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Some Thoughts on Science, Dialectics and Capital—After Luis Arboledas-Lérida

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For Marx, capital is the ‘general illumination which bathes all the other colours and modifies their particularity’ (Marx 1973, 107; Bonefeld 1987, 35). Luis Arboledas-Lerida’s “The Gap Between Science and Society and the Intrinsically Capitalistic Character of Science Communication” (2022a) indicates how contemporary Science Communication (SC) is bathed in the light of capital; how it is a distinctly capitalist social form. It is ‘one of the conditions of the reproduction of contemporary capitalist societies’ (Arboledas-Lerida 2022a, 2).

Drawing upon Ross-Hellauer et al (2020), Arboledas-Lerida characterises SC as: ‘the array of methods and tools intended to convey scientific propositions beyond the narrow circle of the academy’ and, from the perspective of capital, it is ‘one of its inner moments’, and not an optional extra for value creation and capital accumulation (2). Therefore, within capitalist society, there is ‘no case for speaking of liberating SC from the yoke of capital’ (2). SC is socially glued to capital’s social relations, and is indeed a *form* of them. SC and capital’s mode of production are ‘internally related’, argues Arboledas-Lerida. Hence, SC incorporates a vicious antagonism: the endemic struggle between labour and capital. Yet although this is the case, SC functions to fill a ‘gap’ created by capital: a gap between science and society, notes Arboledas-Lerida. He provides convincing arguments regarding the nature of science communication in capitalism, why the ‘gap’ between science and society exists, why and how SC functions (and fails) as an attempt to fill this gap, and demonstrates how SC ‘is both a premise and a result of capitalist production’ and workers’ ‘*alienated productive consciousness* is the veritable material basis of SC’ (Arboledas-Lerida 2022a, 10, original emphases).

Along the way, Arboledas-Lerida takes in dialectical inquiry, the nature of human communication, the Upskilling / Deskilling Debate, the split between conception and execution in capitalist labor, and science as a form of consciousness, amongst other topics. In sum, this is an impressive text and deserves a finer fate than being dragged through the mills of Weberianism, anarchist theory, Neoliberalism, and pseudo-Feudalism as in Cruickshank’s (2022) commentary on another of Arboledas-Lerida’s contributions to *Social Epistemology* (i.e. Arboledas-Lerida 2022b). Thus, Arboledas-Lerida (2022a) is approached here through where it is theoretically situated: Marxist theory, as opposed to bourgeois social theory or anarchist thought. Nevertheless, in terms of the development of Marxist theory a number of critical observations could be made regarding Arboledas-Lerida (2022a).

Science—Marx and the Unity of the Sciences

First, there is opaqueness regarding what is meant by “science”. Therefore, the characterisation of what is actually being communicated through SC is left rather vague. Science is given as a ‘particular form of consciousness’; that is, ‘consciousness of nature’ (after Azeri 2016) that facilitates ‘human mastery over nature’ through the application of scientific reasoning (Arboledas-Lerida 2002a, 3-4). While this view may well be tautological, it also appears to be transhistorical; that is, not woven around a specifically *capitalist* science, even though later on the author invokes the ‘*capitalisation* of science’ (Arboledas-Lerida 2002a, 5, original emphasis).

Second, rather than starting out from “science” as such, Arboledas-Lérida’s analysis, as a follower of Marx, might have gained from calling on Marx’s perspective on the *unity* of sciences. As things stand in the article, readers might be inclined to assume that Arboledas-Lérida is referring to the physical sciences—biology, chemistry and physics—only. For Marx, there is only a ‘single science, the science of history’ that has two aspects: ‘the history of nature and the history of men’ and these two aspects are ‘inseparable’ and ‘dependent on each other’ (Marx and Engels 1976, 34).

More decisively, in the *Economic and Philosophic Manuscripts of 1844*, Marx argues that ‘Natural science will in time incorporate into itself the science of man, just as the science of man will incorporate into itself natural science: there will be *one* science’ (Marx 1977, 105, original emphasis). This ‘is much more than a call for interdisciplinarity, but a powerful critique of the subject discipline obsessed capitalist university’ and provides ‘the basis for a new revolutionary science’ (Neary 2020, 120). Thomas Nail includes the humanities within this conception of the unity of sciences, as the ‘disconnect between the humanities and natural sciences is part of the same disconnect between humans and nature’, and as we have ‘divided up our knowledge as we have divided up our world ... the consequences have been disastrous’ (Nail 2020a, 214). Arboledas-Lérida touches briefly on ‘scientific specialisation’ (2022, 4), but avoids Marx’s radical conception of science. As we shall see, this has some unfortunate consequences.

Dialectics

Arboledas-Lérida argues that his reconstruction of ‘the connection between SC and the capitalist relations of production’ will be ‘informed by Marxist dialectics’ (2022a, 2). Yet his notion of dialectics follows what Andrea Micocci calls ‘vulgar Hegelianism’ (Micocci 2010, 2016). But why is this vulgar Hegelianism so debilitating and limiting for Marxist theory and anti-capitalism? Seeing this requires we track Arboledas-Lérida’s conception of dialectics.

Thus, we, and Arboledas-Lérida, start out from the following statement: ‘To our understanding dialectical thinking consists of the reproduction of the inner life of any real object (i.e. SC) by means of thought, ideally accompanying it in the course of its qualitative self-transformation’ (Arboledas-Lérida 2022a, 4). What we have here is Marxist theory as a *mirroring* or mapping of capitalist development, with the additional challenge that we grasp how capital’s social forms change over time. The following can be drawn from this.

First, as Arboledas-Lérida notes, following Gunn (1991, 206), ‘it is the question of *action* that is all-decisive for dialectical thinking’ (Arboledas-Lérida, 3, original emphasis, and repeated at 11). Yet at the end of Arboledas-Lérida’s article, when he addresses the *political* implications of his convincing account of SC as a distinctly capitalist social form, there is little of substance regarding what we should actually *do*, short of ‘a complete revolution in our hitherto existing mode of production’ (Arboledas-Lérida 2022a, 11—drawing on Engels 1987, 42). Indeed, for Arboledas-Lérida, SC will fade away of its own course due to the ‘inner tendencies of societal progress’ (Arboledas-Lérida 2022a, 11).

Second, invoking ‘qualitative self-transformation’ as a significant constituent of dialectical thought avoids how this occurs through our *labour*. Capital’s social forms do not transform *themselves*; tragically, our labour transforms them. The notion of ‘qualitative self-transformation’ resonates with Moishe Postone’s conception of Capital as the autonomous subject of History, the *automatic subject* (Postone 1996, 75). Yet Postone makes it clear that Marx’s notion of capital as automatic subject (Marx 1979, 255) flows from a one-sided view of the value aspect of labour in capitalism, and sets aside the use-value aspect of labour, and the concrete (as opposed to the abstract) aspect of labour.

Capital can *appear* as the automatic subject (for Postone, and for Marx), seemingly taking on a life of its own, but it is anchored in our labour, the transformation of our labour-power into labour in capitalist labour processes. Thus, Arboledas-Lérida seems to be taking a one-sided view of labour in his rendition of dialectics, even though Marx stresses the ‘dual character’ of labour in *Capital*, where labour in capitalist society is expressed through value and use-values, and notes that he was ‘the first to point out and examine critically this twofold nature of the labour contained in commodities’ (Marx 1979, 131-132).

Moving on, Arboledas-Lérida, drawing on Starosta (2016, 124-126), argues that dialectics involves ‘two interrelated movements’:

[...] one of *analysis*, from concrete to abstract, whereby the more general or abstract real forms are discovered as realising themselves in the more concrete form under scrutiny, and one of *synthesis*, i.e. the return journey from abstract to concrete, the tracking down of the inner connection between all the real forms previously disentangled by means of analysis (Arboledas-Lérida 2022a, 2).

Analysis is the splitting apart of reality, echoing what Arboledas-Lérida calls ‘disentangling’, in order to isolate, and thereby study, particular phenomena. In terms of capital’s social forms, these are socially bound together, woven as bindings that act as constraints on our mode of existence in contemporary society, even though they depend on our labour for their sustenance. However, these social forms fail to completely contain our richness and variability, all the more so as we struggle against their cloying restrictiveness and we overflow their boundaries; we never fully ‘fit within’ these forms of capitalist life, and revolutionary practice presupposes actions aimed at the ‘shattering of containment’ (Holloway 2020, 81).

A few points are in order here.

In terms of analysis as characterised by Arboledas-Lérida above, it is not easy to observe how ‘abstract real forms’ are ‘discovered’ as they move into the concrete form (i.e. SC) being examined. Maybe I have not read the article carefully enough, but this movement was not obvious for me. This is perhaps because capital’s social forms *appear*, as and through, *institutions*. There is no form without content within the constellation of capital’s social forms. Thus, SC as a social form must have content in terms of the institutions that it inhabits. Arboledas-Lérida’s analysis does not follow through too well on indicating the

concretisation of SC as capitalist social form in terms of its pertinent institutions. This is a void within the article that could be developed in future work.

The *range* of institutions incorporating SC is unclear. SC could be seen as encompassing the school science curriculum, university science courses, media reports on scientific developments, popular science books, TV and radio programmes explaining the latest scientific advances, DVDs with science content, and many other institutional, cultural and commodity forms. The relationship of each of these to capital accumulation could vary. Finally, nevertheless, Arboledas-Lérida is to be congratulated for analysing the ‘inner life’ of SC, in *general*. Specifically, he shows clearly how SC is interwoven with capital accumulation, and *vice versa*.

It is when Arboledas-Lérida invokes the second aspect of ‘Marxist dialectical thinking’ that trouble really begins: *synthesis*. First of all, for Arboledas-Lérida, there is a concern with ‘tracking down ... the inner connection between all the real forms previously disentangled by means of analysis’ (following Starosta 2016, 124-126). But capital’s social forms are *open* to each other; they are not *distinct* and separate phenomena. Therefore, concepts used to analyse and critique these social forms must also be *open*; distinctions with ‘hard borders’ between concepts aimed at understanding and critiquing capitalist life are to be eschewed. Only open concepts allow the ‘tracking down’ of inner connections between social forms in capitalist society. In embarking on his methodological adventure, Arboledas-Lérida is in sound company, with Marxist theorists such as Paula Allman (2001, 39-45) and Bertell Ollman (1993). Indeed, Allman argues: ‘Capitalism’s internal relations actually create the *openness* that Marx grasped with his dialectical thought’ (2001, 43, emphasis added).

On the other hand, the notion of *synthesis* creates substantial difficulties when capital’s social forms (such as SC) are explored. First, these social forms incorporate antagonisms, ‘contradictions’ if you like, that cannot be synthesised, as I have indicated in relation to ‘class’ (Rikowski 2021). No synthesis *internal* to capital’s social forms is possible; the antagonisms can be contained, but never merged.

An alternative perspective is that synthesis in terms of capitalist development, synthesis *between* social forms and the development of *apparently new* forms of capital, does in fact take place, argues Micocci (2016). For Micocci, any seemingly new forms of capital, posing as capitalist development, are *iterations* of capital. They point to the development of capital, never its abolition. Capital, for Micocci, develops *dialectically* through iteration—new forms of itself, which, in fact, are not really new at all as they are just adaptations, *syntheses* of previous social forms that power capital forward.

For Micocci, this is the ‘vulgar Hegelianism’ referred to earlier. The vulgarity lies in the avoidance of rupture with disappearance, which can be found in nature, and the embrace of an inclusive logic that continually nurtures and moderates capital (Micocci 2010, 12). Capitalist dialectic is real enough, as, for Micocci, capital *develops dialectically*, and, therefore, capitalism’s dialectical movements must be *ruptured*. Bourgeois social sciences merely ‘*mirror* reality as such’ (Micocci 2010, 13, emphasis added), and:

The social sciences do explain capitalist reality, because the whole apparatus works together, reinforcing itself by its actual working. The condition to go on doing so is to keep to the metaphysics—to stick to the harmony, the dialectical (Micocci 2010, 14).

Therefore, for Micocci, the ‘various Marxisms, by avowing a dialectical method, have assimilated themselves to capitalism’ (2010, 21). Rather, Marxism must seek to ‘emancipate us from the intellectual monster that has reduced us all to an arithmetically equal fraction of a homogenous whole’ (21), emancipation from capitalist metaphysics, and thereby from capital itself. This entails taking *real opposition* seriously, argues Micocci. We must embrace the position that the antagonisms and contradictions with capital’s social forms cannot be contained, and certainly not *harmonised*. What ‘Marxists were describing as contradictions were in fact real oppositions, the waged labor/capital relationship being the most obvious case in point’ (Micocci 2010, 39). An anti-Hegelian Marxism ‘implies the idea of rupture, real opposition—that is change as revolution in which something (or everything) is unredeemably lost’ (39). Micocci argues that we must work for rupturing capital, where rupture indicates ‘a rift, an almost ... impassable gap that has taken place’ (2010, 61).

Of course, ruptures can be repaired, and then we are thrown back into the open arms of capital; we *harmonise* with it once more. However, a rupture may also ‘bring disappearance and/or oblivion ... [and] ... disappearance means something irretrievably gone’ (61). Thus, for Micocci, we must enact ruptures with oblivion when dealing with capitalism. Harry Cleaver (2017), while not following Micocci’s ideas in many respects, does concur with him that the dialectical development of capital must be ruptured. Cleaver, as opposed to Micocci, gives us a richer conception of how we might practically go about rupturing capital’s dialectic (see Cleaver 2017, 235-290).

One way through all this is to reject dialectics and dialectical thinking—as have Foucault, Deleuze, Guattari, Virno, and Negri—and focus on materialism (Holloway 2005a, 2). Yet if capitalism does move dialectically then this throws out the baby of understanding capitalism with the bathwater of dialectics. Holloway’s solution, following Adorno, is to focus on *negative* dialectics, rather than the positivity of a dialectics incorporating *synthesis*, the perspective favoured here. The position of Deleuze, Guattari et al, shows them to be:

[...] anti-dialectical and anti-humanist in their approach, [and] Hegel is repeatedly dismissed as the philosopher of order rather than seeing him as being also the philosopher who made subversive movement the centre of his thought. Dialectics is understood as the logic of synthesis rather than as the movement of negation (Holloway 2005b, 4).

Holloway argues we must ‘abandon any notion of dialectics as a process of negation that leads to a synthesis’, as a kind of ‘happy ending’, and instead view it as ‘a movement of denial rather than synthesis, as a negative dialectic’ (Holloway 2005a, 1-2). The idea of negative dialectics ‘breaks with the idea of synthetic closure’ (Holloway 2022, 28), and we must rupture capital’s ‘dialectic of reproduction’ (Bonefeld 2019, 278).

Mastering Nature

There is some concern regarding the issue of *mastery* over nature by science. For Arboledas-Lérida, a ‘genuinely scientific consciousness provides with *mastery over nature and themselves*’ (after Engels 1987, 461-462, original emphases) (2022a, 4). Thus: science ‘*is* mastery over nature’ (4, original emphasis).

Despite noting that ‘humans are self-conscious nature’ (after McNally 2004), and therefore, for humans, there is ‘oneness with nature’ (after Engels 1987, 461), it can be argued that Arboledas-Lérida misrepresents the drive for *mastery* of science over nature. Furthermore, given his view of the nature of science, which can be interpreted as focusing on the ‘hard sciences’, then scientism lurks in the background. Scientism is ‘the view that the hard sciences—like chemistry, biology and physics, astronomy—provide the only genuine knowledge of reality’ (Moreland 2018, 2). Yet even if Arboledas-Lérida were to follow Marx on the unity of sciences that included the ‘science of Man’ the problem of science as mastery over nature might cause other problems to arise. The idea of science having mastery over humankind might please the most authoritarian of transhumanists, but its logical endpoint is a view of science as *domination* over humanity. The oppressiveness of science, its reification, and ultimately its alienation from humanity all play out in this vision of science.

These potential problems may well arise from Arboledas-Lérida’s over-selectivity regarding Engels’ view on science in his *Dialectics of Nature* (Engels, 1987). Gunn and Wilding (2022) indicate that the question of mastery of nature through the sciences for Engels was not a matter of conquest, and they point towards his view that:

[...] we by no means rule (*beherrschen*) over nature like a conqueror over a foreign people, like someone standing outside nature ... [but] we, with flesh, blood and brain, belong to nature, and exist in its midst. (Engels 1987, 461; in Gunn and Wilding 2022, 125).

Gunn and Wilding go on to argue that, in the light of Marx’s ‘scattered reflections on nature’ throughout his works, then ‘any subjugation of nature would be contradictory and unsustainable’, and Marx does not ‘carry over the insights of the dialectic of master and slave [via Hegel] into his thinking about the natural world’ (125). Rather, our knowledge of nature gained through science heralds how we may best co-operate and partner with nature for the benefit of, not just ourselves, but also for the flourishing of the natural world. Thomas Nail demonstrates how, in capitalism, the opposite occurs (2020b, 77-99). Through value-creation in capitalist society, nature is *devalued* as capital sucks raw materials into its value vortex, yielding devastation for the natural world.

Conclusion: Capital’s Social Epistemology

Despite the criticisms and reservations regarding Arboledas-Lérida’s article outlined above he does, nevertheless, achieve what he set out to do: he demonstrates how SC ‘is one of the

conditions of the reproduction of contemporary capitalist societies' (2022a, 2). SC is clearly bound up with capitalist development, on this account, and is not some optional extra.

For me, this does not constitute the significance of Arboledas-Lérida's article.

He extends the range of social form analysis and critique. He takes social form analysis beyond the 'usual suspects' of value (the value-form of labour in capitalism), the state-form, money, and other 'economic' categories explored by Open Marxists such as John Holloway and Werner Bonefeld. This extension of social form analysis and critique constitutes real progress for Marxist science.

Tantalisingly, Arboledas-Lérida hints at possibilities for grasping a specifically capitalist form of *social epistemology*. For this journal (*Social Epistemology*), and for the development of Marxist science, such an adventure would be an important theoretical and political advance, and further ammunition for anti-capitalism as the *critique* and dissolution of capital's social epistemology could begin in earnest. The possibility of grasping capital's social epistemology is viewed most clearly in what Arboledas-Lérida has to say about 'the capitalisation of science' and 'useless knowledge' (2022a, 5). There are bigger fish to fry.

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