

to re-read the *Grundrisse* as a crucial stage in the development of Marx's critique of political economy.

Dipartimento di Scienze Economiche "Hyman P. Minsky"  
 Università di Bergamo  
 Via dei Caniana 2  
 I-24127 Bergamo, Italy  
 riccardo.bellofiore@unibg.it

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## Machinery, Productive Subjectivity and the Limits to Capitalism in *Capital* and the *Grundrisse*

GUIDO STAROSTA

This paper proposes a reading of Marx's exposition of the forms of the real subsumption of labor to capital — in particular, the system of machinery of large-scale industry — as constituting the dialectical presentation of the determinations of revolutionary subjectivity. The proposition that real subsumption constitutes the ground of revolutionary subjectivity is the concretization of that insight about the most general determination of the process of "natural history" constituting the development of humanity that Marx expounded in the *Paris Manuscripts* in 1844. According to that early text, the content of the history of the human species consists in the development of

the specific material powers of the human being as a working subject, *i.e.*, of *human productive subjectivity*. It is in the historical transformation of its material and social forms, Marx concluded, that the key to the abolition of capital — hence, to revolutionary subjectivity — should reside.

It was fundamentally in *Capital* (but, crucially, also in the *Grundrisse*), mainly through the exposition of the determinations of the different forms of production of relative surplus-value (hence of the real subsumption of labor to capital), where Marx managed to concretize those early insights. He did this by showing precisely what the capital-form does to the materiality of human productive subjectivity as it takes possession of, and transforms, the labor process. In other words, Marx saw the need to discover the material determinations of communist society in their present mode of existence as an *alienated potentiality* engendered by the autonomized movement of the capital-form, to be realized — turned into *actuality* — precisely and necessarily through the conscious revolutionary action of the self-abolishing proletariat (Marx, 1993, 159).

Those determinations are only mentioned in passing in several of Marx's texts. They all characterize the simplest defining character of communism as the fully self-conscious organization of social labor as a collective potency by the thereby freely associated producers. It is in the *Grundrisse*, in the context of the critique of Adam Smith's conception of labor as sacrifice, that Marx offers the clearest and most concise characterization of the general attributes of what he calls "really free working" (Marx, 1993, 611–12). The interesting and "intriguing" aspect of those passages is that Marx not only claims that in order to be really free labor must become a consciously organised, directly social activity, but also that the consciousness regulating that emancipated productive activity must be of a *general* and *scientific* kind. As we will see later, this latter attribute, scarcely mentioned by Marx on other occasions,<sup>1</sup> will prove of paramount importance for our comprehension of the concrete determinations of revolutionary subjectivity.

At this stage, I would just like to reformulate the question of the relation between capital and productive subjectivity posed above in the light of that passage from the *Grundrisse*. Does the development of capital transform human productive subjectivity in such a way as to engender the necessity of producing the latter with the two general attributes mentioned by Marx? Furthermore, is the working class the material subject bearing them? In this paper I attempt to answer these questions through a detailed reading of Marx's exposition of the contradictory movement of the most developed form of real subsumption (the system of machinery) in *Capital* and the *Grundrisse*.

1 See, however, Marx's remarks in the *Paris Manuscripts* on the need for the constitution of a "natural science of man" or "human natural science" as the basis for emancipated human practice (Marx, 1992, 355).

*Large-Scale Industry and Workers' Productive Subjectivity in Capital*

Marx initially presents the essence of the transformation of the human labor process characterizing large-scale industry by developing the specific materiality of machinery, in particular *vis-à-vis* the labor process in manufacture. The two-fold material specificity of the machine springs from the objectification of the knowledge and manual skills and strength of the manufacturing laborer (Marx, 1976a, 490–1). On the one hand, capital strives to substitute the movement of the forces of nature for that of the human hand as the immediate agent in the transformation of the object of labor into a new use-value. On the other hand, it attempts to displace the immediate subjective experience of the worker as the basis for the conscious regulation of the labor process, *i.e.*, as the basis for knowledge of the determinations of the latter. This implies, in the first place, the need to turn the production of knowledge into an activity which, while clearly remaining an inner moment of the organization of social labor, nonetheless acquires a differentiated existence from the immediacy of the direct production process. Coupled with the need to objectify it as a productive power directly borne by the “dead labor” represented in the machine, that knowledge must necessarily take the general form of *science* (Marx, 1976a, 508).

It is in section 4, through the presentation of the functioning of “the factory as a whole,” that Marx starts to unfold the specific *qualitative* determinations of the *productive subjectivity* of large-scale industry. The discussion of a passage from Ure serves Marx to identify the most general determination of the factory as the sphere of capitalist society where the conscious regulation of an immediately social production process takes place. It is a conscious regulation, however, that is determined as a concrete form of the *inverted* general social regulation as an attribute of the materialized social relation in its process of self-expansion. In the factory — and this is the issue that Ure’s definition overlooks — this inverted social existence reaches a further stage in its development by acquiring a “technical and palpable reality” (Marx, 1976a, 548).

Thus, the scientific conscious regulation of social labor characterizing large-scale industry is not an attribute borne by those workers performing direct labor in the immediate production process. For them, those powers exist already objectified in the system of machinery, to whose automatic movement they have to subordinate the exercise of their productive consciousness and will, to the point of becoming “its living appendages” (Marx, 1976a, 548). Large-scale industry consequently entails an enormous scientific development of the “intellectual faculties of the production process” only by exacerbating their separation from direct laborers. In its mode of existence

as a system of machinery, the product of labor comes to dominate the worker in the direct process of production not only formally but even materially as well. Capital thus appears to those workers as the *concrete material subject* of the production process itself.

With these elements, we can now turn to synthesise the specific determination of the productive subjectivity of the worker in large-scale industry. In (*tendentially*) doing away with the need for all specialized skill and knowledge of the workers, the production of relative surplus-value through the system of machinery gives the development of their productive subjectivity the concrete form of an *absolute degradation*. In this brutal way, and in opposition to the *particularism* of the subjectivity of the wage-laborer in manufacture, large-scale industry begets, as its most genuine product, a *universal worker*, *i.e.*, a productive subject capable of taking part in any form of the labor process (Marx, 1976a, 545).

With this tendency to the production of workers who are capable of working with any machine, the simple material or technical necessity for the life-long attachment of individuals to a single productive function disappears (Marx, 1976a, 546). However, insofar as machines become specialized into certain particular productive functions, the persistence of the division of labor in the factory is still technically *possible*. And indeed, the exploitative relation between capitalists and workers, which mediates the development of the material productive forces of social labor as an alienated attribute of its product, leads to the reproduction of the “old division of labor” in an even more hideous fashion (Marx, 1976a, 547). Large-scale industry’s tendency to produce an increasingly universal worker is thereby realized in the concrete form of its negation, that is, by multiplying the spaces for the exploitation of living labor on the basis of an exacerbation of “ossified particularities.” Thus, the individual capitalist could not care less about the disappearance of the technical necessity for a particularistic development of the worker’s productive subjectivity. Under the pressure of competition, his/her only individual motive is the production of an extra surplus-value. If he/she can obtain it by attaching the worker to “the lifelong speciality of serving the same machine” (Marx, 1976a, 547), so he/she will. In effect, the reproduction of the division of labor under the new technical conditions implies that a lower value of labor-power can be paid — since “the expenses necessary for his [the workers’] reproduction” are “considerably lessened.” In addition, it implies that a greater docility on the part of the exploitable human material is induced — since “his helpless dependence upon the factory as a whole, and therefore upon the capitalist, is rendered complete” (Marx, 1976a, 547).

The movement of “the contradiction between the division of labor under manufacture and the essential character of large-scale industry” (Marx, 1976a,

615) acquires a first expression in the establishment of compulsory elementary education for working children. As Marx points out, the unchecked exploitation of child labor by individual capitals led not only to the “physical deterioration of children and young persons” (Marx, 1976a, 520), but also to an artificially produced intellectual degeneration, which transformed “immature human beings into mere machines for the production of relative surplus-value” (Marx, 1976a, 523). Since “there is a very clear distinction between this and the state of natural ignorance in which the mind lies fallow without losing its capacity for development, its natural fertility” (Marx, 1976a, 523), these excesses of the capitalist exploitation of child labor-power eventually reacted back on the very capacity of valorization of total social capital by jeopardizing the existence of the future generation of adult workers in the “material and moral conditions” needed by capital accumulation. This is illustrated by Marx through a discussion of the case of the English letter-press printing trade, which, before the introduction of the printing machine, was organized around a system of apprenticeship in which workers “went through a course of teaching till they were finished printers” and according to which “to be able to read and write was for every one of them a requirement of their trade” (Marx, 1976a, 615). With the introduction of printing machines, however, capitalists were allowed to hire children from 11 to 17 years of age, who “in a great proportion cannot read” and “are, as a rule, utter savages and very extraordinary creatures” (Marx, 1976a, 615). These young workers were day after day attached to the simplest of tasks for very long hours until being “discharged from the printing establishments” for having become “too old for such children’s work” (Marx, 1976a, 615). Those then 17-year-old workers were left in such intellectual and physical degradation that were unfit to provide capital, *even in the same factory*, with the miserably restricted productive attributes that it required from its immediate source of surplus-value, *i.e.*, human labor-power.

The education clauses of the factory legislation allow Marx not only to dispel any doubt about social capital’s “universal vocation” in its transformation of human productive subjectivity. They also serve to highlight, for the first time in his whole dialectical exposition, that it is *only* the development of *that* specific form of human productive subjectivity that expresses capital’s historic movement in the production of the material powers for its own supersession as the general social relation regulating human life (Marx, 1976a, 614).

Notice, however, that Marx makes clear that the education clauses represent the *germ* — and just that — of the “education of the future.” To put it differently, Marx’s discussion aims at showing *both* that the social forms of the future are effectively carried as a potentiality by the productive subjectivity of large-scale industry under consideration, *and* that, with the determinations

unfolded thus far, that potentiality is not yet immediate. On the contrary, in their “paltriness,” the education clauses reveal that these determinations are far from being a “method of producing fully developed human beings.” Rather, they are forms of positing individuals whose productive subjectivity is still trapped within the miserable forms imposed by the reproduction of the conditions for capital’s valorization. Other material transformations are still needed to mediate the development of those germinal elements into their plenitude.

Social capital’s need to produce universal workers is not exhausted by the obstacles to its valorization posed by the division of labor within the workshop. As Marx remarks, “what is true of the division of labor within the workshop under the system of manufacture is also true of the division of labor within society” (Marx, 1976a, 615). In effect, inasmuch as the technical basis of large-scale industry is essentially revolutionary, it entails the permanent transformation of the material conditions of social labor and, therefore, of the forms of exertion of the productive subjectivity of individual workers and of their articulation as a directly collective productive body (Marx, 1976a, 617). This continuous technical change thereby requires individuals who can work in the ever-renewed material forms of the production of relative surplus-value. “Thus,” Marx concludes, “large-scale industry, by its very nature, necessitates variation of labor, fluidity of functions, and mobility of the worker in all directions” (Marx, 1976a, 617). However, he also points out again how the general organization of social production through the valorization of independent fragments of social capital negates the immediate realization of this tendency for an all-sided development of individuals. The private fragmentation of social labor, and its reified social mediation through the capital-form, permits the reproduction of “the old division of labor with its ossified particularities” (Marx, 1976a, 617). It gives the imposition of variation of labor the form of “an overpowering natural law, and with the blindly destructive action of a natural law that meets with obstacles everywhere” (Marx, 1976a, 618). In this contradictory form, the realization of large-scale industry’s tendency to produce universal workers nonetheless marches forward, also revealing that it is in the full development of this determination that this alienated social form finds its own *absolute limit* (Marx, 1976a, 617). In other words, that it is in the fully-developed universal character of human productive subjectivity that the *material basis* for the new society rests (Marx, 1976a, 618).

With this discussion Marx unfolds the way in which the general necessities of the reproduction of social capital (in this specific case, workers bearing a universal productive subjectivity) enter into contradiction with its concrete realization through the private actions of individual capitals (which strive for the perpetuation and exacerbation of the particularistic development

of productive subjectivity). Moreover, we see how this contradiction moves by determining the working class as the personification of the mediated necessities of the valorization of capital, the latter providing the material and social foundation for proletarian political power. In effect, the development of large-scale industry makes the possession of a universal subjectivity a matter of survival for the members of the working class, since only in that way can they be in a position to sell their labor-power to capital (thereby turning the alienated necessities of social capital into an immediate need for their social and material reproduction). Thus, workers have to “put their heads together” and, through their struggle as a class, force the capitalist state to “proclaim that elementary education is a compulsory pre-condition for the employment of children” (Marx, 1976a, 613). But what is elementary education if not a — certainly very basic — step in the formation of future *universal workers*? That is, in the development of productive attributes that equip the laborer to work not in this or that particular aspect of the immediately social labor-process of the collective laborer of large-scale industry, but in whatever task that capital requires from him/her?

Social capital’s need for universal workers thereby provides another material basis for the political power of the working class in its confrontation with the capitalist class over the conditions of its social reproduction. In this first expression of that relation between large-scale industry and workers’ power represented by the Factory Acts, the class struggle does not appear to transcend its most general determination as the form of the buying/selling of the commodity labor-power at its value, which Marx unfolds in chapter 10 on “The Working Day” (Starosta, 2005; Iñigo Carrera, 2003, 81–82; Müller and Neusüss, 1975). Yet, Marx advances the proposition that, when concretely developed, that tendency towards universal productive subjectivity will eventually provide the class struggle with expanded transformative powers, namely, those necessary for the establishment of the workers’ “political supremacy” as a class (Marx, 1976a, 619).

What are the more concrete determinations behind this inevitability of the proletarian conquest of political power? Unfortunately, Marx provides no answer in these pages. In fact, we could argue that no answer could have been provided at all. The unfolding of the necessity of “proletarian dictatorship” as a concrete social form involves still more mediations and, therefore, the former is not carried by the social form we confront at this point of the exposition in the form of an *immediate potentiality* to be realized through the political action of the workers as a class.<sup>2</sup> Thus, at this stage of the dialectical

2 This would require exposition of the tendency for the concentration and centralization of capital as the alienated expressions of the socialization of labor in the capitalist mode of production and whose absolute limit is reached when the total capital of society immediately exists as a single capital (Marx, 1975, 780).

presentation, both this latter remark and the one discussed above regarding the totally developed individual as the basis for the abolition of capital, are unmediated observations, external to the concrete determinations of the productive subjectivity of large-scale industry.

This, in itself, should not be problematic. From the perspective of the dialectical investigation as such, this juncture of our critical reconstruction of Marx's search for the determinations of revolutionary subjectivity is not a dead end. It means only that our journey from the abstract to the concrete needs to proceed forward, as our endpoint — *i.e.*, revolutionary subjectivity — still lies ahead. However, the question is very different when approached from the standpoint of elements for such an investigation that can be found already objectified in Marx's *Capital*. In that respect, the problem faced by the contemporary reader of *Capital* attempting to discover those determinations is, to put it briefly, that *they are not there*.

We have seen how Marx, when faced with the tendential universality of the worker of large-scale industry and the growing conscious regulation of social labor it entails, *extrinsically* reflects upon the specific material form of productive subjectivity necessary to “build society anew” on a really free basis. On the other hand, we have highlighted the methodological pertinence of such a reflection, given that the latter itself has as one of its determinations that of being a bearer of universal productive attributes, *i.e.*, capable of “material production of a general character.” However, the attribute of universality did not exhaust the determinations of the form of *productive* subjectivity with the immediate potentiality for “really free working.” In the first place, the latter also entailed a process of material production whose general social character was immediately posited. This condition is present — at least tendentially — in the productive subjectivity of large-scale industry as developed in *Capital* too. But, in addition, Marx's passage from the *Grundrisse* mentions that the universality of “revolutionary” productive subjectivity must be the expression of a *scientific* consciousness, capable of organizing work as “an activity regulating all the forces of nature.” And here lies the crux of the matter.

Although the productive subjectivity of the worker in large-scale industry as presented in *Capital* tends to become universal, this universality is not the product of the *scientific expansion* of his/her capacity consciously to regulate the production process, but of the increasing (eventually absolute) *deprivation* of all knowledge of the social and material determinations of the labor process of which he/she is part. For workers engaged in the direct process of production, the separation of intellectual and manual labor reaches a maximum. This kind of laborer can certainly work in any automated labor process that capital puts before him/her, but not as the “dominant subject” with “the mechanical automaton as the object.” Rather, for those workers,



“the automaton itself is the subject” (Marx, 1976a, 544–5). The scientific productive powers needed to regulate the forces of nature, and which are presupposed by their objectified existence in a system of machinery, are not an attribute that capital puts into the hands (or, rather, in the heads) of direct laborers. In brief, in the figure of this wage-laborer bearing what, following Iñigo Carrera (2003), I term an absolutely *degraded productive subjectivity*, scientific consciousness and universality do not go together but are in opposition to one another. In other words, it is not this degraded productive subjectivity that, simply as such, carries in its immediacy the historical revolutionary powers that Marx himself considered necessary to make capital “blow sky high.” Moreover, neither has Marx’s exposition demonstrated that the very movement of the present-day alienated general social relation — capital accumulation — leads to the social necessity to transform, in the political form of a revolution, the productive subjectivity of those laborers in the direction of their re-appropriation of the powers of scientific knowledge developed in this alienated form.

Despite this insufficiency as an account of the material genesis of the revolutionary subject, it is here that Marx’s exposition in *Capital* of the determinations of human productive subjectivity as an alienated attribute of the product of labor comes to a halt.<sup>3</sup> In the rest of Volume I (and the two remaining volumes), Marx no longer advances, in any systematic manner, in the unfolding of the determinations of the revolutionary subject. From the point of the presentation reached, and after moving to the exteriority of the inner determinations of the production of surplus-value and to its reproduction, accumulation and the general law that presides over its movement, he simply makes a gigantic leap into the conclusion contained in the chapter on the “Historical Tendency of Capitalist Accumulation,” his well-known account of the determinations leading to the abolition of the capitalist mode of production (Marx, 1976a, 929).

If we leave aside the question of the misleading conflation between two *qualitatively different* (and, therefore, *analytically separable*) “moments” of the revolutionary action of the working class contained in the culminating passages of that chapter — namely, the expropriation of the bourgeoisie and the abolition of capital — the question remains as to whether the determinations developed by Marx in the previous chapters suffice to justify the transition to what arguably is an excessively simplistic and all too gen-

3 This statement needs qualification insofar as the creation of a surplus population relative to the needs of the accumulation process also constitutes a transformation of productive subjectivity produced by the development of large-scale industry. More concretely, it represents the most extreme case of material mutilation of the productive attributes of the working class, *i.e.*, not simply their degradation but their outright non-reproduction.

eral account of the way “the capitalist integument is burst asunder.”<sup>4</sup> Seen from the point of view of the determinations of productive subjectivity, the transition to revolutionary political action contained in the chapter on the “Historical Tendency” is definitely unmediated. How are those workers whose productive subjectivity has been emptied of almost all content to organize the allocation of the total labor-power of society in the form of a *self-conscious* collective potency? The growing “misery, degradation, oppression and so on” certainly confront those laborers with particularly extreme *immediate* manifestations of the alienated mode of existence of their social being. Therefore, they could lead them to reinforce their collective resistance to capitalist exploitation by strengthening their relations of solidarity in the struggle over the value of labor-power. In themselves, however, those expressions of capitalist alienation have no way of transforming the class struggle from a form of the reproduction of that alienation into the form of its fully self-conscious transcendence. The emergence of the social necessity underlying the historical constitution of the revolutionary subject still involves the mediation of more transformations in the materiality of the productive subjectivity of workers.

Thus, a gap remains between the “dialectic of human labor” unfolded in the relevant chapters of *Capital* and the revolutionary conclusions at the end of Volume I. In the following section, I shall examine Marx’s presentation of the determinations of the system of machinery in the *Grundrisse*. Although the complete *systematic* unfolding of the missing determinations is not there either, the main *elements* for such a further investigation of revolutionary subjectivity can be extracted from that text.

### *The Grundrisse and the System of Machinery: The Missing Link in the Determinations of Revolutionary Subjectivity*

As an entry point into the discussion of Marx’s account of the system of machinery in the *Grundrisse*, we can return to the reconstruction of the determinations of large-scale industry as presented in *Capital*. More concretely, we can go back to the relation between science and the production process. Although this form of production of relative surplus-value entailed the general application of science as a productive force, the latter was not an attribute materially borne by those laborers engaged in direct labor in the immediate process of production. For them, scientific knowledge took

4 Whatever the ambiguities of Marx’s formulation in the passage from the chapter on the “Historical Tendency of Capital Accumulation” cited above, a cursory reading of his so-called “political writings” makes evident that he was very clear about the “unity-in-difference” between the expropriation of the bourgeoisie and the abolition of capital.

the form of an alien power already objectified in the machine. Marx notes this in the *Grundrisse* as well (Marx, 1993, 693).

Yet, as Marx puts it in the *Results of the Immediate Production Process*, those scientific powers ultimately are themselves the products of labor (Marx, 1976b, 1055). Thus, although the *formal* subject of those powers — as happens with all the powers springing from the direct organization of human cooperation — remains capital, the question immediately arises as to who is the *material* subject whose (alienated) *intellectual* labor develops the scientific capacities of the human species and organizes their practical application in the immediate process of production. Having discarded manual laborers as such a productive subject, it would seem that the only alternative must be to turn our attention to the only remaining character present in the direct production process, namely, the capitalist. Is it he/she who personifies, through the development of his/her productive consciousness and will, capital's need for the capacity to control scientifically the movement of natural forces? The answer is given by Marx in a footnote to the chapter on "Machinery and Large-Scale Industry" in *Capital*: "Alien" science is incorporated by capital, just as "alien" labor is (Marx, 1976a, 508).

Thus, it is not the capitalist who embodies the intellectual powers to develop the scientific knowledge presupposed by its objectified existence in a system of machinery. The science incorporated in the immediate production process is the result of the appropriation of the product of the intellectual labor of an "other." This "other," whose productive activity the direct production process of large-scale industry carries as a necessary mediation, is not explicitly present in Marx's exposition in *Capital*.<sup>5</sup> By contrast, we shall see that some passages in the *Grundrisse* put at the forefront the underlying material unity of the total activity of living labor, where the development of science and its technological applications act as essential constitutive moments (Marx, 1993, 699).

The determinations presupposed by the production of relative surplus-value involve the division of commodity-owners into capitalist and wage-laborer. Having discarded the former as the material subject of scientific labor, it is self-evident that only those determined as doubly-free individuals can personify the development of this moment of the production process of large-scale industry.<sup>6</sup> Thus, although not explicitly addressed by Marx, the benefit of historical hindsight makes it easy for us to recognize how social capital deals with its constant need for the development of the productive powers of science, by engendering a special partial organ of the collective la-

5 Or only mentioned in passing; see Marx, 1976a, 549.

6 In this analysis of the further determinations of the production process of large-scale industry I follow the approach developed in Iñigo Carrera (2003, 1–37).

borer whose function is to advance in the conscious control of the movement of natural forces and its objectification in the form of ever more complex automatic systems of machinery. While the system of machinery entails the progressive deskilling of those workers performing what remains of direct labor — to the point of emptying their labor of any content other than the mechanistic repetition of extremely simple tasks — it also entails the tendential *expansion* of the productive subjectivity of the members of the intellectual organ of the collective laborer. Capital requires from these workers ever more *complex* forms of labor. As much as those discussed in *Capital*, these are also “immediate effects of machine production on the worker.” Needless to say, inasmuch as this expanded productive subjectivity is nothing more than a concrete form of the production of relative surplus-value, the exercise of the newly developed intellectual productive powers is inverted into a mode of existence of capital in its movement of self-valorization as well.

In this alienated form, capital thereby produces a material transformation whose fundamental significance exceeds the production of wage-laborers simply bearing different productive attributes. What is at stake here is, first and foremost, a radical substantial transformation of the very nature of human labor (Iñigo Carrera, 2003, 11). The latter progressively ceases to consist in the direct application of labor-power onto the object of labor with the purpose of changing its form. It now increasingly becomes an activity aimed at the development of the conscious control of the movement of natural forces in order to make *them* automatically act upon the object of labor and, in this way, effect its change of form. According to Marx’s exposition of the system of machinery in the *Grundrisse*, *it is in the contradictory historical unfolding of this specific material transformation of human productive subjectivity that the key to the absolute limit to capital resides.*

To the degree that labor time — the mere quantity of labor — is posited by capital as the sole determinant element, to that degree does direct labor and its quantity disappear as the determinant principle of production — of the creation of use values — and is reduced both quantitatively, to a smaller proportion, and qualitatively, as an, of course, indispensable but subordinate moment, compared to general scientific labor, technological application of natural sciences, on one side, and to the general productive force arising from social combination (*Gliederung*) in total production on the other side — a combination that appears as a natural fruit of social labor (although it is a historic product). *Capital thus works towards its own dissolution as the form dominating production.* (Marx, 1993, 700, emphasis added.)

The fundamental point to grasp is the specifically capitalist form in which the antithetical movement of those two moments of living labor asserts itself with the development of the system of machinery. The revolutionary aspect of this historically specific transformation of living labor in capitalist

society is that both the scale and complexity of the production process and, in particular, the increasingly scientific character of its organization, make the subjectivity of the capitalist (the non-laborer) impotent to personify the now directly social labor under the rule of his/her capital. This means, in other words, that the development of the powers of intellectual labor and their exercise becomes an attribute of the “laboring classes.”

The scientifically expanded productive subjectivity of intellectual labor is, by its own nature, increasingly general or universal. The exertion of this form of human labor-power aims at the expansion of the conscious control over the *totality* of the forces of nature. Moreover, this subordination of the latter to the powers of living labor involves the comprehension of their *general* determination in order thereby to develop their *particular* technological applications in ever-evolving systems of machinery. Thus, as Marx puts it in *Capital* III, in order to highlight its specificity *vis-à-vis* cooperative labor, scientific labor is, by definition, universal labor (Marx, 1991, 199).

With the constitution and permanent revolutionizing of this organ of the collective laborer, capital thereby engenders *another* tendency for the production of workers bearing a universal productive subjectivity. However, this universality is no longer the *empty* universality deriving from the absolute *lack* of individual productive capacities to which direct laborers are condemned. When developed into its plenitude, it becomes the rich, concrete universality of organs of a collective subject who become increasingly able consciously to rule their life-process by virtue of their capacity scientifically to organize the production process of any automatic system of machinery and, therefore, any form of social cooperation on the basis of large-scale industry. As this productive subjectivity expands, the wage-workers’ individuality no longer vanishes “as an infinitesimal quantity in the face of the science, the gigantic natural forces, and the mass of social labor embodied in the system of machinery” (Marx, 1976a, 549). For the latter *are* the direct products of the objectification of their productive subjectivity: “They are *organs of the human brain, created by the human hand*; the power of knowledge, objectified” (Marx, 1993, 706).

In *Capital*, Marx focused on the “negative side” of the effects of production of relative surplus-value through the system of machinery upon the material forms of the productive subjectivity of the working class. The historical emergence of the social necessity for the constitution of a “fully-developed social individual” thus appeared as an abstract possibility, whose connection to capital’s development of machine-based production seemed to be completely external. Conversely, in the *Grundrisse*, Marx posits capital’s relentless tendency to “call to life all the powers of science and of nature, as of social combination and of social intercourse” (Marx, 1993, 706) as necessarily engendering the historical becoming of that concrete universal productive

subjectivity itself; one that, as Marx puts it, understands and masters nature by virtue of its presence as a social body (Marx, 1993, 705).

Moreover, he presents this specific material form of productive subjectivity as the one whose further expansion eventually clashes with its alienated capitalist social existence and, therefore, as the one that carries as an immediate potentiality the necessity for the “creation of the new society.” In effect, capital tendentially abolishes the qualitative and quantitative weight of manual labor in the process of reproduction of social life, thereby converting the essential moment of living labor into an intellectual process (Marx, 1993, 700). In this way, capital’s transformation of the labor-process eventually reaches a point at which the separation between intellectual labor and what is now a quantitatively and qualitatively insignificant amount of manual labor cannot materially obtain as a form of organizing the life-process of humanity. The development of the material productive forces of society can only assert itself through the embodiment of the intellectual powers of social production in the individual subjectivity of every partial organ of the now directly social productive body. Moreover, this incorporation of the powers of the “general intellect” into every individual worker must now have the form of objective social knowledge (*i.e.*, science), instead of being the product of the immediate subjective productive experience of the laborer (as was the case of independent handicraft production or capitalist manufacture).<sup>7</sup> As we will see below, it is the consciously organized political action of the *whole* working class (whatever its productive subjectivity) that is the necessary form in which this latter material transformation is realized.

Thus, on the two-fold basis of the expansion of the scientific productive powers of the “social intellect” and of the determination of human labor as directly social, capital moves directly towards reaching its absolute historical limit as a social form (Marx, 1993, 709). This limit is not reached when capital accumulation *ceases* to develop the material productive forces of society as, following Trotsky (2002, 1–2), orthodox Marxists would have it. On the contrary, capital clashes with its limit when the very same alienated socialization and scientific universalization of the powers of human labor through the production of relative surplus-value begets, *as its own immanent necessity*, the development of the productive forces of society in a particular material form: the fully conscious organization of social labor as the *general* social relation regulating the reproduction of human life and, therefore, as an attribute borne by every singular productive subjectivity comprising the collective laborer. Under those circumstances, the further leap forward in

7 Crucially, this also requires the transformation of the *form* of scientific knowledge, *i.e.*, of its *method*. For an elaboration of this point, see Starosta (2003) and Iñigo Carrera (2011, forthcoming).

the material productive forces of society — dictated by the most immediate necessity of capital itself, the production of relative surplus-value — comes into conflict with capitalist relations of production. Translated into our mode of expression, this classical Marxian insight means that the *alienated* social necessity arises for the human being to be produced as a productive subject that is fully conscious of the social determinations of his/her individual powers and activity. Thus, he/she no longer sees society as an alien and hostile potency that dominates him/her. Instead, he/she consciously experiences the materiality of social life (*i.e.*, productive cooperation) as the necessary condition for the development of the plenitude of his/her individuality, and therefore consciously recognizes the social necessity of the expenditure of his/her labor power in organic association with the other producers (Marx, 1993, 832). However, this form of human subjectivity necessarily collides with a social form (capital) which produces human beings as *private and independent individuals* who consequently see their general social interdependence and its historical development as an alien and hostile power borne by the product of social labor. The determination of the material forms of the labor process as bearers of objectified social relations can no longer mediate the reproduction of human life. *Capital accumulation must therefore come to an end and give way to the free association of individuals.*

Finally, we can now appreciate the significance of the “Fragment on Machines” from the *Grundrisse*. Although clearly in an unsystematic fashion, that earlier version of the critique of political economy contains the elements for the systematic unfolding of the plenitude of the determinations that constitute the immanent *content* of capital-transcending transformative practice, which *Capital* only partially achieves. However, it is actually the latter text that unfolds the necessity of its *form*, *i.e.*, the conscious political action of the whole working class. As we have seen, through the discussion of the Factory Acts Marx unfolds the determination of the political action of the working class as the necessary mediation, in the form of consciously organized collective action, for the imposition of the *general* conscious regulation of social labor in the capitalist mode of production; that is, as a concrete form of the essentially *unconscious* — hence inverted — organization of social life through the capital-form. But furthermore, we saw above that the struggle of wage-laborers as a class was also the necessary form in which social capital’s need for workers with an increasingly universal productive subjectivity, resulting from the movement of *real* subsumption in the form of large-scale industry, asserted itself. True, in Marx’s exposition in chapter 15 of *Capital* the class struggle does not transcend its determination as a mediating moment of social capital’s reproduction. This is because he does not unfold its immanent material content — the socialization and universal development of human productive subjectivity — up to its absolute limit.

But this is precisely what the *Grundrisse* does; that is, it unfolds not a *different* content, but rather a more complex shape of that content itself. *A fortiori*, its concrete mode of realization remains the same: the struggle of wage-laborers as a class. This struggle, however, is no longer determined as a form of capital's reproduction. As an expression of the plenitude of its content, the political action of wage-laborers now becomes determined as the mode of existence of capital-transcending human practice. Hence the general determination of the communist revolution: to be the political form taken by the historical production of the subjectivity of the "rich individuality which is as all-sided in its production as in its consumption, and whose labor also therefore appears no longer as labor, but as the full development of activity itself" (Marx, 1993, 325).

### *Conclusion*

This paper has argued that, in their unity, the *Grundrisse* and *Capital* provide the elements for the scientific exposition of the determinations of capital leading to the social constitution of the revolutionary working class. As we have seen, Marx's treatment of large-scale industry in *Capital* differs from the exposition he had initially formulated in his research manuscripts known as *Grundrisse*. This has led many scholars to see the two perspectives as somehow incompatible, perhaps even reflecting a change of mind on the part of Marx, from an early optimistic view of the emancipatory potentialities of the forms of real subsumption to a more pessimistic view of the latter as yet another expression of the despotic rule of dead over living labor. I have offered a different reading of this aspect of Marx's intellectual development. While it is certainly true that Marx's exposition changed from the *Grundrisse* to *Capital*, this difference does not express two inconsistent views of the determinations of the productive subjectivity of large-scale industry. Rather, each text actually centers the exposition on the development of *one* of the *two essential contradictions* that characterize the most complex form of real subsumption and whose development constitutes the immanent ground of revolutionary subjectivity. In *Capital*, the exposition focuses on the "absolute contradiction" (Marx, 1976a, 617) between *particularity* and *universality* of the development of productive subjectivity, leading Marx to emphasize the material *degradation* of the individuality of the wage-laborer in large-scale industry. In contrast, in the *Grundrisse* Marx focuses his attention on the development of the contradiction between the *intellectual* and *manual* moments of the production process under the rule of capital, leading him to unfold the tendency for the scientific *expansion* of the subjectivity of the doubly-free laborer. Both contradictions are, however, two sides of the same coin: the alienated form in which human beings produce the materiality of their



species-being at a certain stage of development and on the basis of specific historical presuppositions (Marx, 1976a, 927).

As we have seen, this development not only involves the *formal* inversion between subject and product of social labor but also the *material* mutilation of the productive individuality of wage-laborers. However, Marx was also clear about the *relative historical necessity* of those forms, if only as a *vanishing moment* in the world-historical process of development of the materiality of “really free working” and, hence, in the production of the necessity of their own supersession (Marx, 1993, 162).

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