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# Knowledge Economy and the Commons: A Theoretical and Political Approach to Post-neoliberal Common Governance

Review of Radical Political Economics  
1–18  
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Political Economics  
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sagepub.com/journalsPermissions.nav  
DOI: 10.1177/0486613415586991  
rrpe.sagepub.com  


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## Abstract

Knowledge is increasingly thought of as a common good. This is exhibited in the fact that many central economies are moving towards economic paradigms where knowledge plays a fundamental role. This paper explores the confluence between both processes, asking in what ways an economic model based on the knowledge commons can open up new socioeconomic scenarios in the face of overwhelming neoliberal financialization.

**JEL classification:** B0, B5, O3

## Keywords

knowledge, commons, governance, financialization, knowledge-based economy

## Introduction

Knowledge is increasingly imagined and projected as a common good. Different political and academic disciplines now refer to the rise of “knowledge-based economies.” Considered as a resource, knowledge exhibits all the features of a common good, in terms of its production and use. In fact, the processes of knowledge production and use are increasingly intertwined. This is because knowledge as a resource is an inexorable component of social relations. Furthermore, the relationship between economy and knowledge has grown over time; economy is becoming a cognitive process in which value creation is not so much the result of the transformation of material resources through a work process involving the use of physical energy, but rather through thoughts, emotions, and identities. But to what extent does the confluence between these two processes allow us to consider new social and economic realities?

This article explores the extent to which the enhancement of knowledge as a common good, and the articulation of an economy that supports its development in cognitive processes, can open up new possibilities to improve the living conditions of human societies. To develop this perspective,

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Date received: December 29, 2013

Date accepted: June 25, 2014

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it is necessary to problematize conventional approaches that address both processes of production and use. First, we will reconsider the theories and governance mechanisms related to the commons. In this regard, our interest is not so much the best management strategy to ensure the preservation of a common resource, but to improve our understanding of how the social construction of knowledge as a common good translates into higher levels of wellness and quality of life. Second, it is essential to perform a theoretical critique of conventional approaches to the knowledge economy. This is based on a change in the departing hypothesis: that we should stop considering knowledge as a resource hampered by imperfections, which requires “improvement” by way of conversion into either public or private good. This then necessitates an analytically coherent account of how and in what ways work processes, production, and consumption are reliant on knowledge.

To address these issues, we draw on the works of Rullani (2004) on the concept of creativity and value in the knowledge economy, of Lazzarato (2002) on the economic psychology of Gabriel Tarde, and of Hardt and Negri (2009) on the new commons. The first two sections will function as a dialogue between the above authors, so that the theoretical underpinnings of the governance of the knowledge commons aimed at improving the living conditions of humanity can be laid down. To further advance this concept of governance, it is necessary to analyze its main challenge and obstacle: the financialization of economy and the neoliberalization of governance based on the expropriation and privatization of common goods (Marazzi 2010; Rose 1996). Ultimately, the purpose of this paper is to define a political strategy consistent with the development of a diffuse knowledge economy that promotes cognitive mediations to articulate heterogeneous communities into non-hierarchical meshworks.

## I. The Social Construction of Knowledge as Common Good

In examining how a resource such as knowledge—that diverges from the defining traits of the traditional commons—can be governed, Hess and Ostrom state that “the costs of sustaining large and diverse resources are much higher than when governing small and relatively homogeneous resources,” because “when a resource is large and complex, users may lack a common understanding of resource dynamics, and they frequently have substantially diverse interests” (2007: 44). They consider that the institutional analysis and development (IAD) framework can be used “to analyze dynamic situations where individuals develop new norms, new rules, and new physical technologies” (2007: 44). Taking on the challenge of addressing these situations, they acknowledge that studying them is “very important for an understanding of the knowledge commons given the fast rate of change related to the physical world, the rules that are crafted to cope with new situations, and the enlarged community of producers and users” (2007: 41-42).

However, Hess and Ostrom do not take into account the differences between both kinds of commons to question the validity of the IAD framework. In general, they argue that the “potential problems in the use, governance, and sustainability of a commons can be caused by some characteristic human behaviors that lead to social dilemmas such as competition for use, free riding, and over-harvesting” (2007: 5). For them, the vulnerability to social dilemmas is the key to identify a shared resource as a common good. In fact, they consider that “typical threats to knowledge commons are commodification or enclosure, pollution and degradation, and nonsustainability” (2007: 5). By framing the commons in terms of economic and rational behavior characteristic of the *homo economicus*, Hess and Ostrom preclude the emergence of alternative forms of commons management. In this framework, the analytical treatment of the knowledge commons rests on two problematic assumptions. First, that common resources, however dynamic and changing, are a “given.” Second, that the function of communities is reactive: they adapt their rules to the quickly changing circumstances of the knowledge commons. Hardt and Negri (2009) also distinguish two kinds of commons, but from a different standpoint. They refer, on the one hand, to the wealth of the material world that is often claimed as a heritage of humanity to be shared. On the other, they consider as common goods the results of production derived from

social interaction, *e.g.* knowledge, codes, information, language, or affect. This perspective “does not position humanity separate from nature, as either its exploiter or its custodian, but focuses rather on the practices of interaction, care, and cohabitation in a common world, promoting the beneficial and limiting the detrimental forms of the common” (Hardt and Negri 2009: viii).

In this conception, the commons are not necessarily a given. Accordingly, the debate can move beyond the choice of appropriate governance mechanisms to preserve these resources. What matters is no longer to identify the most appropriate rules to address social dilemmas that can extinguish these resources, but to explain the wide variety of complex processes involved in the social construction of these commons. In fact, knowledge production is not constrained by the logic of scarcity—that tends to subordinate the creation of the new (invention) to that which already exists (repetition)—but rather by all the social barriers limiting the social ability to share and exchange.

The social construction of knowledge commons results from a process of cooperation that exceeds the division of labor. This process brings together different forms of acting together. In it, strict business activities are just one of the possible modes of engagement in social cooperation. According to Tarde, the creation of new forms of knowledge is based on the principle of cooperative multiplicity, whereby new desires and common beliefs form a wide process of social interaction that takes place in the realms of economics, science, aesthetics, and the media (Lazzarato 2002: 148). The dynamic and active principle of this social construction is the cooperation between brains (or between different forms of social desire, to avoid the anatomic metaphor). Actually, the “inter-psychology” developed by Tarde implies a new understanding of the social forces, their forms of cooperation and coordination, which challenges directly the centrality of the division of labor and the market. The foundation of cooperation does not reside in capital or work, but in some prior, a “primitive social fact”: the multiplicity of social relations between creative brains.

Inventions do not come out of nowhere; they always result from processes of co-production involving a series of brain forces that are not functionally subordinated to the reproduction of capital or labor. Inventions result from an encounter and collaboration between multiple flows of ideas, habits, behaviors, perceptions, affects, and sensations that are rearranged in novel ways. For Schumpeter (1934), the invention of a product, a technique, or a new form of organization is the result of the agency of great men and ideas. Instead, Tarde starts from the cooperation between a multitude of social actors and their infinitesimal contributions in terms of creativity and invention. In fact, individual genius should be understood within the logic of a dynamic multiplicity of heterogeneous contributions of the multitude (Lazzarato 2002).

Even if these goods are subject to private or public property as a way of avoiding the social dilemmas that would lead to their hypothetical exhaustion, their production would be negatively affected thereof, because their capacities of expression, creativity, and communication would be curtailed. The first models designed to respond to social dilemmas, such as the logic of collective action (Olson 1965), the tragedy of the commons (Hardin 1968), or the prisoner’s dilemma (Cunningham 1967), opt for governance mechanisms that lead to recurring crises of underproduction in such commons (Hess and Ostrom 2007: 10-12). In fact, Foray (2004: 121-122) recognizes that certain processes of control from the sphere of the market and the public sector can result in scenarios of knowledge production where tragic dynamics prevail. For instance, Heller and Geisler (1998) discuss how in the field of biomedical research, excessive control of intellectual property rights, or the overuse of patents, have involved the underuse of scientific knowledge.

According to Lazzarato (2002: 149), knowledge escapes the logic of scarcity and economic measurement for two reasons. First, because knowledge is the outcome of a collaborative process of production, independent and autonomous from the division of labor. Both ontologically and historically, knowledge results from the action of networks of assembled brains, and not exclusively from the processes of socialization occurring in the bounded context of the enterprise and the market. The linguistic, aesthetic, and scientific creations, public opinion, affects, and emotions, imply forms of acting together that cannot be reduced to the logic of material production or the market. Neither the hierarchical logic of the division of labor can be imposed to control the development of

inventions, nor can the market replace the collective devices that allow for the development of languages, know-how, passions, and communication. These multiple forms of knowledge production are combined in various forms with the structures of capital. However, even when the knowledge commons are expropriated and artificial scarcity is imposed by capitalist elites limiting the public use of knowledge, the private appropriation remains always partial. This is so because the properties of knowledge cannot be only fixed in the material vector and in property relations, but are also retained by the social actors involved, which makes possible new inventions.

Second, because interbrain cooperation operates from the principle of creation rather than from reproduction. Unlike the issue raised by Smith (2000 [1776]) in his famous example of the pin factory, the creation of the new is ontologically incommensurable in the conditions of its own production. In a similar fashion, in artistic, linguistic, intellectual, social, and media productions, the creation of the new is ontologically incommensurable in the conditions that existed before its production: there are no pre-existing factors that explain the emergence of the new. We need to leave the factory to understand the creation of knowledge.

For Rullani (2004: 289-291), knowledge is characterized by a specific quality: when used it is not consumed or exhausted, and remains available for other uses that in turn multiply its potential future use. On one hand, this is because the reproduction of knowledge does not undergo the same operations as in the original process of knowledge production. Thus, the difference between the costs of production and reproduction is closely related to the intrinsic characteristics of knowledge, whose generation involves a rupture between the past and the future. Furthermore, all knowledge contains a potentially infinite reservoir of use value, which corresponds to all potential future uses. In short, the more knowledge spreads, the more it grows in value. Any new use involves a higher degree of usefulness with little or no costs of reproduction. Put another way: knowledge is valued when it spreads, and is common. This understanding moves beyond the orthodox attempt to deal with the increasing value of knowledge through the concept of network externalities, which still considers that the creation of knowledge is bounded to the productive unit.

The knowledge economy does not entail a process of dematerialization of value, rather, it generates value in the “friction between the free reproducibility of knowledge and the non-reproducibility of the material” (Pasquinelli 2010: 296). It is no longer enough to transform the raw material into a product, but it is necessary to endow material products with meanings that make them desirable and sharable by consumers. The creation of value rests less in the functional improvement of a material product, but in the creation of meaningful experiences that converge with the collective desires of people. For instance, a CD must be physically produced and consumed; we need our bodies and our time to produce and consume music. When the CD-form is dematerialized by the evolution of digital technology, the only change in terms of material production is that the body and the time of the artist are subject to a stronger competition, which forces them to work more intensely on the provision of new and changing meanings to the product. At the material level, however, new technological devices such as iPods or MP3s thrive and increase profits. Thus, there is always an asymmetry between immaterial and material production, because value is accumulated on the immaterial level but the profits are made on the material one (Pasquinelli 2008: 150-51).

Knowledge creates value, drawing on the existing social interaction, due to the characteristics of its production (Lazzarato 2002) and propagation (Rullani 2004). That is, value does not simply derive from an investment of capital (Fumagalli 2007: 21-22). From this standpoint, knowledge cannot be considered another factor of production that can be simply added to capital, labor, and land. Instead, knowledge can be considered an anti-economic resource, a non-resource or, as Rullani puts it, a “perfectly imperfect” resource. The economic features of knowledge make this clear (Rullani 2004). First, knowledge is not a scarce resource; its potential users do not compete among themselves because its consumption is not characterized by rivalry. Second, it is not a divisible resource, which makes it difficult to allocate costs and benefits for each knowledge producer and user. Third,

it is a non-excludable good, because it is difficult to prevent non-owners from using knowledge by means of copy or imitation. Finally, knowledge is not instrumental, because the cognitive processes involved in its production and propagation also act upon the purposes and identities of the subjects concerned. Knowledge is not a means to satisfy some pre-given ends. On the contrary, knowledge is a self-reflexive resource that transforms its own premises in the process of propagation.

These features make knowledge a common good *par excellence*, situated in a different and autonomous plane to the private and public spheres (Hardt and Negri 2009: 281). In reality, knowledge is a “rebel” resource, hardly tamed under the capitalist order of production and the state. This has to do with the process of subjectivation of knowledge in society. On the one hand, the human perception that emerges in the production of knowledge differs from the experience of producing other commodities. Although knowledge production involves discipline and high opportunity costs, knowledge producers are not solely motivated by the economic compensation that work will entail. Rather, the production of knowledge, as with cultural and artistic production, usually brings satisfaction for the subjects involved beyond economic remuneration (which, in many cases, does not even exist). This also rests on the common assumption that the potential uses of knowledge are severed when they are enclosed and appropriated privately. In this regard, Akbulut and Soyulu (2013) provide some interesting reflections on the construction of Gezi Park in Istanbul as a common good and its relation to knowledge, while Harvey (2012: 67-89) addresses the development of urban commons from a similar perspective. Social groups develop emotions and values that are not subordinated to the logic of economic valorization, but can decisively influence it. For example, aesthetic and creative workers can establish links between territories and global market dynamics, facilitating the production of certain elements that satisfy and connect with popular desires. In addition, they can produce immaterial meanings that increase the value of the material vector, such as making documentaries about wine that have a greater impact in the increase of the added values of wine than its organoleptic qualities.

Therefore, the social construction of knowledge as a common good is grounded on a very different logic to that of the traditional commons. In the latter, the maximization of value is achieved by exploiting a resource at a similar rate to its capabilities of reproduction. In some cases, when resources are non-renewable, or when renewable resources have been overexploited—such as with whaling—the best option might be putting a halt to its exploitation. Instead, the logic is reversed with knowledge: the maximization of value is reached when it is spread and its uses are multiplied as much as possible. Thus, although knowledge can hardly be defined as a common good in traditional terms, the underlying ideas concerning its use and the practices adopted for its production underpin its social construction as a common good. Moreover, the production and use of knowledge are increasingly intertwined in practices and experiences that mark knowledge as a component of social relations. Thus, knowledge is not constructed as a common good by property rights provisions governing social dilemmas that may jeopardize its conservation (David 2001; Rose 1986), but rather through the patterns of use and social relations arising from the practices and experiences associated with its production and use. This includes, for instance, the qualities of a city that emerge from social practices in its various spaces (Harvey 2012). Thus, a city park can become a common good depending on the practices developed by the social actors involved in its use. The park can be used as a common garden by the neighbors, or conversely, exploited by real estate speculators to increase the prices of nearby houses. Similarly, a street can be used for strolling and promoting social interaction or jammed with cars and polluted.

## 2. The Theoretical Challenges of Knowledge-based Economies

Although the relation between knowledge and economy is increasingly tight, the incorporation of knowledge in the theoretical framework of economy is problematic and contradictory, and even contains glaring omissions.

## 2.1. The limitations of conceptions of the knowledge economy

In reviewing the evolution of the knowledge economy, Foray (2004) notes that initially, “to apprehend knowledge, economists constructed a ‘comfortable world’ in which only some agents, institutions, and sectors were specialized in the production of knowledge” (2004: 6). Machlup (1962) is probably the most representative author of the tradition that conceives of knowledge economies as specialized sectors primarily related to the production and processing of information. These linear approaches develop the current mainstream idea that it is research and development that is the engine of a knowledge economy.

Later, it was considered that any productive process was able to generate knowledge, even if the production of knowledge did not constitute the ultimate purpose of the activity. Accordingly, the process of learning became a central category in knowledge-based economies (Arrow 1962; Rosenberg 1982). However, the “learning by doing” and “learning by using” approaches reproduce an underlying tension between knowledge and economy; there is a conflict between the normal behavior of producers and consumers, and the question of learning in the fields of production and consumption. To some extent, these represent two types of incompatible behaviors (Rullani 2004). The neoclassical discourse on efficiency rests, first, on the idea of a worker who focuses her attention exclusively on keeping regular activity going, in order to maximize the output of the company; second, it also rests on the conception of a consumer who is exclusively dedicated to maximizing the immediate utility of the goods consumed. In this logic, it is difficult to conceive a worker or consumer as a subject that “wastes” their time in experimenting with new methods of production and use. Because of this underlying conflict, David and Foray (2002) note that, for instance, the capacities of properly observing, remembering, or hypothesizing on the processes of production at stake are fairly limited.

When it is compelling to address the issue as such, models of endogenous growth incorporate knowledge as a productive resource endowed with its own dynamics and productivity (Lucas 1988; Romer 1990). However, for Nelson (1994), there are other aspects of knowledge economies of paramount significance that explain value creation, which are almost completely disregarded in the above models. First, knowledge is always portrayed as a set of coded instructions that provide free and unlimited access to the immediate exploitation of technology. Of course, this ignores the fact that most knowledge is not codified into formal sets of instructions. This huge simplification limits our capacity to make sense of knowledge-based economies (Polanyi 1966). Second, companies are still considered to be “black boxes.” Models of endogenous growth do not take into account that mastering a new technology or item of knowledge is an extremely complex process, whose achievement depends on the capabilities of each company. These models do not see this capability as an explanatory factor of economic growth (Penrose 2009). Third, many contextual issues that strongly influence business strategies of growth, innovation, and change are not taken into account. The perspective of national innovation systems helps explain how this array of contextual elements influence such strategies (Lundvall *et al.* 2002).

Notwithstanding these theoretical advances and the overall vast technological progress, many industries and professional sectors are going through a growing economic crisis related to knowledge management (Foray 2004; OECD 1999). Moreover, other problems associated with knowledge go unnoticed in the orthodox paradigm. For example, modern knowledge is used to plunder natural resources, and at the same time to exploit the knowledge of ancestral communities who managed resources sustainably (Khor 2002; Leff 1995; Shiva 1997). But, in reality, these conflicts also arise in most aspects of Western life, from battles around the urban commons (Akbulut and Soyul 2013; Harvey 2012) to the construction of the heritage commons (Alonso Gonzalez 2014).

From our standpoint, addressing these issues requires more a complex theoretical framework than those provided by models based in mechanical balance (Rullani 2004: 323-324). It is necessary to reflect on knowledge outside the conventional ways of conceiving economy, both by

orthodox thinkers and by some of its critics. To achieve this, it is necessary to think positively about the properties of knowledge as a common. This involves overcoming the epistemological horizon limited to asking, in negative terms, the extent to which properties of knowledge differ from other conventional goods in models of economic balance (Rullani 2004: 339-341). Therefore, it is essential to inquire deeper into the implications underlying the social construction of knowledge as a common good, expanding and enriching the definition of productive social cooperation beyond the narrow boundaries of the division of labor within companies (Lazzarato 2002: 148).

## 2.2. *How does knowledge produce value?*

As noted above, it is necessary to stop thinking of the properties of knowledge as a common in negative terms, that is as a non-scarce, non-appropriable, and non-instrumental resource (Rullani 2004: 340-341). At best, that line of inquiry would lead us into a discussion of how to correct the “imperfections” of knowledge. Accordingly, an artificial scarcity of knowledge could be generated by restricting its use with stricter property rights regulation. In addition, knowledge could be artificially split with more sophisticated imputation systems, by adopting methods of social quantification to assess the positive and negative externalities of each productive unit. Finally, it could be turned instrumental artificially, by incorporating into economic calculation procedures the meanings, desires, and feelings of people through market research methodologies. In this scenario, knowledge would be transformed into a standard resource, at the expense of neglecting the key factors that define its potential for value creation.

It is necessary to move forward theoretically in the opposite direction. This involves considering the positive values that allow for knowledge as a common good to not only generate value, but also empower and enhance these values with institutional solutions that do not go against the social potential to create knowledge (Rullani 2004: 341-349). Three issues require specific attention. First, knowledge should be conceived as an infinitely amplifiable resource, rather than just one that is non-scarce. Second, instead of considering knowledge as non-appropriable, it would be better to cast it as a shareable resource in a socially regulated manner. Third, it is necessary to build on the reflective nature of knowledge, instead of understanding it exclusively as non-instrumental. Theoretical advance in this regard requires analyzing the conditions that activate or inhibit these properties, understood in a positive sense.

Turning knowledge into an amplifiable resource involves the facilitation of its propagation. The multiplicativity of knowledge is neither natural, given, nor something that can be explicitly registered. Rather, it requires a complex process of designing, construction, and activation (Rullani 2004: 341-343). This, in turn, requires the identification of the mediators and cognitive connections that can successfully manage the process of propagation, which is unstable and batchwise, alternating periods of stagnation with moments of explosive multiplication.

Non-appropriability means that the ability to assert property rights is limited by the difficulty of isolating individual contributions from that of other social actors, as well as by the high cost incurred by excluding actors who are involved with acts of copying or imitating. On these grounds, the question that arises is the existence of another governance mechanism—aside from the market—that allows for the allocation of resources efficiently and sustainably among knowledge-producing actors. This question is usually circumvented by establishing mechanisms for the enclosure of common goods, which render the process of appropriation artificially efficient, such as patents or intellectual property rights. Meanwhile, Rullani (2004: 343-346) notes the need to understand, in positive terms, the ways and intensities with which knowledge can be shared among various actors. In this sense, it would be crucial to organize cooperative and relational processes grounded in non-exclusionary and non-divisible principles. Likewise, it would be necessary to develop mechanisms of ownership regulation that are not solely underpinned by

anonymous criteria supported by legal provisions that have a single set of terms of all users. It would be better to opt for reciprocal property relations that enable actors to recognize each other and to communicate, which in turn will endow meaning onto the process of knowledge production and sharing. In short, this would entail the recognition that knowledge generates value in the relational process involving heterogeneous actors, and would pave the way for the redistribution of rents that tap the common stock of knowledge produced by society. In the sphere of digital software, the fact that copyrights do not reflect the complex and common processes of production involved in its development has prompted a heated debate concerning property rights. Initiatives such as “copyleft” are also criticized because, although they recognize the common nature of the knowledge produced, they are not a viable option for artists or software developers, who cannot earn a living on them. As Pasquinelli argues,

Copyleft is thus not able to “make society better” in any material sense, because not only is it not viable for many kinds of workers, but the majority of the extra exchange value created by producers of copyleft information is in every case captured by owners of material property. (2008: 82)

For Kleiner (18 July 2007), the solution would be “copyfarleft,” a hybrid license with different terms for each user depending on the exploitation model adopted. Copyfarleft then recognizes class divisions and the heterogeneity of actors behind knowledge production. This would allow for endowing different meanings to knowledge, for the establishment of higher levels of communication between knowledge producers, and for workers to claim back the means of production, charging those who exploit wage labor and use private property to make profit.

Knowledge is not an instrumental means to satisfy needs that are given exogenously and that remain unchanged in the course of the action. Indeed, knowledge has the ability to transform the identities and opinions of the actors engaged, thus creating new collective identities and altering their preferences. Knowledge can produce value by affecting social actors and effecting changes in their worldview. The question is how this actually happens (Rullani 2004: 346-347). Which are the cognitive mediators that perform these fundamental transformations? What kind of cognitive connections develop in the fluid field of a process that self-generates its own purposes? It is essential to act reflexively upon the conditions of emergence of the cognitive experience. This process transforms the interpretative framework of reality, methods of validation and verification, linguistic and communication channels, and even the schemes of strategic interaction between peers. This is why, unlike Hess and Ostrom’s approach (2007), it is key to avoid thinking of communities as adaptive and reactive entities, where knowledge must be replicated due to exogenous structural constraints. In fact, communities have the ability to explore new hypotheses and discover new dynamics in contexts of co-evolution, where collective identities and the world are transformed simultaneously (Bonta and Protevi 2004). In this sense, value production is intrinsically connected with new articulations of the senses of belonging and the capabilities of self-representation that communities can develop (Thrift 2006).

It is necessary to stress that reflexivity in the management of common goods is not only the outcome of some structural requirement motivated by the incorporation of communities into global process of socio-cultural and economic exchange (Macías Vázquez and Saavedra Gallo 2012). This requires moving beyond recent sociological discourses which argue that reflexivity can only be activated through a process of detraditionalization (Beck *et al.* 1994). Although there are differences between them, Beck and Giddens consider that the increasing role of knowledge in the global economy provides communities the opportunity to be self-reflective. On the contrary, we could argue, communities can innovate from tradition, and local culture can provide the basis for enhanced reflectivity, combining the endogenous with the hybrid aspects of global culture (Escobar 2008). Furthermore, reflexivity does not rest solely on cognitive processes, but is imbued with meanings of symbolic and affective character. Consequently, it is necessary to

ground the reflexive activities around invention and propagation of knowledge in positive meanings, memories, and identities shared by communities.

### 2.3. *The knowledge commons as the core of the valorization process*

Hardt and Negri get to the heart of the question when they argue that

with regard to cognitive and affective labor, for example, capital alienates from the worker not just the product of labor but the laboring process itself, such that workers do not feel their own capacities for thinking, loving, and caring when they are on the job” (2009: 140).

However, the dynamics of expropriation are always subject to a permanent tension because

cognitive labor and affective labor generally produce cooperation autonomously from capitalist command. . . . Rather than providing cooperation, we could even say that capital *expropriates cooperation* as a central element of exploiting biopolitical laborpower. This expropriation takes place not so much from the individual worker (because cooperation already implies a collectivity) but more clearly from the field of social labor, operating on the level of information flows, communication networks, social codes, linguistic innovations, and practices of affects and passions. Biopolitical exploitation involves the expropriation of the common, in this way, at the level of social production and social practice. (2009: 140-141)

Thus, while “capital is increasingly external to the productive process and the generation of wealth . . . biopolitical labor is increasingly autonomous” (2009: 141). This means that, as cognitive and affective labor produce wealth increasingly through autonomous cooperation outside capital relations, capital seeks to expropriate such social cooperation, resulting in the generation of knowledge through patents or intellectual property rights (Pasquinelli 2010). Expropriating the outcomes of cooperation does not necessarily imply that capital is in a position to supplant the functions developed in the field of the common, where knowledge is produced. As Harvey has argued in his study of limits of the capitalist valorization of differential urban rents (2012), difference generates value, and difference often emerges in environments of common knowledge production. However, the coding processes required for the private capture of this value through strategies based on rents are usually detrimental to the reproduction of the common knowledge that underpins the value-generating differences in the context of the global hierarchy of value (Herzfeld 2010). As knowledge becomes less context-specific and more easily codified, communities gradually lose control over the knowledge they hold and produce.

Actually, capitalism addresses the expropriation of common knowledge in contradictory ways and with intrinsic limitations. As grassroots creativity is constantly devoured by the market, new contextual knowledge is incorporated to slow down the decay of capitalist valorization. This insane logic, which is based on a frenzied model of accumulation, permanently erodes the bases of creative knowledge, which is only conceived in its utilitarian dimension. Nevertheless, the process of capitalist production cannot reproduce the contextual knowledge generated by communities. The creative ability of specific communities and their specific reservoirs of relationality, knowledge, and expertise cannot be decontextualized and relocated as in the cases of industrial delocalization associated with a set of codified knowledge. Alternatively, capitalism needs to seek new pools of common value to replace sources of value already exhausted. In her analysis of common-pool resource management in ecotourism ventures led by indigenous communities, Stronza (2009) shows how the stabilization and homogenization of the offer lead to constant reinventions to satisfy tourist expectations of the exotic and the savage. The reinvention of capitalism requires the continuous appropriation of new cognitive spaces, which increasingly rest in the exploitation of collective desires for new relations, experiences, and ways of life that are produced in common by the human *bios* (Thrift 2006).

Hence, as Lazzarato (2002: 147-209) argues, it is necessary to introduce a theoretical framework that allows us to understand how the social creativity that generates new forms of knowledge is sustained in material and symbolic structures that go beyond those defined by capitalist production. To do this, we must question the theoretical roots of political economy. Both Marx (1976) and Smith (2000 [1776]) argue that the division of labor is the source of increased productivity and surplus value in capitalism. The difference between them is that Smith thought that this condition was the result of natural evolution, while Marx considered it the production of the social defeat of the artisans and the working classes. Both believed that only the scientific organization of labor is able to coordinate and enable the socialization of human capabilities.<sup>1</sup> By positing the division of labor as the central engine of wealth generation, the creation of knowledge was reduced to a mere derivative effect thereof (Lazzarato 2002: 259). Overcoming this view requires first the subtraction of the analysis of knowledge from the epistemological horizon that limits the conception of production as a process of energy transformation (Rullani 2004: 17-18). From this standpoint, the role of knowledge is restricted to finding the more efficient technical combinations of capital, labor, and land, as Schumpeter (1934) argues in his theoretical approach to innovation. In fact, the main form scarcity takes in economic theory is energetic scarcity, not cognitive scarcity.<sup>2</sup> Because production is conceived as energetic expenditure, energetic scarcity grants value to the product. Multiplicative, interpretive, and self-regulative phenomena, where human knowledge plays a key role, are disregarded. If these phenomena were taken into account, it would be necessary to consider knowledge as the fundamental resource of economic systems and a productive factor of a different nature to the others, with a specific way of generating value (Rullani 2004).

Second, the importance of work in the industrial economy is not based on the division of labor, but in the role of invention as a driver of wealth creation. According to Lazzarato (2002: 268-269), invention is always an encounter that brings together the cooperation of heterogeneous social actors with varied sets of beliefs and desires that are combined in novel ways. Invention is not the task of great entrepreneurs and ideas, as Schumpeter (1934) argues. As an outcome of social cooperation, invention requires infinitesimal contributions from many actors, including, but not limited to, workers employed in productive processes. This perspective highlights the qualitative aspects of work. Consequently, the creation of knowledge should not be described as a process of abstraction deriving from the division of labor, but rather as the integration of the infinitesimal contributions being infinitely amplified that overflow the framework of the productive unit (Toscano 2007).

The main problem of classical political economy is that it focuses on the measuring of value, rather than in the creation and constitution of values (Deleuze 1983; Latour 2005; Lazzarato 2002). Moving beyond classical political economy involves arguing that certain common possessions, such as language, educational institutions, and communication networks, may play a constitutive role in the allocation of resources and the production of wealth. The nature of subjective activity and of the object itself implies that the consolidation of a relevant portion of scientific and technical progress still resides mostly in their free production and socialization through interbrain cooperation (Lazzarato 2002: 151).

For Hardt and Negri, the “common is the locus of freedom and innovation—free access, free use, free expression, free interaction—that stands against *private* control” (2009: 282). They go on to note that

<sup>1</sup>It is true that Marx differentiated between social and technical division of labor. However, his vision of social division continued to be framed within the interactions derived from the specialization of productive units.

<sup>2</sup>In fact, the energetic challenges faced by the world economy could be explained more by a cognitive deficit in the search for alternatives than by the scarcity of energetic resources.

in the age of biopolitical production, the common, which previously was cast as external, is becoming completely “internalized.” The common, in other words, in both its natural and artificial forms, is becoming the central and essential element in all sectors of economic production. Rather than seeing the common in the form of externalities as “missing markets” or “market failures,” then, we should instead see private property in terms of the “missing common” and “common failures.” (2009: 283)

Therefore, concepts like valorization and accumulation

necessarily take on a social rather than an individual character. The common exists in and is put to work by broad, open social networks. The creation of value and the accumulation of the common, then, both refer to an expansion of social productive powers. Economic growth, in this sense, has to be understood as the growth of society. (2009: 283)

...accumulation of the common means not so much that we have more ideas, more images, more affects, and so forth but, more important, that our powers and senses increase: our powers to think, to feel, to see, to relate to one another, to love. In terms closer to those of economics, then, this growth involves both an increasing stock of the common accessible in society and also an increased productive capacity based on the common. (2009: 283)

Thus, social knowledge is becoming the central productive force, increasingly beyond the organizational capability of capital. In other words, production is moving towards an “anthropogenetic” model, centered in the creation of forms of life (Marazzi 2008; Virno 2003). This transformation raises two key questions. First, knowledge is no longer an instrumental means of creating value, but the production of knowledge itself is of creative value. Second, knowledge is no longer a weapon capital employs to control labor and society. The more capital seeks to generate value through the production of knowledge, the more control over such knowledge becomes more elusive. An anthropogenetic conception of a knowledge-based economy could lay the grounds of a theory to face the challenges posed by the process of capitalist exploitation of socially produced common knowledge. The reproduction of forms of life and the new subjectivities that result from the social production of knowledge create the material and cultural bases for a process of knowledge propagation, one that is not necessarily subordinated to the logic of privatization. It is therefore important to stress the role of cognitive and affective workers determined to give new meanings to the potential uses of knowledge. Thus, knowledge can create value in a more expanded form than that generated in the exploitation and expropriation of human forces. Moreover, the production of knowledge would contribute to an enlarged and more sustainable reproduction of these human forces.

### **3. Moving Towards a New Framework for the Governance of the Commons**

Two theoretical remarks are essential in the development of new strategies of commons management. On the one hand, the production of knowledge builds on a social process of cooperation between multiple social actors and their specific beliefs and desires, always assembled in novel forms. Moreover, the process of knowledge valorization is the result of its own creative propagation. The process of propagation is underpinned by shared common cultural and social values, as well as by the coordination mechanisms of the market and the division of labor.

Consequently, knowledge emerges and spreads as a diffuse and distributed phenomenon in society conceived as an open system. The diffuse and distributed character of knowledge cannot be considered as something to be controlled through interventions “establishing something like command outposts by which private and/or state agencies monitor and regulate social production processes through various techniques of discipline, surveillance, and monitoring” (Hardt and

Negri 2009: 144) in the context of technocapitalism (Suarez-Villa 2009). From our epistemological standpoint, the maximization of knowledge production is more related to extensive processes of diffusion and socialization than with processes of intensification and enclosure, such as clusters, business incubators, scientific or technological parks. Notwithstanding this fact, most orthodox governance paradigms seek to create closed circuits of intensive knowledge. In some cases, it is considered obvious that knowledge is generated by private companies and, from there, it may spill into other spheres. Accordingly, these governance paradigms highlight the need to protect and compensate companies that concentrate the production of knowledge (Foray 2006). In other cases, it is recognized that the generation of knowledge can rely on external economies (Dunning 2002; Lundvall 1992). When this occurs, strategies of territorial clustering are developed to support companies in their attempt to attract such external economies to their advantage (Porter 1998).

In both cases, capitalist elites are increasingly turning to strategies based on rent in order to transform into profit the value produced by the knowledge commons (Vercellone 2008). Thus, they preclude the generation of a higher overall value, which would derive from the propagation of knowledge throughout the territory (Magnaghi 2010). In return, however, capitalist elites have a simpler and more direct form of value extraction, because closed circuits enable them to generate scarcity artificially, and to control the process of production. Although strategies of rent extraction are not a historical novelty (Braudel 1982), they have changed under anthropogenetic capitalism and have thus affected the logic of economic governance (Marazzi 2010).

As Harvey (2002) points out, neoliberalism has not led to an expansion of the value creation capabilities within companies. To explain this, “economists are recognizing the increasing importance of factors external to capital because ... capital is increasingly external to the productive process and the generation of wealth” (Hardt and Negri 2009: 141). Thus, the intrinsic relation described by Foucault (2002) between elite power structures and the privileged production of certain forms of knowledge becomes more complex. Rather than focusing on the establishment of disciplinary regimes connected with specific knowledge productions, the elites in cognitive economies focus on the appropriation of the knowledge produced by social cooperation. For Hardt and Negri (2009), capitalism captures the common produced autonomously by society.

Today, capital and entrepreneurship increasingly focus on “capture” of already existing values rather than on their invention or production. Consider, for example, how peer production commons such as open source software are increasingly harnessed by firms (Benkler 2002), the corporate focus on the expansion of copyrights over the production of the new (Perelman 2003), the innovative processes amongst consumers aside from the firm (Oliveira and von Hippel 2011), or the need to develop copyleft licenses to prevent corporations from prohibiting knowledge produced on the basis of common cooperation in different material and digital realms where corporations extract value (Lerner and Tirole 2005; O’Mahony 2003; Perlin 2012).

In our view, the production of knowledge is an ambivalent, dynamic, and bi-directional process whereby capitalism becomes increasingly parasitic and the workforce increasingly autonomous. For Serres (1982), these parasitic dynamics do not extract surplus via a direct profit from labor and the organization of the productive sphere, but through the extraction of rents that allocate surpluses to other economic entities. Parasitic rents favor stronger intellectual property rights and patents, but are most clearly applied to the digital sphere. As Pasquinelli argues, in the internet economy

users are placed in charge of content production and web management, but do not share any profit. Major corporations like Google, for instance, make money over the attention economy of user-generated content with its services AdSense and Adwords [but only] a small part of the value is shared with users. (2008: 93)

To understand these new forms of extraction of common surplus, it is necessary to shed light on the origins of common wealth. Indeed, the common can be external from the perspective of the

mechanisms of capitalist organization, but it is completely internal to the processes of biopolitical production (Hardt and Negri 2009).

In the abstraction, capture, and privatization of the common wealth, the financialization of the economy plays a decisive role (Marazzi 2010). The significance of this process can only be understood if we look at the ways in which the logic of financial markets has changed. Currently, the financialization process cannot be conceived merely as a process of deviation of increasingly larger amounts of surplus value and collective savings towards the elites. Financialization also represents a form of value accumulation, symmetric to the new processes of value production. Under the anthropogenetic paradigm, value cannot be exploited by the traditional forms of value extraction of Fordism or industrial capitalism. Only the financialization of economy enables capital to burst invasively in all areas of life, with a wide range of instruments for the privatization of common value generated in social life. In the field of knowledge, these instruments have a clear impact, from productive to usage processes. Thus, venture capital funds are created to finance scientific-technological research, crowdsourcing strategies are developed, while markets and market indexes are created in connection to knowledge-based economies. At the same time, traditional systems of enclosure, such as patents or intellectual property rights, are subsumed more tightly to the logic of financial valorization. For example, the share price evolution of a pharmaceutical company may be conditioned by the recognition of a patent or the approval of a certain drug by the respective authorities.

The financialization of economy has consequences in terms of governance as well. Because of its focus on redistribution rather than production, the self-referential dynamics that increasingly occur in financial markets result in fictitious profits and speculative bubbles (Marazzi 2010). This generates a context of continuous financial instability that creates more uncertainty and distortions in the dynamics of emerging knowledge economies, such as became clear in the dotcom crisis at the beginning of the century. These systematic transformations require us to reframe the debate on the governance of the commons in general, but particularly of the knowledge commons. In this context, Harvey (2012) realizes that the intensification of capitalist exploitation under neoliberalism renders insufficient the governance mechanisms analyzed by Ostrom to address the management of new commons. For him, leftist approaches should have fewer qualms about defending the adoption of exogenous state hierarchies to manage common goods in larger scales than the local cases studied by Ostrom. He advocates a symmetric model to the capitalist enclosures, but from a common perspective. When the scale of the common good is large, Harvey considers that the processes of communalization cannot be sustained over time relying solely on the spontaneous logic of social relatedness, although he recognizes that the latter underpins the creation of social commons.

Harvey's timely approach raises a number of questions. First, whether it is true that Ostrom rejects the imposition of exogenous political authorities, and rules out the adoption of any other type of hierarchy for managing common goods. Second, in addition to avoiding the reduction of the properties of hierarchies to their ability to coerce the community, we face the question of whether all social order in systemic stability is grounded solely on hierarchical structures. Finally, we wonder if the problem is the scale of the goods to be managed or, as Marazzi (2010) notes, the challenges posed by neoliberal financialization, and the need to develop alternative strategies to appropriate the value generated in common.

Regarding the first question, it is true that Hess and Ostrom (2007) limit their theoretical perspective to argue that the fluidity and changing nature of the rules governing the knowledge commons represent a drawback for community management. Ostrom (1990) considers that the governance of the commons is more sustainable when the management of these resources is territorially bounded and the rules do not change, *i.e.* when they are operated as routines. From the perspective of traditional commons, this position is justified: it would be easier to protect common resources and sustain processes of communalization when these circumstances apply. What

if, however, we reverse this argument? Perhaps, these bounded routines of reproduction render more stable the management of traditional commons because they ease the articulation of hierarchical and coercive structures within communities (Nelson and Winter 1992: 98). Accordingly, it would not be stable rules which provide sustainability to the exploitation of common goods, but rather the hierarchical power structures established as a result of the transformation of rules in routines that generate a habitus (Bourdieu 1973). In fact, as Deleuze (1988) argues, all order in equilibrium is the by-product of articulations of power and desire.

This has to do with the second question, because when communities develop routine procedures of decision making, the choices of individuals become severely limited (Nelson 1982). It is therefore legitimate to ask whether sacrificing freedom for the sake of stability is the best choice in the case of the knowledge commons, given that this will have a negative impact on creativity (Hardt and Negri 2009). The creativity that is associated with this freedom would be sacrificed for the benefit of a systemic stability, grounded on hierarchical power structures, that guarantee that rules endure and are adhered to through a system of coercion. Are there any other alternatives to this scenario? For De Landa (1996) there are other logics of socio-economic reproduction that generate meshwork structures. These are not necessarily hierarchical, and result from the decentralized assembling of heterogeneous actors. Meshwork structures are self-organized and decentralized, emerging spontaneously without a coercive exogenous authority organizing collective life from above. On the contrary, they emerge by creative leeway (Jacobs 1984: 133). Under what conditions can such structures develop in social life? Basically, when the reproduction of multiple social processes at work in a community do not result in copies or replicas of these same processes, that turn the agency of the actors into mere routine. Moreover, when social life is created and reproduced beyond routine, the imposition of hierarchical structures becomes more difficult.

This leads to the last question: can we conceptualize the transition to a knowledge economy based on forms of creative propagation that are not the result of elites reinforcing their economic power? To begin with, we face a paradox. In the context of anthropogenetic production, the capacity of the knowledge commons to generate wealth is higher than ever. At the same time, wealth has never been so easily at risk of being appropriated by capitalist elites. Therefore, the terrain of political struggle lies in the necessity of building a diffuse knowledge economy to face the distributive regression imposed by neoliberal financialization. Doing this implies the development of alternative analytical frameworks to devise the most appropriate governance mechanisms for a communal management of the knowledge commons. A bottom up approach based on anthropological and sociological research is required to shed light on the economic dynamics of specific social processes on the ground. New theoretical models need to be imagined for the economy as a discipline to understand the functioning of the knowledge commons. Moreover, these models should be open to interdisciplinary dialogue, enabling us to understand the socio-cultural processes intrinsically connected with the knowledge commons.

#### **4. Final Reflections: Towards a Diffuse Knowledge-based Economy**

The current crisis in the capitalist model of growth and accumulation “characterized by capital’s growing un-interest in the how or where of production in favor of the capture of already existing value” (Hanlon 2014: 178) reflects a tension and difficult coupling between processes of social reproduction and capital production. This situation of social stability crisis cannot be reduced to a cyclical recession of over-accumulation that can be solved through the relocation of investment or the devaluation of assets and wages (De Angelis 2007: 17). Capital needs to reinvigorate and domesticate the commons, to both strengthen the social generation of value and make common dynamics resemble the hierarchical forms of production promoted by capital. A diffuse knowledge economy could pave the way for the development of new logics of economic reproduction

and value creation, which can generate non-coercive meshworks to ensure sustainability. Moving in this direction would probably undermine the increasingly prevailing rent strategies of capitalist enclosure and privatization.

This may open up new scenarios of equality and collective wellbeing, which are based on the greater capacity to generate and distribute value (knowledge) that has been freely created, and propagated as a common good. The present study has set out to improve our theoretical understanding of the potential political content of an alternative model of knowledge economy, and question its more orthodox conceptions. To move forward, we need to develop theory from real-world experience, exploring transitions to knowledge economies of different kinds and in different communities, as well as learning from mistakes. Herein consists the creative leeway: to understand that in the process of change itself, new skills and knowledge emerge in meshworks that underpin the consolidation and reproduction of the communalization of knowledge.

The current discourse of the entrepreneurial society hides the common roots of value generation and legitimizes the capture of value by a “finders-keepers” model of entrepreneurship (Burczak 2002), “where existing opportunities and value are captured by the entrepreneur rather than created or produced by them” (Hanlon 2014: 178). It is therefore essential to promote the politicization and development of “cognitive mediators,” conceived as “producers-keepers.” Instead of capturing already existing values and redirecting them to the sphere of capital accumulation, they would promote the generation and maintenance of value for the reproduction of the commons in the transition towards common knowledge-based economies. According to Rullani (2004: 226-230), interpretive mediators decisively influence the effectiveness of the uses of knowledge, allowing new creative potential of use to emerge. Among them are “creative” professionals who develop discourses and practices enabling the sharing and communication of emotions and meanings through aesthetics, design, advertising, fashion, film, music, peer production, *etc.* Multiplicative mediators, meanwhile, act upon the propagation of knowledge, reutilizing the same pool of knowledge commons in many different uses. Their main task is to ensure the validity of the knowledge employed, overcoming the differences between specific real-life contexts. This includes professionals in the fields of statistics, software programming, and information management, among others. Finally, the circuit of knowledge propagation should be regulated through institutional mediators capable of channeling the rights, obligations, and general behaviors of those involved in the process of knowledge creation. This includes managers of industrial districts, clusters of innovative companies, societies of authors and creative artists, as well as protected designations of origin. Some of these roles can be assumed by multifunctional mediators, which can engage in the creation, multiplication, and propagation of knowledge at different scales, such as public universities (Kauffeld-Monz and Fritsch 2013).

The task of all these mediators should be politicized, because they engage not only in the management of knowledge commons, but also in their projection beyond their socio-economic and instrumental functions. The ontological status of these workers should be the focus of academic analysis, along with the ways in which communities and social movements can participate in the process of knowledge propagation and communalization. How knowledge economy takes grip and generates meshworks in assembling heterogeneous communities should be a fundamental focus of academic inquiry. This is so because the politicization of knowledge-based economies involves showing that it exists in down-to-earth processes rather than in technology-mediated realizations of abstract value, either in the unbounded flow of market dynamics, or in the closed circuits of corporations and clusters. A new theory of value generation should emerge from the inquiry that does not conceive it in terms of the exploitation of human labor, recognizing that knowledge creates value in a larger scale when it does not involve exploitation, enclosure, and control.

Furthermore, a feedback effect will enable us to overcome the alienation to which the capitalist system subjects us, for the production of common knowledge may contribute to an enlarged and more sustainable reproduction of the human forces and their wellbeing. To achieve this, it is

necessary to devise a set of empirically grounded strategies of value appropriation that are shorn of the characteristics of the rentier, *i.e.* strategies that do not seek to channel the generation of value to the elites by creating artificial scarcities and hierarchical structures that diminish the overall social capacity of generating value. This theoretical and pragmatic approach could help us advance a new strategy to counteract the neoliberal attack on the commons, and open new scenarios of greater social welfare for the whole of humanity.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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