

Cognitive Capitalism or Cognition in Capitalism? A Critique of Cognitive Capitalism Theory

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Heesang Jeon

1. Introduction

No one denies that the scale and scope of the technological development of the last 60 years are unprecedented. This includes the rapid development of micro-electronics technologies and the widespread diffusion of information and communication technologies. Bio-, nano- and alternative energy technologies are emerging as new frontiers. Not only has all this changed the everyday life of ordinary people, but the economy, especially its industrial structure, has also been reshaped. Productivity for existing products has grown significantly and the pace at which new products are created has accelerated. Economy and knowledge and/or technology are integrated with each other more closely than ever before.

All this has brought about the need to reconsider the role of knowledge, especially science and technology, and its location within contemporary capitalism. Many theories have been proposed to address this from different perspectives with diverse emphases and implications. To name just a few from economics: new growth theory attempting to endogenise production of knowledge into growth models; economics of innovation exploring the role of intellectual property rights; and evolutionary economics studying path-dependency in knowledge production.

One question that has drawn much interest among theorists is how to characterise the economic importance ascribed to knowledge and technological development. On the one hand, knowledge and technological development are seen to be always essential for the economy. According to this view, the lack of accounts of knowledge in economic theories is simply considered as a flaw of such theories, which needs to be fixed by incorporating the role of knowledge. On the other hand, recent recognition of the central role of knowledge in the economy is viewed as reflecting a new underlying reality. It is argued that whilst knowledge has always been important, qualitative changes that the capitalist economy is undergoing

have elevated the practical and theoretical significance of knowledge to a far higher level. Terms like Knowledge-based Economy, Network Society and Post-industrial Society represent diverse attempts to conceptualise the new reality, be they either merely rhetorical or substantial.

Cognitive capitalism theory is one such theory which takes recent changes as representing a fundamental transformation that capitalism is going through. Proponents of this theory argue that capitalism is in transition to a new stage of capitalism even though these changes do not entail the emergence of a new mode of production. According to Paulré, the objective of cognitive capitalism theory is "to address the role of knowledge in understanding the evolution and transformation of contemporary capitalism."¹ The new stage of capitalism – cognitive capitalism – is characterised by the appropriation by workers of the cognitive aspect of work and the mutation of the power relation between capital and labour more favourably to labour. It is suggested that cognitive labour, defined as labour that produces knowledge, cooperation and communication, is becoming the hegemonic form of labour. This leads to the argument that determination of the value of commodities by socially necessary labour time is rendered dubious or that Marx's value theory suffers a crisis of relevance under cognitive capitalism because cognitive labour that produces knowledge cannot be measured by labour time. Capital is seen to become increasingly parasitic, playing no meaningful role in the production process, but appropriating part of surplus products created by labour through intellectual property rights. Consequently, it is argued that profit as an economic category is becoming more like rent.

The significance of cognitive capitalism theory lies in the fact that it is one of the few, if not the only, leftist accounts of contemporary capitalism from a viewpoint of knowledge and/or technology. This is contrasted with the flourishing development of knowledge-based economy theories based on mainstream economics, supported by advanced countries' governments and international organisations such as the World Bank and the OECD. Further, although Marxist political economy actively engages with contemporary capitalism, its focus is upon neo-liberalism, globalisation and financialisation. There is a clear need to develop and refine Marxian accounts of the knowledge economy in order to fill this theoretical vacuum, to which cognitive capitalism theory has obviously contributed. However, although it has drawn much well-deserved attention, it has been popularised and embraced in much the same way as has the knowledge economy. Namely,

¹ Bernard Paulré, "Introduction au capitalisme cognitive", 1e journée d'étude organisée par le GRES ET MATISSE-Isys Cnrs-Université Paris 1, Paris, 25 November 2004.

the term 'cognitive' is used widely but rather casually without much theoretical consideration and reflection. For example, "[c]ontemporary 'cognitive' or 'informational' capital is ever more dependent on social production to generate value and profits",² emphasis added. "Adaptation to participatory modes of innovation, to open models of intellectual property (IP), is antithetical to both the industrial and cognitive modes of capitalism"³. More fundamentally, although it is argued that it is based on Marx's methods, their interpretation of value theory is flawed, as we will show later.

There are critiques of cognitive capitalism theory on the basis of empirical facts and numbers. For example, many have demonstrated convincingly that traditional industrial (or material) labour still accounts for a significant portion of total work hours as opposed to the alleged hegemony of cognitive labour, rejecting one of the core arguments of cognitive capitalism theory empirically.⁴ However, despite the strength of such an attempt, this type of critique has not been entirely successful in its outcome. For proponents of cognitive capitalism theory always respond by arguing that the transition is still ongoing and that what matters is not the current status of capitalism, but the tendencies towards a new stage of capitalism. They suggest that cognitive labour is the hegemonic form of labour under cognitive capitalism only as a tendency, not an established fact. In this paper, we take a different approach and do not directly engage with the debate on how to interpret facts and numbers. Rather, close critical consideration is given to the interpretation of value theory by cognitive capitalism theorists. Significantly, new changes are considered by them as representing the transition to a new stage of capitalism on the basis that value theory is allegedly unable to incorporate and/or explain these changes. We are told that we need a new theory because these new phenomena contradict the old theory (i.e. Marx's value theory). Eventually, they

² Adam Avidsson, "The ethical economy: towards a post-capitalist theory of value", *Capital and Class* (Vol.97, 2009), pp. 13-29.

³ Michael Bauwens, "Class and capital in peer production", *Capital and Class* (Vol.97, 2009), pp. 121-141.

⁴ For critiques of cognitive capitalism theory and post-workerism from this perspective, see David Camfield, "The Multitude and the Kangaroo: A Critique of Hardt and Negri's theory of immaterial labour", *Historical Materialism*, (Vol. 15, No 2, 2007), pp.21-52; Steve Wright, "Reality Check – Are we living in an Immaterial World", *Mute* (Vol. 2 No.1,2005), accessible at: <http://info.interactivist.net/node/4952> and Michel Husson, "Sommes-nous entrés dans le « capitalisme cognitif »?". *Critique communiste*, (No.169-170, été-automne 2003); Michel Husson, "Notes critiques sur le capitalisme cognitive", *ContreTemps*, (No.18, février 2007). For responses, see Carlo Vercellone, "Sens et enjeux de la transition vers le capitalisme cognitif: une mise en perspective historique", Paper presented at the seminar "*Transformations du travail et crise de l'économie politique*" held at the Université de Paris 1, Panthéon-Sorbonne, 12 October 2004. and Micheal Hardt and Antonio Negri, *Multitude: War and Democracy in the Age of Empire*, (New York: Penguin Books, 2004), pp. 140-152.

conclude that the increased and central role of knowledge in contemporary capitalism invalidates value theory.

Our critique of cognitive capitalism theory will focus on showing that their interpretation of value theory is flawed and that knowledge does indeed play an important and essential role in the determination of the value of commodities. By doing this, the call for a new theory can be disregarded because the old theory is shown to be sufficiently strong. Contrary to cognitive capitalism theory, knowledge is an essential part of capitalism as well as value theory. From this point of view, what we need is a theory of knowledge (or cognition) in capitalism, not a theory of a new (cognitive) stage of capitalism. In this sense, our critique of cognitive capitalism theory is part of a broader initiative to theorise the knowledge economy from a Marxian perspective, in which knowledge is systematically incorporated into value theory at various levels of abstraction, starting from its role in the determination of the value of commodities.

2. Cognitive Capitalism, Regulation Approach, Post-Workerism and Knowledge Economy Theories

Before embarking on our critique of cognitive capitalism, it is necessary to review the key elements of cognitive capitalism theory. For this purpose, it is instrumental to focus on its similarities with, and differences from, the regulation approach, knowledge economy theories and post-workerism. This will situate our critique in a proper context by helping to clarify the methods of cognitive capitalism theory.

Although the origins of cognitive capitalism theory date back to the early 1990s,⁵ its development as a separate research stream started when the thesis of cognitive capitalism was drafted during a symposium held in Amiens in 1999.⁶ Major contributors include Antonella Corsani, Patrick Dieuaide, Maurizio Lazarrato, Jean-Marie Monnier, Yann Moulier-Boutang, Bernard Paulré and Carlo Vercellone.⁷ The early thoughts are summarised in the document ('Draft') which describes the cognitive capitalism research

⁵ Alberto Toscano, "From Pin Factories to Gold Farmers: Editorial Introduction to a Research Stream on Cognitive Capitalism, Immaterial Labour, and the General Intellect", *Historical Materialism* (Vol.15, No.2, 2007). p.5.

⁶ Paulre, opt.cit. in note 1.

⁷ Over time, varied views have emerged across the theorists even if they should not be considered as alternatives, according to Bernard Paulré, *Finance et Accumulations dans le Capitalisme Post-Industriel*, Université de Paris 1 Panthéon-Sorbonne (Post-Print and Working Papers), hal-00223912_v1, 2008, accessible at : <http://ideas.repec.org/p/hal/cesptp/hal-00223912v1.html>

program of MATISSE (Modélisations Appliquées, Trajectoires Institutionnelles, Stratégies Socio-Économiques) – “*Le capitalisme cognitive comme sortie de la crise du capitalisme industriel* (Cognitive Capitalism as an exit from the crisis of industrial capitalism)”,⁸.

Regulation Approach

Draft shows that the thesis of cognitive capitalism has been developed under the significant influence of the French regulation school. This is most evident in the use of concepts like regime of accumulation or mode of development. Cognitive capitalism is suggested as a new regime of accumulation that arises out of the crisis of the Fordist regime of accumulation. In the same vein, Paulré defines cognitive capitalism as a new “system of accumulation” in which it is centred on knowledge production.⁹ However, the concept of cognitive capitalism goes beyond the regulation approach because the transition to cognitive capitalism involves rupture not only from the Fordist regime of accumulation, but also from industrial capitalism which encompasses both Fordism and post-Fordism. In other words, cognitive capitalism theory is not one of post-Fordism. Hence, cognitive capitalism theory occupies “a unique position”,¹⁰, within the regulation approach. Braudel’s study of the long dynamic of capitalism inspired this view on the transition, where industrial capitalism itself is considered only as a stage of capitalism.¹¹

Theories of the knowledge economy

Cognitive capitalism theory also draws from other contemporary economic and social theories that try to capture the mode of development or “dynamic efficiency” as opposed to “static efficiency” of capitalism.¹² Such theories include theories of the knowledge economy, new growth theory, economics

⁸ Antonella Corsani et.al. “Le Capitalisme cognitif comme sortie de la crise du capitalism industriel. Un programme de recherche”, Paris, Colloque de l’école de la régulation, 11-14 Octobre 2001), accessible at : <http://matisse.univ-paris1.fr/doc2/capitalisme.pdf>.

⁹ Paulré, opt.cit. in note 1.

¹⁰ Corsani, et.al. opt.cit. in note 8.

¹¹ “It is necessary to note that the notion of cognitive capitalism has also been developed as a response to the insufficiency of the interpretations of the current mutation of capitalism in terms of the transition from a Fordist to a post-Fordist model of flexible, or what is sometimes referred to as ‘Toyota-ist’, accumulation. ... Theories of post-Fordism, while capturing some significant elements of rupture, often remain bound to a factory-inspired vision of the new capitalism seen as a further development of the Fordist-industrial logic of the real subsumption of labour by capital”, Carlo Vercellone, “From Formal Subsumption to General Intellect: Elements for a Marxist Reading of the Thesis of Cognitive Capitalism”, *Historical Materialism*, (Vol. 15, No. 1, 2007), p. 14.

¹² Cristiano Antonelli, *The foundations of the economics of innovation: From the classical legacies to the economics of complexity* (Mimeo, 2007) p.13.

of innovation, evolutionary economics and theories of post-industrial society and network society.¹³ They are considered useful and instrumental for stimulating the debate on the role of knowledge in contemporary capitalism, as they provide the raw materials for cognitive capitalism theory – the role and nature of knowledge, the effects of the diffusion of ICTs, and public policy on education and intellectual property rights, to name just a few. These theories focus on the specific aspects of knowledge as compared with material goods, especially its role and its peculiar way of production and diffusion in the broader economy. However, they do not go further to ask if these changes are linked to more fundamental transformation. Cognitive capitalism theory takes the phenomenal changes identified by these theories as a given, but attempts to provide an alternative interpretation on this basis. More specifically, these theories are criticised as being technology-deterministic, ahistorical, positivist and non-confrontational, as they lack social and historical analyses and focus instead on rapid technological development as the source of social and economic changes.¹⁴ “The interpretation provided by neo-classical theories of endogenous growth and knowledge-based economy take into account neither the antagonism between capital and labour nor the conflicts between knowledge and power investing the transformations of the division of labour”.¹⁵ In cognitive capitalism, “there is antagonism, but it is new”.¹⁶ Although the quantitative growth of knowledge sectors and/or knowledge workers is certainly a notable change, it is not considered sufficient to explain or substantiate the establishment of a new (knowledge) economy, considering that knowledge has always been important for the economy.¹⁷

In contrast, the notion of cognitive capitalism aims to capture the qualitative changes in the underlying social forces. It is suggested that a new form of the conflictual capital-labour relation, marked by the hegemony of cognitive labour and labour’s reappropriation of the role of knowledge production, represents such fundamental qualitative changes. In the same

¹³ For details, see Corsani et al. *opt.cit.* in note 8; Yann Moulier-Boutang, “Nouvelles frontières de l’économie politique du capitalisme cognitive”, Communication au Colloque Textualités et Nouvelles Technologies, 23-25 October, Musée d’Art Contemporain de Montréal, *Revue éc / artS*, (No. 3, 2002), pp.121-135, suggests 14 features of cognitive capitalism, some of which, such as the emergence of network form, knowledge as public good, expansion of the scope of positive externalities and the importance of tacit knowledge, are also well-known features of the knowledge economy.

¹⁴ Vercellone, *opt.cit.* in note 4.

¹⁵ Carlo Vercellone, “The hypothesis of cognitive capitalism”, presented at Historical materialism annual conference in 2005.

¹⁶ Yann Moulier-Boutang, “Antagonism under cognitive capitalism: class composition, class consciousness and beyond”, presented in Immaterial labour, multitudes and new social subjects: class composition in cognitive capitalism in 2006.

¹⁷ Paulré, *opt.cit.* in note 1.

vein, technological determinism is rejected. "The emphasis on technology should not be interpreted as meaning the determining role of technology as exogenous causal factor".¹⁸ "Cognitive capitalism cannot simply be equated with a society characterised by the development of the new ICT (information and communication technologies)",¹⁹ "Investments in the information and communication technologies in the physical sense of the term, on which economists often focus their attention, are rather a symptom or a signal of change".²⁰

Post-workerism

It is especially in this respect that cognitive capitalism theory owes much to post-workerism, a strand of autonomist Marxism whose proponents include Antonio Negri, Michael Hardt and Maurizio Lazzarato. Significantly, in his latest English book, *Reflections on Empire*, Negri explicitly reveals the affinity between cognitive capitalism theory and post-workerism. He says, "today, we find ourselves in a way of life and in a way of producing that are characterized by the hegemony of intellectual labour. It has been said that we have entered the era of *cognitive capitalism*."²¹ Indeed, post-workerism and cognitive capitalism theory share crucial aspects of methodology and similar views on class struggle, history and the interpretation of Marx's value theory. Thus, many of the strengths and weaknesses of post-workerism are also present in cognitive capitalism theory.²² Due to such similarities, it is difficult to distinguish cognitive capitalism theory and post-workerism, and our critique of the former partly takes the form of critique of the latter. It is therefore important and instrumental to summarise briefly some of the key arguments of post-workerism.

First, post-workerism views capitalism as consisting of several stages, each of which is characterised by distinct class subject, class antagonism and dominant form of labour. Transition from one stage of capitalism to another is driven by class struggle.

Second, contemporary capitalism is allegedly the third stage of capitalism or the third cycle of struggle between labour and capital. Post-workerism tries to capture the essence of the third stage through the

¹⁸ Corsani et.al. opt.cit. in note 8, p. 8.

¹⁹ Ibid. p.12.

²⁰ Paulré, opt.cit. in note 1.

²¹ Antonio Negri, *Reflections on Empire* (Cambridge: Polity Press, 2008). p. 64.

²² Post-workerism and its proponents – Hardt and Negri – do not represent the entire Autonomist Marxism, which is rather "multiple pathways with their roots in a common theoretical matrix", Wright, opt.cit.in note 4. Even some theorists from the tradition of Autonomist Marxism criticise Negri, especially on immaterial labour (e.g. Bologna and Cleaver).

concept of immaterial labour and the social (or socialised) worker, whereas the second cycle of class struggle is represented by the mass worker and the social factory.²³ The struggles of the mass worker against capital took the forms of sabotage, refusal to work and worker-student alliance, and the class subject was redefined through this mass movement as a more creative and flexible labour power.

Third, labour is considered to play the leading role in the class struggle between labour and capital. In the face of sabotage and the mass worker's refusal to work, capitalists had to adopt different strategies in order to reconfigure class composition. Globalisation of production sites, off-shoring, the shift to service work, outsourcing and the adoption of flexible production methods were some of the countering strategies adopted by capitalists. More specifically, capital had to give up the production mechanism represented by Fordism and assembly lines to cope with this new class subject. "Capital had to abandon the large scale factory, its linear production, its inflexible working day and its mechanistic logic and employ open networks and flexi-time and give space to creativity."²⁴ Hardt and Negri argue in *Empire*, "Capital was forced to move into immaterial production to dominate a new labour power that had redefined itself, autonomously, as creative, communicative and affective".²⁵

Fourth, immaterial labour is suggested as becoming the hegemonic form of labour in the third cycle of class struggle. Significantly, immaterial labour, producing images, meanings and cultural elements of material goods, is considered immeasurable by labour time and by its nature, cooperative, flexible, communicative and affective,²⁶ encompassing both intellectual work and service labour. Immaterial or biopolitical labour is immeasurable because being measured means being imposed, which is in diametrical opposition to its being flexible, creative and communicative. Labour becomes life itself.²⁷

²³ Mass workers are deskilled workers doing repetitive/manual work which "meets Marx's definition of 'abstract labour'" in assembly lines, Bowring, F, "From the Mass Worker to the Multitude: A theoretical contextualisation of Hardt and Negri, opt. cit. in note 4, p.106.

²⁴ Aufheben "Keep on smiling: Questions on immaterial labour", *Aufheben*, (No.14, 2006), p.29.

²⁵ Michael Hardt, and Antonio Negri, *Empire* (Cambridge, MA.: Harvard University Press, 2000), p.276.

²⁶ This aspect of immaterial labour is crucial in distinguishing cognitive labour from immaterial labour. See Michael Hardt, "Affective Labour", *Boundary 2*, (Vol. 26, No. 2, Summer, 1999), pp. 89-100 for more about affective labour.

²⁷ George Caffentzis, "Immeasurable Value?: An Essay on Marx's Legacy", *The Commoner*, (No. 10, Spring/Summer 2005), p. 96 criticises Negri and Hardt, saying that they "willfully ignore the well known ontological distinction between labour and action."

Fifth, despite the immeasurability of immaterial or biopolitical labour, labour is still seen as the source of value. According to Hardt and Negri, "what is different today, however, in the era of biopolitical production, is that intellectual and/or affective invention has become the primary source of value and wealth in society".²⁸ However, no account of the new immaterial labour theory of value is provided.

Cognitive capitalism theory

Whilst sharing many crucial aspects, especially those of methodology, cognitive capitalism theory is distinguished from post-workerism in several respects. The key difference lies in its focus on the central role of knowledge. Instead of immaterial labour, cognitive labour – a type of immaterial labour²⁹ – is suggested as the hegemonic form of labour in cognitive capitalism. Likewise, class struggle between capital and labour is viewed as centred on the role of knowledge production, instead of encompassing all aspects of life as implicit in the category of biopolitical labour. In addition to narrowing the focus onto knowledge, cognitive capitalism theory attempts to conceptualise the new reality at a more logical and abstract level than post-workerism. In such respects, its analysis of the economic aspect of contemporary capitalism is more advanced and sophisticated than that of post-workerism. "Of course, this problem will basically be addressed from the viewpoint of economists", says Paulré.³⁰

Cognitive capitalism theory, as the nomenclature suggests, is also based on the view that capitalism consists of several stages even though cognitive capitalism theory and post-workerism periodise capitalism in different ways. Whereas post-workerism tries to periodise "the history of real subsumption",³¹ identifying three successive stages of capitalism whose first stage dates back only to 1848, cognitive capitalism theory shares Braudel's view that capitalism has a long history, which came into being far earlier than the industrial revolution, between 1780 and 1815.³² According to this view, cognitive capitalism is the third stage of capitalism, preceded by industrial capitalism which started with the first industrial revolution. In its

²⁸ Nicholas Brown and Imre Szeman, "What Is the Multitude? Questions for Michael Hardt and Antonio Negri", *Cultural Studies*, (Vol.19, No.3, May 2005), pp. 372-387.

²⁹ "Conventional terms such as service work, intellectual labour, and cognitive labour all refer to aspects of immaterial labour", Hardt and Negri, *opt.cit.* in note 4, p. 108

³⁰ Paulré, *opt.cit.* in note 1.

³¹ Finn Bowring, "From the Mass Worker to the Multitude: A theoretical contextualisation of Hardt's and Negri's Empire", *Capital and Class*, (No.83, 2004), p. 105

³² Moulrier-Boutang, *opt. cit.* in note 195, "It is a confirmation of one of the lessons of Braudel who, in opposition to approaches assimilating too early the essence of capitalism to its industrial configuration, reminds us that capitalism is an 'old history'", Corsani, et al, in note 8, p. 14.

first stage, capitalism was mercantilist capitalism “based on the models of production of the putting-out system and of centralised manufacture.”³³ In this respect, as mentioned earlier, the transition to cognitive capitalism is called a rupture, not a transition from Fordism to post-Fordism within industrial capitalism. The transition to cognitive capitalism is seen to be so profound that Moulier-Boutang puts it as a “grand transformation” in a Polanyian sense.³⁴ Hence, “it makes us leave behind the political economy born in the eighteenth century”³⁵.

The originality of cognitive capitalism theory lies in its view of the succession of the stages of capitalism mainly as the logical and historical development of the capitalist division of labour.³⁶ According to Vercellone, the three stages of capitalism correspond to three successive forms of the capitalist division of labour – formal subsumption, real subsumption and general intellect respectively, all of which are found in Marx’s works.³⁷ Each form of the division of labour is distinguished from the others by its distinctive configuration of production and appropriation of knowledge. In this view, whereas knowledge was originally produced, owned and controlled by workers in the stage of formal subsumption or mercantilist capitalism, the role of knowledge production was systematically detached from workers and centralised to a small group of specialised workers during the stage of industrial capitalism, with (scientific and/or technological) knowledge mainly objectified in fixed capital. In this form of the division of labour, workers are seen to play a passive role, and are under real subsumption to capital. It is argued that the situation is being reversed in the transition to cognitive capitalism or the stage of the general intellect where the role of knowledge production or conception is being re-appropriated by workers. In this stage, “the traditional terms of the opposition between ‘dead labor and living labor’ of industrial capitalism give way to a new antagonism between the ‘dead knowledge’ and ‘living knowledge.’”³⁸ Social knowledge exists as a “mass intellectuality”,³⁹ or a

³³ Vercellone, opt.cit. in note 11, p.15.

³⁴ Moulier-Boutang, opt.cit. in note 12.

³⁵ Yann Moulier-Boutang, “Antagonism under cognitive capitalism: class composition, class consciousness and beyond”, presented in *Immaterial labour, multitudes and new social subjects: class composition in cognitive capitalism* in 2006.

³⁶ Whilst this view is already present in *Draft*, no one except Vercellone and Moulier-Boutang explicitly associates periodisation of capitalism covering all three stages of capitalism with the evolution of the capitalist division of labour. However, considering that this view is already present in *Draft*, we may conclude that others’ silence on this matter does not mean rejection of this view, but implicit approval.

³⁷ Vercellone, opt.cit. in note 11.

³⁸ Corsani, et.al, opt.cit. in note 8, p. 19.

³⁹ Paolo Virno, “General Intellect”, *Historical Materialism* (Vol. 15, No. 3, 2007), p.6

"diffuse intellectuality"⁴⁰, within living labour as opposed to fixed capital. Moulier-Boutang also speaks of "[t]he centrality of living labour which is not reduced to dead labour in machinery".⁴¹

The evolution of the capitalist division of labour is certainly not just a technical process. As is the case in post-workerism, it is seen as the terrain, as well as the result, of class struggle. Technological determinism is clearly rejected. Rather, knowledge production and its technological application are understood as a means of undermining and containing the resistance of the working class. In the stage of industrial capitalism in particular, capital incessantly attempted to introduce new production technologies in order to subordinate labour to capital and to empty workers of traditional production knowledge. As this involves deskilling and "degradation of work"⁴², the "labour process remains irreducibly conflictual". "Thus, the analysis of technical progress as an expression of a relation of forces concerning knowledge is everywhere present in Marx's work",⁴³. Further, in the tradition of autonomist Marxism, technological development is understood as a weapon for capital against the working class, rather than as the means of structural unfolding of the imperatives of capital. As Aufheben puts it, "this is class struggle which appears, *post facto*, crystallised in the objective laws of capital or in the objective rationale of innovation, progress and development of capitalist production."⁴⁴

In sum, the conflictual relation centred on knowledge is a defining feature of the capital-labour relation in cognitive capitalism, with cognitive capitalism itself basically a result of the class struggle around knowledge production. Based on this view of the determining role of class struggle in historical development, Vercellone goes further and argues that the re-appropriation of knowledge by workers was made possible by the expansion of public education, which is also a result of the struggle between labour and capital in industrial capitalism or, more specifically, Fordism.⁴⁵

3. Cognitive Capitalism Theory and Value Theory

Having reviewed key elements of cognitive capitalism theory, we are now ready to move on to our critique. As mentioned earlier, we will focus on demonstrating that value theory is misinterpreted in cognitive capitalism

⁴⁰ Vercellone, opt.cit. in note 11, p.16.

⁴¹ Moulier-Boutang, opt.cit. in note 13.

⁴² Ibid. p.17.

⁴³ Ibid. p.18.

⁴⁴ Aufheben, opt.cit. in note 16, p.29.

⁴⁵ Vercellone, opt.cit. in note 11.

theory. In short, the marginalisation of direct labour time in knowledge-intensive sectors is viewed in cognitive capitalism theory as representing the demise of value theory. We will show that the marginalisation of direct labour time does not necessarily contradict value theory, and thus does not immediately warrant that capitalism is in transition to a new stage.

Our critique begins by firstly drawing attention to the argument that value theory, or the law of value, presupposes a specific form of the division of labour, and is thus valid in a specific stage of capitalism only. In this sense, value theory is taken by cognitive capitalism theory as a barometer of the status of industrial capitalism. As long as new changes can be explained by value theory, capitalism is seen to remain at the stage of industrial capitalism. Conversely, such phenomena that seemingly contradict value theory are taken to indicate that fundamental mutations are taking place behind them. Significantly, this argument is based on a naturalistic interpretation of value theory, which considers abstract labour as pure expenditure of human energy. In other words, (ahistorical) abstract labour is seen to become the substance of value under a specific form of the division of labour where the role of conception is deliberately separated from workers and is monopolised by capitalists. It is argued that simple execution work prevails in industrial capitalism and corresponds to such a definition of abstract labour. In this sense, separation between conception and execution is implicitly considered to be a defining feature of industrial capitalism, not a consequence of it.

Second, such misinterpretation is based on a specific view of the relation between conception (= cognitive labour) and execution (= industrial labour). Different roles of conception and execution in the production of use value and value in capitalism are not analysed in cognitive capitalism theory. Instead, although both are indispensable parts of the production process as a whole, labour is seen to create wealth as either conception alone or execution alone. Not only are conception (or cognitive labour) and execution (or industrial labour) contrasted with each other, but the two are seen to mutually exclude each other. Put differently, the one is viewed as the negation of the other and no inter-relation between them is analysed. According to this interpretation, Marx's value theory is degraded into execution-labour theory of value where no consideration of conception (or knowledge) is present.

Third, related to the previous point, that abstract labour and value are social categories, expressing equivalence between human labours, is neither acknowledged nor recognised in cognitive capitalism theory. Simple execution work is seen immediately as abstract labour, and quantitative relations between human labours are ignored. In other words, the

conversion of concrete labour time into abstract labour time is not studied, and the social processes involved in this conversion are short-circuited, within which knowledge plays an important intrinsic role. Knowledge is seen to be produced solely by capitalists and to contribute nothing at all to value production. Not surprisingly, then, in taking the view of the predominant role of knowledge under the stage of cognitive capitalism, value becomes a redundant category. But we will show that this ideal division between conception and execution is a false representation of value theory. For knowledge plays an important, even if varied, role in the determination of value through what we call the virtual intensification of commodity-producing labour. Consequently, the marginalisation of direct labour time does not necessarily mean that labour time ceases to be the source of wealth. We may live in a new world, but not for the reasons provided by cognitive capitalism theory.

Value theory and industrial capitalism

For cognitive capitalism theory, abstract labour is a naturalistic category. According to Hardt and Negri, all the qualitatively different (concrete) industrial labours are "equivalent or commensurable because they each contain a common element, abstract labour, labour in general, labour without respect to its specific form"⁴⁶. Whilst this definition of abstract labour is not wrong in itself, abstract labour is seen as a physiological category only, as expenditure of human energy irrespective of its specific form. Its social and historical aspects, which are more fundamental, are neither acknowledged nor recognised. Abstract labour being expenditure of energy, the magnitude of abstract labour is measured by the expended human energy of the average worker, which is proportionate to labour time. Conceptualised in this way, abstract labour is measured by one of the "natural units of measure"⁴⁷. In this view, Marx's labour theory of value belongs to the "energy and entropy paradigm of labour".⁴⁸

Significantly, it is argued that abstract labour, an ahistorical and naturalistic category, becomes the substance of value in industrial capitalism, which has the following characteristics. First, contrary to the previous stage of capitalism, i.e. mercantile capitalism, where measuring labour by labour time had little social significance, time is established as the measure of labour in industrial capitalism as a result of the separation of the cognitive aspect of labour from the workers. Second, whereas capitalists are responsible for knowledge production, workers are forced to perform simple

⁴⁶ Hardt and Negri, opt.cit in note 4, p. 144.

⁴⁷ Ibid. p.156.

⁴⁸ Moulier-Boutang, opt.cit. in note 12.

labour, at the rhythm and pace dictated by capitalists. Commodity-producing labours are primarily about expending human energy, rather than being purposeful activity. As a result, labour becomes "ever more abstract, not only under the form of exchange-value, but also in its content, emptied of any intellectual and creative quality."⁴⁹ This means that commodity production in industrial capitalism is organised on the basis of the production of (exchange) value as a result of this specific form of the division of labour.

On the contrary, for Marx, time is the measure of labour and value in capitalism at a more abstract level, before introducing the division of labour. Whereas generalised commodity production and exchange are presupposed in his analysis of (labour-time) value, the concept of capital is introduced to the analysis only after money is derived. The real existence of value logically, if not historically, precedes more complex phenomena such as the division of labour (within a workplace). In this sense, social production organised on the basis of value determines the division of labour, not the other way around. Therefore, a specific form of the division of labour cannot be taken as a prerequisite for the labour theory of value, nor for the real existence of value. In addition, and more fundamentally, for Marx, abstract labour is primarily a social category. In *Capital* volume 1, immediately after he suggests abstract labour as being the common element contained in various concrete labours, he calls it "social substance".⁵⁰ He does so before he introduces more complex concepts such as money and capital. In the first chapter of *Capital*, Marx reveals what underlies and enables generalised commodity production and exchange. Apparently, the fact that all commodities are products of (physiologically) abstract homogenous human labour is not his answer. Rather, according to Marx, generalised commodity production and exchange express a historically specific social relation between men. That is, isolated individuals make a living by producing commodities for others, selling them, and buying necessities produced by others in the market. Such a social relation between men, which appears as a relation between things, is based on the equivalence between human labours. Notably, the equivalence between human labours is not an ahistorical fact. It holds true in specific times and places only. The historical and social nature of abstract labour is more evident when Marx mentions Aristotle's failure to recognise that human labour is the common element contained in two different commodities that are exchanged with each other. It is because "Greek society was founded on the labour of slaves, hence had as its natural basis the inequality of men and

⁴⁹ Vercellone, opt.cit. in note 11, p.24.

⁵⁰ Karl Marx, *Capital: Volume I*, translated by Ben Fowkes with an introduction by Ernest Mandel, (London: Penguin Books, (1976) [1867]), p.128

of their labour-powers"⁵¹. In sum, abstract labour is socially and historically equivalent human labour that is expressed through generalised commodity production and exchange.

As abstract labour is a social and historical product, so is abstract labour time – the common measure of value. Although abstract labour has no concrete existence and abstract labour time cannot be immediately measured by any concrete means, they nevertheless exist and are no less real than concrete labours and concrete labour times. The point is that in the capitalist mode of production, different concrete labours produce value and are measurable – not because they can be measured by a common concrete measure, but because a social measure is formed out of social processes. It is only in the capitalist economy that physiologically abstract labour becomes the substance of value, and that products of labour take the commodity form in general. The physiological definition of abstract labour attains its significance only after the social and historical nature of abstract labour is properly understood.

Cognitive labour and industrial labour as two independent forms of labour

As noted earlier, labour can be either industrial or cognitive in cognitive capitalism theory, depending on the form of the division of labour around knowledge production. In addition, whilst labour is viewed as the source of wealth both in industrial capitalism and in cognitive capitalism, labour is understood to create value either in its industrial form alone or in its cognitive form alone. In this sense, industrial labour and cognitive labour are contrasted with each other, to the extent that they appear to mutually exclude each other: the former is repetitive, pure consumption of human energy and the latter is creative, cooperative and intellectual; the former is measured by time and the latter is immeasurable by time; the former is expended in the labour process as dictated by capital and the latter organises and co-ordinates itself; the former produces commodities according to knowledge objectified in fixed capital or machinery, the latter produces such knowledge.

It is true that any type of the division of labour involves a separation between conception and execution, justifying the division of labour into cognitive labour and industrial labour. However, as long as both forms of labour are indispensable for commodity production, their different roles in value production should be recognised and analysed. Execution alone cannot produce commodities, and thus alone cannot produce value either. In other words, execution cannot stand on its own without conception, and vice

⁵¹ Ibid. p.152

versa. Put differently, conception and execution are inter-related. This internal relation may appear in many different forms which change and develop historically. For example, conception and execution are now separated to the extent that knowledge production is not only for internal use to enhance productivity or to develop new products, but also for making profit by way of knowledge licensing. However, this should be analysed on the basis of the internal relation between conception and execution at the most abstract level, namely as its concrete and complex forms. In sum, for Marx, commodity production, and thus value production, is firmly anchored in the dialectical unity between conception and execution. The contrary is the case in cognitive capitalism theory, where the internal relation between conception and execution is lost. They are seen to oppose each other, and look as if either one can exist irrespective of and/or prevail over the other.

Likewise, value theory is considered as an execution-labour theory of value by cognitive capitalism theorists, in which no consideration of conception or knowledge work is found. Knowledge that is indispensable for commodity production is argued to be produced by capitalists, but not to affect production of value by any means. In conclusion, the role of knowledge is missing in such an interpretation of value theory.

The law of value in crisis and cognitive labour as source of value and wealth

As soon as the role of knowledge is brought to the fore, the (execution-)labour theory of value reveals serious weaknesses. Let us start from the law of value. As Caffentzis correctly points out, "the 'Law of value' is *not explicitly defined* in Marx's work" to the same extent as other laws, such as the law of the tendency of the falling rate of profit.⁵² "[T]he phrase is not in common use outside of the pages of post-Marx Marxist and Soviet-era economists."⁵³ Nor in the works of cognitive capitalism theorists is the law defined clearly. Nevertheless, Negri and his followers have been using this term more frequently than others since as early as 1978.⁵⁴ Hardt and Negri say, "according to this law of value, value is expressed in measurable, homogeneous units of labor time ... This law, however, cannot be maintained today in the form that Smith, Ricardo, and Marx himself conceived it. The temporal unity of labor as the basic measure of value today makes no sense"⁵⁵. Vercellone also points out that the law of value is founded on "labour time". In addition, it is argued that the crisis of the law

⁵² Caffentzis, opt.cit, in note 19.

⁵³ Ibid. p.91

⁵⁴ For example, Antonio Negri, *Marx beyond Marx: Lessons on the Grundrisse* (Autonomeia/Pluto, 1991) speaks of "[m]oney as the crisis of the law of value".

⁵⁵ Hardt and Negri, opt.cit. in note 4, p.145

of value reveals a more fundamental crisis, the crisis of the entire political economy based on the law of value. "The categories of political economy (trade, value, ownership, production, consumption, labor, etc ...) are in crisis."⁵⁶

Although not explicitly defined, an example provided by Vercellone shows that the law of value is understood as the determination of value by labour time and the determination of price by value.⁵⁷ "[T]he time of labour directly dedicated to the production of commodities intensive in knowledge becomes insignificant; or, to put it in the language of neoclassical economy theory, where the marginal costs of reproduction are practically nothing or extremely low, these commodities should be given for free."⁵⁸ This suggests that the value of commodities is considered close to zero because the (execution-)labour time expended to produce commodity in knowledge-intensive sectors is very low. Consequently, if the law of value is still operative, price needs to be determined by value, and must be, in turn, approximately zero. However, the reality is that commodities such as software and microprocessors are sold at a price far higher than their marginal cost or the direct labour time expended per output. Considering that the emergence of such knowledge-intensive sectors is understood as the epitome of the new stage of capitalism, this example seems to vindicate the argument that the law of value suffers a crisis of relevance in cognitive capitalism.⁵⁹

In this interpretation, the quantitative conversion of concrete labour time into abstract labour time is not analysed. Instead, although not explicitly, all commodity-producing labours are considered to be identical, as a result of deskilling, producing the same amount of value in a given period. However, despite the seeming homogeneity between concrete labours, their qualitative differences do not simply disappear by any means. Of course,

⁵⁶ Corsani, et.al. opt.cit, in note 8, p.16.

⁵⁷ Vercellone, opt.cit. in note 11.

⁵⁸ Ibid. p.34

⁵⁹ However, it is argued that value remains a central category of cognitive capitalism, and labour the source of wealth, even if wealth in cognitive capitalism cannot be taken as the same wealth as in industrial capitalism. "Labour, particularly in the form of knowledge, remains nevertheless the principal source of the creation of wealth, but it can no longer be measured on the basis of labour time directly dedicated to production", Vercellone, opt.cit. in note 194, p.30. It is obvious that labour time is not a good measure of knowledge-producing labour: the distinction between labour time and non-labour time disappears as labour becomes cognitive; ideas just flash through the mind and workers can still think at home; more importantly, the same amount of labour time can lead to both useless idea and epoch-changing idea. Whilst better commodities or more commodities can be produced in a given period of time as knowledge-producing labour time increases, labour time is not a decisive factor in evaluating the economic value of this benefit. In conclusion, it is argued that a new theory of value is needed.

concrete labours can be measured by time. But concrete labour times cannot be directly compared with each other even if they are expressed in the same unit of time. For example, when a worker produces two desks for an hour and three desks for another hour, the two one-hour works are not identical even if performed by the same worker; the former is one-hour-work-producing-two-desks and the latter is one-hour-work-producing-three-desks.

Labours are considered homogeneous only if labours are measured as abstract labours. The difficulty is that abstract labour time cannot be directly measured. Abstract labour exists in the form of concrete labours, and abstract labour times take the form of concrete labour times. Hence, we face the problem of converting concrete labour times into abstract labour times. In our example above, one-hour-work-producing-three-desks is converted into 1.5 times as much abstract labour time as one-hour-work-producing-two desks, because abstract labour time required to produce a desk is a given. The conversion requires consideration of other factors. For example, differences in personal capabilities, differences in technologies and differences in the complexity of labour affect the conversion, to name but a few. If worker A produces three desks and worker B produces two desks in an hour, one-hour work of worker A is counted 1.5 times as much as that of worker B. Similarly, depending on the difference in productivity, desk-producing workers of firm A may produce more desks in a given period than workers of firm B due to a more productive use of knowledge, and consequently one hour of concrete labour of firm A counts as more abstract labour time than that of firm B. Finally, when worker A produces one watch and worker B produces one desk for an hour, one-hour-work of worker A may count for more than that of worker B, as watch-producing labour is more complex than desk-producing labour. Considering that there are so many other factors affecting the conversion, and it is generally not feasible to isolate one factor from the others, it is almost impossible technically to convert concrete labour times into abstract labour times.

Fortunately, this conversion is not a technical process taking place in the heads of accountants, but is a result of social processes. The difficulties above are not those of the conversion itself, but are those of reconstructing real social processes in thought. The everyday practice of exchange between commodities assures that the conversion works well.⁶⁰ Hence, we should start from the result of the conversion of concrete labour times into abstract labour times that goes on behind individual producers, not from observed

⁶⁰ Of course, the conversion is not carried out through exchange between commodities, but expressed through exchange.

concrete labour times.⁶¹ The task of theory is to trace and lay bare the social processes by which concrete labour times are converted into abstract labour times and reproduce them in thought.

Virtual intensification of commodity-producing labour

Put differently, cognitive capitalism theory short-circuits social processes and structures by which qualitatively different concrete labours are equalised, but with quantitative differences. In particular, cognitive capitalism theory ignores the social process of what we call the virtual intensification of commodity-producing labour. Marx defines socially necessary time as “the labour-time required to produce any use-value under the conditions of production normal for a given society and with the average *skill* and *intensity* of labour prevalent in that society”.⁶² In other words, as the skill and/or intensity of labour varies, the same concrete labour times are converted into different abstract labour times. Intensity of labour, which is not explicitly defined by Marx, is the degree of expenditure of labour power during a given period of time and is related to the pace of work. Thus, more intense work has the same effect as an extension of the working day. Introducing new production methods can have the same result as intensification, creating more value in a given period of time, without any changes to the intensity of commodity-producing labour. Marx says, “exceptionally productive labour acts as intensified labour”,⁶³ and “[m]ore complex labour counts only as *intensified*, or rather *multiplied* simple labour”⁶⁴ emphasis in original. Virtual intensification refers to such social processes by which the same amount of labour time produces more value without any changes to the intensity of labour due to, for example, the use of better knowledge within a sector or across sectors. Labour becomes more productive in the former, and more complex in the latter.

Knowledge allows for virtual intensification through two different mechanisms: intra-sectoral virtual intensification and inter-sectoral virtual intensification. For the first, if an individual capitalist makes more productive use of knowledge than the sectoral norm, the commodity-producing labour will have a higher productivity. Thus, the individual value of commodities produced by this capitalist will be lower than the social value, and the

⁶¹ Through these social processes, all concrete labours are normalised, synchronised and homogenised. In other words, they are equalised as abstract human labour. For more details on normalisation, synchronisation and homogenisation, see Alfredo Saad-Filho, *The Value of Marx: Political Economy for Contemporary Capitalism* (London: Routledge, 2001).

⁶² Marx, op.cit. in note 50, p.129.

⁶³ Ibid, p.435.

⁶⁴ Ibid, p.135.

capitalist will be able to accrue extra surplus value in the form of higher profit. For the second, however, the sectoral average level of knowledge might be higher than the social average. The average commodity-producing labour of such a sector serves as complex labour. Complex labour produces more value than simple labour precisely because it requires significant efforts in education and training. Even if machinery dominates individual workers, workers use the machinery as an instrument of production at the collective level. Knowledge produced in its own (non-value) generation process serves, in the labour process, as the knowledge of the value-producing collective worker. Even if individual workers perform simple labour, collective knowledge can virtually intensify that labour.⁶⁵

In this way of incorporating the role of knowledge into value theory, knowledge labour is considered not only as necessary for the production of use-value, but also as a contributor to the production of value. Here, the inter-relation between knowledge (or cognitive) labour (= conception) and commodity-producing labour (= execution) is obvious despite their different roles. Whereas commodity-producing labour produces value, knowledge labour does not create value, but determines the value-producing capacity of commodity-producing labour. Value production is not possible if either of the two is missing. Significantly, incorporating the role of knowledge in this way, i.e. virtual intensification, does not require alteration to any assumptions or propositions of Marx's value theory.

If we go back to our earlier example of microprocessors, although concrete direct labour time to produce a unit of microprocessor of computer software is close to zero, direct microprocessor-producing labour can be virtually intensified or can act as intensified labour. In other words, the abstract labour time required to produce a unit of microprocessor of software, or the direct labour portion of the value of microprocessor of software, can be higher than zero. Therefore – and contrary to the view of cognitive capitalism theory – the marginalisation of direct labour time in knowledge-intensive sectors does not necessarily mean that the value of commodities produced in such sectors is close to zero. Nor is it necessarily the case that the price of commodities in such sectors is not determined by the value of those commodities. In sum, the argument that value theory or the law of value suffers a crisis due to the marginalisation of direct commodity-producing labour is not well-grounded.

⁶⁵ For more details on virtual intensification, see Heesang Jeon, "Korean Debate on the Value of Software and Knowledge Labour", presented in the 2nd IIPPE international research workshop, 2008 accessible at: [http://www.iippe.org/wiki/SecondIIPPE InternationalResearch Workshop](http://www.iippe.org/wiki/SecondIIPPE_InternationalResearch_Workshop) and Ben Fine et.al.. "Value is as Value Does: Twixt Knowledge and the World Economy", *Capital and Class* (No.100, 2010), p.69-83.

4. Cognitive Capitalism Theory on General Intellect and Rent

So far, we have seen that cognitive capitalism theory holds a naturalistic and ahistorical view of the category of abstract labour, which allegedly becomes the substance of value only under a specific form of the division of labour. In addition, as the social and historical aspects of value theory in general, and abstract labour in particular, are ignored, the crucial social process of virtual intensification is not considered in the determination of the value of commodities. As a result, cognitive capitalism theorists argue that with the tendential growth of cognitive labour, especially in knowledge-intensive sectors, labour time is no longer the measure of wealth in contemporary capitalism. For knowledge (cognitive) labour is seen as not playing any role in the determination of the value of commodities. We have demonstrated that both the conclusion is wrong, and that crucial aspects of the interpretation of value theory by cognitive capitalism theorists are seriously flawed.

Although not directly related to value theory, we will now touch upon two other points of cognitive capitalism theory: the first concerns the argument that the general intellect which Marx speaks of in *Grundrisse* anticipates the re-appropriation of the role of knowledge production by workers; the second concerns the alleged collapse of the distinction between profit and rent and the role of intellectual property rights in cognitive capitalism. Whilst wealth in cognitive capitalism is produced by workers alone, it is argued that capitalists continue to appropriate a portion of wealth through intellectual property rights, without contributing to the production process at all. Hence, intellectual property rights are viewed as the main terrain of class struggle in cognitive capitalism.

General intellect

Whilst the marginalisation of commodity-producing labour does not contradict value theory, that does not guarantee that value theory still holds true. Significantly, in 'Fragment on Machines', Marx does argue that with the rapid development of science and technology, at some point labour time will cease to be the measure of value. 'Fragment on Machines' has drawn attention from many commentators, especially those in the tradition of Autonomist Marxism which encompasses cognitive capitalism theory. This section of *Grundrisse* is often suggested as strong evidence that Marx shares their view and anticipates the advent of cognitive capitalism. However, the 'Fragment on Machines' is interpreted through a lens of cognitive capitalism theory and the general intellect is equated with living knowledge vis-à-vis knowledge objectified in fixed capital, or dead labour. For example,

Vercellone speaks of “the relation of living knowledge/dead knowledge”⁶⁶, and Virno suggests mass intellectuality, “the entirety of post-Fordist living labour” as “the prominent form in which the general intellect is manifest today”⁶⁷. Clearly, as Virno admits, Marx’s notion of the general intellect is different.⁶⁸ For Marx, the general intellect coincides with fixed capital, the dead knowledge.⁶⁹ On the contrary, for Virno, the dead knowledge objectified in fixed capital is only formal knowledge, whereas informal knowledge plays a more crucial role in the new stage of capitalism. It is notable that the distinction between formal knowledge and information knowledge is very similar to that of tacit knowledge and explicit knowledge.⁷⁰

Marx apparently considers that knowledge basically exists as objectified in fixed capital.⁷¹ He says, “[t]he development of *fixed capital* indicates to what degree general social knowledge has become a direct force of production, and to what degree, hence, the conditions of the process of social life itself have come under the control of the *general intellect* and been transformed in accordance with it,”⁷² emphasis added. This does not mean that knowledge of living labour is ignored, although he definitely places more emphasis on dead knowledge. Rather, in ‘Fragment on Machines’, Marx concentrates on the role of knowledge in general, be it formal or informal.

For Marx, knowledge is one of the sources of real wealth as opposed to wealth expressed in terms of value. Quoting William Petty, Marx says, “labour is the father of material wealth, the earth is its mother”⁷³. Considering the role of knowledge, to this we must add knowledge. In addition, Marx views that the role of knowledge in the production of commodities rapidly increases in capitalism. As Marx puts it, “the creation of

⁶⁶ Vercellone, opt.cit. in note 11 p.18

⁶⁷ Paolo Virno, “General Intellect”. *Historical Materialism* (Vol. 15, No. 3, 2007), pp. 3-8.

⁶⁸ Ibid. p.5.

⁶⁹ Note that Vercellone, opt.cit in note 11 p. 27, disagrees with Virno. “[O]ur interpretation diverges from that of Paolo Virno, according to which Marx identifies the general intellect with fixed capital in toto, in contrast to the way that the same general intellect presents itself as living labour”.

⁷⁰ Ironically, the distinction and opposition between living/informal/tacit knowledge and dead/formal/explicit knowledge reveals that a complete separation of knowledge or the cognitive aspect of work from workers is impossible. Certain knowledges, by their nature, cannot be written down or codified. In addition, the social process of deskilling, deliberately separating the cognitive aspect of work from workers, involves the use of methods of production based on new technologies, in the course of which new skills emerge and workers are re-skilled.

⁷¹ Karl Marx, *Grundrisse* (London: Penguin Books, 1973 [1953]).

⁷² Ibid. p. 706.

⁷³ Marx, opt.cit. in note 50p.134.

real wealth comes to depend less on labour time and on the amount of labour employed than on the power of the agencies set in motion during labour time, whose 'powerful effectiveness' is itself in turn out of all proportion to the direct labour time spent on their production, but depends rather on the general state of science and on the progress of technology, or the application of this science to production"⁷⁴, emphasis added. He continues, "as soon as labour in the direct form has ceased to be the great well-spring of [real - added] wealth, labour time ceases and must cease to be its measure, and hence exchange value [must cease to be the measure] of use value".⁷⁵

Labour has always been an essential source of real wealth irrespective of its historical forms, and labour time has always played an important role. As Marx puts it, "[i]n all situations, the labour-time it costs to produce the means of subsistence must necessarily concern mankind, although not to the same degree at different stages of development"⁷⁶. In 'Fragment on Machines', Marx envisions a society where labour continues to be necessary for the creation of real wealth, but plays only a minor role. In such a society, production of real wealth, i.e. use values, will depend more on the state of science and technology rather than on total direct labour time, both at the level of the individual firm and at the national/global level.

If 'Fragment on Machines' is not about cognitive capitalism and the collectivity of cognitive workers, what is it about? It is basically about a clash between the forces of production and the relations of production. Marx says, "[o]n the one side, then, it [capital] calls to life all the powers of science and of nature, as of social combination and of social intercourse, in order to make the creation of wealth independent (relatively) of the labour time employed on it."⁷⁷ On the other side, it wants to use labour time as the measuring rod for the giant social forces thereby created, and to confine them within the limits required to maintain the already created value as value". Capital is a "moving contradiction". He argues that capital, as one of its consequences, pushes the forces of production to the limit, to the extent that it shakes the stability of its relations of production.⁷⁸ Marx does not mention counter-tendencies which are also consequences of capitalism. For example, he does not consider workers' knowledge, which is the result of

⁷⁴ Ibid. pp. 704-5.

⁷⁵ Ibid. p.705

⁷⁶ Ibid. p.164.

⁷⁷ Marx, opt.cit. in note 71, p.706.

⁷⁸ George Caffentzis, "From the Grundrisse to Capital and Beyond: Then and Now", *Workplace*, (No.15, 2008), pp.59-74.

calls this the "incommensurability tendency". This tendency refers to the increased role of knowledge.

mutually contradictory processes of deskilling and reskilling.⁷⁹ Nor does he mention that human needs are redefined as new products are introduced and old products vanish. As is the case with the LTRPF (law of the tendency of the rate of profit to fall), we cannot predict the outcome of the contradictory interplay of the tendency to minimise the role of direct labour and such counter-tendencies.⁸⁰ Going back to our question of how to interpret the decreased role of direct labour, we cannot give a definite answer. At this point, it is sufficient to say that theories dealing with this topic should consider counter-tendencies as well as the tendency to minimise the role of labour.

Intellectual property rights and rent

It is argued that the category of profit disappears in cognitive capitalism. According to Vercellone, there are two conditions of existence for profit in industrial capitalism.⁸¹ The first concerns the essential nature of the role of capital to the production process. Capitalists manage, supervise and organise the labour process, and this shows “the correspondence between the figure of the capitalist and that of the entrepreneur”. The second condition is related to the reinvestment of surplus value or profit for expanded accumulation of capital. It is argued that these two conditions are only a “transient outcome of a period in capitalism, that is, that of industrial

⁷⁹ In the same vein, Tony Smith, “The ‘General Intellect’ in the Grundrisse and Beyond”, presented in the *International Symposium on Marxian Theory (ISMT) Conference*, 2008, p.25, says, “[b]ut this tendency existed alongside a tendency for the workforce as a whole to develop new capacities and new forms of tacit knowledge, despite being dominated by machine systems. These capacities and forms of knowledge played a profound role in the incremental and radical innovations that occurred throughout the period in question, however much the reality - and the ideology - of “deskilling” prevented this from being recognized adequately”.

⁸⁰ Caffentzis, opt.cit. in note 78, seeks to explain the relation between the incommensurability tendency and the LTRPF, but mistakenly equates the former with the transformation of commodity values into prices of production. He says, “in the transformation of commodity values into prices of production the incommensurability thesis is preserved and finally made compatible with the falling rate of profit tendency. If the value-to-price-of-production transformation did not occur, the high organic composition industries would suffer from inadequate profit rates and would be unable to develop into a hegemonic presence in production. Indeed, the transformation makes it possible for there to be electricity-generating nuclear power plants that successfully realize an average rate of profit (on the basis of an enormous investment in fixed and circulating capital) even though the workers within them create a tiny fraction of the surplus value created by workers in a typical sweatshop”, *ibid*, pp. 63-4. For Smith, opt.cit in note 79, p.35, the theme of the general intellect is present in *Capital*, though Marx does not use this term any more. He says, “Marx stressed the intrinsic connection between relative surplus value and the systematic tendency for the scientific-technical knowledge to play an increasingly important role in the production process. This is the concept of the general intellect, even if the term itself is not employed.”

⁸¹ Carlo Vercellone, *The new articulation of wages, rent and profit in cognitive capitalism* (London: Queen Mary University, 2008).

capitalism" and fully realised "during the golden age of Fordist growth, when the logic of the real subsumption of labour under capital and that of mass production come into being". Further, Vercellone argues that profit or surplus value stems not only from the surplus labour time of individual workers, but also from co-operation between workers.⁸² Capitalists are seen to appropriate the latter part of surplus labour free of charge. "As Marx has already pointed out about the factory, this surplus-value is not intended as a simple sum of the individual surplus-labour of each wage labourer, but also as the gratuitous appropriation of this surplus generated by the social cooperation of labour." In cognitive capitalism, capitalists are seen to be increasingly detached from the task of management, supervision and organisation of the labour process, and as not contributing to the production of final commodities to the same extent as in the previous stage of capitalism. As a result, the appropriation of surplus value, which is inherent in the capital-labour relation in industrial capitalism, is no longer perceived to be feasible. This is different from Marx's explanation. His view is that capitalists accrue profit not from any roles they play in the production process, but from surplus labour time performed by workers who must work for capitalists to make a living, due to capitalists' monopoly over the means of production.

Anyway, it is argued that in cognitive capitalism capital attempts to appropriate surplus by way of the expansion of the sphere of the market "through a progressive colonisation of the common goods of knowledge and life by means of strengthening Intellectual Property Rights".⁸³ "[T]he solution sought by capital is now to establish strict intellectual property rights aiming at capturing monopoly rents."⁸⁴ It is called a new enclosure movement or primitive accumulation, around which the antagonism between capital and labour is reconfigured. As Dyer-Witheford puts it, cognitive capitalism is "commercial appropriation of general intellect."⁸⁵ As a result, "[b]ecause as the law of value-labour time is in crisis and the cooperation of labour appears to become increasingly autonomous from the managerial functions of capital, the very frontiers between rent and profit begin to disintegrate."⁸⁶ Consequently, rent is seen to become the central category of cognitive capitalism. "The current transformation of capitalism is characterised by a full-fledged comeback and proliferation of forms of rent paralleled by a complete change in the relationship between wages, rent and profit." In short, cognitive capitalism is a stage of capitalism where

⁸² Vercellone, opt.cit. in note 81.

⁸³ Ibid.

⁸⁴ Vercellone, opt.cit. in note 4.

⁸⁵ Nick Dyer-Witheford, "Cognitive Capitalism and the Contested Campus", *European Journal of Higher Arts Education* (No. 2, February 2005).

⁸⁶ Vercellone, opt.cit. in note 81.

capital tries to “accentuate and exercise direct control over places or people with knowledge or potential of technical creativity”.⁸⁷

This means that the class struggle in cognitive capitalism increasingly takes the form of a distribution struggle, where no pre-existing economic rules apply. It is a pure clash between capitalists and workers by which surplus products are divided. The presumption is that whilst knowledge should be freely available due to its non-rival nature, capitalists attempt to impose intellectual property rights from outside, so that they can monopolise the use of knowledge and thus appropriate monopoly rent which is based on (artificially) limited use of knowledge. Hardt and Negri argue that exploitation in the new stage of capitalism requires non-economic political compulsion.⁸⁸ From the point of view of cognitive capitalism theory, political compulsion takes the form of intellectual property rights.⁸⁹ In this view, capital and labour are understood to be independent from each other. Here, a group of people called working class, and another group of people called capitalists, fight with each other about who takes control of the role of knowledge production. Now we have two super-powers, confronting each other. “There is a clash of Titans.”⁹⁰

Whilst no economic analysis on rent is provided, it is worth mentioning that rent is understood not in a Marxian but in a Marshallian sense as acknowledged by Negri and Vercellone.⁹¹ Marshall conceptualises as the categories of rent and quasi-rent the portion of value that is accounted for by the use of better production methods or inputs than the social average. Similarly, many commentators have argued that the productivity increase attributed to the monopoly of production methods or knowledge or natural conditions can be analysed using the category of rent, even if they do not necessarily sign up for any theory of new capitalism. For example, Harvey says, “Monopoly rent arises because social actors can

⁸⁷ Corsani et.al. opt.cit. in 8, p.10.

⁸⁸ Hardt and Negri, opt.cit. in note 17.

⁸⁹ For Hardt and Negri, opt.cit. in note 17; and Hardt and Negri, opt.cit. in note 4 who consider not only knowledge production but also broader aspects of immateriality of contemporary capitalism, political compulsion can take more diverse forms. “[T]he indexes of command (like those of economic value) are defined on the basis of always contingent and purely conventional elements.” As no systematic approach to exploitation is feasible, the political compulsion that is necessary for exploitation cannot be associated with order or measure. Rather, its effectiveness is based on “destruction (by the bomb), on judgement (by money), and on fear (by communication)”, Hardt and Negri, opt.cit. in note 25, p.355.

⁹⁰ John Holloway, “Going in the Wrong Direction: Or, Mephistopheles – Not Saint Francis of Assisi”, *Historical Materialism*, (Vol.10, No.1, 2002), pp.79-91.

⁹¹ Antonio Negri and Carlo Vercellone, “Il rapporto capitale/lavoro nel capitalismo cognitivo”. *Posse*, (Ottobre, 2007), pp. 46-56. “[T]his is what Marshall described as a rent, to distinguish this good as ‘free gift’ which results from the general progress of society from normal sources of profit”, ibid.

realize an enhanced income stream over an extended time by virtue of their exclusive control over some directly or indirectly tradable item which is in some crucial respects unique and non-replicable.”⁹² Negri and Vercellone even argue that rent takes many different forms – “financial, real estate, cognitive, wage etc”, not confined to ground-rent as in Marx.⁹³

Here again, cognitive capitalism theory deviates from Marx because there is no general theory of rent in Marx. As Fine points out, in the analysis of ground-rent, “Marx’s starting point then is the existence of landed property as a specific means by which surplus value can be appropriated in the form of rent”.⁹⁴ Rent is “immediately linked to the historical conditions of existence of landed property”. Therefore, “rent cannot be analysed simply on the basis of its effects ... Logically, rent would then arise wherever there was any obstacle to capitalist investment, that is in all but the most abstract existence of the capitalist mode”. Intellectual property rights certainly constitute a type of barrier to capitalist investment, in that the use of protected technologies or knowledge requires licensing of technologies or other forms of transfer of knowledge. However, intellectual property is different from landed property. Above all, intellectual property rights have contradictory impacts on capital accumulation, whereas capitalists confront landed property as a pure barrier. On the one hand, IPR may encourage innovation by preventing competitors from imitating or catching up. On the other hand, for the same reason, increase of the level of general social knowledge can be retarded. Marx’s theory of ground-rent is an application of his value theory to an agricultural sector which is based on historically specific landed property. Likewise, we need to develop a theory of intellectual property rights on the basis of value theory, but in full consideration of the historical nature of intellectual property rights. For this, the category of ground-rent is certainly instrumental.

5. Concluding Remarks

Our critique of cognitive capitalism theory has demonstrated that its interpretation and application of Marx’s value theory are flawed in many crucial aspects and at various levels: the basic categories are misunderstood to be naturalistic, and attain practical truth only under a specific form of the division of labour; the inability to explain new changes on the basis of value theory is resolved by simply rejecting the validity of value theory in

⁹² David Harvey, *Spaces of capital: towards a critical geography* (New York: Routledge, 2005), p. 395.

⁹³ Negri and Vercellone, opt.cit. in note 91.

⁹⁴ Ben Fine, “On Marx’s theory of agricultural rent”, *Economy and Society* (Vol.8, No.3, 1979), pp. 241-278.

contemporary capitalism; the category of profit is misunderstood to be due to the role of capitalists in the production process; the meaning and significance of the general intellect is distorted to be fitted for the hypothesis of cognitive capitalism; analysis of intellectual property rights is reduced to a general theory of rent.

This leaves us with the task of developing a theory of the knowledge economy from a Marxian perspective: those changes seemingly contradicting value theory must be explained based on value theory; the role of knowledge should be incorporated into value theory in a consistent and coherent manner; value theory should guide the analysis of more complex and concrete aspects of the knowledge economy, not least intellectual property rights and the commoditization of knowledge. In short, we need a theory of knowledge (or cognition) in capitalism, not a theory of the new (cognitive) stage of capitalism. This is important not only in its own right, but also in relation to other themes like financialisation, neo-liberalism and globalization.⁹⁵

⁹⁵ This point is acknowledged by proponents of cognitive capitalism theory. See Paulré, *opt.cit.* in note 7, for financialisation and Moulier-Boutang, *opt.cit.* in note 221; Moulier-Boutang, Y, "Le Sud, la propriété intellectuelle et le nouveau capitalisme émergent", in Peugeot (eds), *Pouvoir savoir: le développement face aux biens communs de l'information et à la propriété intellectuelle* (Paris: C&F éditions. Collection Sociétés de l'information, 2005).