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Cognitive Commodities and the Value-Form

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ABSTRACT: One of the central claims of the “post-workerist” Cognitive Capitalism approach is that the specific ontology of cognitive commodities (costless reproducibility, indivisibility, non-rivalry, etc.) contributes to the obsolescence of the Marxian “law of value” in contemporary capitalism. Although that claim is usually presented as grounded on self-evident and unproblematic facts and implications of the nature of cognitive commodities, those arguments about the crisis of the “measure of value in social labor-time” rest on a rather crude understanding of the antithetical determinations of the commodity-form as the unity of use-value and (exchange-)value. While acknowledging the descriptive validity of some of the features associated with so-called cognitive commodities, a more rigorous approach to the critique of political economy can make sense of those peculiarities through the lenses of the qualitative and quantitative determinations of the value-form that Marx presented in *Capital*, *i.e.*, through the law of value.

THE “COGNITIVE CAPITALISM” APPROACH is the latest theoretical development of the post-workerist current associated with the French journal *Multitudes* (including, among its major figures, Yann Moulier-Boutang, Carlo Vercellone, Antonella Corsani and Bernard Paulré).¹ It emerged as an attempt to systematize the previously advanced (and better known) “immaterial labor” thesis into a coherent and unified research program (Dieuaide, *et al.*, 2006).²

1 For overviews of the main tenets of the approach, see especially Corsani, *et al.*, 2001; Vercellone, 2004b; Paulré, 2007; and Moulier-Boutang, 2007. There are few English translations of this recent work by post-workerists. See, however, Vercellone, 2005; 2007.

2 The “immaterial labor” thesis is a central element of *Empire* (Hardt and Negri, 2000) and *Multitude* (Hardt and Negri, 2004), two highly influential books by leading post-workerist authors.

The main thrust of the argument remains the same: the essence of the recent transformations of capitalism can be found in the novel forms of productive subjectivity in the era of the “general intellect” and the emancipatory content that they embody (Vercellone, 2007, 35). The current phase of capitalist development is thus seen as the realization of the qualitative determinations of productive subjectivity that Marx described in the so-called “Fragment on Machines” in the *Grundrisse* (Vercellone, 2007, 26ff). On the one hand, “living knowledge” or the cognitive dimension of living labor becomes the principal force of production (Vercellone, 2007, 19, 29) and, therefore, the qualitatively dominant source of value creation and accumulation (Negri and Vercellone, 2008; Vercellone, 2008a). This represents a new stage in the antagonistic development of the capitalistic division of labor, which sublates the Smithian logic of separation between mental and manual labor (or conception and execution) that dominated “industrial capitalism” and the real subsumption of labor to capital. On the other hand, this new figure of the collective laborer (“a diffuse intellectuality”) thereby embodies the material capacity to organize productive cooperation autonomously from capital, thus rendering superfluous the role of capitalist command (Vercellone, 2008b, 4). These two aspects of contemporary capitalism entail both the obsolescence of the law of value and the immediate material possibility of a direct transition to communism (Vercellone, 2007, 35).

These contentious claims have already been critiqued quite forcefully by a number of authors from diverse traditions and perspectives (Caffentzis, 2005; Camfield, 2007; Henninger, 2007; Smith, 2008), so my discussion will be focused elsewhere. Instead, this article concentrates mainly on a second constitutive element of the Cognitive Capitalism approach, namely its emphasis on the peculiar nature of the products of this allegedly novel hegemonic form of labor, that is, the specificity of so-called *cognitive commodities*. These are commodities for which the knowledge mobilized and objectified in their production predominates over the direct manufacturing labor required for the actual fabrication of its material support, which will act as “carrier” of that predominantly “ideal” content constituting their use-value (Vercellone, 2007, 29). This feature of cognitive commodities results in a peculiar cost structure: the production of the first article generally entails enormously high initial fixed costs in the form of massive R&D investments, whereas the cost of “reproduction” (*i.e.*,

the “marginal cost”) of subsequent units pales into insignificance or even approaches zero (Vercellone, 2004a, 69). The emblematic case, which is one of the main focal points of discussions within the Cognitive Capitalism literature and which we address in more detail below, is that of software (Blondeau, 2004). In a now seminal paper in the mainstream economics literature on the subject, Arthur (1996, 103) reports that the first Microsoft Windows disc was produced at a cost of \$50 million, in contrast with the negligible \$3/unit production cost of subsequent copies.³

This argument about the implications of the increasing hegemony of cognitive commodities for capitalist development of the productive forces is also a central aspect of this paradigm, but one that has remained relatively unexplored in the critical literature (for brief exceptions, see Carchedi, 2005; Husson, 2007). As much as the mutations in the labor that produces them, this transformation of products into “cognitive commodities” is seen by this approach as pushing the Marxian “law of value” further into the dustbin of history.⁴ In effect, the argument goes, the specific material “ontology” (Zuckerfeld, 2006) of these knowledge-intensive, “immaterial” products of labour (involving their costless reproducibility, indivisibility, non-rivalry, non-excludability, etc.), clashes with the nature of value as “objectified social labor-time.” The value-form is therefore forced upon use-values, through the “parasitical” imposition of “artificial scarcity” by means of juridical forms such as intellectual property rights (Moulier-Boutang, 2004b).

The material nature of cognitive commodities is, in this approach, conceived as one of the two pillars of the contemporary structural crisis of the “law of value.” Inasmuch as the law of value makes the market (hence, scarcity) the key criterion for the production of use-values, its rationality as a progressive social relation loses all historical foundation in the face of the “logic of abundance” characterizing the cognitive components of social wealth (Vercellone, 2009, 69). The second pillar is the aforementioned hegemony of the cognitive

3 Another paradigmatic example is that of pharmaceutical commodities, especially as a product of the so-called “biotechnological revolution.” But the case of software has additional appeal to cognitive capitalism theorists because of the political ramifications associated with the free software movement. I offer some reflections on this below.

4 By the “law of value,” I mean the organization of the unity of social labor through the qualitative and quantitative determinations of the value-form of its product. In other words, it is the active principle regulating the movement of material reproduction of social life.

dimension of living labor as the dominant force of production, especially given the alleged growing importance of “living” knowledge *vis-à-vis* that which is embodied in fixed capital (Moulier-Boutang, 2007, 58–9, 144–7). In this second sense, the crisis of the law of value reflects its exhaustion as a form of capitalist rationalization (that is, as a form of control of workers and of increasing social productivity), which is seen as necessarily predicated on the imposition of abstract labor measured in units of simple labor time (Vercellone, 2009, 69).⁵ With the cognitive dimension of the organization of production now reunited with living labor, the objective basis for capitalist command and its appropriation of value also disappears (Vercellone, 2009, 69). In brief, both the market and capitalist command become parasitic as social relations, and the capitalist mode of production in its current cognitive stage reaches its absolute limit as a form of development of the productive forces (Vercellone, 2009, 68).

This paper subjects to critical scrutiny such claims about the impact of the growing hegemony of cognitive commodities on the fundamental “laws of motion” of capitalist society. It argues that the claims about the crisis of the “measure of value in social labor-time” rest on a rather crude understanding of the antithetical determinations of the commodity-form as the unity of use-value and (exchange-)value. While acknowledging the descriptive validity of some of the features associated with so-called cognitive commodities, the paper shows that a more rigorous approach to the critique of political economy can make sense of such commodities through the lenses of the qualitative and quantitative determinations of the value-form that Marx presented in *Capital*. The paper thus provides further arguments against the thesis that we are living in an age of crisis of the “law of value” as the dynamic principle presiding over the contradictory movement of contemporary capitalism.

The need for this critical engagement with the Cognitive Capitalism approach is eminently political. Although these post-workerist scholars are usually at pains to distance themselves from apologetic approaches to the “new economy” based on centrality of information and communication technologies (ICT) (Corsani, *et al.*, 2001, 11ff.; Moulier-Boutang, 2007, 67–80; Vercellone, 2004b, 5–8), I think that they remain too uncritical of many of the mainstream claims about

5 This kind of formulation reveals that, despite protestations to the contrary (Moulier-Boutang, 2007, 57–8), post-workerist authors do tend to conflate deskilled concrete labor and abstract labor.

the so-called “knowledge economy.” This not only leads them to draw theoretical conclusions about the relevance of Marx’s value theory too hastily, but also leads them to flawed political implications. In simply offering a radical reformulation of fundamentally unchallenged ideological accounts of the role of knowledge in the contemporary economy, they overstate the immediate emancipatory potentialities of the present phase of capitalism and downplay the profundity of the material transformations of productive subjectivity still needed before “the capitalist integument” can be “burst asunder” (Marx, 1976a, 929).

The Specific Material “Ontology” of Cognitive Commodities and the Simpler Determinations of the Value-Form

A central argument put forward by Cognitive Capitalism theorists is that cognitive commodities differ significantly from “physical” ones due to the peculiar cost structure entailed by their knowledge-intensity: there are extremely high costs of production involved in the first unit, while the costs of reproduction are minimal and come down to the reproduction of the materiality of the support in which the previously deployed knowledge will be incorporated (Ordoñez, *et al.*, 2008, 43) — a compact disc, for example. This costless reproducibility of cognitive commodities thereby makes the “law of value founded on the measure of abstract labor-time immediately dedicated to production enter into crisis” (Vercellone, 2007, 29). This sounds deceptively simple and intuitive. If the primacy of exchange-value over real wealth is predicated on scarcity (marginalism) or on the “difficulties of production” (classical political economy and, in Cognitive Capitalism’s interpretation, Marx as well), then it seems reasonable to conclude that the immanent determinations of the value-form cannot regulate the production of commodities for which “the time of labor directly dedicated to production . . . becomes insignificant” (Vercellone, 2007, 33). Presumably relying on this apparent simplicity, Cognitive Capitalism theorists hardly make any effort to actually flesh out and substantiate their arguments (Henninger, 2007, 172). Yet the argument rests on a fundamental confusion over the immanent determinations of the value-form of the product of labor. More specifically, this line of reasoning stops short at the *appearance* presented by the determination of value when the commodity is considered abstractly, as the *premise* of capitalist production (Marx, 1976b, 953ff).

On this simpler level of abstraction, the commodity does indeed appear, and could therefore be legitimately treated, as an “autonomous article” or “independent object,” a single product whose value is determined “in isolation” by the specific quantum of socially necessary labor objectified in it (Marx, 1976b, 953). However, the practical critique of capital cannot rest content with being “right *as far as appearances go*” (Marx, 1976b, 972). And in fact, this appearance vanishes as soon as we consider commodities as what they really are, that is, not simply the abstract element or “economic cell-form” of capitalist production but as its direct *result*. For we shall see that the determinations of value are then revealed to pertain not to the isolated individual commodity as such, but to the total mass of commodities of which each singular article is not just materially, but also *formally*, posited as an aliquot part. The notion of value as an abstractly individual attribute of the isolated commodity, on which the thesis of the incompatibility between cognitive commodities and the value-form necessarily depends, will be shown to rest on shaky foundations.

Thus we need to examine the form-determinations that give unity to the organic relation between the value of the individual article and that of the broader total product of which it is part. There are two main scales to consider in this regard. First, the “partial” organic relation between the individual articles comprising the mass of commodities resulting from each privately organized process of production. Second, there is the broader relation between that partial mass and the total volume of commodities of that kind that is brought to the market by competing private producers. This pertains to the establishment of the qualitative and quantitative articulation of social production and consumption within a branch of the social division of labor as a whole. Marx considers this only in passing when presenting the metamorphosis of the commodity in Chapter 3 of Volume I of *Capital* (Marx, 1976a, 2023); it fully unfolds when he considers the overall unity of the movement of social capital as mediated by the establishment of a single market value out of the diverse individual values of each producer within each sphere (Marx, 1991, 281ff).⁶ For the purpose of this discussion, the examination of the first aspect is of more direct relevance to demonstrate that the alleged contradiction between the

6 When exploring the circulation of commodities, Marx explicitly poses the question of the actual unity of the movement of social labor as a whole for the first time in his exposition. He thus mentions in passing those aspects of the determination of value (Marx, 1976a, 202).

peculiar material nature of cognitive commodities and the simpler determinations of the value-form is only apparent.

Marx starts his dialectical investigation with the commodity as the elementary form of the “immense collection of commodities” in which social wealth appears in the capitalist mode of production (Marx, 1976a, 125). He takes the individual commodity “in his own hand” and analyses “the formal determinants that it contains as a commodity and which stamp it as a commodity” (Marx, 1976b, 1059). This analysis shows that what is specific in the commodity is that, as a product of labor, it not only possesses a use-value but is also the bearer of a second, historically specific objective attribute: the form of general exchangeability or the value-form. The subsequent analysis reveals that the commodity is the product of the “labor of private individuals who work independently of each other” (Marx, 1976a, 165), this being the reason why the organization of the division of labor must necessarily be mediated in this reified form or, to put it another way, why commodity-producing labor is essentially value-producing. Although the different private labors are materially dependent upon one another as part of the “primordial system of the division of labor,” their irreducibly social character is not immediately manifested when they are actually performed in the direct process of production. Hence, this necessary social articulation of private labors is realized indirectly, through the mediation of the exchange of the products of private labor as commodities. Only at that moment is it revealed whether the portion of social labor which each producer personifies was expended in a socially useful fashion. This is the reason why the objectification of the abstract character of the privately performed social labor is specifically represented as an objective attribute of its products, *i.e.*, value. The *magnitude* of value is determined by the *socially necessary* labor-time required for the production of commodities. This means that the objectification of the abstract character of private labor is socially represented in the form of value only inasmuch as it satisfies two conditions: first, it corresponds to the technologically normal conditions of production prevailing in society (Marx, 1976a, 129), and, second, it can satisfy a social need (Marx, 1976a, 31), regardless of whether these needs arise from “the stomach or the imagination” (Marx, 1976a, 125).

When analysing the individual commodity as such, each of them is considered by Marx as “an average sample of its kind” (Marx, 1976a,

129–30). This means that at this level of abstraction the diversity of individual circumstances can be ignored, and that the organic relation between the determination of value of each singular commodity and that of the mass of which it is part can be momentarily left aside. The individual “part” can be considered apart from its relationship with the broader “whole,” for the time being, and therefore each commodity is analysed at this stage in isolation, as an autonomous individual product. The *relation* of the individual product with the mass of which it is part does exist but, as it were, only extrinsically, through the determination of the individual commodity as an “average representative.” This also implies that the divergence between the labor expended on any single commodity and any other is, at this stage, immaterial. And this obviously includes the relation between the “first” cognitive article produced and the reproduction of subsequent identical items of its kind.

But matters are very different when the commodity is no longer considered as an abstract form of capital or as its premise, but as its immediate product or result. This is the subject of Marx’s investigation in the *Results of the Immediate Process of Production*, where he shows that the re-examination of the commodity as the product of capitalist production brings new light to the value-determinations. In fact, it is mainly in that text that we can find Marx’s most explicit and extended discussion of the central question that concerns us here in order to solve the “riddle” of the cognitive commodities that puzzles post-workerist authors: the inner nature of the individual commodity as component part of a form-determined total product of the process of capitalist production (Murray, 2009, 165).⁷

Marx states right at the outset of those manuscripts that, as the product of capital, the commodity emerges differently from the commodity taken as a single product, with which the dialectical exposition began (Marx, 1976b, 953–4). In this more concrete context,

7 In addition to some in-passing or implicit reflections on this question at different stages of the presentation (Marx, 1976a, 202), the place in *Capital* where Marx explicitly addresses this aspect of the determination of the value-form is the chapter on the “Concept of Relative Surplus Value” (Marx, 1976a, 433–4). In fact, in Volume III of *Capital* he cites those pages of Volume I precisely in order to contrast this inner determination of value with the inverted form in which it appears in circulation (and hence in the fetishized consciousness of the individual capitalist), namely that price is fixed for the individual commodity and that the price of the total product is determined by multiplication (Marx, 1991, 338). But, unlike in the *Results*, that question is discussed rather succinctly and does not constitute the focal point of the presentation.

the commodity “changes in form” (Marx, 1976b, 969); it becomes a “depository of capital that has valorized itself” (965) and must therefore be considered “as the *product of a total capital*” (971) that embodies a part of the total surplus-value generated by it. As a consequence, the determination of the value of the individual commodity can no longer be considered in isolation but must be directly posited in its organic relation to the mass of commodities whose unity embodies the valorization of the capital invested. As Murray perceptively notes (Murray, 2009, 164), Marx’s shift from singular to plural in his first contrasting reference to the commodity as premise and product of capital is far from arbitrary (Marx, 1976b, 949).

In effect, as “the transfiguration of capital that has valorized itself” (Marx, 1976b, 954), the individual commodity does not simply appear as an autonomous thing that possesses value inasmuch as it is the result of a determinate quantity of privately undertaken socially necessary labor (Marx, 1976b, 969). Instead, it becomes further determined as the material bearer of the value of the capital advanced (the part of constant capital transferred during the current production process, plus the variable component reproduced by living labor), together with the surplus-value resulting from the exploitation of the (collective) worker. However, each commodity contains only a fraction of the total surplus-value generated by the movement of capital. The latter’s *full* valorization thus necessarily entails that the commodity be present and sold “on the *scale* and in the *quantities* necessary to realize the old capital value and the old surplus-value it has created” (Marx, 1976b, 954). The immanent result of the process no longer consists in “individual goods,” but in a determinate “mass of commodities” that acts as depository of valorized capital and which must therefore be considered as a *single* (composite) commodity, *i.e.*, “as a single use-value . . . whose exchange-value therefore also appears in the *total price* as the expression of the total value of this total product” (Marx, 1976b, 956).

In this more concrete mode of existence, the value of each single article is determined “by expressing its use-value as an aliquot part of the aggregate product, and its price as the corresponding aliquot part of the total value generated by the capital invested” (Marx, 1976b, 957). So, the individual commodity undergoes a transformation from an *average sample of its kind* into an *aliquot part of the total product of capital*. It becomes not just materially but *formally* determined as a

singular element of the total mass of commodities produced by each individual capital. The relation between the “the parts and the whole” suffers an inversion *vis-à-vis* the abstract appearance with which the exposition started. The value of the aggregate product no longer represents the simple addition of its constituent elements. Instead, the total value is determined “first” and then shared out equally by each individual commodity, which now contains a proportional fraction of the former (Marx, 1989, 301). At stake here is no longer an extrinsically connected aggregate of “autonomous” individual commodities, but a mass of use-values which is given formal unity and consistency as a single total product that embodies the value of capital plus, above all, the surplus-value to be realized (Marx, 1989, 301).

In sum, we can now appreciate that the real determination of value actually transcends the isolated single commodity as such. The implications of this for the analysis of cognitive commodities follow quite straightforwardly. Seen in this light, the disproportion between the enormous “cost of production” of the first original product and the costless reproduction of subsequent “copies” loses the fantastic aura that captivates theorists of Cognitive Capitalism and which constitutes one of the pillars of the proclaimed obsolescence of the “law of labor-value.” Inasmuch as each single commodity embodies an equal fraction of the value of the product of capital as a whole, the comparison between the (exceptionally high) cost of production of the first article and (exceptionally low) cost of reproduction of the rest is rendered meaningless as far as their value-determinations are concerned. The alleged contradiction between this aspect of the specific material “ontology” of cognitive commodities and the value-form is thus revealed to be a false one. This peculiar aspect of the materiality of cognitive commodities leaves the qualitative and quantitative determinations of the value-form intact.

*The Economic Content and Juridical Form
of Cognitive Commodities*

Does the previous discussion imply that the phenomenon of “costless reproducibility” of cognitive commodities is entirely irrelevant for the understanding of contemporary capitalism? Actually, no. Although this characteristic does not transform the normal “laws” that regulate the *production of value* of commodities, this material specificity does

impinge on the conditions of *appropriation* of their *use-value* and, therefore, on the *realization* of their *value*. The contemporary prominence of discussions around *intellectual property rights* essentially derives from this peculiarity of cognitive commodities.

In effect, what *is* distinctive about cognitive commodities, derived from their so-called costless reproducibility, is that their use-value can be appropriated as a *means of production* of further identical use-values (*e.g.*, subsequent copies of the original software) without virtually any cost.⁸ Unlike “physical” commodities, almost no new living labor or additional costly means of production are involved in, say, copying a digital file containing software. As we have seen, this does not alter the determinations of the *production* of value. But it most certainly does affect its *full realization* and therefore gives a specific character to the juridical form that necessarily *mediates* it. The latter must not simply codify the possession of commodities as legal ownership, but also needs to regulate the conditions of appropriation of their use-value by, for instance, prohibiting home-copying or sharing of proprietary software, and more generally, its reproduction, modification, improvement and redistribution, especially for commercial purposes (this is usually accompanied by *technical* barriers to the appropriation of its material properties through non-accessible source codes). This is necessary to prevent the appearance of competitors who can produce identical commodities without the need to incur all the costs involved in software development (Husson, 2007). These other producers would otherwise be able to sell their own commodities at a price that stands below their value due to the exceptional circumstances — namely, the material properties of cognitive commodities — that allow them to sell software without needing to expend labor-time in product development. The producer who did expend that labor-time would also be forced to sell her commodities at a price that does not reflect the overall quantity of social labor required to produce software. Here it is important to emphasize that such a situation would not modify the value of software, since the labor-time expended in its development would not have been rendered superfluous as would happen, for instance, in the case of a change in the productivity of R&D labor or of the development of an alternative use-value that rendered the

8 In what follows, I will take the case of software as the paradigmatic example of a cognitive commodity.

old software socially useless. In preventing potential situations like this, intellectual property rights do not force the exchange-value of software above its insignificantly small (or nonexistent) value (cf. Rullani, 2004), but mediate its full realization. This simplest juridical form assumed by the realization of the value of cognitive commodities is already present in their more abstract mode of existence as premises of capital. But it is obviously further developed in their actual determination as products of capital, in which case intellectual property rights essentially become juridical forms taken by the realization of surplus-value.

The crucial point to highlight is that the juridical form does not “artificially impose” the (materialized) economic relation (the value-form), as argued by Cognitive Capitalism theorists. Instead, intellectual property rights, however necessary, only *mediate* the realization of the economic content, whose foundation still rests on the specific *social form* taken by the organization of the human metabolic process in capitalism, *i.e.*, the private and independent form of the production process of use-values. The “peculiar ontology” of cognitive use-values does not compromise these simpler determinations of property rights that Marx unfolds in Chapter 2 of *Capital*. Like “physical” ones, cognitive “commodities cannot themselves go to the market and perform exchanges in their own right” (Marx, 1976a, 178) either. As a consequence, the *indirect* relation between private producers mediated by knowledge-intensive things, must be itself mediated by a *direct relation* between two *possessors* of commodities who recognize each other as *owners* of private property “whose will resides in those objects” (Marx, 1976a, 178). The juridical relation is therefore not simply a direct relation between free persons (although that is indeed the form in which it appears and is realized), but one between personifications of economic categories; more specifically, of the value-form (hence between unfree, alienated subjects) (Marx, 1976a, 178–9). In other words, the juridical relation does not only simply mediate the “changing of hands” of use-values but, fundamentally, gives course to the realization of the value-form (Marx, 1976a, 179). In this sense, there is no essential difference between cognitive commodities and “physical” ones beyond the aforementioned technicality of extending the legal regulation beyond the act of exchange proper and into the conditions of use. The juridical form of the contract must consequently

assume a more complex form. But there is nothing conceptually out of the ordinary in it which would be signaling that we are witnessing capital's desperate attempts to subsume a production of use-values whose immanent logic "ontologically" already escapes the latter's form-determinations.⁹

This is not the way Cognitive Capitalism theorists conceive of the economic content and the juridical form of cognitive commodities. Having first declared that cognitive commodities have no immanent "economic value" as a consequence of their costless reproducibility, they also add that, resembling so-called public goods, they are "non-rival" and "non-excludable" (Moulier-Boutang, 2007, 163).¹⁰ Drawing explicitly upon these unequivocally mainstream notions from marginalist economics of information goods (cf. Varian, 1998), they conclude that the growing hegemony of cognitive goods therefore undermines the two foundations on which exchange-value (economic content) and private property (juridical form) respectively rested: scarcity and rivalry/excludability (Moulier-Boutang, 2004b, 117–8; Vercellone, 2007, 34). These goods can only be turned into commodities and subjected to private appropriation "artificially," through the social creation of

9 Intellectual property rights (IPRs) might be "technically" difficult or costly to enforce, but these difficulties are far from constituting in its immediacy an *absolute* contradiction of the capitalist mode of production, as Cognitive Capitalism theorists tend to put it (Moulier-Boutang, 2007, 153–82). As Altvater sharply points out, "human ingenuity" (*i.e.*, capital) "knows no bounds in overcoming the state of non-exclusivity 'alien to the market economy' and in assigning exclusive proprietary rights" (Altvater, 2004, 8). This is not to deny that the specificity of the conditions of appropriation of the use-value of cognitive commodities does constitute a particular acute manifestation of the contradictory foundations of the capitalist mode of development of the productive forces of social labor. And this certainly means that the development and enforcement of IPRs will tend to be done with remarkable zeal. However, the point is to not to exaggerate their contradictory content by treating them as an immediate carrier of the absolute limit of the capitalist mode of production. Those mediating juridical forms of the movement of cognitive commodities do certainly rest on a peculiarly antagonistic foundation but one that can be resolved (as ever, without being abolished) within the reproduction of capital itself.

10 Their non-rivalry implies that the use-value of cognitive commodities can be shared without loss of the available quantity of that use-value. In other words, one person's consumption does not diminish the amount available to other people (Varian, 1998, 6). Strictly speaking, this is not really a feature of these commodities. The alleged non-rivalry is based on the assumption that the real use-value is the knowledge-content, which is seen as an ethereal entity floating in mid-air, with the material support as a "mere" physical guise (Zuckerfeld, 2009). But the use-value of a commodity is given by all the material properties in their indissoluble unity, including both the knowledge-content and the "physical bearer." Thus, the use-value of software thus comprises the unity of the digital content and the material support, which means that the consumption of each copy *is* rivalrous.

scarcity by means of “anachronistic” property relations.¹¹ Inasmuch as the immanent value-determinations no longer operate in the case of cognitive goods, the juridical form must secure the parasitic imposition of a “fictitious” economic content (exchange-value), reduced to nothing but an “empty husk” (Vercellone, 2008b). The following passage by Vercellone summarizes these ideas quite eloquently:

Where the time of labor directly dedicated to the production of commodities intensive in knowledge becomes insignificant; or, to put it in the language of neoclassical economic theory, where the marginal costs of reproduction are practically nothing or extremely low, these commodities should be given for free. From this standpoint, the solution searched for by capital is now to advance rights to intellectual property in order to collect monopoly rents. This stratagem corresponds to a situation which contradicts the very principles on which the founding fathers of political economy had theoretically justified private property and the efficiency of a competitive order. In fact, it is now the very creation of property which generates scarcity. It is what Marx (but perhaps even a classical economist like Ricardo) would qualify as an artificial way of maintaining the primacy of exchange-value (which is based on the difficulties of production) against wealth, which is based instead on abundance and use-value, and therefore on free appropriation. (Vercellone, 2007, 34.)

In other words, the very materiality of cognitive commodities makes them clash with the general principles of a market order. According to Moulier-Boutang (Moulier-Boutang, 2007, 160ff) this “ontological recalcitrance” of cognitive goods *vis-à-vis* the commodity-form renders the enforcement of intellectual private property rights highly difficult and increasingly problematic, making them one of the major tensions of contemporary capitalism. This in turn explains the dedicated and concerted global efforts around the imposition of the “new enclosures” on “intellectual commons” in the last 30 years or so of capitalist development (Moulier-Boutang, 2004a, 10). It also

11 As Marx notes (1976a, 197), the acquisition of an “imaginary price-form” by things that are not “in and for themselves” commodities (like conscience, honor, etc.) is a possibility that is immanent in the commodity-form as the general social relation. These cases do entail a qualitative contradiction between form and content in which “price ceases altogether to express value.” Cognitive Capitalism theorists seem to be treating cognitive commodities as if they were equivalent to those cases of commodification of moral attributes mentioned by Marx. The problem is that, unlike the latter, the former do have the full content of the value-determinations.

underpins the contemporary significance of struggles against intellectual property rights such as those of the free software movement, seen as directly embodying a post-capitalist logic of production (Blondeau, 2004, 45–8; Moulier-Boutang, 2007, 134–41). Both the juridical form and the struggles against it are in this way inflated into *the* paradigmatic expressions of what are deemed as *absolute* contradictions of the current phase of capitalist development.¹²

The main problem with this line of reasoning is that despite its anti-capitalist sentiment and rhetoric, it remains firmly trapped within the bourgeois horizon of mainstream economics. For even when it aims to provide weapons for the struggle against the commodity-form, it too uncritically borrows the conceptual foundations of its practical critique from the neoclassical theory of the market and property rights and simply gives them a “radical twist.” Indeed, the validity of neoclassical arguments for the “necessity” of the value-form (scarcity) and for the legal regulation of the private appropriation of use-values (rivalry, excludability) is implicitly accepted for ordinary commodities and the era of “industrial capitalism.” The problem seems to reside not so much in those marginalist arguments themselves, but in their scope of applicability when an increasingly greater part of social wealth consists of knowledge-intensive commodities, as happens in the age of Cognitive Capitalism (Moulier-Boutang, 2004a, 117–8). Whereas ordinary private property is tacitly accepted as an *absolute* necessity for the stage of humanity’s history of “struggle against scarcity” in which “material” commodities were hegemonic (Vercellone, 2008b, 1), intellectual private property has become a historical aberration that blocks the further development of the productive forces.

12 Some authors go as far as to characterize the production of free software as germinal communism (Ordoñez, *et al.*, 2008, 53). They seem to forget that those free software developers continue to rely on selling their labor-power as a commodity to reproduce the materiality of their productive subjectivity. They are wage-laborers and capital continues to be the *general* social relation of production through which they produce their life. Under the appearance of building “spaces of freedom and horizontal democracy” outside the despotic organization of production under the command of individual capitals, they are, on the one hand, further expanding their productive subjectivity with no additional cost for capital, which the latter then exploits in those workers’ day jobs. On the other hand, they are unconsciously mediating the competition between individual cognitive capitals and/or acting as an active force in the imposition of the needs of the reproduction of the total social capital when the independent actions of particular individual capitals become a barrier to the production of relative surplus-value (*e.g.*, Microsoft’s attempts at “excessive” monopolistic practices and the technical unreliability of its operating systems). See Smith, 2009, for a critical assessment of the limits to the transformative potentialities of commons-based peer production.

But the point is that the specific material properties of commodities did not ever constitute the foundation of the value-form and private property, not even during what Cognitive Capitalism theorists (wrongly) see as the now defunct age of industrial capitalism. The products of labor were never commodified because they were “naturally” scarce; their exchange-value was never simply determined by the “difficulty of production” (*i.e.*, the human overcoming of natural scarcity); and their private appropriation was never founded on their “rivalry and excludability.” This fetishistic form and its juridical expression do not derive from the material characteristics of the product but from the specific *social form* in which its production process is organized (Nuss, 2005). The products of labor take on the value-form because they have been produced in the form of private and independent labor. The critique of the commodity-form of cognitive goods based on the moral denunciation of “artificial scarcity” leaves the attribution of the form of general exchangeability of “physical” commodities to “natural” scarcity untouched. In the end, it uncritically falls prey to the fetishism of the commodity-form of the product of social labor.

Cognitive Means of Production and the Formation of Value

In the first section we followed Marx’s method of presentation of the simpler determinations of the value-form by treating the total socially necessary labor for the production of a certain commodity as an undifferentiated quantity that evidently included, but did not explicitly distinguish between, past and present labor. Although I did refer in passing to constant capital when discussing the commodity as a product of capital, I also tacitly followed Marx’s presentation in that section of the *Results* in assuming that its value “was entirely contained in and had entered into the product of the total capital under consideration” (Marx, 1976b, 958). We must now drop that assumption and address the case of means of production whose value is transferred piece by piece to the finished product. This will allow us to expand our initial examination of the impact of the “replicable material ontology” of cognitive commodities in the determination of the magnitude of value by socially necessary labor-time. Specifically, it will bring out additional elements that will show that the commodity must necessarily be thought of as part of a total product, and that therefore the contrast between the value of the first article and that

of subsequent identical products is ill-conceived. I will focus again on the case of software which, in light of the high-intensity of the digital content of its use-value and the insignificant burden of the material support, is most expressive of the “replicable material ontology” of cognitive commodities.

Let us first examine the simpler case of specialist programming software used for the development of a new application. Here there seems to be no essential difference with, say, a machine. From the point of view of the production of the new application, the specialized software is the material product of previous labor, which will be productively consumed in the current labor-process, by appropriating its use-value to produce a new use-value. Assuming that the specialist software was bought from another private producer as a commodity, it will be a bearer of value. However, its contribution to the production of a different use-value means that the social usefulness of the labor materialized in it needs to be re-validated in the new material shape. Its value will therefore be transferred in the same magnitude to the finished product as the result of the activity of living labor in its concrete character. The functional role of programming software in the labor process becomes form-determined by positing that product of past cognitive labour as *constant capital*. And also as happens with a machine, the useful properties of specialized software as a means of production are realized over the course of more than one period of production, which means that its value will be transmitted to the product fractionally, at a rate determined by the average useful life during which it acts as an objective factor of the labor-process. It seems, then, that the “weightlessness” of this peculiar cognitive means of production brings no essential modification to the process of value formation.

There is, however, a rather significant difference. Unlike the case of a machine, software can be said to approximate a condition of material non-perishability (Zuckerfeld, 2006). The material support of this cognitive means of production might exhibit wear and tear as a result of the appropriation of its material properties, but not the “knowledge-content,” which can be preserved indefinitely as long as it is given an alternative physical carrier with minimal cost (see, however, note 10 above). Perhaps the most remarkable characteristic of software as a means of production is that the rate at which it will transfer its value to the final product *will almost exclusively be determined*

by its moral depreciation (more on this below). Beyond this particularity, the functioning of this kind of cognitive product as means of production resembles that of machines.

With these form-determinations of software as a means of production in mind, let us now re-consider the problem of the apparent stark contrast between the value of the “first unit” of a cognitive commodity and the “valueless” nature of subsequent copies.

For, strictly speaking, the “first unit” of software is actually the “prototype,” the original digital file that contains the new application that has been developed and which will be used to make subsequent marketable copies.¹³ The former is the use-value that is the immediate result of the mostly cognitive socially necessary labor of conception, design, etc. (briefly put, R&D). As Mandel already noted in the early 1970s, the labor of R&D workers is an unambiguous part of the productive labor of the collective laborer, both of use-values and of value (Mandel, 1975, 255). But its direct result is not the finished product that eventually takes the commodity-form and is brought to the market. The production of the subsequent marketable copies (whether by stamping out the digital content on blank CDs or by the “virtual” transmission of a copy of the file through the internet), entails the production of a use-value which is materially different from the original file, and it is in this very final objectified shape that the overall labor required for its production must still manifest whether it was expended in a socially useful form or not. From the perspective of the production of the finished product, the “prototype” represents past objectified labor. It must therefore not be treated as part of the actual *result* of the process of production of software. From the perspective of the final phase of the collective labor process that produces software as a commodity, the socially necessary labor of R&D that results in the prototype produces a *means of production* and, more concretely, an *instrument of labor* (the raw material comprising either the blank CDs on which the digital file will be stamped out or the electric pulses which will be given the material form needed for their “virtual” transmission and reception through the internet).¹⁴ Like the case of the making of earthenware melting-pots by glass manufacturers reported by Marx

13 Strictly speaking, the stable and marketable version of software is usually referred to in the specialized literature as the “Gold version,” the prototype proper being an earlier version which might still contain errors or technical problems (Blondeau, 2004, 44).

14 I am indebted to Juan Iñigo Carrera for clarifying this point to me.

in *Capital*, the production of the “means of production is here united with that of the product” (Marx, 1976a, 465). It is the product of the separate labor-process of a special organ of the collective laborer as a whole, whose *common final product*, made up of the subsequent mass of marketable copies, becomes a commodity (Marx, 1976a, 475). This functional determination of the “first unit” in the production process is usually overlooked by Cognitive Capitalism scholars.

In this sense, it might appear as if the labor of R&D whose partial product is the prototype should be simply treated as any other partial activity in any collective labor process. However, from the perspective of the formation of the value of the product this partial function has certain peculiarities that make it resemble, but does not actually coincide with, the case of specialized programming software functioning as constant capital that we discussed just above. In effect, inasmuch as its potential usefulness is not exhausted in the production of just one copy of the marketable software but in a mass of them, the labor contained in the prototype must be considered as socially necessary, hence as a condition, for the production of that total product. To put it differently, its use-value is consumed gradually, as it is productively appropriated by living labor “finally added” in the form of “copying” over the course of several production processes. However, the similarity with the case of specialized software bought from another private producer ends here.

In the first place, the prototype does not take the form of value until it undergoes final transformation into the copy. The material interdependency between the activity of R&D and that of copying is not mediated by the commodity-form but is organized directly within the individual capital that privately commands the respective portion of social labor. When the prototype is finished, there is still no “value” to be transferred into the copies (cf. Marx, 1976a, 475).¹⁵ Second, in the case of in-house R&D for the production of a prototype, capital is not advanced in the form of constant capital only. It is also advanced, arguably quite intensively, as *variable* capital, in order to pay the highly complex intellectual labor-power of software developers (Ordoñez, *et al.*, 2008).

Here we do encounter a specific feature of cognitive commodities when looked at from the perspective of the reproduction of variable

15 A point missed by some commentators; *e.g.*, Sander, 2005, 2.

capital advanced for their highly intensive R&D component. As corresponds to the general determination, variable capital is reproduced through the daily consumption of the use-value of labor-power during its rather long working period comprising a succession of several inter-related working days, *i.e.*, of the material realization of its potential for the expenditure of socially necessary abstract labor through objectification in the product; in this case, mostly consisting in the workers' "mental" vital energies. Given the *continuous* nature of the R&D labor process stretching over a long working period, the objectification of labor-power that reproduces variable capital is only realized in "layers" of labor that are successively "deposited" on an unfinished product until giving the latter its final shape of the replicable prototype.¹⁶ However, the reproduction of R&D variable capital is not yet fully realized, as happens in the simpler case, with its objectification in the product of the continuous labor-process of which it is the direct result. Instead, variable capital actually reappears in the product of the subsequent "copying" labor-process with which the production process of this "cognitive instrument of labor" is united. More importantly, the variable capital advanced for the production of the prototype is reproduced over the course of *a series* of final labor-processes that yield the total mass of marketable copies of software that will eventually take the commodity-form. As part of the valorization process, the abstract character of R&D labor objectified in the prototype must therefore be treated as if entering *piece by piece* into the process of value formation of the final product. Thus, the value of *variable capital* advanced in this specific form re-appears in the value of the finished commodity in a manner which is, typically, that of *constant capital*. Seen from the perspective of the turnover of capital, the portions that are advanced to buy R&D labor-power appear at first sight to start its circuit in a manner that corresponds to the form-determinations of its *circulating* part (Marx, 1978, 245). However, its actual nature is eventually revealed when looked at from the point of view of the completion of their turnover circuit, which determines this part of variable capital as *fixed* capital (Iñigo Carrera, 1998, 44).

These further determinations of the process of value formation for cognitive commodities such as software allow us to concretize the

¹⁶ Marx discusses the notion of working period and the peculiarities of continuous labor processes in Volume II of *Capital* (Marx, 1978, 306ff).

quantitative determination of the volume of the mass of commodities that must be considered as the materialization of the socially necessary labor for its production. Once we make the distinction between past and present labor explicit, this mass of commodities acquires an immanent *diachronic* dimension: the software “prototype” maintains its role in the formation of value as long as it remains socially useful, *i.e.*, indirectly satisfies a social need by acting as a means of production of additional copies. Given its specific “non-perishable” character, the social usefulness of the software prototype has the peculiarity of being subject to virtually no material limit springing from its physical deterioration. Unlike the case of “hardware,” the relevant volume of commodities is almost purely determined by the “moral” useful life of the software prototype. The latter is given by the existence of a social need for the finished marketable product (the “copies”), which in turn usually depends on whether those products have been displaced by similar ones (Marx, 1976a, 201).¹⁷

Be that as it may, the essential point is that the individual value of each copy is determined as an aliquot part of the total value that represents the materialization of the overall socially necessary labor for the production of a *synchronically and diachronically*–specified mass of cognitive commodities. This additional determination of the value of individual commodities thus throws the validity of claims about the alleged obsolescence of the law of value brought about by the nature of cognitive commodities into further question. The differentiation between an expensive first “unit” and valueless subsequent copies is rendered even more spurious. In fact, this organic determination of the individual commodity as a constituent element of a larger mass

17 With the acceleration of technological change in the current phase of capitalist development, individual capitals now tend to plan the moral obsolescence of their own commodities, thus deliberately shortening their useful life by inducing the creation of a new social need that displaces the old one. (Needless to say, individual capitals cannot *fully* control the pace of moral obsolescence. As ever, they are still exposed to unexpected capital devaluation caused by the action of competitors.) These processes therefore delimit more strictly the time horizon for the diachronic determination of the relevant mass of commodities in accordance with these ever-shorter product life-cycles. In the example of software above, the relevant period for the role of the prototype in the formation of the value of the copies is therefore that of its (planned) product life-cycle (or, seen from the viewpoint of the overall circulation of capital, that would be the relevant turnover period). This is further compounded in the case of newer versions of fundamentally similar commodities or of closely related families of products; some of the original R&D labor will enter the formation of value of subsequent generations, or concurrent variations, of the same product. The relevant turnover period (or synchronic scope of action of R&D labor in the determination of the value of the diverse elements of a family of products) will be extended (or broadened) accordingly.

does not even derive from its more concrete mode of existence as a product of capital, discussed earlier. It simply derives from the material specificities of the software prototype as an instrument of production (*i.e.*, as past labor), and the ways in which they make it participate in the formation of the value of the finished article. It is therefore an even simpler determination which, abstractly considered, already pertains to the value of commodities simply constituting the reified representation of the socially necessary labor for their production, regardless of their condition as depositories of valorized value. In reality, we can appreciate now that already at that higher level of abstraction each single article acts as a formally identical embodiment of an aliquot part of the overall socially necessary abstract labor required for the production of a determinate mass of commodities.¹⁸

Concluding Remarks

This paper has offered a critique of some of the central theses of the Cognitive Capitalism approach that underpin the claims about the crisis of the law of value, focusing on certain aspects that have remained unexplored in the critical literature. We have examined the alleged impact of the peculiar nature of cognitive commodities upon the determinations of the value-form. As we have seen, none of these allegedly novel features of contemporary capitalism compromise the law of value and its rule over the organization of social life. The value-form in the unity of all of its qualitative and quantitative determinations is still alive and kicking as the alienated general social form in which human productive subjectivity reproduces and develops in the capitalist mode of production. We have demonstrated this not only by pointing to the flaws in the arguments of Cognitive Capitalism theorists, but also by positively unfolding an alternative explanation of those phenomena that seem to clash with the Marxian law of value, on the basis of this law itself. As should be obvious from our discussion, nothing too mysterious was at stake which could not be elucidated through the unfolding of the specific categories and method of the Marxian critique of political economy as developed in *Capital*.

18 However, as stated above, in this paper we have followed Marx in postponing the *presentation* of this determination until reaching the level of the capital-form.

This raises the question: Why do these authors, who otherwise see themselves as continuing Marx's revolutionary intellectual legacy, too easily declare the whole edifice of the critique of political economy obsolete (with the exception, of course, of the "Fragment on Machines"), and draw inspiration from a series of notions borrowed from the most varied strands of bourgeois thought? Husson quite sharply notes that this approach and its resulting eclecticism express a strategy consisting in attempting to be innovative and modern at any cost (Husson, 2003). All theoretical tools which one way or another lend support to the claims to novelty are embraced and deployed, while attempts to use categories from the past are rejected out of hand and deemed dogmatic or anachronistic. Armed with such an eclectic theoretical arsenal, a spurious novel "totality" is then constructed on the basis of a laundry list of commonplaces and myths about alleged new features of contemporary social reality uncritically taken from mainstream social sciences (cf. the 15 "markers" of Cognitive Capitalism in Moulier-Boutang, 2007). In this context, the Marxian critique of political economy is portrayed as a creature of its time (*i.e.*, industrial capitalism), which is almost by definition incapable of shedding light on the qualitative transformations that the present "cognitive" phase of capitalism entails.

This attitude reflects a more general trend on the left and is far from being abstractly intellectual. As Bonefeld aptly put it in the late 1990s, this intellectual posture is expressive of a specific politics that he appropriately labelled the *politics of novelty*, which "amounts to the Left's abdication of negative critique in favor of new and newer concepts . . . based on the theoretical tradition of positivism" (Bonefeld, 1998). Critical social theory is thus reduced to a variation on the common themes developed by mainstream scholars, albeit with the extrinsic addition of a revolutionary rhetoric aimed at fostering progressive social change. But in order to be able to turn into practical criticism, the scientific critique of the capital-form must go beyond the one-sided empirical descriptions and fetishistic categories of contemporary vulgar economics. Otherwise, and despite its laudable progressive intentions, it cannot but become trapped within the ideological forms taken by contemporary modalities of exploitation; a risk which, as some commentators have perceptively noted, has become the reality of much recent post-workerist theorizing (Bellofiore and Tomba, 2008; Henninger, 2007).

There is no doubt that capitalism has changed and that those transformations have their essence in the mutations of the productive subjectivity of the working class. This should come as no surprise since it is precisely in the revolutionary nature of large-scale industry to “continuously transform the worker and the social combinations of the labor-process” (Marx, 1976a, 617). Moreover, these transformations most certainly involve an expansion of the knowledge-dimension of the productive subjectivity of the collective laborer as a whole (albeit unevenly among its different partial organs), which in turn takes concrete form through the increased cognitive-content of the use-values that act as material bearers of the value-form. In this sense, there is a rational kernel in the post-workerist emphasis on the role of knowledge in the production process as capital develops and as the necessary basis for its revolutionary transcendence. Despite all the flaws in the Cognitive Capitalism approach, these post-workerist scholars have at least the merit of trying to connect the political subjectivity of workers with the transformations of their productive subjectivity, *i.e.*, their capacity consciously to organize the production of the materiality of human life (Iñigo Carrera, 2008). Cognitive capitalism theorists are also right to point to the passages on machines from the *Grundrisse* as a key text where Marx more explicitly (albeit far from systematically) developed the transformation of the intellectual powers of the process of production into attributes of the collective labourer (Starosta, 2011). The problem lies, however, in the idiosyncratic way in which they conceptualize the role of knowledge in contemporary capitalism, in turn based on a problematic reading of those sections of the *Grundrisse*.

More specifically, these scholars unmediatedly (hence speculatively) apply what Marx discussed as the essential content and finished form of the development of workers’ productive subjectivity under the rule of the capital-form — *i.e.*, the movement of “bourgeois society in the long view and as a whole” (Marx, 1973, 712) — onto contemporary concrete forms of realization that still represent its negation. But over the course of capitalist development, that *essential determination* and *general tendency* underlying the revolutionary mode of existence of productive subjectivity unfolds *in the form of its self-negation*: its required *universality* is realized through the reproduction of *ossified particularities* and the expansion of its *intellectual and scientific* productive attributes is realized in the necessary mode of the degradation of others (both

intellectual and manual).¹⁹ Moreover, this two-fold contradictory movement of the productive subjectivity of the collective laborer is manifested (hence experienced) differently in the individuality of each of its diverse organs, which tends to reinforce the political fragmentation of their objective general determination as a *class*.

In other words, the constitution of the capital-transcending form of productive subjectivity is historically produced as the result of a development that keeps the productive attributes of wage-workers miserably bound to being those required by the material forms of the reproduction of relative surplus-value (even when they are expanded as in the case of intellectual laborers performing the most complex productive functions of scientific research).²⁰ But even an impressionistic glance at the current “technical composition of the working class” suffices to reveal that the materiality of its productive subjectivity is far from immediately expressing the fully developed universal individual, for whom life-activity constitutes “the appropriation of his own general productive power, his understanding of nature and his mastery over it by virtue of his presence as a social body” (Marx, 1973, 712, 705). From the latter perspective, which represents the ultimate result of the “system of bourgeois economy” and personifies its revolutionary negation, the contemporary “knowledge-economy” might as well be said to look more like an economy of general ignorance.

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¹⁹ See Starosta, 2011, for a more detailed discussion of these points.

²⁰ More concretely, the alienated nature of this development of intellectual labor is even expressed in its general scientific form, *i.e.*, its method. In its determination as a form of the reproduction of capital, scientific knowledge is bound to represent natural and social forms as self-subsistent entities or immediate affirmations, and their relations as inevitably external ones. For an elaboration of this point, see Iñigo Carrera, 2008; Starosta, 2003.

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