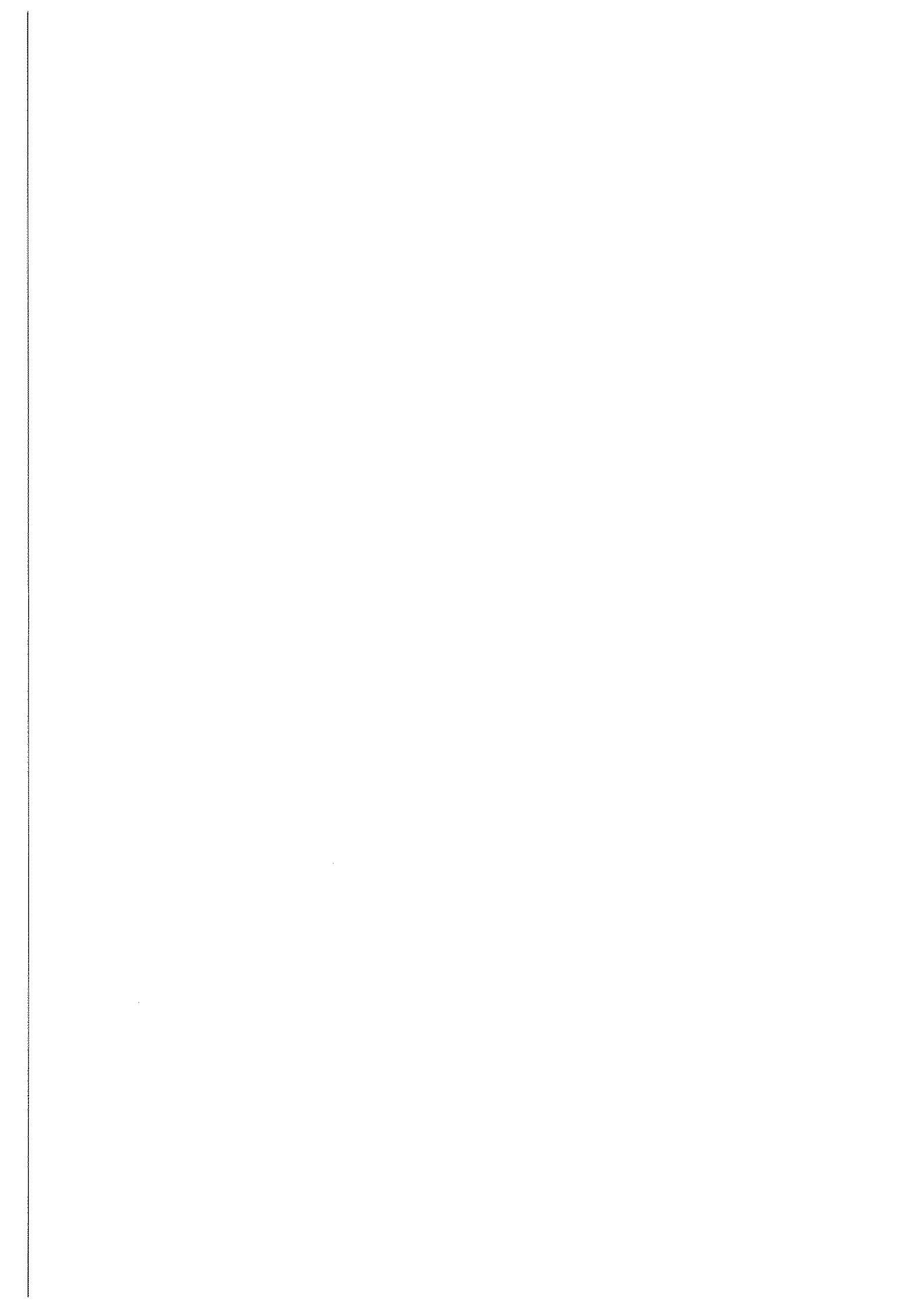


Value and Exploitation in the Networked Economy

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1. Introduction

While mainstream microeconomic textbooks consider “value” a dead concept, we are bombarded on a daily basis with discourse on value creation in the information (or digital) economy. For example, a book published by the Harvard Business School has discussed the idea of creating value in the network economy (Tapscott, 1999). Additionally, the executive editor of *Wired* magazine has argued that, “In the network economy a firm’s primary focus shifts from maximizing the firm’s value to maximizing the network’s value” (Kelly, 1998, 67).

In these examples, the value implied is use-value, or, strictly speaking, consumer surplus, as is easily known from the following paragraph.

Mathematics says the sum value of a network increases as the square of the number of members. In other words, as the number of nodes in a network increases arithmetically, the value of the network increases exponentially. Adding a few more members can dramatically increase the value for all members (Kelly, 1998, 22).

This also echoes the description by the famous mainstream economists, Shapiro and Varian, who argued against new economic concepts, other than “durable economic principles,” with which to understand the so-called new economy, and contrasted the term “value” with “production cost”.¹

The development of networked economy combined with financialization, however, increases the theoretical necessity of value concept, not necessarily in a subjective sense (i.e., utility or consumer surplus). It is useful to quote from one of business-school-version discourses on the networked economy.

¹ The following quotes succinctly summarize their position:

“You don’t need a brand new economics. You just need to see the really cool stuff, the material they didn’t get to when you studied economics” (Shapiro & Varian, 1999, x).

“You must price your information goods according to consumer value, not according to your production cost.” (*Ibid.*, 3)

The concept of value is one last area of convergence between the markets for financial instruments and real goods and services. Our mind-set toward value in real goods has always been oriented toward component costs. ... In financial dealings, by contrast, we assign value by focusing on the potential for future returns. *Future flow, not past stock accumulation, is the essence of financial activity.* More often now, this mind-set is migrating to how we value real goods (Davis & Meyer, 1998, 101–2, italics original).

Ironically, the value concept hinted at here is fairly consistent with the Marxian labor theory of value in that socially necessary labor time in the latter presupposes the time concept, integrating future flow of production into the present.²

Given that value has a privileged status in Marxian economics, it is peculiar that there have been so few discussions on value creation in the networked economy from the perspective of the Marxian labor theory of value.

Although much has been written in Marxian or radical tradition to criticize and make an objection to the commodification of everything, including knowledge and information (e.g., Perelman, 1998; Witherford, 1999), little attention has been paid to the value concept and value theory.

One rare exception in the Marxian tradition focusing on the value concept treats knowledge (or information) as a new origin of value creation. Harris (1995) provides a good example in this respect. In describing a formula in which “money buys a very specific form of commodity, information, which is then turned into greater money,” he argued that, “we are looking at a different form of value than that produced in industrial capitalism.” In the same journal, Davis and Stack (1995) also emphasized the idea that knowledge has dominated conventional factors of production, which has actually led to a knowledge theory of value. However, the questions of why and how a new form of value has been produced remain unanswered.

With this framework in mind, I attempt to bring the Marxian value concept back into the discourse of the networked economy. My aim is to provide a consistent explanation of recent developments in the networked economy using the framework of Marxian value theory. Although other terms, such as information capitalism (Morris-Suzuki, 1986) and

² Socially necessary labor time indicates the quantity of labor required to produce commodities using current technology. Because production does not happen instantaneously, labor time does not imply historical cost in any sense but reflects a series of future labors. Recently, Bryan and Rafferty (2006) argued that financial derivatives played a role in the substance of capitalistic money in the global economy in that they “‘set in motion’ a computational process that builds bridges between, and reconciles, different forms of capital into a singular empirical concept of capital” (91). This provides a plausible connection between recent phenomena and the Marxian value concept.

knowledge-based economy (Jessop, 2002), refer to the same phenomena, I have adopted the term “networked economy” to emphasize the development of the digital network itself and to reflect the theoretical strategy employed here, namely, to understand Marx’s theory of exploitation in relation to an economy of networks. Therefore, in this paper, network has a twofold meaning: one refers to digital networks while the other refers to Marx’s broader term of “concentration (Vereinigung)” (Marx, 1973, p. 528), implying the unification of individual forces through united, and combined labor. The networked economy can also be understood in a broader context, although the term itself is related to the recent development of digital networks.

This paper is structured as follows. Section 2 discusses the conceptions on knowledge production, particularly regarding whether or not knowledge is a new source of value creation. Section 3 provides an interpretation of Marx’s exploitation concept and discusses the involvement of non-workers, including consumers, in the production of surplus value as a characteristic of the networked economy. Section 4 concludes the paper.

2. Conceptions on knowledge production

Curry (1997) has pointed to an important distinction between knowledge and information: Knowledge is “general abstraction” while information is “determined abstraction.”³ Piercing the integument of Hegel’s *Logic*, this idea implies that information is a more specific, context-dependent application of knowledge, which is a more general, synthetic concept. One possible implication of this distinction is that optimistic discourses on “knowledge workers,” defined as those who have knowledge as “human capital,” can be critically reappraised by thoroughly examining whether they have knowledge or information. There are other examples of the distinction between knowledge and information, and the mechanisms by which the former is transformed into the latter, and vice versa, are worth a close examination.

However, it is not urgently necessary to strictly distinguish between the two when focusing on the consistent applicability of the labor theory of value to the networked economy. The two concepts are used interchangeably in many cases, particularly as far as value theory is concerned. This is also evident in the literature. For example,

³ “For example, knowledge is necessary for making an electronic semiconductor chip. If that knowledge is applied to a concrete production process with a specific purpose, it becomes information” (Curry, 1997).

Morris-Suzuki (1986) extensively illustrates the nature of knowledge under the heading of “the tricky characteristics of information.” Therefore, what is true for “information as a commodity” (Perelman, 1998, 4) is also true, to a considerable extent, for “knowledge as a fictitious commodity” (Jessop, 2002, 129). They are also characterized by the two well-known characteristics of “information goods,” i.e., non-excludability and non-rivalry of consumption. In this sense, even the following broad definition of information adopted by mainstream economists may be used for the sake of simplicity.

We use the term *information* very broadly. Essentially, anything that can be digitized – encoded as a stream of bits – is information” (Shapiro & Varian, 1999, 3, italic original).⁴

As the crucial issue in this paper is to examine how knowledge or information, as opposed to human labor, can contribute to value production, I use the term “knowledge” to avoid unnecessary complexity.

A good place to start is Castells’s (1996) famous conceptualization of the most important characteristics of the networked economy as the “reflexive application of knowledge to the production of knowledge.” This conception can be represented as follows:

Knowledge + other inputs (including labor) → knowledge. (1)

Although this equation seems straightforward, there is room for different interpretations. For example, from what we call a right-hand-side view, it is interpreted as follows:

Labor power + other inputs → knowledge. (2)

This is called a right-hand-side view because knowledge explicitly appears only on the right-hand side and disappears on the left-hand side. This relation dovetails with the conventional Marxian idea regarding knowledge as embodied in labor power, not as a separate factor of production. As Carchedi (2005, 276) has noted, “...knowledge, as the output of a production period, cannot become the input of a subsequent production period without being incorporated in the laborer’s labor power.” Equation (2) simplifies the complicated nature of the networked economy, but it is insufficient for evaluating

⁴ This definition is related to the reality that knowledge is getting more and more digitized, which also implies that knowledge is becoming more and more observable and quantifiable by the number of bits or the number of copies of software and etc.

whether or not knowledge can be a new source of value because it incorporates knowledge into labor power. Thus, in this context, value can only be created by exploiting the so-called “knowledge workers,” who are essentially the same as simple, manual workers except in the magnitude of value of labor power. Therefore, there is no need to modify or renovate conventional Marxian value theory.

If we accept the framework of equation (2), the only remaining problem is how to calculate and measure socially necessary labor time required for producing knowledge. In the conventional Marxian value theoretical framework (e.g. Rowthorn, 1980), differential value creation between skilled and unskilled labor mainly results from differences in their respective value of labor power. Labor power embodying knowledge is considered as complex, skilled labor here. As such, skilled labor, in fact, implies unskilled, simple labor plus knowledge. Therefore, the value of knowledge must be measured in order to measure the value of labor power in cases of skilled labor. The value of knowledge is supposed to be the socially necessary labor time needed to produce it. However, this definition is muddled when determining the labor time for producing knowledge, particularly when it is digitized, because the reproduction of digital commodities costs almost nothing. It is interesting to note that this creates a homology between labor theory of value and neoclassical competitive price theory. The problem of a near-zero embodied labor quantity for digitalized goods in the former corresponds to a near-zero marginal production cost problem in the latter.⁵

On the other hand, from what we call a left-hand-side view, equation (1) is interpreted as follows:

$$\text{Knowledge + other inputs} \rightarrow \text{commodities (other than knowledge)}. \quad (3)$$

This is called a left-hand-side view because knowledge itself is not produced as a commodity, although it is bought and sold on the market. Equation (3) does not negate the fact that knowledge is traded as a commodity in reality. Rather, this relation is consistent with the concept of knowledge as a half (or quasi) commodity, or “fictitious commodity” (Jessop, 2002), the term that Polanyi (1944) used to describe something that is produced but not for sale. In this framework, although knowledge is a factor of production, it is not a capitalist commodity in the proper sense. Various institutional and ideological apparatuses relating to intellectual property rights [IPRs], even including

⁵ In a perfectly competitive setting, the equilibrium price of a commodity must be equal to its marginal cost. If marginal cost converges to zero, there is no material foundation for a positive equilibrium price. The theoretical framework with which Shapiro and Varian (1999) handled this difficulty was that of a theory of price discrimination based on different degrees of consumers’ subjective satisfaction. Whether one agrees with their solution or not, the aforementioned homology breaks down here.

the metaphor of “piracy,” are necessary to make knowledge a commodity. Most radical discourses of the network economy focus on the character of knowledge, which is “inconsistent with a market system” (Perelman, 1998, 5).

Sraffa (1960) tried to solve the problem of invariable measure of value by constructing the concept of the standard commodity, in which commodities not appearing on either side of input–output equations cannot be included. Although he did not use the concept of fictitious commodity, his research can be interpreted as implying that fictitious commodities, such as land and labor power, appear only on the left side of production equations, while non-basic commodities appear only on the right side:

The similarity of rent-earning natural resources with non-basic products shows itself at once in the impossibility of their being counted among the components of the Standard product, since they appear on one side only of the production process (Sraffa, 1960, 74).

According to Sraffa’s method, therefore, knowledge as a fictitious commodity can be analyzed in the framework of equation (3). This viewpoint opened up the possibility of understanding knowledge as a new source of value creation. Equation (3) is consistent with the characterization that “the substance of value must be fully used and transformed into another form, and does not happen as a product” (Park, 2003, 167) in Marxian value theory.

For example, Morris-Suzuki (1986), an early theorist on knowledge as a new source of value, spoke of knowledge exploitation in a framework similar to equation (3).

While the Sraffa system is a closed system in which commodities are always produced by means of existing commodities, the economy of information production is an open system, into which non-commodities enter as inputs and whose outputs may eventually “escape” from the cycle of commercial exchange (Morris-Suzuki, 1986, 87).

Her concept of “information capitalism” can be represented as follows:

Existing knowledge + labor → surplus knowledge. (4)

Here, surplus knowledge on the right-hand side is similar to a fictitious commodity for which price is set and maintained by IPRs; this said, unlike equation (2), the concept of knowledge as a separate factor of production is accepted on the left-hand side.

Although equation (4) is compatible with equation (3), it can be interpreted to

rationalize two different ideas.

First, knowledge is monopolized and commoditized by legal, institutional systems, resulting in a form of monopoly rent. Harvey (2006) applied Marx's concept of monopoly rent to "culture as a commodity of some sort." This fits well with the example of knowledge here because the concept is also related to the "exclusive control over some directly or indirectly tradable item, which is in some crucial respects unique and non-replicable." This is true for knowledge because knowledge is non-replicable by artificial devices such as IPRs. In this case, a theoretical role played by knowledge is similar to that of land (or other fictitious commodities) in a capitalist society.

Second, knowledge itself produces a form of surplus value exceeding its original value estimated at the point of entering into the production process. Once commoditized, knowledge has a price on the market. Whether this price has its own value content or not, it can be consistently interpreted with Marxian labor theory of value, because this commoditized knowledge is a part of constant capital, which, by definition, only transfers its value to the final product. If, however, we assume that knowledge actually contributes to the production of surplus value, the story will be different. This is a point to which we shall return later in section 3.

In sum, there are two inseparable issues here: by what knowledge is produced, and how knowledge contributes to production, i.e., whether knowledge just transfers value as constant capital or whether it contributes to value creation like labor. If knowledge just transfers value in the production process, it is impossible to have surplus knowledge. Therefore, exploitation of knowledge is only possible by enhancing the reflexive application of knowledge and simultaneously using communal (free) knowledge, which is similar to the free use of land.⁶ However, with the establishment of exclusive ownership, knowledge users are required to pay monopoly rent to its owner, which implies that enforcing IPRs is not compatible with the free use of communal knowledge.⁷ An example of market dominating software such as MS Windows will suffice to show this. Like all other means of production, the value of MS Windows, if any, is transferred to the final product using it as a factor of production. A heavy amount of monopolized profit in MS Windows due to IPRs will be given to the owner of its patent. Unless the software is used "illegally," no surplus value can be created from its use as a factor of production.

Therefore, the only remaining case worth examining is the case in which knowledge

⁶ "... while the knowledge inputs are mostly free, the new surplus knowledge created by the project has a price, conferred on it by the patent system, which has turned it into a piece of private property" (Morris-Suzuki, 1986, 63).

⁷ Jessop (2002) defined this problem as "the tension between knowledge as intellectual commons and knowledge as intellectual property" (110). Chang (2003) also emphasized that enforcing IPRs increases transaction costs, thereby making the production of surplus knowledge more difficult.

actually contributes to the production of surplus value.

3. Exploitation as the initiative of networking

Before turning into the case mentioned above, it will be useful to shed a new light to Marxian concept of exploitation. Marx's concept of exploitation, according to Lebowitz (1992), entails the "transformation of productive forces of social labor into productive forces of capital" (67–70). In Marx's own words,

...the effect of the combined labor could either not be produced at all by isolated individual labor, or it could be produced only by a great expenditure of time, or on a very dwarf-like scale. Not only do we have here an increase in the productive power of the individual, by means of co-operation, but the creation of a new productive power, which is intrinsically a collective one.... This is why a dozen people working together will produce far more in their collective working day of 144 hours than twelve isolated men each working for 12 hours, and far more than one man who works 12 days in succession. This originates from the fact that man, if not as Aristotle thought a political animal, is at all events a social animal (Marx, 1976, 442–3).⁸

This idea can be depicted as follows:

$$\lambda(x_1, x_2, \dots, x_n) - [\lambda(x_1) + \lambda(x_2) + \dots + \lambda(x_n)] > 0, \quad (5)$$

⁸ The same idea had already circulated in *Grundrisse* (Marx, 1973, 528ff). Keynes offered a similar explanation: "Perhaps the essential reason for treating the varying efficiency of labor as though it belonged to the equipment lies in the fact that the increasing surpluses, which emerge as output is increased, accrue in practice mainly to the owners of the equipment and not to the more efficient workers (though these may get an advantage through being employed more regularly and by receiving earlier promotion); that is to say, men of differing efficiency working at the same job are seldom paid at rates closely proportional to their efficiencies" (Keynes, 1973, 43). According to Keynes, this caused the instability of the wage unit, which, from this paper's viewpoint, involves the discrepancy between creation and distribution of income. With the sympathetic comment on the labor theory of value (Keynes, 1973, 213), this point may indicate that Keynes's idea was based upon a kind of labor theory of value. That issue, however, is beyond the scope of this study.

where x_i and $\lambda(\cdot)$ represent the activity level of the i^{th} labor and value function, respectively. Abstracting from the so-called problem of transforming values into prices, equation (5) implies the following dual relation, which characterizes the phenomenon of economies of scope:

$$C(x_1) + C(x_2) + \dots + C(x_n) - C(x_1, x_2, \dots, x_n) > 0, \quad (6)$$

where $C(\cdot)$ denotes the cost function. Assuming that equation (5) accurately represents the structure of exploitation, it is important to determine who controls the network. As Marx himself admitted, this control may contribute to value production.⁹ Therefore, the bargainability of this control must also be emphasized.

Table 1
Player 2 (Laborer)

		Strategy 1	Strategy 2
Player 1 (Capitalist)	Strategy 1	3, 1	0, 0
	Strategy 2	0, 0	2, 2

Table 1 presents an example of bargaining game theory and has the same logical structure as the typical coordination game involving a standard choice, say, between an IBM and an Apple computer, which leads to a non-cooperative equilibrium (Economides, 1996). If, however, we suppose that Player 2 (Laborer) must follow the choice of Player 1 (Capitalist) through a certain mechanism, the final result would be (3, 1) rather than (2, 2), even though there are two Nash equilibria. This reflects the conventional

⁹ “The work of supervision and management necessarily arises where the direct production process takes the form of a socially combined process, and does not appear simply as the isolated labor of separate producers. But it takes two different forms. On the one hand, in all labor where many individuals cooperate, the interconnection and unity of the process is necessarily represented in a governing will, and in functions that concern not the detailed work but rather the workplace and its activity as a whole, as with the conductor of an orchestra. This is productive labor that has to be performed in any combined mode of production. On the other hand... this work of supervision necessarily arises in all modes of production that are based on opposition between the worker as direct producer and the proprietor of the means of production. The greater this opposition, the greater the role that this work of supervision plays” (Marx, 1981, 507). Duménil and Lévy (2003) called this profit-rate-maximizing (PRM) labor.

interpretation of Marxian exploitation. Laborers are forced to accept an exploitative relationship because of the power of the capitalist, and they are worse off than in an alternative situation.

Table 2
Player 2 (Laborer)

	Strategy 1	Strategy 2
Player 1 (Capitalist)	Strategy 1 3, 3	Strategy 2 0, 0
	Strategy 2 0, 0	Strategy 2 2, 2

In Table 2, although there are two Nash equilibria, (3, 3) is socially more desirable than (2, 2). If Player 1 (Capitalist) leads Player 2 (Laborer) to choose Strategy 1 rather than Strategy 2 (in other words, if Player 1 has the initiative), Player 1 can appropriate all the increase in payoff. As Player 1 takes advantage of the situation in this example, exploitation implies the management and control of the network of players. Player 2, however, may be better off in the new situation because the increase in the payoff is bargainable between the two players. In this respect, Joan Robinson was correct when she said, "It is a terrible thing to be a worker exploited in the capitalist system. The only worse thing is to be a worker unable to find anyone to exploit you." This aspect clearly shows that the betterment in the economic situation of the exploited does not preclude the existence of exploitation. Many utopian visions of the networked economy that focus on an increase in consumers' satisfaction may be criticized from this perspective.

The logic of this increase in payoff is very similar to that of Aoki's (1990) "information rent," which arises from the development of information and communication technology. Although capitalist employment is not considered exploitative in his "firm as a nexus of treaties" literature, the information rent itself is bargainable.¹⁰ Therefore, the question of who appropriates the rent becomes an important issue. If one interprets exploitation as control over the production network, the scenario depicted in Table 2 would be a more suitable description.

In addition to network externalities in consumption, the initiative for the network producing surplus value is important to the networked economy. This is related to the "deterritorialization of production" (Negri & Hardt, 2000, 295), which goes beyond the

¹⁰ "...the firm... should be regarded as a cooperative venture in which the provision of capital by the owners (stockholders), of an organizational framework by management, and of information processing capacities by employees can generate results in co-operation, the distribution of which is susceptible to intrafirm bargaining among those agents" (Aoki, 1990, 28).

formation of production networks (i.e., virtual corporations) to include consumers in the production process. The elementary form of consumer inclusion is called user-generated lock-in, which is succinctly described by Kenney:

This means that the consumer by investing in understanding and becoming proficient with a certain program will likely continue to use it or upgraded versions that have a similar human interface. From this perspective, in the aggregate the users have invested far more time in learning to use a software program than did the developers (Kenney, 1997, 94).

On the other hand, McDermott presented another concept, that of the “social relations of consumption,” to describe how the consumption of the consumer/purchaser has a productive character.¹¹ He provided an example of purchasing a car with regard to its quality maintenance and repair and etc.

Recall that in purchasing the car one pays for a number of potential services, which will have to be complemented later in sale/purchase state with the purchase of further quasi services.... The key point here, however, is that the extra money paid for the car at the point of sale, that is, the money advanced to pay for services that are as yet only potential, makes the consumer/purchaser a coparticipant in the investment process undergirding the manufacture of the automobile; the purchaser/consumer quite literally advances part of the investment (McDermott, 2004, 59).

Here, McDermott refers to the case in which consumers must advance money to producers and then cooperate with them in order to remove quality uncertainties happening in time-consuming process of consumption.

However, things go further than this in the networked economy. Consumers produce digital content and even provide “affective labor”¹² in the cases of portal sites, search engines and blogging. For example, in 2005, NHN Corporation (www.naver.com) had about 61.4% of the Korean search engine and portal site market, leaving the runner-up, Yahoo! Korea, behind with just 13.2%. The competitiveness of NHN lies in the fact that

¹¹ McDermott argues that “consumption in a modern economy is normally linked to and conditioned by its further productive effects on the consumer as producer” (42–3). This may be generalized to include this paper’s case below in the text.

¹² This is a concept provided by Negri and Hardt (2004), whose definition is as follows: “We call the other principle form of immaterial labor “affective labor.”... Affective labor, then, is labor that produces or manipulates affects such as a feeling of ease, well-being, satisfaction, excitement, or passion” (108).

almost all of the content is created voluntarily by subscribers, which differs from demand-side economies of scale in that subscribers actually participate in the production process.¹³ This means that the consumer-versus-employer relationship must be reconsidered. The necessity for control goes beyond the boundary of the organization to non-workers.¹⁴ Although this procedure looks similar to the case of network externalities, it should be noted that consumers participate in the production process of contents. The capital that succeeds in taking advantage of the network earns a greater profit than its competitors, which is a form of extra surplus value. In reality, such an extra surplus value is generated through advertising revenue and other such means.

In the sphere of production “the mechanisms by which social knowledge becomes a source of private profit” (Morris-Suzuki, 1986, 90) still remain. Transforming tacit knowledge into formal knowledge, and vice versa (Nonaka & Takeuchi, 1995), accompanies the conventional process of exploiting the so-called “knowledge workers” in the production process. In particular, search engines and blogs, the content for which is maintained and updated by subscribers themselves, are good examples of how the socialization of knowledge can and does happen, even among consumers. In this sense, the exploitation of knowledge must be expanded to include consumers.

This concept of exploitation is compatible with both equation (2) and equation (3). On the one hand, adopting equation (2) implies that consumers’ labor is included on the left-hand side. On the other hand, adopting equation (3) implies that consumers’ knowledge is freely appropriated by capital as “surplus knowledge.”

4. Concluding remarks

The main points of this paper are summarized below.

First, considering the logical consistency of Marxian value theory, knowledge (or information) as a new source of value creation is incompatible with the concept of knowledge as private property.

¹³ This is now well-known as Wikipedia way. Tapscott and Williams (2006) refer to this phenomenon as “collaborative minds.” What this paper emphasizes is that benefits from the collaboration or “collaborative minds” can be, and actually is, the object of exploitation by capital.

¹⁴ Although consumers are neglected, this point is noted in the literature on organization theory: “Far from the development of non-integrated production systems implying the demise of the need for management to control and motivate labor, we find instead that these needs extend across original boundaries and involve the interrelation of non-employers (client organizations) in the traditional function of the legal employer—that of controlling and motivating the internal workforce of the suppliers” (Grimshaw & Rubery, 2005, 1036–7).

Second, exploitation as control of the network is a novel concept, which implies that exploitation is not necessarily a zero-sum game. The exploited agent may be better off participating in the process of exploitation. Furthermore, in the networked economy, any agent integrated into the network, including consumers, can be exploited by those in control of the network. Therefore, extending the concept of exploitation offers a new perspective on economic democracy.

Last, without imputing any mystical character to knowledge (or information), one can explain the mechanism by which profit is created from the perspective of Marxian value theory.

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