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EDITORIAL

Postdigital Marxism and education

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The great convergence

We now live in a world where digital technology is no longer 'separate, virtual, [or] "other" to a 'natural' human and social life' (Jandrić et al., 2018, p. 893). Contemporary information and communication technologies are now routinely used for harvesting and algorithmic processing of all kinds of data—these developments profoundly influence all aspects of human existence including but far from limited to radical transformations of economy (Uber, Airbnb, etc.) and education. Biotechnology is now at the point where we can routinely turn living matter into digital code, alter the code, and turn altered code into living matter. This brings about new economic models (Peters et al., 2021a), ethical questions (Johnson et al., 2021), and reaches all the way to the eternal question of human nature (Savin-Baden, 2021). In recent literature, this 'unity between biology, information, and cognitive sciences at a nanoscale' can be found under various names such as the 'Nano-Bio-Info-Cogno Paradigm' (Bainbridge & Roco, 2006, 2016), the great convergence of biology, information, and society (Peters et al., 2021b), and the postdigital condition (Jandrić et al., 2018).

These developments are mutually constitutive political economy. In a recent paper, Jandrić and Ford (2020) listed a selection of recent relevant theories: data capitalism (Fuchs, 2019), algorithmic capitalism (Peters & Jandrić, 2018), communicative capitalism (Dean, 2009; Ford, 2018), surveillance capitalism (Zuboff, 2019), technoscientific capitalism (Birch & Muniesa, 2020), high-tech and low-pay capitalism (Marcy, 2009), and bioinformational capitalism (Peters, 2012; Peters et al., 2021a, 2021b). While this list is far from complete, it does confirm Christian Fuchs' (2019, p. 119) claim that '[c]apitalism is many capitalisms at the same time that are interconnected'. The great convergence of biology, information, and society, therefore, is dialectically intertwined with the great convergence of old and emerging forms of capitalism.

Capitalism(s) of the twenty-first century cannot be understood using Marx nineteenth-century theories. However, also they cannot be understood without Marx's theories, as 'Marx's dialectical methodology and dialectical theory is not just a dialectical logic, but also a dialectical concept of history' (Fuchs, 2019, p. 119). Following Fuchs' understanding that '[t]wenty-first-century capitalism is neither completely different from nor completely identical with nineteenth-century capitalism' (Fuchs, 2019, p. 119), postdigital theory needs to self-reflect on its own relationship with Marx. However, this seemingly simple task is far from straightforward. With its theoretical roots

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in the Frankfurt School and critical pedagogy (amongst other schools of thought), postdigital theory generally stands shoulder to shoulder with the oppressed and aims at emancipation and social justice (Jandrić et al., 2018), yet little literature engages directly with Marx (e.g., Carmichael, 2020; Hall, 2020; Malott, 2019; Rikowski & Ford, 2019). Most authors engage with Marx only implicitly and often through the work of more recent theorists in the (primarily Western) Marxist tradition. So where do we begin this reflection on the relevance of Marx in our postdigital condition?

In *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics,* Ernesto Laclau and Chantal Mouffe (1985/2001) offer a possible way forward:

> The surpassing of a great intellectual tradition never takes place in the sudden form of a collapse, but in the way that river waters, haying originated at a common source, spread in various directions and mingle with currents flowing down from other sources. This is how the discourses that constituted the field of classical Marxism may help to form the thinking of a new left: by bequeathing some of their concepts, transforming or abandoning others, and diluting themselves in that infinite intertextuality of emancipatory discourses in which the plurality of the social takes shape. (Laclau & Mouffe, 1985/2001, p. 4-5)

Building on this vivid metaphor of flowing river and its tributaries, this article examines what is left, what needs to be abandoned, and what needs to be transformed, in traditional Marxist theories of education in our postdigital context.

New abstractions for new subjects

Capitalism is an inherently dynamic system and, as such, cannot be theorized fully at any point in time. Marx, as such, never claimed to present such a complete theorization, which is why he planned to write several more volumes of *Capital*. Methodologically, postdigital theory needs to not only identify how capitalism has changed but also, in response, introduce new abstractions into a critique of capitalism. Over the past decades, much Marxist analysis has reckoned with the radical changes brought about by financialization and the technological developments that facilitate and accompany it. Both are extensive and intensive expansions of Marx's theory of capitalist abstraction. For Marx, abstraction is both a theoretical method and ontological process. Marxists (and all theorists) must make certain abstractions in order to investigate any component of reality. Yet for Marx, capitalism is also a process of *real* abstraction, an ontological flattening of differences and singularities, which is what makes different use-values exchangeable. He critiqued so many bourgeois political economists of his day (as well as Proudhon) because, for them, the 'eighteenth-century individual', Marx (1939/1993, p. 83) writes, 'appears as an ideal, whose existence they project into the past. Not as a historical result but as history's point of departure.' For Marx, the individual was an *abstracted* form of the subject.

The primary change post-Marxists examine is from the Fordist to the post-Fordist regime, the former of which faced an inescapable crisis in the 1960s-1970s as a result of a matrix of factors, including the falling rate of profit, movements of workers and oppressed peoples in the dominant capitalist countries, and the revolutionary national liberation and socialist movements sweeping the world. There are varying accounts of causes of the crisis and the forms of the transition, but what we wish to highlight is the centrality of digitalization in the transition to post-Fordism. Whereas Fordism in imperialist countries was defined by the industrial worker, generally stable work for the employed, disciplinary social boundaries, and some level of Keynesian policies, post-Fordism is characterized by the precarious worker, the privatization of social goods, and the blurring of boundaries between the economic, social, political, and 'everyday' life. If Fordist capitalism produced mass commodities, post-Fordist capitalism produces networks, knowledges, affects, specialized commodities, and social relations more generally.

Digital technologies were crucial in this transition and in post-Fordism. As Nick Srnicek points out, the move from mass production to flexible and lean production, which entailed firing

workers, minimizing inventories, and quickly responding to changes in demand 'was mandated and enabled by the rise of increasingly sophisticated supply chain software, as manufacturers would demand and expect supplies to arrive as needed' (Srnicek, 2017, p. 17). Information and communication technologies—specifically platforms—were crucial for outsourcing production and reorganizing the workplace and society. The proliferation of digital capitalism was egged on by the dot-com bust, which is notable for 'the installation of an infrastructural basis for the digital economy and the turn to an ultra-accommodative monetary policy in response to economic problems' (ibid: 20). There was massive investment in the Internet and software, even though most corporations didn't have any revenue source—the motto was 'growth before profits,' based on the idea that *at some point* one player would have monopoly share and would then become profitable. 'Concretely, this investment meant that millions of miles of fibre-optic and submarine cables were laid out, major advances in software and network design were established, and large investments in databases and servers were made' (ibid, p. 22).

While finance capital became increasingly dominant in the late 1970s, it accelerated in the 1990s with online trading. Financialization is exemplified by the transformation from retirement funds to 401(k)s or *contribution* pension plans, the first of which happened in 1981. This was distinct from former *defined* pension plans because, as Christian Marazzi (2011, p. 19) notes, they were 'dependent on returns from the securities in which the funds are invested'. The role of finance capital is the subject of continuing debates, yet we argue that it works primarily by extracting and reappropriating our social world through financial abstraction. 'Derivatives and derivative markets,' for example, 'operate a continual process of calculation and establish commensurability, making an extraordinary wide range of existing and future assets measurable against one another in the market' (Hardt & Negri, 2017, p. 165). Financialization, in other words, makes an increasing number of productive activities and products commensurable and, in doing so, abstracts the activities, products, and producers.

Along with financial abstraction is digital abstraction. Yann Moulier Boutang's (2011) theory of cognitive capitalism reveals this ontological change in that incommensurable use-values and forms of labor and life are reducible to ones and zeros. Boutang contends that the novelty we are witnessing is the centrality of a living labour that is not consumed and not reduced to dead labour in machinism (Boutang, 2011, p. 54). Boutang uses the metaphor of pollination to define what he calls cognitive capitalism, a third stage of capitalism that comes after mercantilist and industrial capitalism. He frames it, however, as a hypothesis of the transformations taking place today rather than an empirical description. For Berardi (2015, p. 170), it's already a reality: machinery 'is no longer an exterior device but a system of cognitive automatisms and internal necessity;' 'We are the machine'. His search is to reunite what Marx called the 'general intellect' with *the body*.

Postdigital subjectivity

The figure of the postdigital subject is one that is enmeshed in and extended through digital technologies. Hardt and Negri (2004, p. 91) present the multitude as a 'swarm intelligence' that 'is based fundamentally on communication'. Production takes place through networks and is increasingly based on—and productive of—cooperation and collectivity. Yet this is a subjectivity that Marx would figure as a political project. After all this time, the ideology of the individual subject-form still predominates. As Jodi Dean (2016) argues, it's even *embraced* by some on the left: 'The 'do-it-yourself' injunction is so unceasing that 'taking care of oneself' appears as politically significant instead of as a symptom of collective failure' (Dean, 2016, p. 31). We might also suggest that it's a Marxist *pedagogical* project as well. The question becomes: how do we produce the postdigital collective subject that can overthrow capitalism?

To be Marxist, this must be done not to *understand* capitalism but to *eliminate* it. After all, the fundamental feature of Marxism is that the working and oppressed classes *can* take power and that doing so 'only constitutes the transition to the *abolition of all classes* and to a *classless society*' (Marx, 1852/1983, p. 65). The political project is one of fighting against expropriation, oppression, dispossession, and exploitation; of expropriating the corporations that own the networks that the international proletarian produces. The pedagogical project is of forming the subjectivity that can do so. Here, we would like to propose that a reading of Louis Althusser's reading can provide a pedagogical form for a postdigital collective subjectivity.

Following Marx, Althusser (1968/2009) insists that there is no teleology or linearity to history. There are multiple temporalities, modes of production, and possibilities at any given moment. Capital *can't* abstract everything and, as Henri Lefebvre (1974/1991, p. 55) reminds us, it is the class struggle that prevents capital from 'papering over all differences,' because it is 'only the class struggle [that] has the capacity to differentiate'. Thus, even as social media and other 'technologies that further individuation … provide at the same time an escape from and alternative to individuation: connection to others, collectivity.' (Dean, 2016, p. 64). There is a contradiction, of course, between the differences that class struggle produces and the need for collectivity, for the class that can abolish capitalism and thus abolish all classes.

Althusser's (1968/2009) reading of *Capital* provides a pedagogical method for managing this contradiction. Althusser argues that Marx's philosophy is developed both synchronically and diachronically. 'Synchrony represents the organizational structure of concepts in the thought-totality or *system*,' he writes, while 'diachrony [represents] the movement of the succession of the concepts in the ordered discourse of the proof' (Althusser, 1968/2009, p. 73). The former is the linear presentation of building blocks—like the trajectory of learning from ignorance to knowledge—while the latter is the open heterogeneity of chance encounters that transform those building blocks. A definition changes as it's subjected to swerves of inquiry and study. In the same way, our subjectivity as individuals is transformed into collective modes of being through postdigital technologies, of which we can work to proliferate the possibility—but only the possibility. While we see such a pedagogy in Althusser's heterogenous blocking together of synchrony and diachrony, Tyson Lewis (2017) derives it from Althusser's materialism of the encounter. Through the encounter, the subject is 'disinterpellated,' which 'makes the subject unfamiliar to itself and thus open to its own dissolution through the encounter with an outside' (Lewis, 2017, p. 314).

Conclusion

Ideas and concepts developed by Marx and his successors are built into very foundations of postdigital reality—and our understanding of it. Postdigital theory has superseded Jurgenson's (2011) digital dualism, or the ontological division between online and offline, in which 'the digital domain was somehow cast as immaterial … [One] cannot have cognitive labor without a machine, electricity, servers, and those that maintain the machines' (Coleman & Jandrić, 2019: 546). Each abstraction is based on and results in its own materialization: abstract computer code materializes into material transformation of labour [Srnicek's *Platform capitalism* (2017) is a typical case in the point], and abstract financialization materializes in real poverty. Before the Covid-19 pandemic, educational theory had predominantly focused to the digital-analog spectrum of abstractions and materializations (Peović Vuković & Jandrić, 2015). After months of lockdowns and millions of victims, postdigital theory is now much more finely attuned to the biology-information spectrum (Peters et al., 2021a, 2021b) and the struggle against bio-informational capitalism (Peters, 2012).

Today's struggle for abolition of capitalism implies development of new postdigital subjectivities that can be located within 'new postdigital ecopedagogies that are critical and creative, certain and indeterminate, transparent and opaque, and that accept and negotiate the

contamination of the constantly shifting borders between humans, machines, nature, nonhuman animals, and objects' (Jandrić & Ford, 2020). But the abolition of capitalism would be meaningless without an alternative, and the exact contours of this alternative can be developed only in a wide social consensus and through pedagogical and political struggles. These struggles are synchronic and diachronic; open and closed; collectivized and disinterpellated, as we work toward a revolutionary transformation that will be accompanied by an unforeseeable number and quality of reforms and defeats. These days, explicit references to Marx in postdigital scholarship are few and far in between. Yet postdigital theory has Marxism in its very foundations, making postdigital science and education a rupture, continuation, and reimagination of Marx's theories in and for the twenty-first century.

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