

Critique of cognitive capitalism: A political economy of knowledge-based Internet industries

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CERTIFICATE

It is certified that the work contained in this thesis, titled “Critique of cognitive capitalism: A political economy of knowledge-based Internet industries” by Pravin Patil, has been carried out under my supervision and is not submitted elsewhere for a degree.

7th July, 2015

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Abstract

The thesis posits that analytical studies relating to knowledge based industries (especially social media) as rent seeking organization must be revisited. Proponents of cognitive capitalism, especially Autonomist Marxists attribute sources of revenue in knowledge based industries to “rent seeking behavior” departing from Marx’s labor theory of value. Industrial production process requires capitalist’s active supervision for efficient production and value of labor is calculated with respect to socially abstract labor time invested in production process. Autonomist Marxists contest that after the crisis of Workerism(resulting in reduction in working time) and rise of knowledge as productive force, capital has become external to production process while extracting collective knowledge as a rent for provisions to access means of production. Knowledge has always been central to organization of societies, although Autonomist Marxists and economists indicate a renewed interest in knowledge (in its technological capacity) owing for its effects on growth and productivity in world economy. We claim that production process must be analyzed in totality to fully apprehend the realities of today’s political economy and not just limited to advanced capitalist countries, which Autonomist Marxists neglect in their theories of cognitive capitalism. Our criticism is two fold. Firstly we present our critique to cognitive capitalist theories by analyzing Facebook: an epitome of post-Fordist management practices, and claim that Facebook is not a rent seeking organization. If Facebook is indeed a rent seeking organization, we argue that it undermines the contributions of software creators and contributors who maintain the large scale operations of the firm. Secondly knowledge labors represent only one aspect of the class of multitude(term popularized by Hardt and Negri in Empire, refers to the class of collective social subjectivities present today) while other, which is often neglected, is the rise of precarious labor in global south. Marx argued that opening up of luxury industry stands on the shoulder of relative surplus population, “a population often made available owing to the preponderance of constant capital in other branches of production; these base themselves in turn on a preponderance of the element of living labor, and only gradually pass through the same trajectory as other branches”. Knowledge industries relies heavily on physical infrastructure which increases the organic composition of firm. Organic composition of firm is the ratio of constant capital(machines and raw materials) to variable capital(value of labor). The crisis of value is not because of cognitive capitalism but because of inherent antagonism between capital-labor relationship at play in global value chain. For Knowledge based industries, in order to recover the *tendential* fall of rate of profits (owing to relative increase in constant capital to variable capital) low organic firms are introduced in economy so as to shift the surplus to advanced level of production. Lastly we part

from the critique of cognitive capitalism and assesses the tragedy of commons evidently indicated by rising privatization of modes of production which is central to immaterial production.

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Chapter 1

Introduction

Marx's analysis of capitalism is focused on industrial mode of production and commodity exchange. Value of labor is the socially abstract labor time spent in production. Historical struggles for reduction in working time led to capitalist restructuring focused on immaterial production identified by rise of knowledge-based industries. Autonomist Marxists, abandoning labor theory of value, have defined new antagonisms of capital-labor relationship in terms of *immaterial labor*, *multitude*, *knowledge labor* and *information economy* while addressing knowledge as prime factor in value creation. They say that capital has become external to production while appropriating collective knowledge. This shift, Autonomists argue, is characteristic of cognitive capitalism. Carlo Vercellone's new articulation of quantitative relations of production (wages, rent, profit) signify that cognitive capitalist extracts economic rent from collective actions of knowledge labor made scarce by legal enclosures [89]. Vercellone calls this *becoming rent of profit* or rent is the new profit. The crisis of value has led Autonomist Marxists to baptize cognitive capitalism from post-Fordism. In chapter 2 of this thesis we start by outlining Marx's labor theory of value and the M-C-M' transformation which holds the hidden abode of surplus.

Following Marx's inquiry of industrial mode of production we proceed to outline the theories of cognitive capitalism in chapter 3. Within chapter 3, we also discuss the so called crisis of value described by cognitive capitalists theorists. Social media platforms like Facebook, Google and Twitter have exemplified the notion of post-Fordist capitalism and have created valorizing space for sharing and collective action by giving out services for free. Collective activity (codified in information) is channeled, subsequently generating profit. Profit is made by enclosing of knowledge within intellectual property rights enabling firms to create artificial scarcity and monopoly over resources. There has been a steady rise in literature understanding the notion of labor, its channeling and value creation in informational capitalism [84][22][25][4][26]. In chapter 4 we analyze Facebook with respect to contributions of free labor i.e. as content creators and collective knowledge labors.

Bohm et.al's analysis of Facebook gives us key insights of global value chain at play while simultaneously recognizing Facebook as "rent seeking organization" and earning profits [12]. Their analysis is inspired by Vercellone's notion of becoming rent of profit, whereby rentier i.e. Facebook, extracts rent [89]. However their analysis doesn't clearly mention as to what is rented, is it data, memory or some-

thing else. We present our critique to political economy of Facebook and the problems of recognizing it as “rent seeking organization” in chapter 5 (section 1). We show that there lies a contradiction in cognitive capitalism’s notion of labor and surplus value. According to Marx only labor could produce value whereas cognitive capitalist theorists claim that capitalists earn profit without creating value at all. For Marx rentier is unproductive, rent being a parasite that sucks surplus value. Categorizing Facebook as a rentier devalues the contribution of social media’s employees who create and maintain its huge infrastructure. We argue that software creation involves collective organization of labor which cannot be reduced to individual contribution and must be seen in light of “intensive labor” that Marx speaks of. We also show that Facebook as capitalist firm is not external to production process, it in fact deploys myriad mechanisms for steadily engaging users on their platform so that more and more advertisers find their potential customers for their products. We strengthen our claim by referring to Caffentzis’ historical reference of put-out system where the merchant or *Verleger* maintained active surveillance over production process even though workers had relative autonomy [14]. Furthering Caffentzis’ interpretation of *Verleger*, we draw an analogy recognizing Facebook as *Verleger/middleman capitalist* who put-out virtual memory to prosumers. The struggles of labor in *Verleger* system resulted in blood and fire of primitive accumulation in Europe. In chapter 5 (Section 2) we indeed show how a familiar phenomenon is taking place with development of knowledge industries in global north supported by labor intensive firms of global south. Marx defined organic composition of a firm as ratio of constant capital to variable capital. Our interpretation is based on Marx’s notion of absolute and relative surplus value, and the *tendential* fall of average rate of profit, whereby surplus value is transferred from low organic composition industry to high organic composition industry. We argue how knowledge-based industries especially social media earn profit, not by their virtue of rent seeking but by average rate of profit being distributed from lower organic composition industries to higher.

In chapter 6 we depart from the discussion of cognitive capitalism and focus our attention on the plight of commons in digital economy whose emancipatory potential is subsumed before its realization under the laws of capital accumulation indicated by increasingly encroachments under laws of private property.

Chapter 2

Capitalist mode of production

2.1 Introduction

In first volume of *Capital*, Marx argues how surplus value is extracted from labor but itself does not undergo any change [55]. Marx's labor theory of value is the time measure of socially abstract labor time invested in production process. Marx's theory is a labor theory of value, which draws conclusion from the analysis of the total labor time that is needed for the production of goods. Marx argues that the fundamental element of capitalism is the commodity, goods that are exchanged in a certain quantitative relationship with money (x amount of commodity A = y units of money). The more value a good has, the longer its production takes. With labor subsumed under factory walls, capitalists could control the production process while recognizing individual contribution of value by time. Marx argues that fundamental element of capitalism is commodity that are exchanged in a certain quantitative relationship with money. Commodities exchanged in capitalist societies have a use value and an exchange value. The use value is the qualitative aspect of a good; it is a utility that satisfies certain human needs. In exchange-based societies, humans can only get such goods by exchanging other goods (e.g. money or labor power) with the needed goods in certain quantitative relationships (x amount of commodity A = y amount of commodity B). Capitalist production is not merely the production of commodities, it is, by its very essence, the production of surplus-value¹.

2.2 M-C-M' transformation

Capital accumulation process involves two spheres: sphere of circulation and sphere of production. In sphere of circulation, value of first money M is transformed into value of commodity C . Capitalist buys labor power L and means of production M_p . A new product is produced in sphere of production. Capital stops its transformation and new value of product is V_p . As capitalist do not pay for the product,

¹Marx 1976, p. 644.

value $V_p = c + v + s$ where value of labor is v (variable capital- wages of labor), and of constant capital is c (raw materials, machinery).

In capitalism labor power is separated from the means of production: “the mass of the people, the workers, . . . come face to face with the non-workers, the former as non-owners, the latter as the owners, of these means of production” [54]². Constant capital is also divided into circulating capital (C_{cir}) and fixed capital (C_{fix}). C_{cir} is value of scarce raw material and intermediary items. Together, C_{cir} and v form circulating capital (they instill their value totally to the product and must be constantly reproduced). C_{fix} remains fixed in the production process for many turnovers of capital. The turnover time of capital is the sum of its circulation time and its production time³. C_{fix} is the value of machines and hardware. Raw material may either form the principal substance of a product, or it may enter into its “formation only as an accessory”⁴. Circulation time is the time that capital takes to be transformed from its commodity form into the money form and later from its money form to its commodity form. Production time is the time that capital takes in the sphere of production. Commodity which move out of the sphere of production sees the initial money M being turned to $M' = M + m$ where “ m ” is the increment in capital. Surplus value created in capital accumulation process is partly reinvested. Products are to be sold at price higher than the investment cost to gain profits. Without labor there can be no profit. Surplus value arises from the difference between “what labor gets for its labor-power as a commodity and what the laborer produces in a labor process under the command of capital” [30]⁵. For Marx surplus value lay in the “hidden abode of production” [55]⁶ where the $M-C-M'$ transformation takes place. Surplus is produced by labor and owned by capitalists. For Marx, one decisive quality of capital accumulation is that profit is an emergent property of production that is produced by labor, but owned by the capitalists.

2.3 Absolute, relative surplus value and formal, real subsumption

Marx argued that the the value of labor power is the average amount of time that is needed for the production of goods that are necessary for survival (necessary labor time), which in capitalism is paid for by workers with their wages. Surplus labor time is all of labor time that exceeds necessary labor time, remains unpaid, is appropriated for free by capitalists, and is transformed into money profit. For example if a laborer can work for 6 hours and earn his means of subsistence, the capitalist would make him/her work for 8 hours - 6 hours for himself and 2 extra hours for the capitalists as gratis. Marx argues that capitalists are unproductive, that they do not produce value, and that profit stems from the production of value by workers that is exploited and appropriated by capitalists. He uses the term

²Marx 1885, p. 116

³Ibid., p. 236.

⁴Marx 1976, p. 288.

⁵Harvey 2010, p. 125.

⁶Marx, 1976, p. 279.

productive labor in this context: Productive labor “produces surplus-value for the capitalist, or in other words contributes towards the self-valorization of capital”⁷.

Marx stresses in the trinity formula that value created by workers is transformed into capital, consists of 3 parts: wages, profit, rent. Part of the value are transferred to rentiers and in return the capitalist obtains the access to a property that he uses as constant capital in the production process [52]. For production process to take place, labor had to be brought within the factory walls. Labor with no means of production are forced to enter class relations to produce profit for their subsistence, which facilitates capital accumulation. The process was such that labor content wasn't changed in the process of production. Marx calls this as formal subsumption [55]. Subsumption is used by Marx to theorise the differential forms of subjugation of labor to capital. Formal subsumption meant the capitalist - i) had to take good care so that work was done in proper manner [55] ii) “the prolongation of the working day beyond the point at which the worker would have produced an exact equivalent for the value of his labor-power, and the appropriation of that surplus labor by capital - this is the process which constitutes the production of absolute surplus-value”⁸. Technological progress transforms the labor process leading to real subsumption of labor in order to increase pace of value creation. Real subsumption marks a shift from absolute to relative surplus value such that now within same time labor can produce more value supplemented by machines.

In chapter “Fragment of Machines”, Grundrisse, Marx noted that with rise of science as main force of production, machines substitute labor process where labor is reduced to an attendant [53]. Introduction of machines changes the labor process into more *mechanical ones* where working is transferred to that of machines. Relative surplus value is by reducing wages and by reducing costs of waged goods, which revolutionizes the technical process of labor [55]. Indeed, in a famous passage in the Grundrisse Marx suggests that with the rising organic composition of capital (i.e., the growing weight of machinery and technology in relation to labor), and the ensuing increased complexity of the labor process, cooperation and what Marx calls “general intellect” will dwarf labor time as a source of wealth creation. This, Marx argues, will fundamentally transform both the process of value creation and the relations of value appropriation (or exploitation) that prevail within capitalism. Much of Marx's Capital Volume 1 establishes how factory production takes place with the creation of surplus value and capitalists inclination towards increasing profits. Moreover it also describes the process of how social contradictions within capitalist mode of production leads to its own demise. It is only in Capital volume 3, does Marx explain how the inner contradictions are correlative and examines it in totality from commodity formation to distribution of surplus value in form of profit, wages, interest and rent. Ever since Marx first wrote Capital Volume 1, capitalism has been more crises ridden than ever- politically, economically and ideologically. From the workerism crisis of 1968 to the financial depression of 2008, capitalism has transformed society and itself undergone drastic restructuring. In next section we present the theory of cognitive capitalism

⁷Ibid., p. 644.

⁸Ibid., p 645.

as given by autonomist Marxists such as Hardt, Negri, Moulier-Boutang and Vercellone, and their new articulations of profit and rent.

Chapter 3

Cognitive Capitalism

3.1 Introduction

Historical revolutions pertaining to labor reforms reoriented capitalist regime for less labor working time. This transformation is rife with the ontological desire to qualitatively contest that capitalism has entered entirely into a new mode of production where surplus value is detached from traditional Marxian location of productive labor. The new antagonisms are fraught with problems. Some argue that currently we are in post-Fordist society while Autonomist Marxists baptize this notion hypothesizing cognitive capitalism, where knowledge acts as decisive productive force. The defeat of workerism crisis followed by subsequent deindustrialization, globalization and microelectronic revolution animated the idea of Cognitive Capitalism. Knowledge has always been central to organization of societies, although theorists and economists indicate a renewed interest in knowledge i.e. in its technological capacity owing for its effects on growth and productivity. Marx had anticipated the exploitation of producers by arguing that as a result of development of productive forces, a time of capitalist development will come, in which the general intellect; the power of knowledge as objectified; and “general social knowledge... becomes a direct force of production”¹. The productive forces would not only be produced in the form of knowledge, but also as “immediate organs of social practice, of the real life process”. Marx here describes (like having a distinct vision of future) that in a knowledge society, social life becomes productive. For example, Vercellone, who has given critical aspects of cognitive capitalism, argues that dynamic of capitalist reorientation is historic, initiated by formal subsumption in industrial society followed by real subsumption in fordist society, which finally resulted in the crisis of workerism [88]. Vercellone is critical of those who find in the “just-in-time” labor regime a new “post-Fordist” period, because it is still “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”².

After crisis of workerism, workers were given relative autonomy to eventually consume the products of their labor in order to complete the circuit M-C-M' and ensure the flow of wages back into the capital-

¹Marx 1857, p. 706.

²Vercellone 2007, p. 14 (Footnote (2)).

ists' pockets [95]. Autonomist Marxists such as Hardt, Negri, Moulier-Boutang and Vercellone, who are inspired by "Fragment of Machines", have bestowed us with numerous new approaches to old notions of economy and class that Marx had once presented with great rigor. The term "Cognitive Capitalism" seems to be of more recent origin than the term "Knowledge Economy", since the books and articles presenting it date from the dot-com crash in 2000-2001. The books that Vercellone and Boutang write with "Cognitive Capitalism" in the title were published in 2007 and the first references to a cognitive capitalism research program were from the year 2000 or so. They use terms such as *knowledge* and *information* to highlight specific period in capitalisms history. Furthermore Vercellone argues that "an understanding of the meaning at stake in the current mutation of capitalism cannot be reduced to the mere constitution of an economy founded on knowledge, but in the formation of a knowledge-based economy framed and subsumed by the laws of capital accumulation"³. Marx postulated that capitalism reckons on technological dynamism [76]. Autonomist Marxists have tried to grasp the dynamism of today's capitalism by categorizing new economy as informational capitalism, knowledge-based economy, while representing class notions as *multitude*, *immaterial labor*, *affective labor*, *biopower* and *general intellect* as a collective entity completely subsumed under the laws of capital. Hardt and Negri argue that modernity is in a crisis and thus is in need for a new regime of production [28]. What makes this era's capitalism more cognitive than any other, one may argue. The answer, for Vercellone, lies in a new periodization of the history of capitalism using the concepts found in Marx's unpublished Results of the "Immediate Process of Production" real and formal subsumption of labor under capital; as well as terms from the first volume of Capital - absolute and relative surplus value.

Autonomist Marxists claims rests in the changing nature of US economy in since 1960s, which was first marked by Fritz Machlup [49], as a transformation depicted by "an increase in the share of 'knowledge-producing' labor in total employment"⁴. At the end of 20th century one-third of workers in US were employed as service employees. In 1980, 7 among 10 were employed in service industries [9]. Castell's inquiry of about rising role of knowledge implies that certain societies are becoming more knowledgeable than others. Countries that lagged behind by the shortcomings of manufacturing and differing dissemination of wealth are now struggling to fight a new imbalance caused by trade of hi-tech goods, indicating an uneven distribution of knowledge and technology between countries around the world [15]. The shift from agricultural and industrial jobs was undermined by increasing jobs in sectors to information processing such as software, finance and marketing [15]. The shift, Castells' notes, is transformation to "information mode of production", where knowledge is main source of productivity. ICT's concur feedback loops of information processing with human mind not only limited to definitive element in production process but also the direct productive force [15]. The transition does not indicate disappearance of manufacturing but information processing significantly determines their productivity. Hardt and Negri argue that the imposition of control by *Empire* was made possible by engulfing of

³Vercellone, 2007, p. 14.

⁴Machlup 1962, p. 9.

social and productive capacities (immaterial subjectivities) of the multitude whose collective knowledge is appropriated by capital [28].

Marx identified immaterial labor as *non productive* form of intellectual labor⁵ however Autonomist Marxists like Lazzarato claim that immaterial labor produces informational content of commodity and also economic value [45]. Marx's labor theory of value is fixated in material exchange of commodity, which renders it inapplicable to immaterial informational economy present today. Negri argues that labor produces not only commodities but also affective social relationships, which explicates to take control of production process thereby changing the nature of work and no longer can be supervised or controlled [64]. Autonomist Marxists have dystopian vision of the new class where the productive general intellect presents a nest of antagonisms while technological developments based on the generalization of collective production is in crisis. Virno argues that capitalist restructuring has created a realm for potential communist for its (capitalists) own benefit, in the process of which, has seized control of immateriality which transcends the domain of production process and thus is unrecognizable [90]. Hardt and Negri argue that capital re-appropriates by rupturing individual subjectivities and thwarts the collective biopower by controlling cooperative autonomy to save itself from self-destructing [28].

Cognitive capitalism theorists have also presented with new articulations of profit and rent. Moulier-Boutang argues that the source of value in information capitalism resides not in the exchange value of knowledge resources but as a cognitive product of collective actions [62]. Hardt and Negri, while commenting on crisis of value in cognitive capitalism, argue that the accumulation of capital would strongly be based on affective and cognitive labor; and the exploitation of labor power and accumulation of surplus value, which must be understood in terms of capitalist rent and not profit [28]. For Marx profit could only stem from workers while rent was a parasite that sucks surplus value. In next section we point out modification made by Autonomist Marxists to structural invariants of capitalist mode of production so as to grasp the crisis of value and how they contradict Marx's claim.

3.2 Crisis of Value

The novelties of current cognitive stage of capitalism, Vercellone claims, are many. But a key feature is that capitalists have been driven out of the zone of the labor process and have returned to a formal subsumption of labor, although labor-time no longer is a measure of value. Vercellone argues that the ever-intensifying capitalist drive for relative surplus value accumulation that applied ever more scientific and technological knowledge to production, and was typical of the second stage of capitalism, is a thing of the past. Cognitive capitalism arises from crisis in post-Fordism and involves retorting to a formal subsumption of labor under capital with two modifications:

1. Capital is external to production process and rent is the new profit. According to Marx rent is rentiers payment of a "contractually fixed sum of money for the permission to employ his capital

⁵Chapter - Manifestations of Capitalism in the Sphere of Immaterial Production, "Theories of Surplus-Value"

in this particular field of production”⁶. Rent could be paid for agricultural land, building land, mines, fisheries [52]. Autonomist Marxists has developed the theory of rent by upgrading Marx’s notion of the general intellect. Re-evaluating Marx’s Capital volume 3, Vercellone argues that Marx himself foresighted “becoming rent of profit” as a result of rise in Joint Stock Company. Financial rent has risen massively as a proportion of both corporate profits (and in particular of the revenues of social media companies), and private income in recent decades [30]. Drawing analogy from putting out system, Vercellone states that the capitalist is a middleman trapping the products of collective workers and receives rent for the use of it. There would be renewed primacy of rent because in the contemporary networks of bio-political production, the extraction of value from the commons (or general intellect) is increasingly accomplished without the capitalist intervening in its production [29]. Capitalists manifest the contradiction of living labor (general intellect) to dead labor in the increasing privatization of knowledge thereby deepening the conflict between expropriated knowledge labors and appropriation.

Rent requires a certain monopoly status of an owner over the property i.e. “all rent is based on monopoly power of private owners of certain portions of the globe”⁷ or over “certain assets”⁹. Landed property presupposes that certain persons enjoy the monopoly of disposing of particular portions of the globe as exclusive spheres of their private will to the exclusions of the other [52]. The monopoly to a piece of the earth enables the so-called landowner to extract a tribute, to put a price on it [52]. It is because of the monopoly of capitalist on production process that he demands revenue in form of rent. Knowledge is in abundance, what is scarce is the “capacity to use them in meaningful ways”¹⁰. Capitalist does so by creating artificial scarcity by enclosing commodity within the laws of intellectual property rights, patents and trademarks. Pasquinelli argues that “rent is the other side of the commons it was once cast over the common land, today over the network commons”¹¹. Given that renting does not create value, Marx argues that it consumes value that has been created by workers and thus surplus value or surplus product in the form of profit, so the landowner pumps-out a part of this surplus value or surplus profit in turn from the capitalist in the form of rent, according to the laws developed earlier [52].

2. Labor is not under capitals immediate control and thus cannot be temporally measured (relative and absolute surplus are run-down in this era). Vercellone claims that “the new knowledge driven labor is no longer dependent upon machines and other forms of fixed capital” (eg. office buildings, fiber optic networks, and management personnel)¹². Vercellone further writes:

⁶Marx 1894, p. 755.

⁷Harvey 2006, p. 349.

⁸Harvey 2001, p. 395

⁹Harvey 2012, p. 90.

¹⁰OECD report, p. 11.

¹¹Pasquinelli 2008, p. 93.

¹²Caffentzis 2013, p. 103

”In so far as the organization of labor becomes increasingly autonomous, white collar offices either disappear or become the avatar of times past. In this framework, control over labor no longer takes on the Taylorist role of direct allocation of tasks; it is mostly replaced by indirect mechanisms based on the imperative to deliver, the prescription of subjectivity and a pure and simple coercion linked to the precarisation of the wage relation”¹³.

Vercellone suggests it is in the nature of things that the capitalist employer treats such immaterial workers carefully and from the outside similar to the way that record and film industry bosses deal with their artists. This is especially true of cognitive labor, the embodiment of living knowledge. His thesis is that since “the law of value-labor time is in crisis and cooperation of labour appears to become increasing autonomous from the managerial functions of capital, the very frontiers between rent and profit begin to disintegrate”¹⁴. The key idea here is that since capital has retreated from organizing production (at least in the areas where the cognitive powers of labor are crucial), it, in effect, leases the means of production to the workers and receives a rent in return. *Time* is taken as measure of value when dealing with absolute surplus value; although it (time) becomes irrelevant to knowledge-based work. This is the source of conflict which Vercellone points out to is because it opens up a contradiction in value of knowledge in commodity and value of time in production. This means that this kind of labor is *outside capital* and hence the value that it creates is both poorly represented by the general equivalent of labor time, and difficult to attribute to the productive input of specific individual actors [64].

The change in technical composition of labor and society nullifies the “relation of subordination of the living knowledge incorporated in labor-power to the dead knowledge incorporated in fixed capital” thereby giving rise to new antagonisms “between the dead knowledge of capital and the living knowledge of labor”¹⁵. As labor process is autonomous (formal subsumption), capital exists as a parasite appropriating value from self-organized labor.

New information-processing technologies have made certain kinds of knowledge and information increasingly critical to the accumulation and distribution of global wealth, as well as to the terms of our bodily and social existence. Information-processing industries responded to these shifts by pressing for and achieving unprecedented extensions of intellectual property rights in order to gain more control over the use and exchange of information across the globe. Vercellone critiquing the proponents of cognitive capitalists states that “the time directly dedicated to the production of high-tech commodities becomes every more insignificant, these commodities should be distributed for free”¹⁶. However Marx argued that the theft of labor time is the direct extraction of surplus value from such productive practices that are subject to factory discipline and hence

¹³Vercellone 2008, p. 6.

¹⁴Ibid., p. 2.

¹⁵Ibid., p. 10.

¹⁶Ibid., p. 10.

directly measurable in terms of the labor theory of value, is ever more replaced by the ability to appropriate the “general productive power” of new, heavily socialized productive networks.

Marx’s labor theory of value establishes that surplus can only be produced by labor, value depends on socially abstract labor time required to produce a commodity and surplus is the gratis work that labor does for his employer. The commendable efforts of cognitive capitalist theorists speak of the emancipation of multitude and the in-dwelling demise of capitalism, while dismissing the extent and entanglement of forces within this multitude. Rent is the part of surplus value that is transferred to rentier for use of property. For capitalist then rent would enter the production process as fixed constant capital. Rentier would be unproductive extracting only surplus without creating value at all. The production and exploitation of surplus value are, according to Marx, the heart of class structuration and capitalism. Therefore, we today have to deal with the question of who the producers of surplus value are in an information age. We contest that cognitive capitalist theories is fraught with contradictions in the conception of rent and profit and present our critique by focusing our analysis on today’s prime business model : Facebook, which has epitomized the notion of post-fordist management practices. Bohm et.al have presented us with critical analysis of global value chain of which Facebook is a part, however they even posit that Facebook is a rent seeking organization [12]. We present our criticism to above claim and present political economy of Facebook by analyzing the firm as *Verleger* or middleman capitalist with respect to historical practices in piece wage system presented by Caffentzis and also referring to Marx’s analysis as and when required.

Chapter 4

Case study of Facebook : part 1

4.1 Introduction

Facebook is the largest social media service with over 1.4 billion users and more than 10,000 employees. The company went public in 2012 with market capitalization of 104 billions dollars. Creative artists, bands, newspapers and celebrities continuously immerse themselves along these platforms to communicate with their fans and followers. Comscore reports that Google sites top multi-platform destination and Facebook accounts for 20 percent of this time spent online¹. Along with providing a platform free to use, social media firms have deployed advertisement based revenue models, which manages their wide-scale operations. Facebook positions itself as leader of interactive, participant-based online media, or Web 2.0 [66], the descriptor for websites based on user-generated content that create value from the sharing of information between participants [37]. Facebook has materialized what has been a slang in advertising market of 21st century: viral advertising and affective binds.

4.2 Free labor and Facebook

The difference between the audience (on traditional mass media) and users on the social media is that in the latter are also content producers: there is user-generated content, the users engage in permanent creative activity, communication, community building and content production. That the users are more active on the Internet than in the reception of television or radio content is due to the decentralized structure of the Internet that allows many-to-many communication. Facebook packages the user generated data and sells it to advertising thereby earning profits. Facebook revenue rose to 3.54 billion from 2.50 billion with advertising contributing 3.32 billion (46 percent rise from 2014)².

¹Comscore, UK Digital Market Overview 2015, <http://www.comscore.com/Insights/Presentations-and-Whitepapers/2015/UK-Digital-Market-Overview-April-2015>

²Reuters, Facebook revenue growth slows, costs weigh on profit, 2015, <http://www.reuters.com/article/2015/04/23/us-facebook-results-idUSKBN0ND2F020150423>

In 2014, an average American spent 40 minutes checking his newsfeed on Facebook³ shows the extent of penetration of social media in day-to-day activity. Browsing patterns of users is profiled where advertisers search for prospective user attention [23]. Van Dijck argues that the role of prosumer must be seen not only in light of cultural role but also his economic meaning as producer, consumer and importantly as data provider [87].

The Verge in 2014 reported that Facebook earns \$5.18 in annual advertising revenue per user in US and Canada⁴. By providing a constant stream of content about the online activities and thoughts of people in one's social networks, Facebook taps into members' productivity through the act of surveillance. An article released same year on Forbes suggests that a user is worth 128\$ on Facebook⁵. The sheer amount of users and data collected as part of their day to day engagement makes Facebook the king of data brokers⁶. Fuchs considers "free labor" [83] as "audience commodity" [21] suggesting that since social media platforms like Facebook engage users to valorize advertising space by selling information are unpaid, prosumers suffer infinite level of exploitation [83]. The labor theory of value has been taken up again by a number of authors who have generally been inspired by the Italian tradition of autonomist Marxism, starting with Tiziana Terranova's early concept of free labor for unpaid and unsupervised labor that goes into the construction and maintenance of content on the Internet [83]. In many ways the free labor argument is compelling. It emphasizes how the contemporary media system relies on the activities of a wide range of diverse external actors (a multitude) that are generally not paid for what they do, like writers of fan fiction, members of brand communities, or the people who create content for social media sites like Facebook.

Dallas Smythe posited that when audience is commodified it involves work-a utilitarian function which is creative and humanly distinctive act [79]. In the process of work the individual too is altered. Smythe's thesis points to inequalities where monopoly capitalism and political structures reaffirm their power. Audience in such instance is merely a victim to hegemony of consumerism without recognition. Capitalism has engulfed work but it has also strategically squeezed out value out of leisure time. Smythe's model was that the audience created value not only by watching, but by actually imitating the consumption style proposed by advertisements. In other words, Smythe's model was built on the assumption that time spent in media use equaled attention time.

The business models of Web 2.0 ventures depend on the performance of free labor; without it there would be no content and therefore no profit. Web 2.0 applications are built on an architecture of participation, their foundations depend on the creation of massive databases of user information; each new participant adding to the database and thus adding value to the site [66]. Fuchs associating his analysis

³Americans Now Spend More Time on Facebook Than They Do on Their Pets, <http://www.bloomberg.com/bw/articles/2014-07-23/heres-how-much-time-people-spend-on-facebook-daily>

⁴Facebook now has more than a billion mobile users every month, <http://www.theverge.com/2014/4/23/5644740/facebook-q1-2014-earnings>

⁵You're Worth \$128 On Facebook.. <http://www.forbes.com/sites/georgeanders/2014/02/07/youre-worth-128-on-facebook-sorry-about-that-linkedin-drop/>

⁶Facebook: The New King of Data Brokers? <http://www.wired.com/2014/10/facebook-king-data-brokers/>

to informational capitalism applies conventional labor theory of value to prosumer practices who are uncompensated and therefore exploited [25]. Fuchs indicates that the role of free labor can be understood in terms of variable capital in Marx's labor theory of value :

$$Vp = C + (V1 + V2) + S$$

Vp is the audience commodity, C is the constant capital, S is surplus, $V1$ is the value produced by Facebook employees and $V2$ according to Fuchs is the value of free labor which is not paid for. Fuchs argues that “by consuming reproductive labor and public goods and services, wage labor is reproducing itself. Wage laborers exploit reproductive workers to be able to be exploited by capital”⁷. The free labor, according to Fuchs, are “deprived and expropriated of resources by capital”⁸.

We contest that network economies involve multiple participants rather than a single entity to organize operations. Internet abets network externalities i.e. each member is additive in the value creation chain. Social media engages maximum users initiating a complex web of benefits which makes it difficult to measure individual value [43]. Fuchs' demand for redistribution in form of taxes is rife with problems [25]. Taxing loopholes have caused Facebook to evade taxes⁹ to the extent that the firm has also got refund by taking advantage of the tax deductibility of executive stock options¹⁰. British government has repeatedly tried to crack down off shore tax avoidance but as Facebook(UK) classifies its turnover as marketing and engineering services, because much of the company's ad revenues are funnelled through Ireland to take advantage of much lower tax rates¹¹. The Economist has noted how multinational firms are able to evade taxes:

“Tax avoidance, unlike tax evasion, is legal. But many large companies push into legal grey areas with aggressive strategies designed to increase “tax efficiency”. A common way to move profits offshore is through transfer pricing, when subsidiaries in different countries charge each other for goods or services “sold” within the group. This is particularly popular among technology and drug companies that have lots of intellectual property, the value of which is especially subjective. These intra-company royalty transactions are supposed to be arms-length, but are often priced to minimize profits in high-tax countries and maximize them in low-tax ones” ¹².

Jean Tirole, 2014 Nobel prize winner in economics, explains how the economics of free works [75]. His paper “Platform competition for two sided market” outlines how firms like Google, Facebook, Visa,

⁷Fuchs 2010, p. 186

⁸Ibid., p. 186.

⁹Facebook Paid No Income Taxes In 2012: Report http://www.huffingtonpost.com/2013/02/15/facebook-taxes_n_2694368.html?ir=India&adsSiteOverride=in

¹⁰Facebook Gets a Multibillion-Dollar Tax Break <http://www.bloomberg.com/bw/articles/2013-02-15/facebook-gets-a-multi-billion-dollar-tax-break>

¹¹Facebook pays no UK corporation tax for a second year <http://www.theguardian.com/media/2014/oct/22/facebook-uk-corporation-tax>

¹²The price isn't right <http://www.economist.com/blogs/schumpeter/2012/09/corporate-tax-avoidance>

Ebay and Xbox works. Two sided markets involve indirect network effects i.e one side of market affects other side as well. The more Facebook is able to attract users the more advertisers will pitch in for maximum coverage. Usually one side of the market is made the loss leader who get services for free or for very low cost. Taking example of Uber, it effectively connects the users with taxi drivers and charges a fixed fee for each ride i.e 20% to taxi drivers. Google too does the same by charging the advertisers while freely giving services. However Tirole suggested that states must be cautious in regulating such industries as it's difficult to track monopoly practices. Mergers and acquisitions are meant for efficient production process and lowering of prices. However vertical integration abets monopoly as it happened with AT&T which finally converged to its breakup in 1984. The traditional economics dealt with pricing and necessary caps were imposed to safeguard the consumers which is not the case when services are given for free. Haucap and Heimeshoff argue that competition between platforms is characterized by network effect (direct and indirect), switching costs, reputation effects and economies of scale. Google enormous user data makes it easy for them to launch new applications such as Maps and Google Plus. It must be remembered that data was collected for several years before it could be integrated into other subsidiary platforms. Haucap and Heimeshoff further state that switching cost plays an important role in Ebay auctions as the platform is sticky i.e seller reputation cannot be ported to other platforms [32]. Ebay has been able to maintain its market share as reputation building would take time to strengthen. European Union as well Federal trade commission are investigating several cases against Google monopoly practices wherein the firm was alleged to promote its own services over its competitors in search results¹³. The economics behind Tirole's work is beyond the scope of this paper, nonetheless it highlights the role of state in regulating such industries.

Arvidsson and Colleoni have different notion of value on social media, arguing that value is realized in financial market with little contribution of labor attention time [4]. Arvidsson et al. analyze how user generated content is monetized based on the reputational value and access to financial rent, critiquing Fuchs' approach of value embodied in labor time. The notion of *brand value* is a convention that enables the interpretation of information about a company, so that a large share of the discrepancy between market and book value can be made sense of¹⁴. Arvidsson and Colleoni argue that social media business models are based on the valorization of affective relations (the number of links to a site on Google, websites, profiles or elements a user likes or assesses positively, expression of positive sentiments towards certain elements, social networks' affectual attachment to an element) [4]. As a consequence, "the value of online advertising is not primarily dependent on the number of users that a site can attract websites users like, shared sites or content"¹⁵. The time spent online viewing or interacting with a particular site is not the critical parameter for defining or measuring value in the online advertising environment, rather it is affective engagements and user affects (eg. measured by

¹³Google Accused of Abusing Power on Search as Android Probed <http://www.bloomberg.com/news/articles/2015-04-15/eu-accuses-google-of-antitrust-violations-starts-android-probe>

¹⁴Arvidsson et. al 2012, p. 141.

¹⁵Ibid., p. 144.

social buttons, sentiment analysis, network analysis) would be the “source of value”¹⁶. Arvidsson and Colleoni’s account of value is based on Negri’s concept of affective labor where value transcends the realm of individual firm to financial market and can be understood as “a process that to a large extent mobilizes and builds on the public affective standing or reputation of companies, brands, and related assets”¹⁷. Branding is a reciprocal relation where exchange value of brand is associated with having a communication use value for consumers which enables them to perform communicational activity by their consumption of brand product [3].

Google has repeatedly tried to enter the social networking market with Orkut and now with Google+, which started in 2011. Google stands at 3rd position in Forbes brand value rating¹⁸ is still struggling to increase user engagement, which Facebook has effectively sustained since its inception. Out of 2.2 billion users only 9 percent of users actively post on Google+¹⁹. In 2014 Techcrunch noted that Google+ is “walking dead”²⁰ and reported that Google apparently has started shifting teams on Google+ to other departments. Branding creates stickiness and initial hype, however user gratification is necessary for any social network to foster. Surplus cannot be attained without the “general intellect” and “affective relations” that structure social relations [28]. By investing time, energy and creativity in Facebook, participants receive information, maintain friendships, and generate a feeling of belonging or fulfillment [37]. Brand plays an essential part in sustainability and attracting financial rent however it is the productive forces of users that keeps a social media running. The process on social networks is far more impromptu and sophisticated, as it is the variability of possible valorization processes that holds the secret abodes of surplus value for capital [17]. The problems of Arvidsson and Colleoni’s approach are that it generalizes the sentiment and affect approach to all corporate online advertising, leaves out the notion of labor, does not study specific platform’s capital accumulation models in detail, and that it does not see that affect and sentiments require labor activities that take place in space and time. You do not simply create positive affects, relations, attitudes, and reputations, you work on creating and maintaining them, which is time intensive and takes place in certain spaces.

¹⁶Ibid, p. 144.

¹⁷Ibid., p. 142.

¹⁸The world’s most valuable brands <http://www.forbes.com/powerful-brands/list/>

¹⁹Nobody Is Using Google+ <http://www.businessinsider.com/google-active-users-2015-1>

²⁰Google+ Is Walking Dead <http://techcrunch.com/2014/04/24/google-is-walking-dead/>

Chapter 5

Case study of Facebook : part 2

5.1 Facebook a rent seeking organization?

Facebook as a capitalist firm does not create its commodity: user data; and prosumers autonomously build friendships, relations, post content and communicate. Prosumers cognitive capacity in living knowledge is codified, packaged and sold to advertisers. Teixeira and Rotta argue that as software can be easily reproduced its value is zero [82]. Teixeira and Rotta's argument is based on monopolizing knowledge rent by intellectual property rights and patents. As land does not have any value and cannot be reproduced by labor in the same way "if highly skilled Microsoft employees spend three whole years developing a new operating system, but even a child can easily copy, its value is nil"¹. The argument is based on the notion of cooperative factories where Marx foresaw decrease in capitalist supervision as production process is industrialized [52]. After the workerism crisis workers have been run down as role of managers and administrative tasks in knowledge based industries. Pasquinelli argues that "skilled cognitive workers become 'functionaries of capital rent' who settle for stock options while knowledge rich multitude face declassament"².

For Marx rented property are things that have no value in and of themselves because they are either not the product of labor, like land or cannot be reproduced by labor such as antiques, works of art [52]³. Rent is in no way determined by the actions of its recipients commodity which is rented out does not require constant production and reproduction whereas software needs constant updating and new releases. Marx uses the example of waterfall "the waterfall like the earth in general has no value, since it represents no objectified labor and hence no price, this in normal price nothing but value expressed in money. When there is no value there is nothing to be expressed in money. This price is nothing but "capitalised rent"⁴. If Facebook is a rentier but gets profit in return to its capital investment, it contradicts Marx's claim that fundamentally capitalists are unproductive, that they do not produce value, and that profit stems from the production of value by workers that is exploited and appropriated by

¹Teixeira and Rotta 2009, p. 5.

²Pasquinelli 2008, p. 93.

³Marx 1894, p. 772

⁴Marx 1894, p. 787.

capitalists. He uses the term productive labor in this context: Productive labor “produces surplus-value for the capitalist, or in other words contributes towards the self-valorization of capital”⁵. Rent does not require productive labor, it is only part of surplus value created by labor transferred to rentier. Price of uncultivated land is without value because “no human labor is objectified in it”⁶. As productivity increases the value of commodity decreases but labor is prerequisite to generate profit. For Marx this is the simultaneous conception and execution as an antagonism between living and dead labor and between productive forces and production. As a result there is a propensity of machine substituting labor which gives rise to conflict. Crisis of value has always been immanent to capitalism and not because of rise of cognitive capitalism.

Knowledge labor allows for “intensified labor”⁷ and “creates the conditions for enhancing the productivity and/or complexity of collective labor, but without being a part of that collective labor in anything other than a formal sense”⁸. For Marx, “exceptionally productive labor acts as intensified labour; it creates in equal periods of time greater values than average social labor of the same kind”⁹. Capitalist who deploy advanced forms of machines for production “appropriates and devotes to surplus labour a greater portion of the working day than the other capitalists in the same business”¹⁰. As productivity increases, so does surplus value comes down as new mode of production with increased efficiency is generalized, “for then the difference between the individual value of the cheapened commodity and its social value vanishes”¹¹. Moreover Marx argues that even if working day is shortened, it is aimed at increasing productivity in capitalist production process. When labors work cooperatively aimed at a certain production process, in such cases, “the effect of the combined labour could either not be produced at all by isolated individual labour, 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.”¹². In complex production process, as in case of software development, “the sheer number of the co-operators permits the apportionment of various operations to different hands, and consequently their simultaneous performance. The time necessary for the completion of the whole work is thereby shortened”¹³. Fine et. al. also argue that concept of rent is based on false premise without recognizing the coupling of cognitive and physical dimensions of work [24]. Facebook employees are autonomous workers who are not bounded by industrialist regimes but it still necessitates exercise of disciplinary agency that apparently overturns the alienation of conception and execution of tasks [77]. The concept of a productive worker is not only the relation between work and its effect, between worker and his product “but also a specifically social relation of production, a relation with a historical origin which

⁵Marx 1867, p. 644.

⁶Marx 1976, p. 197.

⁷Ibid, p. 435.

⁸Fine et al 2010, p. 78

⁹Marx 1976, p. 435.

¹⁰Ibid., p. 436.

¹¹Ibid., p. 436

¹²Ibid., p. 443.

¹³Ibid., p. 445

stamps the worker as capital's direct means of valorization"¹⁴. In order to sustain business capitalists always strives for increasing productivity and labor deployed on large scale requires "a directing authority, in order to secure the harmonious co-operation of the activities of individuals, and to perform the general functions that have their origin in the motion of the total productive organism, as distinguished from the motion of its separate organs"¹⁵.

Caffentzis has expressed his criticism to Vercellone's analogy of putting-out system. Vercellone's understanding of *Verleger* is inspired by piece-wage system where merchant supervision is superfluous as wage is embodied in "quality and intensity"¹⁶. Caffentzis argues that the "historical accounts of the putting-out system show the merchant capitalist deeply involved in the planning and organizing of the work process"¹⁷. In mercantile society, the merchant would put-out the means of production to craftsman and later collected the finished product to be sold. The craftsman would become subcontractor to the worker and wages were paid per piece rate. Caffentzis points out that the once the instruments of production were the property of merchant he controlled the work process. Furthermore this form of labor, Caffentzis argues, "is standard in the world of the computer programmers, artists and designers,... social entrepreneurs"¹⁸. In a way, domestic industry involves a capitalist subletting of labor, with the artisans and his family's hands as the items to be sublet"¹⁹. The craftsman would then only sell his labor power to the *Verleger* for piece-wages.

*"In England the typical form of cottage or domestic industry was wool and, later, cotton weaving...Merchants brought raw materials to rural cottages and then picked up the woven cloth, which they had finished in towns or large villages"*²⁰.

The merchant or *Verleger* was effectively a middleman capitalist who would later sell the product at higher rate to gain profit. Vercellone claims that in cognitive capitalism labor cannot be measured by time indicating the change in structural invariants of capitalist modes of production. However if we carefully examine Marx's analysis of piece wage system we find that just because piece wage is different from time-wage it "no way alters their essential nature"²¹. Labor process is not measured by time but by the quality of piece delivered by craftsman, which decided the wages. Marx argues that "in time-wages the labor is measured by its immediate duration, in piece-wages by the quantity of products in which the labor has become embodied during a given time"²². For Facebook to sell data to advertisers it is essential to engage users continuously. Facebook is used for several reasons such as sociability and communication [40]; pass-time [70]; entertainment and convenience [78] and immersion strategies such as Newsfeed are deployed to steadily create stickiness. Nicole Cohen writes that "not only is the News

¹⁴Ibid., p. 644.

¹⁵Ibid., p. 448.

¹⁶Ibid., p. 694.

¹⁷Caffentzis 2013, p. 114.

¹⁸Ibid., p. 115.

¹⁹Ibid., p. 115.

²⁰Hodson and Sullivan 2011, p. 19.

²¹Marx 1976, p. 693.

²²Ibid., p. 693

Feed a means of constant surveillance of one's friends, but it provides members with incentive to log on to the site more frequently, and Facebook with an innovative and non-intrusive way to incorporate advertising into the site"²³. With News Feed, text and graphic ads can be placed in members' feeds, appearing to be updates from friends [60].

The Verleger, as argued by Caffentzis needed to "keep a constant surveillance over the materials put out put an inevitable limit as to the number of cottages he could employ"²⁴. It can be argued that social media firms such as Facebook and Google put-out digital memory and gain control of users data in guise of ownership over the means of production. The most prominent form of putting out memory is in the present and thus the most pervasive interface of personal and collective memory is various forms of computer memory, USB drives, smartphones and shared memory systems in social media. Van Dijck argues that "since the emergence of digital platforms, memory is increasingly defined by networked computers, which are in turn deployed by institutions or companies who manage memory practices"²⁵. The memory practices involves autonomous commons who share photos, posts and likes. Participation on Facebook is voluntary and terms and conditions are agreed upon before user signs up. Facebook then collects user data packages it and sells it to advertisers. The piece wage system in England was called "sweating system" where the merchant would bind the worker in contract, which the worker himself undertakes. Marx states that:

*"On the other hand, piece-wages allow the capitalist to make a contract for so much per piece with the most important worker - in manufacture, with the chief of some group, in mines with the extractor of the coal, in the factory with the actual machine-worker - at a price for which this man himself undertakes the enlisting and the payment of his assistants. Here the exploitation of the worker by capital takes place through the medium of the exploitation of one worker by another"*²⁶.

Every prosumer activity that users undertake on Facebook is it- creating content, sharing, liking, commenting, is recorded in huge data centers deployed which is then used for advertising purposes. Facebook makes it mandatory that user information is stored with them so as to provide services as well as to gain profit by selling data to advertisers under the policy that:

"For content that is covered by intellectual property rights, like photos and videos (IP content), you specifically give us the following permission, subject to your privacy and application settings: you grant us a non-exclusive, transferable, sub-licensable, royalty-free, worldwide license to use any IP content that you post on or in connection with Facebook (IP License). This IP License ends when you delete your IP content or your account unless

²³Cohen 2008, p. 12

²⁴Caffentzis 2013, p. 116.

²⁵J Van Dijck 2010, p. 2-3.

²⁶Marx 1976, p. 695.

your content has been shared with others, and they have not deleted it.”(facebook privacy policy)²⁷.

An analogy can be drawn in between workers autonomy and user activity that happens on Facebook. Marx stated that “the wider scope that piece wages give to individuality, and with it the worker’s sense of liberty, independence and self-control, and also the competition of workers with each other”²⁸. Intellectual property rights owned by them create competition among social media firms to monopolize the access to their platform. Data is made scarce by logic of refinement which platforms like Facebook, Google are effectively able to engage owing to their ubiquitous and omnipresent nature. The data which generates revenue is not to increase rent but to make it scarce. Google acquisition of Youtube wasn’t because it had inferior technology rather their GoogleVideo was far better. The main motive behind YouTube’s acquisition was to bring in user base which enabled Google in vertically integrating its search with content, social network and advertisements [87]. The vertical integration ensures better services at the cost of users being surveilled and personal data been stored. User’s cumulative activity and with sufficient data, his future actions be predicted. The more the data the better the research [5]. With huge amount of data gathered in social media firms opens up a new dimension for knowledge to be explored and research to be carried out. Sum and Jessop analyze the “contradiction that affect the spatial and temporal organization of accumulation” [80]. They say that reflexivity enhances contradiction in a way that firms which have accumulated knowledge over the years have an advantage as new entrants cannot displace them only with their products. In a spell that turns cognitive capacities into exchange commodities, intellectual property rights give creators the sole rights for the distribution of content before it is reproduced. These rights consequently provide huge revenues for those who hold the ownership of content which structure the distribution of benefits in entire chain of production.

Marx argues that in piece-wage systems “exploitation of the worker by capital takes place through the medium of the exploitation of one worker by another”²⁹. Hesmondhalgh argues that concept of exploitation is not applicable to social media [35]. There exists a strong motivation for participating online however these efforts stand at the juxtaposition of capitalist channeling of surplus value. Participation goes from being restricted and indulging to becoming mandatory. Apart from common phenomenon of privatization taking place, social media incorporates social relations (sense of community and trust) into capitalist relations as well as orchestrating community through dispossessions that is immanent in Newsfeeds and networks. Extensive commodification refers to the “way in which market forces shape and re-shape life, entering spaces previously untouched, or mildly touched, by capitalist social relations”³⁰ [61]. Adorno and Horkheimer work on cultural industries highlights the development of mass media communication and entertainment industry [1]. The takeover of sovereignty of cultural production and its subsequent inclusion in market logic. As such the term cultural industry signifies the commodification of culture, in Marx’s lingo “exploitation of culture by capitalism”. Informationalism

²⁷ <https://www.facebook.com/legal/terms>

²⁸ Marx 1976, p. 697.

²⁹ Ibid., p. 695.

³⁰ Cohen 2008, p. 7.

and capitalism are at conflict with digital commons pressing for more control over their productivity while being estranged by increasing constraints put by copyright laws which has expanded globally to an unprecedented extent in the past few decades. While user generated content becomes increasingly central to the economy, the prospect of a 'core commons infrastructure' [94] is restricted by a myriad of technical and legal enclosures thus creating new forms of relationships between supervisor and supervised. Knowledge is a social product which has the potential for liberating the general intellect however is appropriated before reaching social autonomy [68]. The applicability of this logic in, the "anarcho-communism" [7] according to Virno is "a communality of generalized intellect without material equality"³¹. Hardt and Negri argue that socialization does not imply that multitude controls the "productive machines", rather in the re-appropriation process they become alienated from the very productive machines [28]. Exploitation negates the true potential for liberation as Facebook does not alienate users rather divorces them of their social activity. The loss of control of one's creative activity is the loss of freedom [38]. Digital commons are bounded, as underlined by Dyer-Witthford, by dispossessions and liberalization of architectures [22].

5.2 Flow of surplus value and global value chain

Massimo De Angelis argues that "primitive accumulation is also present in mature capitalist systems and, once the centrality of social relations of production and class struggle is recognized, assumes a continuous character" [19]³². Angelis marks that "the characteristic extra-economic process of separation between people and means of production is a continuous and inherent process of capitalist production"³³. The extra-economic processes also include the privatization of spectrum, memory, telephone lines which are analogous to capturing of agricultural land and privatizing it. Angelis further argues that process of separation does not occur in phases but in its primitive guise, for capitalist protects its interest by legal measures. Neoliberal economic policies has opened public institutions to be undertaken by private enterprises such as education [93] and telecommunication [48]. Knowledge commons are the new enclosures whereby socialization of means of production [20]; and technical knowledge are overcome by privatization and accumulation through copyright laws, corporate sponsorship of research and education and through newly established forms of intellectual property rights [63] [69]. This is also what is implied in James Boyle's analysis of the "Second Enclosure Movement", in which the "digital cultural commons are enclosed with the help of strengthened copyrights" [13]³⁴.

In Capital Volume 1, Marx explains the recurrence of primitive accumulation where the producer was alienated from the means of production. Within capitalist mode of production facets of primitive

³¹Virno 2004, p. 18.

³²Marx's Theory of Primitive Accumulation: a Suggested Reinterpretation, <http://homepages.uel.ac.uk/M.DeAngelis/PRIMACCA.htm>

³³De Angelis 2001, p. 4.

³⁴Pirates of Silicon Valley : State of exception and dispossession in Web 2.0, <http://firstmonday.org/ojs/index.php/fm/rt/printerFriendly/2799/2577>

accumulation are reproduced which reflects the historical progress within Marx's logical analysis. For Marx, primitive accumulation was a pre-capitalist process where the immanent logic of capitalist value reproduction further alienated the means of production from labor giving rise to poverty and inequality. Departing from idea of theological sin and states that alienation was a result of division of society into two classes: one that owns the means of production (eg. land) and the other class, which is dispossessed of it. Alienation is central to realization of labor. Money and commodity are no more than capital and need to be transformed.

“This transformation can itself only take place under particular circumstances, which meet together at this point: the confrontation of, and the contact between, two very different kinds of commodity owners; on the one hand, the owners of money, means of production, means of subsistence, who are eager to valorize the sum of values they have appropriated by buying the labor-power of others; on the other hand, free workers, the sellers of their own labor-power, and therefore the sellers of labor”³⁵.

Information processing technologies have made specific aspects of knowledge and information crucial to accumulation and distribution of wealth as well as restructuring of economies. Castells claims that this transformation is global where economy works on planetary scale and local markets depends on the performance of their globalized core including financial trade, transnational production and some amount to technology is narrowly centered around technical and scientific knowledge [15] [42]. Comparisons of enclosures and its antipodes (the commons) have been critical to the attempt to gather against the infringements of privacy rights in digital age. The problem lies in drawing parallels with post-mercantile history of England to that of encroachment of commons on global scale, which, however is restricted to only national boundaries.

Knowledge labors only present half the story of range of activities that go on global value chain of which Facebook is a part. As we have seen earlier in Marx's trinity formula, in the sphere of production the value of new commodity $V_p = c + v + s$ where c is constant capital, v is variable capital and s is surplus value that is not repaid. The average profit is $r = s/(c+v)$. Surplus value in terms of profit is $s = R * (c+v)$. Marx stated that “surplus value in a given bourgeois society (country) as a whole is redistributed. This results in an average rate of profit more or less applicable to each branch of capital”³⁶. The profit of enterprise is a variable dependent on entire capitalist system and redistribution is “divided among the capitalists as dividends in proportion to the quota of social capital that belongs to each”³⁷. Organic composition of capital is the ratio of constant capital to variable capital.

“Branches of production which have an organic composition of capital below the social average (i.e. which employ more labor, spend more variable capital, in relation to total capital spent) do not realize part of the surplus value produced by 'their' wage-labourers”³⁸.

³⁵Marx 1867, p. 874.

³⁶Marx 1894, p. 16.

³⁷Ibid., p. 959.

³⁸Ibid., p. 16.

Capitalist might fully exploit its workers thereby having low organic composition, although must share surplus value created in their industry to industries with higher organic composition where capitalist might exploit little of its workers. Even if knowledge based industries have high organic composition of capital it does not imply that workers are not exploited. As Marx himself notes:

“A capitalist who employed no variable capital at all in his sphere of production, hence not a single worker (in fact an exaggerated assumption), would have just as much interest in the exploitation of the working class by capital and would just as much derive his profit from unpaid surplus labor as would a capitalist who employed only variable capital (again an exaggerated assumption) and therefore laid out its entire capital on wages”³⁹.

For free movement of labor and capital, capitalist must resist the declining rate of profit ($R = s/(c+v)$). This resistance is introduced by introduction of low organic composition industries which shoulder knowledge sector industries. The differing rate of profit across industries is excellently explained by Marx:

“What would be the consequence of this difference in the rates of profit for capitals employed in the different branches of industry? Why, the consequence that generally obtains whenever, from whatever reason, the average rate of profit comes to differ in different spheres of production. Capital and labor would be transferred from the less remunerative to the more remunerative branches; and this process of transfer would go on until the supply in the one department of industry would have risen proportionately to the increased demand, and would have sunk in the other departments according to the decreased demand. This change effected, the general rate of profit would again be equalized in the different branches”⁴⁰.

Labors have always struggled to introduce mechanization, which led to workerism crisis and reduction in working time in post-fordist era. As labor time was reduced, absolute surplus value also reduced as capitalist could appropriate less from labor time. Introduction of machines would make workers intensive and efficient thereby lowering “socially necessary” part of labor time. Even with reduction in working hour the mechanization of industry can increase the ratio between surplus and “socially necessary” labor time.as capitalist had incentive to increase relative surplus value. As the cost of labor-power in real wages is increased and the working day reduced through working-class struggle, the dominant capitalist response is a dramatic restructuring of production. Marx argued that opening up of luxury industry stands on the shoulder of relative surplus population, “a population often made available owing to the preponderance of constant capital in other branches of production; these base themselves in turn on a preponderance of the element of living labor, and only gradually pass through the same trajectory

³⁹Ibid, p. 299.

⁴⁰Marx 2015, p. 10.

as other branches”⁴¹. Facebook forms a part of global production hierarchy not limited to advanced capitalist countries of global north. Bohm et. al’s [12] analysis presents a contradiction whereon one hand they place Facebook as part of global value chain [47] while on other hand attribute surplus creation restricted only to brands, data collection, financial investments [50] where “value is now appropriated through a form of rent”⁴². Their analysis is based on Vercellones “becoming rent of profit” theory. Christian Marazzi, a political economist close to the Negrian tradition, organizes his understanding of the contemporary finance-centered regime of accumulation along these lines: “simply put, value is ever more produced in complex networks of inter-firm cooperation, as well as cooperation between firms and other actors, like consumers, that is, by a multitude that remains, at least in part, outside of the direct control of capital” [4] [50]. We contest that Facebook cannot be a rentier as they produce something in return which is not based on scarcity. Price of production (P’) of a commodity is determined by constant capital, variable capital and average rate of profit. Value of commodity is summation of constant capital, variable capital and surplus value.

$$V' = c + v + s$$

$$P' = c + v + R * (c + v)$$

There is a difference between value and price that Marx stressed: The measure of the substance of value of a commodity is the amount of hours needed for its production: “how then is the magnitude of this value [of a commodity] to be measured? By means of the quantity of the ‘value forming substance’, the labor, contained in the article. This quantity is measured by its duration, and the labor-time is itself measured on the particular scale of hours, days etc”⁴³. For Marx, “every commodity (product or instrument of production) is equal to the objectification of a given amount of labour time”⁴⁴. For Vercellone as time in production of commodities becomes insignificant, therefore $v = 0$. Moreover if we consider Facebook as a renting firm implying that labor-value (employees) is not absorbed in commodity thereby surplus value $s = 0$. Average rate of profit $r = [s / (c+v)]$ acts as normalizer for whole cognitive capitalist system in its reproduction. Surplus value generated by a commodity is the difference between the value added to the commodity in the production process and the value of the labor-power expended in the production process. As $P' - V'$ cannot be zero and if we subtract price of production from value of commodity:

$$P' - V' = R * c.$$

Certainly “ $R * c$ ” must come from somewhere. Price is not the same as value: “the expression of the’ value of a commodity in gold x commodity $A = y$ money commodity is its money-form or price”

⁴¹Marx 1993, p. 344.

⁴²Bohm et al 2012, p. 12.

⁴³Marx 1867, p. 129.

⁴⁴Marx 1857, p. 140.

⁴⁵. Price is the “money-name of the labor objectified in a commodity”⁴⁶. This means that values are determined at the level of working hours and prices at the level of money. Both are quantitative measures, but use different different units of measurement. Value is a measure of the production process, price a measure of the circulation process (selling) of commodities. Labour is extended in time (and space) in the production process, in which commodities are created, and is transformed into profit (measured as a price in money) in the sphere of circulation, i.e. commodity markets, on which commodities are sold for certain prices. As knowledge (or software) is easily reproducible it would defy the above proposition and labor would appear ineffectual in accumulation process. Software would prove to be contradictory commodity, which absorbs surplus value, and produce nothing in return. There is a divergence of value and price of commodities but it is unnecessary to apply rent concept as Marx argued that “a quantitative incongruity between price and magnitude i.e. the possibility that the price may diverge from magnitude of value, is inherent in price form itself”⁴⁷. Software as a commodity has an exchange value. Knowledge or software is easily reproducible unless they add value to extended value chain. To earn profit, the value of commodity must be greater than use value. This profit must entirely replicate the production system i.e. employee wages, machineries, hardware etc. on expanded scale. For a capitalist system to be productive there must be a constant exchange and flow of capital. Bohm et. al state that free labor does not create additional capacity for consumption of information which complicates the completion of full circuit of M-C-M’ circuit. Moreover they claim that Facebook’s capacity to attract attention and structure communication is the “main source of value”⁴⁸. The M-C-M’ is one of the critical aspects of transformation process that Marx speaks of. It is within this transformation of value to prices, in higher organic composition industry price of commodity have value more than that produced in low organic composition industry. Marx draws conclusion that in a fully developed and normally functioning capitalist mode of production, each industrial branch does not receive directly the surplus-value produced by the wage-labor it employs⁴⁹. It only receives a fraction of all surplus-value produced, proportional to the fraction it represents of all capital expended.

To demonstrate the issue at hand, we assume that variable capital to be 100 (wages and working day times). If the wage labor works for as much time for capitalist as he works for himself, the value of product will be 200.

$$V' = c + v + s$$

As $c = 0$; $v = 100$; $s = 100$ (labor adds same value as he does for himself); therefore $V' = 200$. If rate of profit $R = [s / (c + v)]$, then $R = 100\%$. Assuming above parameters as same, on increase of constant capital, the rate of profit falls down as given in table below 5.1 .

The normalization of rate of profits in divisions of production forms the basis of general rate of profit as a result of which “tendential fall in the rate of profit also produce a counterweight to this tendency,

⁴⁵Marx 1976, p. 189.

⁴⁶Ibid., p. 195.

⁴⁷Marx 1976, p. 196.

⁴⁸Bohm et al 2012, p. 13.

⁴⁹Chapter Twelve: The Concept of Relative Surplus Value, Marx Vol. I

Table 5.1 Rate of fall of profit

constant capital	variable capital	rate of profit
50	100	$R = 100/(50+100) = 66.6\%$
100	100	$R = 100/(100+100) = 50\%$
200	100	$R = 100/(200+100) = 33.3\%$

which paralyses its effect to a greater or lesser extent”⁵⁰. The tendency is “peculiar to the capitalist mode of production”⁵¹. But where is the capital for this investment in higher organic composition industries to come from? Clearly in the transformation of relative prices and the ever-widening and deepening absorption of surplus value throughout the world. For Marx, the technical solution to the problem of transformation of prices into value that is a “social” and not an individual category, low organic composition industries having organic composition of capital below the “socially average” objectively exploit social labor from point of capitalist society as a whole.

The market does not return to their owners all the value effectively created during the production process in these branches. On the other hand, industries with high organic composition, objectively economize “socially necessary” labor and their owners are rewarded for their higher proportion of all surplus value produced that that which is directly produced by the wage laborers they employ. As machines cannot create value, the profit in software industry comes from the lower branches of production units. Marx argues that “each individual product, taken by itself, contains a smaller sum of labor than at a lower stage of development of production, where the capital laid out on labor stands in a far higher ratio to that laid out on means of production”⁵². For workers at the bottom, or kicked to the bottom, this means in most cases increased exploitation in an absolute sense (e.g., increased workday) and decreased wages, since the profits of the low organic capitalist might have to come from the necessary labor-time of the worker. What applies to different successive stages of development in one country applies also to different countries that find themselves in differing stages of development at the same point in time⁵³. In countries where knowledge-based economy forms a significant part of GDP with little contribution from living labor and while appropriating significant portion from constant capital. The constant capital involves contribution of previous living labor that has been objectified which forms part of constant capital in upper industries. The value appropriated from low organic composition industries therefore must involve exploitation of waged labor in relation to the value to total capital advanced. The ratio changes not because living labor(variable capital) falls but rather because the mass of already objectified labor that it sets in motion rises. We take an example to explain our case. Suppose total capital is $80c + 20v$ and rate of surplus-value is 100% ($s = 20v$) i.e. labor works for as much time for capitalist as he works for himself. The rate of profit would be $R = 20\%$. If other capital comprises of $20c + 80v$, but labor works two-thirds for himself and one-third for capitalist, the rate of surplus would be 50%. The rate of

⁵⁰Marx 1993, p. 344.

⁵¹Marx 1984, p. 319.

⁵²Marx 1984, p. 318.

⁵³Ibid., p. 320.

profit in this case would be 40%. The reason for this is that a capital of same value appropriates in first case the surplus labor of only 20 workers, as against that of 80 workers in second case. The labor in first case resembles to that of knowledge workers who create software for Facebook while second case implies the precarious labor of global south.

Caffentzis argues that Vercellone's parallelism to Verleger system must be analyzed in historical perspective [14]. In periods of boom, the craftsman would reduce its output as to increase their return per units. The increase in wages led to decrease working time (backward bending of labor-curve), which was a major impediment in development of European capitalism. As a result new and expensive industries were introduced with centralized production process with "slave labor bought in from Brazil, Caribbean and American south"⁵⁴. This same analogy is being played out in knowledge industries where mechanization is avoided to increase relative surplus value. A familiar phenomenon is taking place with development of knowledge industries in global north supported by labor intensive firms of global south. Availability of cheap and massive labor force thwarts efforts towards mechanized production. Coltan, a tantalum bearing gravel ore is one of the critical component of ICT products is mined from Democratic republic of Congo although Australia was initially responsible for 60 percent of world production [33]. The situation in Democratic Republic of Congo (DRC) has been repeatedly addressed at UN security council about the rise of armed groups and militia against the exploitation of natural resources and illicit trade [81]. Before 2002, on average 73000 people died in DRC due to lack of hospitals and amenities destroyed in the civil war [58].

David Levy argues that exploitation resembles to that of imperial age and is occurring at the periphery of global economy, where the profits from low rung industries are fed to the center [47]. Advanced countries with developed capitalist mode of production, thrusts outward the relative surplus population. Fragmentary subordination of labor to capital continue in various divisions of production and harder to comprehend at topmost level of development. To echo Marx's words, "the creation of such a surplus population is inseparable from the development of labor productivity and is accelerated by it, the same development as is expressed in the decline in the profit rate", primitive accumulation ensures the development of the global north whilst maintaining poverty through the expropriation of raw materials in the global south. Cognitive labor in the era of cognitive capitalism appears in Vercellone as a crucial element in the transition a theme that has become more and more prominent in Autonomist Marxist writing. Not accidentally, Autonomist Marxists refuse to take a gloomy view of precarity and all the additional changes in the work relation that are often condemned as generators of economic insecurity like flexibilization. Though recognizing the hardship consequent to the lack of an income, on the one hand, Autonomist Marxists see precarization in more positive terms, insofar as they read it both as the product of a struggle against the regimentation of work - a condition, they argue, to which no one wishes to return.

⁵⁴Caffentzis 2013, p. 117.

Chapter 6

Commons

In our previous chapters we have discussed the tendency of the rate of profit, shift of surplus and precarity in global south to feed the global north. In our analysis of Facebook, we discussed about the plight of commons who participate voluntarily, and as Terranova would say “shamelessly exploited” [83]. In next section we shall speak more about the “commons” in information age who are expropriated for capital accumulation process.

6.1 Rise of digital commons

The information age has seen an increasing rise of social and legitimized significance of co-equal production (or in current slang peer-production), commons based property regime and non-rival flow of intangible information in the digital world. Hardt and Negri define two types of commons - i) the natural, materially grounded with finite resources ii) and cultural commons who incorporate intangible production of knowledge and shared culture [29]. While this digital commons still operates through physical medium, their production process may not be subject to the same logic of scarcity as a natural resource. In turn commons are subjected to forms of enclosures and modes of capital accumulation. For information economy to foster some kind of freedom to access commons knowledge is important for innovation and growth.

The notion of digital commons is to generalize the modes of production, circulation and consumption that have emerged over past decade around information and communicative technologies. Commons exists in both the material and immaterial world, where recent technological advancements have identified commons as core actor in peer production. The capacity to leverage communicative abilities, participation in non-hierarchical cooperation, distribution of non-proprietary information, has led theorists like Lessig [46]; Benkler [94]; and Kelly to posit the rise of “virtual communism” [44]. Rachael O’Dawyer argues that “his traces an immaterial virtual space that trades in knowledge and culture, at once free from commercial subjugation and conversely capable of exerting influence on the material substrate of capital”¹. Today we encounter conditions in which the core tenets of communism “the socialisation of

¹Dawyer 2013, p. 498

production and the centrality of commons-based peer-production are remade in the interests of capital” [90]. These conditions imply new forms of sovereignty and political economy.

Communities work on the basis of two major characteristic: common and cultural [72]. The first one is the value of horizontal, free communication. Castells argues that “the practice of virtual communities epitomizes the practice of global free speech, in an era dominated by media conglomerates and censoring government bureaucracies”². Kevin Kelly’s Wired article “The new socialism- Global collectivist is coming online” shows instances of communal aspect on the Internet where startups herald a new way to harness community action through sharing, cooperation, collaboration and collectivism [44]. Kelly’s idea of digital commons sees its potential of collective action that extends to material aspects of production. Wikipedia, the online encyclopedia is a large scale cooperative project which currently has 25,297,61 named users although only a minority takes part in editing. The mode of production at work in Wikipedia goes beyond the collaborative encyclopedia; it is also present in the production of, for instance, free software. Wikipedia sets an example, furthering Badiou’s understanding that communism can only materialize in new form of social organization [6]. This mode of production, which we call gift economy, is an informational mode of production, that is, a dialectic connection of social relations and information technology based productive forces that create informational goods and services. The Internet gift culture is thus “really existing anarcho communism” [7].

What we observe currently is the “reconfiguration of pre-capitalist forms of social coordination in the computational-informational space” which incorporates “non-market and non-proprietary activities such as open source software and open standards, peer-to-peer economies, and distributed forms of production over networks”³. With open source software like Linux, numerous people contribute source code anonymously and freely [10] [11]. Benkler called this “commons-based peer production” [94]. Other examples include music and video file sharing [51]; software or freeware sharing [71]; and a variety of virtual communities sharing information via online bulletin boards, chat rooms; Web sites [8] [73]. Cambridge graduate Lily Cole launched an altruism based social network where people connect to help each other. Lily argued that she believe more in gift exchange than monetary transaction, where kindness of stranger rules⁴. The difference between the gift paradigm and more typical exchange paradigms sits largely in the rumor of reciprocity. In exchange paradigms, return is quantified and direct. In giving paradigms, reciprocity exists but it is generalized and not quantified. The rise of new form of societal communication is conceptualized by Castells as mass self communication [15]. Dawyer writes:

*Leveraging the flexibility of virtual commodities to cost free reproduction and distribution, these advocates present collaborative culture as a digitised gift economy in which participants trade in social capital, self realisation, and various forms of non-market exchange*⁵.

²Castells 2001, p. 54.

³Dawyer 2013, p. 500.

⁴Lily Cole: welcome to the gift economy, where the kindness of a stranger rules, <http://www.theguardian.com/commentisfree/2014/mar/19/lily-cole-impossible-social-network-gift-economy>

⁵Dawyer 2012, p. 7.

Jeremy Rifkin describes how internet is changing economy towards products with zero-marginal cost (eg. free or gift economy) and no longer subject to market forces [74]. Rifkin states that internet has pushed boundaries of capitalism and given rise of Collaborative Commons. Firms like Google and Facebook provide a two sided platform for sellers and consumers where sellers are charged and consumers as loss leaders and thus get services for free [2]. Internet economy unlike conventional brick mortar industry works on economics of abundance. Internet has supplemented social capital and made communication globalized [92]. People have started using Internet for almost all of their daily needs - email, e-commerce, e-banking have shifted transactions online. The more people use internet the more it increases participatory capital [91].

Social media like Facebook, Twitter, LinkedIn has created platform for organizations and individuals to interact, share, browse and find people with similar interests. Hardt and Negri frame the centrality of the commons to capital as a metastable condition that will eventually exceed its boundaries and give way to the productive multitude, arguing that “the freedom required for biopolitical production also includes the power to construct social relationships and create autonomous social institutions”⁶. Castells’ inquiry of information society relating to ownership (internet as public or private entity), capitalist restructuring around social organization (commodification of culture), increasing socialization of productive forces and private interests, however points towards the conflict between commons and private property [15]. In next section we discuss the conflict between encroachments of commons and activism against it.

6.2 Tragedy of digital commons

Internet has been governed, to a compelling limit, to the capital accretion process. What seemed to be an increasingly open public sphere, removed from the world of material transactions, seems to be deforming into a private sphere of increasingly closed, proprietary, even monopolistic markets. It is genuine that in any capitalist society there is going to be steady and firm, even at times staggering, pressure to open up fields that can be profitably abused by capital, disregarding the social costs. Capitalists, by explication, given their economic strength-exercise extortionate political power. But it is not a given that all areas will be open to the market.

It is genuine that in any capitalist society there is going to be steady pressure to open up fields that can be profitably abused by capital, disregarding the social costs. But owing to their economic strength, the capitalists enjoy immense political power. But it is not a given that all areas will be open to the market. State provides services which are not deemed profitable in capitalist sense. Author Robert McChesney argues that such a crucial argument never took place in reference to the Internet [57]⁷. The entire labyrinth of digital communication was matured through government sponsored and directed research and during the post-Cold war decades (DARPA project), primarily through the military and leading research universities. Had the matter been left to the private sector, to the free market, the Internet never

⁶Hardt and Negri 2009, p. 310.

⁷Robert McChesney, Internet’s Unholy Marriage to Capitalism, Monthly Review, 2011

would have come into existence. The lack of argument about how the Internet should be developed was due, to a certain extent, to the digital shift exploding at precisely the time that neoliberalism was in uprising (especially after fall of USSR), its euphuistic rhetoric concerning open markets being most evocative. Markets were established, businesses were permitted to gain profit and efficiently use resources. Anything opposing such a move was thought as bad for economy and therefore ignored. This tenet led the drive for deregulation across the economy, and for the privatization of once public sector activities.

The lack of argument about how the Internet should be developed was due, to a certain extent, to the digital shift exploding at precisely the time that neoliberalism was in uprising, its euphuistic rhetoric concerning open markets most evocative [56]. The core spirit was that businesses should always be permitted to develop any area where profits could be gained, and that this was the most efficient use of resources for an economy. McChesney writes:

Anything standing in the way of capitalist exploitation was bad economics and ideologically weighted, and was usually advanced by a deadbeat 'special interest' group that could not cut the mustard in the world of free market competition and so sought protection from the corrupt netherworld of government regulation and bureaucracy. This tenet led the drive for deregulation across the economy, and for the privatization of once public sector activities⁸

For the content to be delivered at the doorstep of the users, Internet service providers (ISP's) form an integral part of Internet architecture. Telecommunications is uniquely volatile field: economically, technologically, and politically. The disputes that arise within and among the different sectors of the telecommunications industry, often in response to these rapidly changing conditions, have triggered some of the fiercest public policy wars ever waged. In the United States, the very structure of the industry turns on the decisions of various regulatory authorities, most notably the Federal Communications Commission (FCC). Internet services providers in America were well established monopolies due to government handed monopoly licenses. Consequently ISP's have been indirect beneficiary of government subsidies. These ISP's are dominant lobbying forces as their business requires support of state.

The telephone companies (majorly after AT&T divestiture in 1984) had lent their wires to Internet transmission and, over the course of the 1990s, they soon followed by the cable companies realized it was their future, and a very lucrative one, at that. All the more so, considering that ISP's are the only entry point to the Internet and digital networks.⁹

Any telecommunications carrier envisaging the development of a new network faces massive initial costs, including, for example, the costs of digging trenches and laying thousands of miles of cable to

⁸Ibid.,

⁹Ibid.,

reach different customer locations. These costs are both fixed, in that the carrier must incur them up front before it can provide any volume of service, and sunk, in that, once made, the investment cannot be put to some other use a fact that makes the investment particularly risky. Scale economies keep heaping until a provider is serving all customers in the market. In that situation, because a single firm can serve the whole market with lower overall costs per customer than could multiple firms, the market is said to be a natural monopoly. Large entry barrier to market implies there exists a few competitors in this area and sometimes treated as natural monopolies like water and electricity boards [41]. In contrast, the marginal cost of providing service to each additional customer, once the network is up and running, is often tiny by comparison. High fixed costs and low marginal costs lead to large scale economies in many industries, from auto manufacturing to applications software production, and most such industries have never been subject to pervasive schemes of prescriptive economic regulation. Regulators have formed rules to regulate such industries to keep prices and competition at optimum to better services for customers. It remains a mystery whether social gain of introducing competition in already monopolized market assure the pandemonium such competition evokes. Pragmatically, governmental regulation of a monopoly market inescapably create squander and also an entanglement of politically prudent yet economically unreal regulatory perceptions. Competition finds and eradicates each such perception and dismantles the whole regulatory regime (as with AT&T divestiture case¹⁰). Regulatory authority like ICC and FCC have failed to keep up with the strengthening in common carriers, the broad effects of confluence of all media, and the increasing control over information flows is hooked to monopolistic carriers in America.¹¹.

Author Susan Crawford argues that only telecoms are not to blame for their monopolistic powers, its the federal and state governments who are majorly responsible. Competition forces companies towards innovation and creativity and thus riding competitors out but its responsibility of government to keep up to technological advancements and its implications on society. Telecom industries has ardently resisted harmful business practices that allow for bandwidth limiting and giving preferential treatment for those with deep pockets. FCC being an independent agency has largely remained out of public eyes. Only industry stakeholders, lobbyists and officials[59]. know about its practices and has large influence and leverage over its workings¹². In early twentieth century, US had reached its saturation point in telecommunication. Majority of market share was owned by AT&T which was an amalgamation of many large companies offering services over long distance called Long Lines. In less populated areas other telecom companies had established themselves but owing to the monopoly power of AT&T over long distance calling were losing market share. Other firms had no capital to build a rival network which Bell System had built up over decades of acute negotiating and self-bolstering good prosperity. That was an economic impossibility. In 1913, the Department of Justice took note of practices of AT&T, and resolved the issue to open its lines to rival companies and to constrain its acquisitions [85]. A

¹⁰Refer to Parson's "Blue skies: A history of cable television" for more details [67].

¹¹See Susan Crawford's "Captive audience: The telecom industry and monopoly power in the new gilded age" for history of US Sherman Antitrust Act and monopoly practices in telecom industries.

¹²See Jeff Chester, "Digital destiny: New media and the future of democracy" [16].

quid pro quo, the government settled its compelling sanction on AT&T's monopoly control over all U.S. telecommunications markets in which it was already dominant. This case is conspicuous not just because it emphasizes the monopolistic penchant of an unregulated telephone industry, but also because it provides an illuminating disparity to the anti-competitive practices that ultimately led to the breakup of the Bell System 70 years later into its local and long distance components. In 1984 when AT&T was broken into Baby Bells forced the prices to go down and led to innovations in long distance service [86]. After 30 years, that divestiture has now been undone by large lobbying forces operating within telecom industries. Two separate markets exists where wired access is under the control of Comcast and Time Warner while wireless markets is overtaken by AT&T and Verizon.

Recent involving neutrality of net has questioned the neo-liberal policies adapted in support of innovation which stands at the juxtaposition of morality and ethics. When Airtel, one of the largest telecom service provider in India, announced its plan for charging VoIP services such as Whatsapp and Skype, a huge uproar from online population hindered Airtel's plan for differential pricing schemes for content providers¹³. Facebook's new venture Internet.org too was met with fraught in India with regulatory authority against it stating "collaborations between telecom operators and content providers that enable such gate-keeping role to be played by any entity should be actively discouraged"¹⁴. The idea behind Zuckerberg's Internet.org is to "connect people who are unconnected"¹⁵, but content providers have to pay Facebook in order to give services, raising issues of net neutrality. Although Facebook will provide internet for free but all the users will route through facebook servers giving rise to privacy and surveillance issues. Facebook also declined to share policies regarding user data, its agreements with governments questioning transparency of its administration. More than privacy the question of net neutrality laid down several impediments to its development in India where firms withdrew from Internet.org¹⁶.

Criticism to such plans have occurred elsewhere in US when Comcast (cable provider) started charging Netflix (content provider) for bandwidth owing to its high viewership and high data usage¹⁷. A common statement given everywhere by ISP's has been that content providers use their networks to earn profits while heavy costs of upgradation and maintenance is incurred by ISP's. We as part of commons already pay for the data usage while browsing. If ISP's start charging content providers, the cost will be finally fall on customers itself. As the consumption of data increases the more the ISP's revenue stream increases. With rise of new technologies the prices for data caps will decrease too but will be complemented by rise in usage. High fixed costs exists for upgrading the infrastructure, nonetheless the

¹³Bharti airtel to charge for using voip services, <http://in.reuters.com/article/2014/12/24/bharti-airtel-rates-idINKBN0K20SU20141224>

¹⁴Telecom panel okay with Airtel Zero, not Facebooks Internet.org, <http://www.hindustantimes.com/business-news/telecom-panel-ok-with-airtel-zero-not-facebook-s-internet-org/article1-1366222.aspx>

¹⁵Internet.org Platform, <https://internet.org/platform>

¹⁶Blow To Internet.org As Indian Internet Companies Begin To Withdraw, http://www.huffingtonpost.in/2015/04/15/internetorg-withdrawal_n_7071532.html

¹⁷Comcast vs. Netflix: Is this really about Net neutrality?, <http://www.cnet.com/news/comcast-vs-netflix-is-this-really-about-net-neutrality/>

cost of serving new customer is near to zero. Telecoms companies want to open their markets and establish a two sided market just as Google and Facebook have created. The immense potential to profit has made the telecoms exploit this business models. Telecom should only implement data caps which limits users usage. Bandwidth must be provided equally to all content providers. If not for content providers, there is no internet to access and no data to use. Differential pricing scheme will mean consumers would have less options to choose between service providers. Only because all content can be accessed equally, competition is thriving in telecom market. Incumbents will have to upgrade their services for them to attract customers who might choose better options for lower prices.

Myriad collectivist activities occurring over digital networks appears to escape the enclosures of capital, overtly implicated by the gift and free economies. Simultaneously, recent conditions signals to a terrain of conflict wherein activities of commons emerge within capital valorization process. These conflicts incorporate the increasing corporate activities of encroachments over modes of communicative production and network architecture. These architectures include spectrum, bandwidth and ICT devices, to name a few. This nowhere implies that value is not attained by commons but the very instruments that leverage its appropriation are held in private hands. These two scenario, on one hand valorize sociability while on other hand valorizes capital. On one hand commons have rise to the center but are expropriated of their subjectivities arising from commons-based peer production. Dawyer writes:

*This is not to say that the commons has not historically potentiated capitalist accumulation, but that we are witnessing a dramatic intensification of these conditions. Privatization through intellectual property or other forms of enclosure destroys the productive potential of the commons.*¹⁸

The phenomenon taking place can be recognized as, what Garrett Hardin would say the “Tragedy of Commons” [27]. While explaining tragedy, Hardin quotes philosopher Whitehead who states that “tragedy is not unhappiness....it resides in the solemnity of the remorseless working of things”¹⁹. Hardin’s article presents the plight of individual progress which would result in the ultimate demise of the commons.

For example, Internet has given rise to the spirit of entrepreneurship owing to Schumpeterian wave of creative destruction. Facebook, Google, Amazon and recent Alibaba, are classic examples of freedom that Internet provides for anyone to earn a fortune, nonetheless it only does so to substitute the previous hegemony. Myspace to Facebook in social media, Yahoo to Google in search engine, Netscape to Internet explorer in browser wars evidently point to only changes in position of power and not distribution of power itself. Google’s and Microsoft’s dominance in Internet market create endless opportunities for firm to launch applications and get an advantage over competition in application markets. However, unlike Windows, Google’s revenue scales as more services are added such as Maps, Google-drive cloud service, Google+, Gmail etc. These two shifts have one key point in common: the possibility of creating

¹⁸Dawyer 2013, p. 498.

¹⁹Hardin 1968, p. 1244.

prodigious amounts of data about end users. Moreover the nature of such application coerces users owing to high switching costs associated with proprietary platforms. Network effects are so large in case of Google that it has drowned out all other search engines and built up traditional barriers-to-entry [36]. Jean Tirole work on two sided markets shows how platforms like Facebook and Google work while providing free services to customers [75]. Two sided markets are economic platforms that serve two different set of users that provide each other network benefits. The platform that provides the benefits with different set of user base directly interacting with each other is called Multi sided platform. In tech-industry, platforms leverage one side for profit purposes(profit making segment) while subsidizing other set of users (loss leaders). Such firms go through a chicken and egg problem to choose which side to subsidize. To reason in terms of profit centers, costs are intuitively set up but often arbitrarily allocated to either side of the market. Tirole argues that such markets have a tendency toward monopolization, though that is not dangerous if new competitors are able to enter them.

For certain management practices centralization on one layer might be a precondition for decentralization on layers above it. Vertical integration by a company across different markets is often enticing because it can yield significant economies of scope: cost efficiency achieved by producing several products at once. In most industries, likewise, competition in each of the adjoining markets free these vertical assimilation from the requirement for cumbersome governmental regulation. To the degree the government gets involved, it is generally through impromptu prosecution of the antitrust laws. Complex market systems such as those of Facebook, Amazon and Google the underlying infrastructures are clubbed for coordination and standardization. Yet these kind of standardization is imposed by states and monopolies. It questions the sanctity about the conditions in which decentralized system can emerge or rather how the cons of centralization can be bought down. According to Evgeny Morozov there exists a conflict for power in cyberspace and like every other conflict it consists of two sides - i) one traditional i.e. coordinated institutional powers like states governments and large multi-national corporations ii) second comprises of decentralized power i.e. commons [59]. Internet gave them collocation and competency and made them invincible. As of today traditional powers are back and they are winning big. Back in the infancy of internet, there was a lot of debate about its natural laws. Censorship was impossible and anonymity was easy. The architecture of internet was truly global and was destined to be a new world order. Traditional powers sources were inclined and grassroots were empowered. There was freedom of speech and large audience base. It was a utopian vision and internet did actually revolutionize commerce, finance, marketing, mass media, political organization and crowd-sourcing. Facebook and twitter really did help in toppling governments. Looking at how all this utopian dream turned out to be, its all shattered and anti thesis.

Jakobsson and Stiernstedt have argued that the ongoing process of expropriation of commons is that of primitive accumulation by dispossessions under the guise of networked production [39]. Firms like Facebook and Google are given leverage while dealing with ownership of content while users are extensively surveilled(by the need of copyright), at the same time being legally dispossessed of their own creativity. A look at the proceedings of National Academy of Science shows how a research team

at Facebook changed emotions of around 600,000 users without their realization²⁰. When first reported by Animal New York, it spells out the fear and influence of social media which has the power to treat users as “lab rats”²¹. Users who have signed up on Facebook have already agreed to Facebook’s data usage policy in the light of which such experiments raises the issues of ethics and morality.

Internet paradoxically made traditional powers more compelling. The rise of cloud storage has stripped us of our rights over our data: our mails, photos, calendars, phone book, messages, documents which are now stored on servers belonging to Google, Apple, Microsoft, Facebook and others. Secondly the fall in prices of computing power has given easy access to mobile phones which in turn are tightly controlled by vendors. Our mobile phones, ipads and even our new operating systems tend towards restricting user controls. These trends are giving rise to corporate power by controlling data and therefore directly us. The power of Government is also increasing on internet in wake of national interest and security. Internet was supposed to be out of the labyrinth of natural laws and so the governments. Now there is surveillance like never before. The global nature of internet is soon diminishing leading to balkanization of internet. There is a growing cyber sovereignty movement that totalitarian governments are adopting to give more control by surveillance, censorship, propaganda and use control. The cyber wars race is in full swing, further amassing government control. The leaks of Edward Snowden have proved that NSA is eavesdropping on the entire planet. In many cases, the interests of corporate and government power are aligning. Both corporations and governments want ubiquitous surveillance, and the NSA is using Google, Facebook, Verizon, and others to get access to data it couldn’t otherwise. The entertainment industry is looking to governments to enforce its antiquated business models. The truth is technology magnifies power in general, but the rates of adoption are different.

6.3 Critique to free culture

Critique to ideology of free culture, specially to its outer appearance as communism, while being a part of materially entrenched capitalist system resembles to that of exploitation of commons in imperialistic context. Virno argues that “virtual communism is a communality of generalized intellect without material equality” [90]²². The underlying architectures that support the circulation of content are still proprietary. Counter-intuitively these *hegemonic value practices* [20] are held in high esteem as seen with over 100 billion dollars IPO evaluation of both Facebook and Alibaba. Angelis describes value practices of trade management by intellectual property rights as attempts to enclose by privatizing ownership of social and cultural commons [20]. The hegemony of the digital commons constitutes the provision of social tools and critical faculties required to mobilize the labor force. This perspective is reverberated by proponents of free culture such as Benkler [94], who describes the economic impor-

²⁰Experimental evidence of massive-scale emotional contagion through social networks, <http://www.pnas.org/content/111/24/8788.full>

²¹FACEBOOK EXPERIMENT MANIPULATES EMOTIONS OF 600,000 USERS, <http://animalnewyork.com/2014/facebook-experiment-manipulates-emotions-600000-users/>

²²Virno 2004, p. 18.

tance of cultural production as an emancipatory force and Rheingold, who views pervasive mass media as a vital tool for political mobilization [73]. The vital tools are either enclosed by ownership of private property or businesses allow access to privately owned infrastructure such as Facebook and Google. In information era, the digital commons, are grounded in such materially entrenched production process [65]. Channeling of immaterial surplus voluntarily produced on open platforms and cloud architectures lies deeper within the underlying proprietary infrastructure of data centers. It is because of exclusive ownership over the means of production that a profitable business is made outside the production process. Through their socializing activities individuals create the communicative value in their virtual world. While this cultural common cannot be destroyed through use but can be degraded through excessive abuse. Hardin rightfully states that “every new enclosure of the commons involves the infringement of somebody’s personal liberty”²³. In the communism of capital, therefore, and particularly in the digital commons, increasingly encounter a condition that inverts the standard narrative of economic freedom, where openness as opposed to private control is the locus of accumulation [34].

As the communications channel for all mobile and wireless transmissions, electromagnetic spectrum is a core apparatus in the digital economy; its enclosure is part and parcel of the techniques that facilitate capitalist accumulation through production over wireless and mobile networks. We can consider the case of smartphones which has changed computing scenario from desktop view to pocket view. Various recent innovation relating to mesh networks, community wifi and mobile peer to peer networks are lauded for their efforts for peer-to-peer production, pair-wise social exchange and locative media cultures. Appropriation occurs at each level individual level of substrate network, commons pay for their digital devices, the bandwidth, spectrum, and in the end also hand the ownership of data to firms. Even if a layer is open at some level, the potentiality of mobile commons is thwarted by various spectrum policies, proprietary end devices and smartphones, operating systems, data centers and network infrastructure. The realization of peer-to-peer network is subsumed under capitalist logic a priori, which constrains research and innovation subjected towards non commercial media practices, the emancipation can only be achieved by opening up of network at all layers. Wifi which operates over 2.4 GHz is open for commons to operate is subjected to physical and policy limitation that thwarts scale of potentially open networks. Frequency bands are not themselves scarce resources but are made scarce by the logic of enclosures obtained by auctions of spectrum. Any network infrastructure that intends to provide coverage over a wide area requires access to spectrum that is licensed and auctioned on a scale that suits powerful commercial entities.

Without infrastructure dedicated towards the commons, the appropriation of commons is open for exploitation. Immaterial production occurs within the limits of physical infrastructure which is where the antagonism arise between collective value and ownership of material infrastructure. This is reflected not only in the productive power of minds and bodies, but in the storage and processing power, electricity, cooling resources and bandwidth required to support an immaterial economy of goods and services. The extraction of surplus from social factory depends upon the infrastructure, the storage facilities and

²³Hardin 1968, p. 1248.

processing capacities which exists at the server side, while user generated content depends on the connectivity, high speed network infrastructure, operating over finite physical space. With the increase in demand of physical infrastructure grows exponentially does its value decreases as a static resource. David Harvey argues that proponents of private property have wrongfully interpreted Hardin's interpretation which fails to recognize scalability problem involving issue at hand [31]. Indeed, Harvey argues that at grander scale "some sort of enclosure is often the best way to preserve valued commons"²⁴, like the sort in protection of National parks. However the preservation of one commons is made at the expense of other, as in case of tribals situated in the enclosed National parks or as in case of cheap labor available in global (explained earlier in chapter 5).

²⁴Harvey "Future of commons", p. 102.

Chapter 7

Conclusions

7.1 Summary

In chapter 2 and 3 of our thesis we have outlined the theories of cognitive capitalism and its departure from Marx's labor theory of value. Cognitive capitalism is a relatively new term started from the works of Vercellone and Moulier-Boutang. Post-autonomists revalue Marx's midnight notes, the Grundrisse, and posit, that the premise for a theory about capitalists crisis created by exercising knowledge as productive force resulting in the emancipation of workers from exploitation is outlined. Marx's Fragment on machines has been a source of inspiration for post-autonomists theories of immaterial labor and cognitive capitalism in the likelihood of cultivating a new society and withdrawal of capital. Carlo Vercellone's claim is that as capital is external to production process, and their profit increasingly resembles to that of rent. Moreover, Vercellone argues that time is not a measure of value in knowledge based industries as knowledge can be easily reproduced. We have presented the case of Facebook, which in recent years has set an example of post-fordist business practices while critiquing cognitive capitalist theories.

In chapter 4 we have analyzed Fuchs works [25][26], which suggests that Facebook's main commodity is the audience and is necessarily productive creating massive amounts of data for the firm to sell to its advertisers. We have also contested Arvidsson and Colleoni claim [4] that value is realized in financial rent and brand. Free labor is a necessary prerequisite to content creation and brands provide the additive value for Facebook to exercise monopoly-pricing schemes. The fall of Google+ is attributed to lack of stickiness and user gratification, which Facebook has aptly maintained over the years. Free labor on Facebook invest their time in posting, sharing, commenting wherein data collected from collective actions of users is sold to advertisers.

In chapter 5 (part 1), we have argued against the claims that Facebook is a rent seeking organization. For if Facebook is rent seeking organization, it undervalues the contribution of employees working on deadline based schedule and contributing thousands of lines of code. For Marx rentier is unproductive while employees of Facebook are immeasurably productive who contribute to updating and maintaining the massive infrastructure of the social media site. By drawing analogy to Caffentzis' Verleger

in piece wage system, we have shown that Facebook is not external to production process but consistently deploys mechanism like “newsfeed” and “trending” posts thereby increasing user engagement and attracting advertisers to seek user attention [18]. Capital-labor antagonism inherently encompasses exploitation where Facebook alienates users of its social activities and freedom. Kelly’s [44] idea of online socialism is sabotaged by capital appropriation of collective intelligence through cooperation. Participation on Facebook is a voluntary phenomenon and users sign up to the terms and conditions, which entails surveillance practices of data tapping. Social networking site “Tsu” pays for the content created by prosumers. Their policy states that half of your [user’s] earned revenue is in the form of royalties generated by the content you post while the other half “comes from the growth and activity of your [user’s] personal social network”. Tsu’s algorithm automatically tracks, measures, and distributes revenue to the appropriate user and their Family Tree. At a high level, 90% of revenues are distributed to users. The social media attracted a million users within first 30 days, a feat Facebook took 10 months and twitter nearly 2 years¹². Tsu is relatively new as compared to Facebook, thus it will be interesting to see whether Tsu attains the feats achieved by Facebook.

Furthering our criticism to social media as rent seeking organization, in chapter 5 (part 2) we have argued that Facebook forms the part of global value chain at play. By presenting our case of shift of surplus value from low organic composition industries to high organic composition industries, we show the source of profit for knowledge-based industries and in our case, Facebook. Bohm et. al’s [12] analysis of Facebook presents contradictory terms by referring to behavior of capitalist (rent seeking) and simultaneously referring to primitive accumulation without the recognizing the flow of surplus value. We have shown that profit has nothing to do with the behavior of capitalist with respect to production process and hence irrelevant to functioning of the flow of surplus value into the form of profit. Moreover, cognitive capitalism theorists assertion regarding the departure of capitalists from the production process does not quite reach its fruition unless the very transformation process by which capitalism becomes itself is abandoned.

In final chapter of our thesis we are discussed about the plight of commons who are increasingly enclosed within the laws of private property. Moreover we have taken our discussion further towards communism of substrate network which is central to immaterial production. We have seen that commons are expropriated at every level of physical layer, from spectrum, bandwidth, device locking and finally by transfer of ownership of their creativity to capital accumulation process. For true realization of potentiality of commons, the material substrate of Internet architecture must be declared as commons property and businesses must operate over the top of these institutions.

¹Tsu.co Reaches 2 Million Users!, <http://tsu.expert/tsu-co-reaches-2-million-users/>

²The Social Network That Rewards Content Creators: An Inside Look at Tsus Growth, <http://www.adweek.com/socialtimes/tsu-after-6-months/619654>

7.2 Future work and discussions

We have tried to outline the critique of cognitive capitalism based on our understanding of Marx's labor theory of value and Caffentzis' historical understanding of the "Verleger" system. In our analysis of knowledge-based industries further research can be done regarding the notion of "knowledge". What counts as knowledge? What aspects of knowledge is important in current economy? Such questions can give us a better understanding of the shifting forces of production which are no longer subjected to industrial regimes. Moreover a better understanding of Labor process theory is required to understand managerial supervision in knowledge based-industries. The plight of commons is twofold-one of expropriation of creative artists who put in their best efforts to earn a living and are exploited by capitalists; second is the usage and distribution of proprietary information. We have discussed the second case rigorously but the kind of exploitation that is taking place in first case will be an interesting case study to pursue.

Related Publications

1. **Immateriality, formal subsumption and value theory : A critique of cognitive capitalism**

Pravin Patil, Navjyoti Singh. Paper in review and submitted at *Ephemera : Theory and politics in Organization, 2016*.

2. **Exploitation on Commons: A Case for Mesh Networks in India**

Pravin Patil, Navjyoti Singh. Paper in review and submitted at *Economic and Political Weekly, 2016*.

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