysis of their interrelations and dynamics (Lessig, 2002: 115-6). According to this view, although capitalist markets have out-competed other systems of resource management in most sectors of social activity, intellectual resources have certain properties which may render them in certain cases more apt to be governed as commons (Benkler, 2011: 152-3). In the words of Lawrence Lessig,

> [w]hile some resources must be controlled, others can be provided much more freely. The difference is in the nature of the resource, and therefore in the nature of how the resource is supplied. (Lessig, 2002: 93-4)

In fact, co-existence between the sphere of the intellectual commons and the domain of commodity markets is not only possible but also mutually beneficial. As David Bollier claims,

> the market and the commons interpenetrate each other, yin/yang style. Each 'adds value' to the other in synergistic ways. (Bollier, 2008: 251)

Critical evaluation: The intellectual commons as patch to Capital

Epistemology	Agency	Structure	Internal Dynamics	External Dynamics	Normative Criteria	Social Change
Rational Choice Institutionalism	Individual(s) in Interdependent Relations	Patterns of Interactions	Bottom-Up Emergence	n/a	Consequential	The Commons as Patch to Capital

Table 1: The characteristics of neoliberal theories of the intellectual commons

The main argument of rational choice theorists is the thesis that intellectual commons are relevant today as objects of research, because they significantly contribute under certain conditions of institutional efficiency to the advancement of art and science and should, therefore, be utilised by policy-makers as a complement to state and/or market regulation of intellectual production, distribution and consumption.

In regard to epistemology, the quest for objective and value-free knowledge through inductive methods of research, which characterises rational choice theories, inevitably bears the shortcomings of positivism. As far as the goal of objectivity is concerned, observations of the empirical reality of the intellectual commons are fatally theory-laden and, as a result, framed from the given social

context, in terms of both the socially pre-constructed meanings of the semantics used to describe them and the theoretical presuppositions and motivations of the observer. As far as the ideology of value-free science is concerned, the choices of rational choice theorists regarding the objects of their analysis, their core elements and interrelations and, finally, the stated goals of their theoretical endeavours, are also laden with specific values that correspond to or contend with dominant or subversive value systems in our societies. Finally, the persistence on an analysis of the intellectual commons as precisely defined, with clear-cut boundaries, limited to resource management, internally consistent, reduced to their components and interconnected with iron causal laws may end up with a static and fragmentary perception of reality, subjugated to the incapacity of grasping processes of becoming. As a result, the theoretical contribution of rational choice theories is eventually limited to the examination of particular cases of intellectual commons' communities, thus failing to place the social phenomenon of the intellectual commons as a whole within social tendencies, contradictions and antagonisms and to arrive in conclusions relevant to their position in the social totality.

In terms of the internal dynamics of the intellectual commons, rational choice theorists fail to recognise that the public goods' character of intellectual resources is not only based on their intangible traits but is also in part socially determined, being nowadays more and more under pressure by legal and technological enclosures. Accordingly, human agency within the rational choice framework remains inescapably confined to a methodological individualism, which conceives individuals as engaging with the intellectual commons in order to maximise their personal benefits (Bardhan and Isha, 2006: 655, 660-1; Macey, 2010: 763). Hence, rational choice scholars inevitably conceive commoners primarily as extractors of resource units or free-riders of the efforts of others, whereas competition is again elevated at central stage. In corollary, the IAD framework fails to fully grasp the shared ethics, values, goals, narratives and meanings, which hold communities of the intellectual commons together, tending to reduce them to their functionalist, procedural and consequential aspects (Bailey, 2013: 109). The institutional forms of the commons are mainly conceived by rational choice theorists as shaping behavioral patterns more by putting fetters on and less by empowering social action and enabling sharing and collaboration.

Yet, their main shortcoming is that rational choice theories diminish the interrelation of the intellectual commons with capital to a simplistic conception of either co-existence or complementarity. By approaching the intellectual commons from a utilitarian perspective, such theorists evaluate them in comparison to state intervention or intellectual property-enabled markets solely

according to the criterion of utility maximisation (Wright, 2008: 236). Hence, intellectual commons are held as more effective modes of organisation in social contexts where they out-compete the state or the market. In this theoretical exercise asymmetries of power between the dominant capitalist mode of intellectual production / distribution / consumption and the insurgent sphere of the intellectual commons are not taken into account. In addition, the impact of commodification over commons-based peer production and the public domain is generally neglected in favour of a more conciliatory ideological conception of society free from contradictions and antagonisms (De Angelis and Harvie, 2014: 287).

Most important, the utilitarian perspective of rational choice theories falls prey to the dominant perspective over the common good, which inextricably connects the maximisation of social utility with the proliferation of private property, capitalist markets and private monetary incentives. Inevitably, values proliferating within and through the sphere of the intellectual commons that are found at the margins of the current state of social reproduction, such as access, sharing, collaboration, self-government, individual and collective empowerment, will tend to be ranked lower in the utilitarian calculus of rational choice theories and their positive social outcomes will tend to be downgraded in comparison to dominant conceptions of the common good.

Rational choice theories provide a theoretical framework for the evaluation of the intellectual commons in relation to their potential for social change, which is ahistorical by design and, therefore, limits the latter in a complementary position to intellectual property-enabled markets. In accordance to their utilitarian epistemological choices, the underlying rationale behind the approach of rational choice theories is that intellectual commons are appropriate in cases where state or market-based modes of social organisation encounter failures. Nevertheless, such complementarity is ostensible. Opposing processes of value circulation and value accumulation between capital and the intellectual commons make any interrelation between the two inherently contentious. Within the context of the dominance of the capitalist mode of intellectual production / distribution / consumption and the vast asymmetries of power this dominance entails, intellectual commons are inevitably plagued by crises of value and unsustainability (Bauwens and Niaros, 2017). Hence, in actuality, this supposed complementarity is translated as a commons' patch to failures of capital, an argument in favour of commons-oriented practices as long as they remain at the margins of contemporary social reproduction.

Neoliberal theories of the intellectual commons: The commons as fix to Capital

Main question and methodology

Neoliberal theories of the intellectual commons have as their foundation the orthodoxy that markets are the most appropriate mechanisms to maximise net social benefits (Mankiw, 2014: 150-1). From this perspective, neoliberal theorists examine the ways in which the intellectual commons are accommodated by the capitalist mode of intellectual production, distribution and consumption, with the aim to provide proposals that best serve market needs. Along these lines, they engage into an analysis of the alternative organisational patterns and value systems of the intellectual commons and research their potential for creativity and innovation in order to provide useful tools for their monetisation. Finally, they search for appropriate restructuring policies for business patterns, capitalist markets and for-profit corporations, which will efficiently exploit this potential. In relation to methodology, neoliberal theories are strongly inclined to evaluate the intellectual commons according either to a pragmatic consequentialism or an openly utilitarian cost / benefit analysis in strong connection with the promotion of markets and the accumulation of capital.

The philosophical anthropology of neoliberal theories generally implies a conception of commoners that is methodologically individualistic (MacPherson, 1964, 1973). In relation to social structures, neoliberal theorists opt for a reductionist methodology. According to this perspective, explanations about the intellectual commons are reduced to explanations in terms of facts about the individuals composing them (Bentham, 1948: 126; Mill, 1858: 550; Hayek, 1948: 6; Hayek, 1955: 37-8; Popper, 1961: 135). Social order emerges in spontaneous form from the bottom-up through the autonomous and decentralised matching of their intentions and expectations (Hayek, 2013: 34-52). The most efficient mechanism of such a spontaneous order of allocating resources is the invisible hand of the free and competitive commodity market (Stiglitz, 1991: 1). Within markets the pursuit of individual private interests leads to greater wealth for all and a more effective distribution of labour (Botsman and Rogers, 2010: 41).

Projecting this methodology to the realm of the intellectual commons, neoliberal theorists consider the ensemble of social relations within the communities of the intellectual commons as collections of individuals who exercise their freedom of creativity and innovation according to their own preferences and without external interference. In the process of commons-based peer production commoners are pooling together their private property rights over their individual intellectual works through private contracts in order to extract pleasure or other forms of

personal utility (Benkler, 2010: 230). As a result, neoliberal thinkers tend to conceive the structures of the intellectual commons as markets, wherein individuals meet and earn social capital and/or personal pleasure in exchange of putting their skills to work for a mutually agreed cause (Raymond, 1999).

Point of entry: The tragedy of the commons

For neoliberal thinkers the point of reference for engaging with the intellectual commons is the tragedy of the commons theory. This theoretical framework commences from the presupposition of neoclassical economics that individuals are relentless appropriators with no capacities for coordination to achieve anything but short-term goals. In the absence or failure of human capacity to coordinate in the long term, the commodity market emerges as the necessary coordinating mechanism external to any collections of individuals (Buchanan and Yoon, 2000: 3).

Already as far back as ancient Greece, Aristotle framed the commonsensical view behind the tragedy of the commons theory by pointing out that '[w]hat is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest' (Aristotle, 1966: 33). In modernity, the tragedy of the commons returns in the pamphlet of political economist William Forster Lloyd, who observed that:

> [i]n an inclosed pasture, there is a point of saturation [...] beyond which no prudent man will add to his stock [...] Were a number of adjoining pastures, already fully stocked, to be at once thrown open, and converted into one vast common, the position of the point of saturation would immediately be changed. (Lloyd, 1833: 31)

Much later on, the Austrian school economist Ludwig von Mises claimed in his treatise on the economics of human action that

> [i]f land is not owned by anybody [...] it is utilised without any regard to the disadvantages resulting. [...] the erosion of the soil, the depletion of the exhaustible resources and other impairments of the future utilization are external costs not entering into [the commoners'] calculation of input and output. (Mises, 2008: 652)

Along the same lines, the economist Scott Gordon engaged with the economics of the plight of fisheries by remarking that: 'the plight of fishermen and the inefficiency of fisheries production stems from the common-property nature of the resources of the sea [...] a bag-limit per man is necessary if complete destruction is to be avoided' (Gordon, 1954: 131). Some years later, private property theorist Harold Demsetz claimed that the private enclosure and parceling of the commons into property rights is the most appropriate solution to

their demise, arguing that common-property regimes are inherently flawed (Demsetz, 1967).

Still, it is only in 1968 that the ecologist Garrett Hardin sums up all previous elaborations in regard to the vulnerabilities of the commons in order to formulate his famous theory. In comparison to previous thinkers, the novelty in Hardin's theory is that the tragedy of the commons is inescapable. In his own words, '[f]reedom in a commons brings ruin to all' (Hardin, 1968).

The intellectual commons as component to capital accumulation

Neoliberal theorists have been quick to grasp the potential of the re-surging intellectual commons for human creativity and business profitability. In their business manifesto, Don Tapscott and Anthony Williams enthusiastically welcome us 'to the world of Wikinomics where collaboration on a mass scale is set to change every institution in society' (Tapscott and Williams, 2006: 10). In a similar manner, in an earlier online version of his own book-length call to the brave new world Charles Leadbeater again greet us 'to the world of We-Think', where '[w]e are developing new ways to innovate and be creative en masse. We can be organised without an organisation. People can combine ideas and skills without a hierarchy' (Leadbeater, 2008). Even the Time magazine confirmed this rising new fashion in 2006 by naming as its 'Person of the Year' the creative 'You'.

New terms have been coined to describe the exciting dynamics of the digital era. Already from 2004, at the O'Reilly Media Web 2.0 Conference, Tim O'Reilly and Dale Dougherty talked about the emergence of Web 2.0 (O'Reilly, 2005). In its relation to the market, O'Reilly has later clarified that the whole idea and the success of Web 2.0 is based on 'customers [...] building your business for you'[4]. Inspired by Alvin Toffler's idea that the information age will blur the boundaries between production and consumption and give rise to the 'prosumer' (Toffler, 1980: 265), Tapscott and Williams, have elaborated on the model of prosumption as an important new way through which businesses are putting consumers to work (Tapscott and Williams, 2006: 13, 43, 125-7). In this vision, prosumers are included in the productive process as fundamental component, whereas the market is no longer a space where supply and demand meet but has rather become inseparable from the productive process as the actual 'locus of co-creation (and co-extraction) of value' (Prahalad and Ramaswamy, 2004: 5).

4 O'Reilly T. and J. Battelle (2004) *Opening Welcome: State of the Internet Industry*. San Francisco, California, October 5.

Other commentators have added an even more insightful dimension in the debate, claiming that the business technique of prosumption reconstructs the very agency of consuming masses in ways more prone to exploitation by exchanging new consumer freedoms and a feeling of empowerment with the right of corporations to expropriate consumer creativity and innovation (Zwick, Bonsu and Darmody, 2008: 185). In this context, for-profit entities, which grasp the zeitgeist of the information age, do not only become leaders of the new mode of intellectual production, but also renew the fractured social contract, upon which conventional modes of work and production are established (Leadbeater, 2008: 88-90).

The proliferation of social and business patterns relative to the productive processes described above have led Botsman and Rogers to introduce in 2010 the term 'collaborative consumption' so as to describe social arrangements in which communities of individuals pool together and share privately owned products and services with the help of contemporary information and communication technologies (Botsman and Rogers, 2010). Drawing from the concept of crowdsourcing, defined by Jeff Howe as the 'act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call' (Howe, 2006), Botsman and Rogers have coherently demonstrated the potential of emerging patterns of online collaboration for the satisfaction of individual needs and the promotion of collective goals, as diverse as co-sharing scarce resources, producing intellectual goods in commons-based peer mode, building business models upon the intellectual commons and even acting together for the resolution of social problems as important as climate change (Botsman and Rogers, 2010: 59). From such a perspective, engagement with collaborative consumption not only secures a small income but also transforms participants into 'microentrepreneurs' (Botsman and Rogers, 2010: xvii, 180). Businesses, which base their profitability on communities of collaborative consumption, are successful on the condition that they view themselves not as rulers 'but more as hosts of a party helping to integrate new members with the rest of the community' (Botsman and Rogers, 2010: 204). Acting as the definite community builders of the information age, such corporations actually own and architect the online platforms and tools, which both facilitate the horizontal peer transactions of collaborative consumption and encourage relations of trust and reciprocity among participants (Botsman and Rogers, 2010: 91).

In this nexus of social relations, corporations are not just looking for unpaid work to be exploited. Instead, they invest in the construction and management of entire communities of resource sharing, sociality, collaborative creativity and innovation (Botsman and Rogers, 2010: 204). The main object of profit

extraction is the information and communication produced by the matrix of social relationships continuously weaved within online communities [5]. Ownership of the platform and the related infrastructure, which underpins the community, bestows access and control over the data produced by the networked social exchange of its users. Sociality itself in the fixation of data becomes a form of commodity and a source of profit. Hence, the most important technique for business ventures to develop in order to surpass the profitability of competitors in this context is how to monetise the community and embed the powers of the social intellect into the structures of the capitalist market (Bollier, 2008: 238).

Another way through which the intellectual commons are employed as component to capital accumulation, is in market competition between corporations. On the one hand, intellectual commons' communities are utilised by single enterprises to leverage their position in market competition. The most famous example of this type of relationship between the intellectual commons and a for-profit corporation is the relationship between IBM and the free software community (Lessig, 2002: 71). In 1998, IBM began supporting the apache and linux free software communities and granting to the latter compatibility with its hardware. As this collaboration gained momentum, IBM reaped the benefits, by gradually improving its position vis a vis its main competitors (Tapscott and Williams, 2006: 79-83). On the other hand, alliances of non-dominant actors have pooled together and shared resources for their industries in order to pre-empt the ability of competitors to control assets of strategic importance for the development of the market (Merges 2004). Many market consortia and patent pools, especially in biotechnology and open source software, are managed as intellectual commons between the members of the market alliance (Madison, Frischmann and Strandburg, 2010: 692). This has led Milton Mueller to claim that '[t]he commons as an institutional option is rarely implemented as the product of communitarian compacts or a sharing ethic. It is more likely to be an outcome of interest group contention' (Mueller, 2012: 40-1). Neutralisation of strategic assets might even take place in relation to a single market actor. Indicatively, Tapscott and Williams, report that with the release of

5 Based on an all-inclusive conception of labour, which extends to every aspect of social reproduction, this distinct form of social value appropriation is also defined by certain critical thinkers as exploited free labour (Hardt, 1999: 93; Hardt and Negri, 2004: 147). To the extent that the accumulation of social power by capital can take many forms, accumulation by exploitation being just one of them, the interpretation of all forms of value capture from the virtuous circle of the intellectual commons and their insertion in the circuits capital circulation / accumulation as exploitation is ideologically framed, since it disregards the fact that the intellectual commons reproduce a form of life distinct to the reproduction of capital and are thus not a by-product of capitalist organisation and exploitation but, instead, an assemblage of alternative circuits of power circulation / accumulation.

15,000 human gene sequences into the public domain in 1995 the pharmaceutical giant Merck 'pre-empted the ability of biotech firms to encumber one of its key inputs with licensing fees and transaction costs' (Tapscott and Williams, 2006: 166-7).

Intellectual commons and the restructuring of the corporation and the market

Since monopolisation is in the nature of intellectual property, its contentious relationship with market competition has been a well recorded issue of interest both in theory and in policy planning (WIPO 2012; OECD 2013). By expanding the public domain and facilitating access to prior information, knowledge and culture, vibrant intellectual commons' communities are a social force, which has the potential to counter the dynamic inefficiencies produced by the unbalanced enclosures of intellectual property-enabled markets over competition (Lessig, 2002: 6-7, Boyle, 2003: 63-4). Hence, a commons-oriented regime of governance at the cutting edge of technology and in the new modes of cultural production may be required as a fix to the rigidity of dominant intellectual property regimes in order for corporations to take full advantage of the rapidly shifting conditions in intellectual production / distribution / consumption. To put it more generally,

> In cyberspace [...] market after market is being transformed by technological progress from a "natural monopoly" to one in which competition is the rule. (Dyson, Gilder, Keyworth and Toffler, 1994)

The intellectual commons are also implemented as a strategic tool for the aversion of market failures that have been characterised as tragedies of the anti-commons (Heller, 1998, 2008). Such conjunctures occur when too many market players hold and exert partly or wholly overlapping rights of exclusion against each other over a strategic resource, so that no party finally acquires an effective right of use (Hunter, 2003: 506). These failures in the optimisation of social utility constitute the tipping point where the social relation of property becomes a fetter to forces of production (Mueller, 2012: 45). In this light, fixing the failures of monopolies through the construction of intellectual commons over strategic assets, whereas keeping market competition around them, is viewed as a method to combine the best of both worlds and achieve optimum social utility (Mueller, 2012: 60). Examples where state and market institutions co-ordinate to produce intellectual commons in order to avert tragedies of the anti-commons over strategic intellectual assets include standard-setting entities, joint ventures for research and development, informational databases and patent pools (Tapscott and Williams, 2006: 178-9, Madison, Frischmann and Strandburg, 2010: 692, OECD 2013: 22).

As far back as 1945, Friedrich von Hayek has claimed that knowledge is a resource unevenly distributed in society (Hayek, 1945). In the context of the collective intelligence of post-industrial intellectual commons' communities, Pierre Levy wrote: '[n]o one knows everything, everyone knows something, all knowledge resides in humanity' (Levy, 1997: 20). To make matters even more complicated, the distributed force of the social intellect does not exist in static form within the individual minds of creators / innovators, instead it is unleashed by a dynamic process of intellectual sharing and collaboration (Castells, 2001: 101). In order to correspond to the challenges mentioned above, commercial enterprises in knowledge-based sectors of the economy restructure their organisational patterns in order to co-ordinate and pool together the productive forces of the social intellect. This ambitious aim has a corrosive effect not only on the hierarchical top-down structures of the corporation but also on its boundaries with society. Permeability vis a vis the distributed innovative powers of society is achieved by various means, all of them involving the engagement of actors located outside the organisational structures of the corporation (Chesbrough, 2003: XXIV).

Outsourcing creative work to the crowd is one among the many corporate methods of capturing the productive value of the social intellect, which cannot be supplied in-house. The aggregation of distributed individual talent and knowledge is conducted on privately owned project platforms, which are focused on the management of creative labour supply. The platform design enables open recruitment, meritocratic ranking and self-selection of tasks (Lakhani and Panetta, 2007). Commercial innovation management platforms also borrow the organisational patterns of task modularity, granularity and diversity, which are observed in the institutions of intellectual commons communities[6]. Such platforms are a manifestation of the expansion of the commodity market over the structures of the hierarchical corporation, which has been rendered possible by the significant reduction of transaction costs due to contemporary processes of digitization. Yet, similarities with the intellectual commons stop here. Despite the fact that communication, sharing and collaboration among peers is ostensibly encouraged in order to create a sense of community, the competitive environment cultivated within such projects ultimately transforms them into labour commodity markets, rather than hub-bubs of commons-based peer production.

6 See e.g. Amazon's mechanical turk crowdsourcing platform According to Amazon's pledge 'Mechanical Turk is a marketplace for work' [https://www.mturk.com/]. We give businesses and developers access to an on-demand, scalable workforce. Workers select from thousands of tasks and work whenever it's convenient'.

Apart from outsourcing innovation to the crowd, a deeper corporate restructuring seeks to embrace the potential of the intellectual commons by combining the market with the community. In Leadbeater's vision,

> [t]he most exciting business models of the future will be hybrids that blend elements of the company and the community, of commerce and collaboration: open in some respects, closed in others; giving some content away and charging for some services; serving people as consumers and encouraging them, when it is relevant, to become participants. (Leadbeater, 2008: 91)

In this peculiar hybrid, the engine of 'collaborative consumption' and the 'sharing economy' is the community and the lifeblood flowing within its circuits is trust (Botsman, 2012). The mere role of the corporation is to enable and empower 'decentralised, and transparent communities to form and build trust between strangers' (Botsman and Rogers, 2010: 91). In practice, this contribution usually concerns the provision of material infrastructure, which requires an expensive and concentrated capital base to be produced and can rarely be provisioned by communities themselves (Benkler, 2016: 102). According to another less materialistic view, market mechanisms and commercial enterprises generally provide to intellectual commons' communities the instruments of regulation and management that are necessary for their well-being and cannot be provided internally (Ghosh, 2007: 231).

Hence, corporations and markets have the unique opportunity to embrace and harness the potential of the intellectual commons for collaborative creativity and innovation by orchestrating the forces of self-organization thriving within their communities (Tapscott and Williams, 2006: 44). In this market / commons hybrid scheme, social power is not only circulated and accumulated via the monetisation of the community. Ownership of the communal infrastructure on the one hand separates commoners from the means of reproducing their sociability and controlling their collaborative productivity and, on the other hand, gives owners the power to govern production and determine its final goals (Andrejevic, 2011: 87-8).

Critical evaluation: A commons fix for Capital

Epistemology	Agency	Structure	Internal Dynamics	External Dynamics	Normative Criteria	Social Change
Methodological Individualism	Isolated Individual(s)	Market	Bottom-Up Emergence	Co-optation of Commons by Capital	Utilitarian	The Commons as Fix to Capital

Table 2: The characteristics of neoliberal theories of the intellectual commons

Neoliberal theorists conceive of the intellectual commons not as human communities but as networked markets of exchange among self-interested individuals and between individuals and corporations. According to the neoliberal view, their decentralised structure and capacity for individual self-empowerment renders the intellectual commons an ideal terrain for human creativity and innovation, which may even supersede the innovative capacities of the corporation (Benkler, 2002: 377). First, commercial enterprises can benefit by capturing their social value with various business techniques. Furthermore, they can be utilised as a vehicle to restructure markets in order to make them more competitive and well-functioning. Finally, they can be employed as a tool to avert serious market failures and gridlock effects. In Peter Barnes' words,

> [t]he essence [...] is to fix capitalism's operating system by adding a commons sector to balance the corporate sector. The new sector [...] would offset the corporate sector's negative externalities with positive externalities of comparable magnitude. (2006: 65-6)

The main contribution of neoliberal theories in relation to the analysis of the intellectual commons is the fact that they bring to our attention the various ways through which capital dialectically relates with the intellectual commons. Nevertheless, the alleged co-existence between the intellectual commons and capital is emptied from its obvious contradictions. As communal resources, values and their systems, which are consumed by private for-profit activities, constantly undercut the energy and dynamics of intellectual commons' communities and degrade their potential for creativity and innovation.

Accordingly, asymmetries of power between commoners and corporations are obfuscated through the use of terms such as 'co-creation' and 'co-existence'. Control over infrastructure and the powers it confers to its owners is considered either as benevolent contribution or as a new type of social corporate responsibility or even as another proof that private profit motivation and market mechanisms maximise social utility. And the governance of the intellectual commons by capital is apprehended as necessary regulation, which cannot be supplied internally.

To sum up, neoliberal perspectives approach the intellectual commons as a fix to capital, both by exploiting commons-based peer production as a component to capital accumulation and by utilising the productive force and organisational capacity of intellectual commons' communities as a means to restructure commodity markets and corporate forms and avert their failures (Caffentzis, 2010, De Angelis, 2012).

Conclusion

Rational choice and neoliberal theories of the intellectual commons are re-conceptualizations of the social intellect as the productive force of our intellectual commonwealth, albeit in a relation of complementarity or subsumption with capital. Under this prism, they come in contrast to social democratic and critical theories of the intellectual commons, which conceive of the intellectual commons as embodying modes of social reproduction alternative to capital and, thus, having the potential to contribute to the emergence of commons-based societies (Broumas, 2017).

A unified and systematic theory of the intellectual commons should hold a critical perspective over existing social arrangements. Therefore, it ought to have solid normative foundations, not confined within the limitations of the status quo in the field but rather orientated towards what the current state of affairs should become. In this context, the normative horizon of such a theoretical endeavour stretches nothing short of the realization of the radical potential of the intellectual commons to fully unleash the productive forces of the social intellect. In addition, a 'strong' theory of the intellectual commons should in principle analyse social phenomena not in isolation but rather within their social context and, hence, touch issues related to the interrelation between the intellectual commons and the social totality. It is within this wider analytical framework that the elements of both rational choice and neoliberal theories have to be evaluated and incorporated, wherever appropriate.

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