



Analysis

Bringing Class Analysis Back in: Assessing the Transformation of the Value-Nature Nexus to Strengthen the Connection Between Degrowth and Environmental Justice[☆]

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ABSTRACT

The article aims at showing the relevance of understanding the transformations of class composition for strengthening the connection between degrowth and environmental justice (EJ). In particular, I suggest the heterodox line of Autonomist Marxism as enabling factor of such connection. From an ecological perspective, the changing components of the working-class can be grasped by assessing the historical development of the value-nature nexus, and specifically of labour's role within it. In fact, capitalism does not have but rather is an ecological regime. Value creation occurs not upon nature, but through it – that is, within socio-natural relations emerging from the articulation of capital, power and the environment. My basic argument is that in contemporary capitalism conditions of existence and reproduction of society have become key drivers for surplus value production – most notably in carbon trading. Hence, EJ resistances are instances of class struggle and degrowth theoretical elaboration would benefit from incorporating such class-character. In this unprecedented situation, the task of the critique of political economy is not only that of unmasking ruling class' attempts to *naturalize capitalism*. It also requires resisting to elites' endeavours to directly *capitalize nature*.

1. Introduction

This paper engages in a dialogue with thesis IV and thesis V of the Introduction to this special issue. In particular, my aim is to problematize the latter in order to provide additional solid ground for the former. Thesis IV states that “[d]egrowth and Environmental Justice are complementary – EJ lacks a broader theoretical roadmap while degrowth lacks a wider movement” (Akbulut et al., 2018); such complementarity, however, is not yet a given reality. Rather, it is a potential, a task to be accomplished both conceptually and on the ground. Moreover, it suggests that a good starting point for this endeavour “can only be world-systemic and class-based” (Akbulut et al., 2018). Thesis V claims that “[w]hereas Marxism emphasizes the capital vs. labour contradiction, both degrowth and EJ emphasize the contradiction between capitalist growth vs. living conditions” (Akbulut et al., 2018). More specifically, the core idea is that “[u]nlike traditional labour movements, EJ and the degrowth critique do not usually focus on the capital vs. labour conflict within processes of (re)production, but are rather concerned with the defence of the community, its territory and the environment against capitalist accumulation. In other words, the

focus of EJ and degrowth is often less on the conditions of production and more on the conditions of existence and reproduction of society” (Akbulut et al., 2018).

My basic argument is that in contemporary capitalism conditions of existence and reproduction of society have become – to a significant extent – drivers of valorization (for example in environmental markets, and most notably in carbon trading). In this sense, they are not only traversed by multiple forms of social oppression but also by *class divisions* (i.e. they concern the capital vs. labour conflict). Here I follow Erik Olin Wright in his Marxist interpretation of the notion of class divisions as “primarily defined by the linkage between property relations and exploitation” (Wright, 1997: 13). Thus, what I want to show is that some commodities exchanged in environmental markets contain value as their production involve the exploitation of a peculiar form of labour.

A fitting case in point is the green economy: what was once considered an unsurpassable obstacle to valorization (the ecological crisis as a political issue, imposed to reluctant elites by social unrest between the 1960s and the 1970s) is today regarded as a profitable opportunity for business. The internalization of the environmental limit within the logic of value as an accumulation strategy – no matter how problematic

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or ‘ideological’ – represents a major shift in the history of capitalism. Such internalization, however, requires a specific labouring practice to take place: the *general intellect* as the organizing principle of contemporary (re)production. This means that conflicts in defence of the community, its territory (and knowledge) and the environment against capitalist accumulation should be considered instances of contemporary class struggle rather than anti-oppression practices that may or may not build alliances with the labour movement. In other words, “where we live, work, play and eat” (Gottlieb, 2009) is nowadays a direct element of capitalist production and exploitation. Thus, the research question I address in this article is the following: what is the relevance of the transformations of working-class composition for analytically understanding and politically empowering the connection between degrowth and EJ or, to use Irina Velicu’s fitting wording, for “degrowth EJ” (Velicu, 2018)? This question is particularly relevant because the link between class and ecology has traditionally been thought in ‘additional’ terms, namely as the connection between two different ‘entities’ that could or could not be ‘composed’ within a political strategy. As I will discuss below, this was the case with regard to 1968–1973 social movements. If, however, class and ecology are thought as two sides of the same coin – capitalist value as predicated on labour exploitation – then it may become possible to politically articulate a class dimension of environmental conflicts and an ecological dimension of class struggle.

In order to develop such argument, I will proceed as follows. First, I inscribe my reflection within a methodological framework based on a political understanding of the theory of value and on the heterodox line of Autonomist Marxism (also known as Workerism, or *operaismo*) (Mezzadra, 2009; Wright, 2002) (Section 2). In this context, I critically assess the value-nature nexus – which is to say the categorial relation between economy and the environment – as established by classical political economy (Section 3). Here, nature is *internalized* within the capitalist dynamic as an *enacting limit* of its unfolding: an infinite provider of raw materials at the beginning of the economic process, an equally infinite garbage bin at its end. I will also focus on the political implications of this configuration for the interface between capitalist production (*source* of value) and social reproduction (*condition* of value), namely the rise of the wage-growth dyad at the core of Fordism (Section 4). I will then analyze its conflict-induced crisis and the resulting trajectory of capitalist development – marked by the rise of the *general intellect* as an organizing principle of production (Section 5). Following this I will focus on the emergence of a ‘new’ value-nature nexus, which does not substitute the ‘classical’ one but rather supplements it and complicates the sharp subordination of reproduction to production *vis-à-vis* valorization (Section 6). Here, parts of nature are further internalized within the capitalist dynamics and in some specific situations (e.g. carbon trading) can act as *sources* of value production. Only at this point it will become clear how class struggle is not only a desirable supplement of EJ mobilizations and degrowth analyses; rather, it is part and parcel with them and should be assessed as such.

2. Methodological Remarks

My attempt to elaborate on the class-character of EJ movements and degrowth-inspired theories is grounded on two methodological insights:

- 1) Following Jason Moore’s (2015: 2) analysis of world-ecology, I posit that capitalism does not *have* but rather *is* an ecological regime, which is to say “*a way of organizing nature*”. Thus, the abstractions mobilized by the theory of value act as structuring principles of reality (as opposed to simple descriptive tools). In particular, ‘society’ as an exclusive reign of productive humans and ‘nature’ as a reservoir of reproductive humans and non-humans are *not* merely deceptive or ideological mystifications. Rather, they convey a profound violence that carves up social reality until it is made functional to the perpetuation of value. This understanding of the theory

of value as a historical agent implies what Moore (2017: 602) calls the double register of “capitalism as a *project*” and “as a *process*”. In the first case the theory of value poses a certain vision of nature as external – composed by discrete, commensurable and manageable entities, framed as free and infinite taps and sinks. In the second case it coercively *imposes* such vision onto reality. In this sense, the theory of value produces at the very same time a capital-looking world and the myriad resistances which ceaselessly question it. Thus, value’s *categories* (as expressed by political economy) and their historical *validity* are strictly imbricated: criticizing the former on the exclusive basis of their ‘falseness’ or ‘wrongness’ fails to target their practical effectuality and is therefore to be regarded as a necessary but insufficient strategy. This does not entail a dismissing attitude towards non-capitalist forms of valuation (Martínez-Alier, 2008). Rather, it stresses that conflicts over alternative valuations do not occur on a smooth space of mutual recognition and transparent communication, but in the dire materiality of power unbalances where capitalist value is not an option amongst many but a political framework which, in its own deployment, forcefully constitutes the conditions for its reproduction.

- 2) Following Edward P. Thompson’s (1963) observation that the category of class is better understood in its processual character – its *making* – than as a static entity, I intend to show how the historical variability of the social subject which produces surplus value by being exploited also concerns nature. To do so I subscribe to the methodological pillars of Autonomist Marxism: a) the primacy of class struggle over capitalist development, which implies that capital’s restructuring is actually set in motion by class conflict: the interplay between cycles of struggle and cycles of accumulation suggests that the latter merely displaces the former at a higher, more socialized level; b) the ambivalence of workers’ condition – labour power (objectively) *within* capital, working class (subjectively) *against* capital – whose historical contingency defines the *antagonistic tendency* of capitalist development, namely the field of possibilities in which class struggle both innovates valorization and threatens its survival; c) the centrality of class composition, in both its *technical* and *political* dimensions: the former regards labour power as organized through the capitalist division of labour – namely the relationship between labour practices, level of technology and workplace hierarchy; the latter concerns the working class as a potentially autonomous political subject with its own culture, economic interests and social behaviours. In other words, as relations of production change under the pressure of antagonism, so are modified the organic composition of capital and the technological composition of the working class. I will briefly refer to these transformations in the following sections, here I simply want to recall their function: to grasp not only the origins of the theory of value, but its historical mutations – and their ecological relevance – in the last century and beyond.

3. The ‘Classical’ Value-Nature Nexus

According to Marx’s critique of political economy, something like a value-nature nexus could only emerge with capitalism since the primacy of exchange-value over use-values within the commodity-form is the *differentia specifica* of such mode of production with regard to preceding ones. The “natural distinctness” of needs (and of the multifarious ways through which use-values can satisfy them) is systematically downplayed in favour of the “economic equivalence” enacted by exchange-value within market-oriented production (Marx, 1993: 141). In fact, whereas in pre-capitalist economic formations nature is seen as a transcendent force, as an external normative entity – Marx’s wording is telling: “*nature-idolatry*” (Marx, 1993: 410) –, in capitalism its function is from the very beginning mediated by surplus value as uncontested economic goal. From this perspective, the value-nature nexus as expressed by Classical Political Economy sees *nature as an indirect, yet*

enacting limit to valorization. To unpack this formulation it is necessary to take a closer look at the relationship between surplus value and its natural basis. For François Quesnay and the Physiocrats, there is no distinction between the two: the net product is the function of soil fertility. What they do not recognize, however, is the new quality of labour as mobilized by capital: in this situation, the natural basis of surplus value is surely a *necessary* condition for its production, but is nonetheless far from being also *sufficient*. It actually sets the limits within which abstract social labour (namely labouring capacity constrained within the wage-form and measured in units of labour-time) is put to work to produce surplus value.

This point can be better appreciated by following Marx's analysis of Smith's and Ricardo's reaction to the Physiocrats. Smith goes beyond them in recognizing labour as the substance of value, but does so by forgetting the role played by nature: "In manufactures [...] *nature does nothing; man does all*" (Smith quoted in Marx, 1963: 60). On the contrary, Ricardo realized that the function of nature in the early Nineteenth century was to provide an internalized and flexible limitation to the process of valorization: "There is not a manufacture which can be mentioned, in which nature does not give her assistance to man, and give it too, generously and gratuitously" (Marx, 1963). This free assistance may take the form of an infinite source of objects of labour (to be turned into raw materials), at the beginning of the process (*taps*), or that of an inexhaustible garbage bin, at its end (*sinks*). In both cases, however, nature and valorization do not overlap; rather, nature is configured as a free and infinite use-values provider, as the mobile border within which value-creation *proper* occurs. Hence, an *enacting limit* as it simultaneously circumscribes value-creation and provides both material inputs and waste disposals.

This point is elucidated by Moore (2015: 16; *emphases added*): "Value operates through a *dialectic of exploitation and appropriation* that illuminates capitalism's peculiar relation with, and within, nature. The relations of exploitation produce *abstract social labor*. The relations of appropriation, producing *abstract social nature*, enabled the expanded accumulation of abstract social labor". By reworking Moore's value-dialectics, it is possible to schematically locate the foundation of the 'classical' value-nature in the *subordination of the sphere of reproduction to the sphere of production*. This latter is where value-creation proper takes place, which is to say where the general labouring capacity is forced by capital into the wage-form, measured in discrete units of linear time and exploited; the subjects/factors inhabiting this sphere are capital and wage labour – which together compose abstract social labour. The sphere of reproduction contains all the elements which make valorization possible without directly participating in it; the objects/conditions of reproduction that compose abstract social nature are human non-waged labouring capacity – domestic and slave labour – and non-human processes which contribute to material wealth – the environment. The real abstractions in this sphere concern space (constructed as flat) and nature (constructed as external).

Already in Marx (1995 [1867]) it is clear that valorization develops "only by sapping the original sources of all wealth – the soil and the labourer". However, such degradation does not affect waged workers and reproductive subjects (amongst which is soil) equally – also from an ecological perspective (Hornborg, 1998). For the former, in fact, the wage-form acts not only as an instance of discipline (element of social deterioration), but also as a potential driver of citizenship (element of institutional recognition) which is denied to the latter. Waged labourers were thus faced with a twofold, highly ambivalent possibility: resisting the wage-form as such, or 'striking a deal' with capital, so to speak, in order to improve their condition at the expense of reproductive subjects.

In this context, the hegemony of the second option is represented by the *growth paradigm* (Schmelzer, 2015). Fully implemented throughout the Fordist period (1930s–1970s; approximately 1945–1975 for Western Europe, hence the well-known French expression *les trente glorieuses*), the growth paradigm expresses precisely the institutional

inclusion of waged workers as predicated on a symmetrical exclusion of the sphere of reproduction. In particular, from an environmental perspective, the wage-growth dyad systematically downplayed the crucial role of what Ariel Salleh (2010: 212) calls *meta-industrial labour* – which "denotes workers, nominally outside of capitalism, whose labor catalyzes [positive, negentropic] metabolic transformations, be they peasants, gatherers, or parents" – and *metabolic value* – which "denotes the value sustained and enhanced by this kind of worker in supporting ecological integrity and the social metabolism".

Within this binary framework a putatively 'official' class and the multifarious metabolic interdependencies which structure ecology are thought in sharp opposition as belonging either to the sphere of production (the former) or to the sphere of reproduction (the latter). This scheme, whose Fordist apex I am about to discuss, eventually underwent a deep transformation which posed the issue of 'composing' class and ecology *against* the 'classical' value-nature nexus. This task of composition, so to speak, is what emerges in the crisis of the growth paradigm and, moreover, is what I think should interest the most those who work to strengthen the connection between EJ and degrowth.

4. Fordism as an Entropic Device

To unpack the growth paradigm I borrow André Gorz's interpretation of the history of proletarian struggles based on the ambivalence of wage labour which "is not just a way for capital to grow" but also "a means of dominating the workers" (Gorz, 2010 [2005]: 151). During the "heroic age of trade-unionism" most proletarians have actively *refused* the institutional dimension of wage by claiming a common "norm of *sufficiency*" (Gorz, 2010 [2005]: 153) – a salary decent enough to satisfy their shared needs and those of their families. Gorz is describing XIX century mercantilist capitalism, in which capital faces an already formed productive network and internalizes it as its own base. Here the model for production is the workshop, concomitant with the hegemony of workers' handicraft. From the perspective of class composition, the key subjective figure is the *professional worker*. According to Gorz, these craftworkers "stopped work when they'd earned *enough* to live in a manner to which they were accustomed" (Gorz, 2010 [2005]). However, things start to dramatically change with the New Deal in the US (1930s) and the Marshall Plan in Western Europe (post-WWII). The capitalist goal of expanding markets to absorb an ever-increasing volume of commodities requires a new figure of the consumer whose purchases "were motivated less and less by *shared needs* and more and more by *differentiated individual desires*" (Gorz, 2010 [2005]: 154). Social inclusion of waged workers through access to mass-consumption and protection provided by the welfare state is one of the defining features of the so-called Fordist period.

In fact, Fordism is informed by a fully deployed capitalistic logic that produces the means of production within its own dynamics. Here the model of production is the large-scale factory, whose peculiar output of standardized goods for mass-consumption implies a polarization of workers' knowledge and skills. This, in turn, involves a strict division between parcellized and replicable working tasks (sphere of execution) and planning skills (sphere of conception). From the perspective of class composition, the prevalent subjective figure is the *mass worker*. What counts the most, for Gorz, is the intertwining of social and ecological aspects within Fordism as a regime of regulation. On the one hand, it "succeeded in combining raising wages, greater social benefits and public expenditures and, above all, increased production and employment [...] With the exception of a minority Left-wing section of the trade unions, the labour movement didn't criticize the nature and orientation of this expansion but called, rather, for it to be speeded up" (Gorz, 2010 [2005]: 155). On the other hand, "from the ecological standpoint, speeding up the circulation of capital leads to excluding everything that reduces profit in the immediate term. The continual expansion of industrial production thus entails an accelerated pillaging of natural resources" (Gorz, 2010 [2005]: 156).

It is against such a background that it is possible to define Fordism as an *entropic device* (Leonardi, 2017a), namely as an institutional arrangement grounded on a social pact – working class obedience in exchange for protection guaranteed by the ruling class – which premised its solidity on perpetual (and environmentally destructive) growth. In this sense, at least until the mid-1970s, growth has represented the policy counterpart of wage as the institutional pillar of social mediation. Claus Offe (1992) named *productivist nexus* the twin societal goal of full employment and perpetual growth. It is only in this context that social antagonism could be displaced from the qualitative composition of production (what, where, when is to be produced, and how, by whom, for whom?) to the depoliticized terrain of quantity. If each class' proportional share of aggregate production is to be maintained, then a quantitative increase of economic output is the one best way to defuse social confrontation. As Matthias Schmelzer (2015: 266) argued, the growth paradigm “promised to turn difficult political conflicts over distribution into technical, nonpolitical management questions of how to collectively increase GDP [...] It helped integrate labor and the political Left, rendered rearmament feasible without a decline in living standards, it helped stabilize the Bretton Woods system, and in the context of global inequalities it offered the (post)colonial countries in the global South a possible route out of poverty towards what came to be defined as ‘progress’”.

The crisis of the wage-growth dyad – or productivist nexus – was, however, soon to come.

5. The Crisis of Fordism (1968–1973) and the ‘Peculiar’ Defeat of Social Movements

The ‘classical’ value-nature nexus, whose main institutional outcome is the growth paradigm, constitutes the foundation of Fordism as an entropic device. Although it profoundly influenced social as well as economic life (at least in the global North) for nearly three decades, it was nonetheless continuously put to question by a variety of struggles. Those were able to exercise a remarkable opposition, such that, eventually, the ‘classical’ value-nature nexus entered into a deep crisis between 1968 and 1973. The two dates are chosen due to their symbolic power: the French May and the first Oil Shock encapsulate the simultaneously social and environmental causes of the *impasse* of Fordism. On a similar basis Gorz elaborated an original, twofold interpretation of the capitalist crisis in the early 1970s. On the one hand, starting from the Marxist approach of the tendency of the rate of profit to fall – namely the impossibility over the long run to substitute the valorizing function of living labour with dead labour crystallized in machinery – there is a situation of *overproduction* induced by class antagonism. Capital's reaction takes the shape of a number of counter-tendencies, amongst which are commodities' planned obsolescence and the creation of artificial needs which are disentangled from their own use-values. On the other hand, Gorz sees a *crisis of reproduction* due to the ever-increasing costs capital has to bear to regenerate the environment (up to that point used as free and infinite *reservoir* of taps and sinks) so that it can be polluted again – an operation whose consequence is a higher price of final products.

From this perspective, class and ecology could politically converge as weapons against the ‘classical’ value-nature nexus on the basis of a specific ‘division of labour’: while the former focused on the *internalized limits* to productive activities and targeted exploitative practices, the latter dealt with its *externalized limits* and denounced their crossing when the processes of nature appropriation showed their nefarious impacts on livelihoods. Fordism collapsed first and foremost because of this encounter – within the general framework of the event-’68 (Badiou, 2018) – between *conflicts against abstract social labour* and *conflicts against abstract social nature*. Examples of the former were struggles to dismantle *workplace alienation* – whose relevance for the degrowth debate today has been powerfully recalled by Stefania Barca (2017b) – and strategies for the *refusal of labour*, whose main tenet was a

reformulation of Paul Lafargue's classic text *The Right to Be Lazy* (Shukaitis, 2014).

On the other hand, a classic example of conflicts against abstract social nature is the politicization of the ecological crisis as presented in the 1972 Club of Rome *Limits to Growth* – which was itself prompted by the social turmoil of ’68 (Schmelzer, 2017) – and diffused by environmentalist movements especially after the Oil Shock. Even more important, however, was the myriad instances of feminist struggles which destroyed the double process of naturalization and invisibilization that relegated domestic labour – mostly performed by women – in the subordinated realm of reproduction (Federici, 2012 [1975]). Paradigmatic in this sense is the *Wages against housework* international campaign: the key point, in fact, was not to claim the right to be included in the wage-form so that institutional recognition could be gained. Rather, demanding wage was supposed to unmask the invisible condition of possibility for the Fordist social compromise to hold: the assumption that the sphere of reproduction could provide free and infinite use-values. Feminism, in this sense, provoked the explosion of abstract social nature and is thus a key component of the connection between EJ and degrowth (Dengler and Seebacher, 2018).

It is my conviction that the combination of all these struggles actually opened a ‘window of opportunity’ for anti-capitalist movements between 1968 and 1973. Such historical possibility, however, was not seized. The reason is that the potential disclosed by the compatibility of class-based Marxism and antagonistic ecological movements did not live up to the new political space disclosed by the struggles at the point of reproduction. Instead of ecological issues becoming key aspects of class composition, the crisis of Fordism brought about a socially paralyzing retrenchment of class issues vs. environmental issues – as shown by the widespread plague of job blackmail throughout the world. This is why re-assessing the relationship between class and ecology in the present condition is so important to strengthen the connection between degrowth and EJ.

To do so, however, the ‘defeat’ of 1968–1973 social movements should be characterized as ‘peculiar’ since it entailed massive consequences which are of utmost importance to this re-assessment. In fact, the economic background of valorization emerged as *enlarged*: the sharp separation-and-subordination of reproduction vis-à-vis production is no longer the *only* pillar of the value-nature nexus. Whereas in some sectors the ‘classical’ nexus is still implemented – even with increased violence: think of how frequently EJ movements face instances of accumulation by dispossession (Harvey, 2003) or accumulation by contamination (Demaria and D’Alisa, 2013) – in other sectors the sphere of reproduction is becoming more and more central for the process of value-creation. Keeping in mind the Autonomous Marxist predicament about the primacy of struggle over development, here is the ‘peculiar’ nature of social movements' defeat: by losing their war they gave rise to an unprecedented space for capitalist valorization, one in which the wage-growth dyad no longer properly functions. Class composition mutated accordingly: just beside the Fordist *mass worker* – which certainly still exists – the new subjective figure of the *disseminated worker* (Bologna, 1977) started to inhabit metropolises and territories alike, bringing to the foreground social reproduction as (also) a source of value.

It is not by chance that Workerist historian Sergio Bologna, who first mapped the features of this unprecedented techno-political class composition, saw the emerging of the green economy already in 1987: “Only environmentalism is today capable of providing a powerful boost for product-innovation (not only process-innovation). Capital needs environmentalism to reach the frontier of a new industrial revolution” (Bologna, 1987–1988: 38). To understand this shift I propose to consider a *bifurcation in the theory of value*, such that – under certain conditions – reproductive work (domestic, care and knowledge practices) and activity (the environment) encounter the hidden abode of production not only as *conditions* for its existence, but also as *factors* of its self-propelling movement. In short: I posit that, just beside brown

economic sectors in which the ‘classical’ value-nature nexus still holds – in the green economic sectors a particular form of ‘nature’ – deeply intermingled with an equally particular form of ‘labour’ – acts as source of value. What I mean by this is that through a complex system of mediations what was once constructed as *external* (free and infinite) to the economic process is now (partly) turned into an *internalized* element of a coherent – if fragile and volatile – accumulation strategy.

To grasp this shift, it is useful to set the analysis against the background of neoliberal capitalism, most notably of its unfolding tripartite crisis: ecological, socio-reproductive and financial. As Nancy Fraser aptly puts it: “Far from being neatly separated from one another, the three strands of capitalist crisis are inextricably interwoven” (Fraser, 2014: 554) as they represent a comprehensive attempt to simultaneously commodify nature, care and time. I believe this unprecedented form of enclosure depends on the multiplication of spaces for capitalistic intervention entailed by the ‘peculiar defeat’ of social movements. Moreover, such process is facilitated by the emergence of what a number of Autonomist Marxists name *cognitive capitalism* (Marazzi, 2008), namely “a new system of accumulation in which the cognitive dimension of labor becomes the dominant principle of value creation, whereas the main form of capital becomes the so-called immaterial and intellectual one” (Lucarelli and Vercellone, 2013: 10). From this perspective, socialized knowledge – a commons that Marx ([1857–1858] 1993) called *general intellect* – becomes the organizing principle of production. Two elements are key at this regard: the spread of a mass intellectuality stemming from the dramatic rise of schooling and the democratization of teaching; the reduction of costs and the decentralization of knowledge-circulation allowed by innovations (the Personal Computer, the World Wide Web, etc.) tied to Information and Communication Technologies (D-CENT, 2015). What is thus set in motion is a circular process whereby the output constantly regenerates the input through relatively cheap innovation based on seemingly endless reproducibility – all this, however, is always subjected to commercial appropriation.

This description of cognitive capitalism requires a clarification as far too often the rhetoric of so-called *immaterial labour* has monopolized the debate. Such label was originally intended to emphasize the undeniable enlargement of the basis of valorization, its absorption of “communication and its most important content: *subjectivity*” (Lazzarato, 1996: 140). Eventually, however, it ended up conveying an unnecessary misunderstanding, that of production occurring beyond the material constraints of social metabolism. Yet the profound materiality of contemporary ‘immaterial’ circuits of valorization is self-evident: to manufacture a single laptop, quintals of contaminating materials and several hectolitres of water must be mobilized; the diffusion of servers has strongly increased energy requirements for offices; logistics and commodity transportations are today more diffused than ever. In other words, cognitive capitalism must primarily be understood as the exploitation of the *general intellect* on the top of the constant production of – utterly material – negative externalities which equally affects the environment and the quality of human life.

6. The ‘New’ Value-Nature Nexus

I can now come back to the shift in the value-nature nexus as it is against such background that an unprecedented relationship between class and ecology could emerge and influence the way through which a strengthening of the connection between EJ and degrowth can be achieved. Here is the novelty: the environment is nowadays not *only* mobilized as abstract social nature, but *also* as an instance of abstract social labour. This is the result of what I referred to as bifurcation in the theory of value.¹ In this unprecedented situation, the task of the critique

¹ Such bifurcation includes, but is not limited to, what Erik Gómez-Baggethun et al. (2010: 1211) refer to as the “analytical treatment of nature in terms of

of political economy is not only that of unmasking ruling class’ attempts to *naturalize capitalism*. It also requires resisting elites’ endeavours to directly *capitalize nature*.

I will take carbon trading as an example of this unprecedented role played by ‘nature’. Firstly, however, it is important to recall an important historical point: when the ecological crisis became a political issue – in the wake of social turmoil between the late 1960s and the early 1970s – a capitalist ‘solution’ to it was quite simply *unthinkable* for ruling elites whose attention was exclusively captured by the Cold War. The crisis appeared as a *pure cost* either for companies (Gorz, 1980 [1977]) or for the state (O’Connor, 1973) and was thus perceived exclusively as an obstacle to valorization (under the form of either rising market prices or increasing fiscal instability). That obstacle was unavoidable, yet impossible to overcome on capitalist terms: as Gorz put it, the future would look like either *techno-fascism* or *eco-socialism*. Capitalists had to accept such state of affairs and prepared to live in difficult ecological conditions. This is why, in the second half of 1970s, the embryonic climate change debate focused on *adaptation* rather than *mitigation* (Felli, 2016): at that time, this latter would have implied a smaller social metabolism, which is to say a contraction of the sphere of production. With the terminology proposed in this article: there is no developmental internalization of the ecological crisis within the ‘classical’ value-nature nexus – which in fact brought it about in the first place. Thus, the language of adaptation expresses the necessity of a hard choice: either a rising rate of profit or cleaning up a polluted biosphere: *tertium non datur*. Although historical evidence reveals that ruling elites were most often willing to privilege surplus value over a livable planet, there were some notable exceptions, in particular the Montreal Protocol which in 1987 phased out a number of substances that were industrially useful but also responsible for the ozone layer depletion (Epstein et al., 2014).

The ‘peculiar’ defeat of 1968–1973 social movements and the consequent – if partial – becoming productive of the sphere of reproduction significantly changed this scenario. Two discursive formations elaborated between the 1980s and 1990s – both essentially related to mitigation – were instrumental to such shift: *sustainable development* (which posited that a compromise between economic growth, environmental preservation and intergenerational justice could be reached) and the *green economy* (which inverted the function played by the ecological crisis *vis-à-vis* valorization: no longer a constraint, but rather a driver). Originally perceived as a crisis of capitalism (the industry-driven crossing of the immutable threshold represented by the physical limits of the planet), ecological deterioration is now considered as a crisis for capitalism, as a new instance of creative destruction. It should be noted that the novelty engendered by these practico-conceptual innovations is an instance of a more general shift in the interplay between human agency and biophysical matter. As Luigi Pellizzoni (2015: 42) remarks, the former “is assumed to build on those distinctive qualities of material processes – unpredictability, creativity, surprise, recalcitrance, self-organization, contingent assemblage – which were traditionally regarded as limiting factors”. Similarly, Melinda Cooper (2008: 23) notes that biotechnologies “transform biological production into a means for creating surplus value”.

Such trajectory can be particularly appreciated with regard to carbon trading, namely a recent phenomenon – designed by the Kyoto Protocol in 1997 and re-ignited by the Paris Agreement in 2015 – that catalyses a significant share of both economic activity and policy imagination. It clearly expresses the intrinsic link between capitalism and climate change (Koch, 2012). Although the direct proportionality between the levels of CO₂ in the atmosphere and the surface temperature of the earth was discovered already in 1896, when Svante Arrhenius, drawing on previous speculations by other scientists, gave full account

(footnote continued)

exchange values” engendered by Neoclassical economics.

of the greenhouse effect, the emergence of a collective awareness about the damaging potential of global warming – and a proactive policy response to it – began to arise only in the 1980s. In this sense, if the ‘classical’ value-nature nexus *created* the ecological crisis (climate change being one instance of it), it is the ‘new’ one that *promises to make it manageable* (by inscribing it into the homogeneous grammar of markets). Against this background, the new role played by the (exploitation of) *general intellect* cannot be overestimated: socialized knowledge here does not mean the sum total of individuals’ information; rather, it mobilizes what Paul Edwards define as “infrastructure perspective” that “views knowledge as an enduring, widely shared socio-technical system” (Edwards, 2010: 17). In fact, the political visibility of climate change relies on complex, contested and always renegotiable *knowledge infrastructures*, which “comprise robust networks of people, artefacts, and institutions that generate, share, and maintain specific knowledge about the human and natural worlds [...] Virtually everything we now call ‘global data’ is not simply collected; it is checked, filtered, interpreted, and integrated by computer models” (Edwards, 2010). In this sense, to experience a global warming event as such presupposes the infrastructural support of climate science. Thus, linking a weather-related event – no matter how extreme – to climate change requires a massive mobilization of the *general intellect* in its diverse forms (various knowledge-factories such as universities, think-tanks, activists’ counter-narratives, etc.).

Against this background it is possible to see how at the very core of carbon trading lies a dogma according to which cap-and-trade systems for CO₂ emissions and carbon offsetting are the only way to simultaneously lower the aggregate cost of meeting reduction targets, foster sustainable development in non-industrialized countries and create profitable opportunities for green business. This *carbon trading dogma* (Leonardi, 2017b) is an extremely entrenched – albeit empirically unprovable – political belief that climate change, although a market failure (the environment was considered infinite and free, thus over-used), can be viably solved only by a wave of further marketization. Such a market-based regime of truth gives rise to an utterly arbitrary equation that, elaborating on recent work by Larry Lohmann (2011), might be defined as follow

$$\begin{aligned} \text{climatic stability} = & \\ & \text{reductions in CO}_2 \text{ emissions} = \\ & \text{carbon trading} = \\ & \text{sustainable economic growth} \end{aligned}$$

The strength of this dogma is demonstrated not only by climate policy makers’ insistence on the utility of carbon markets, despite their irrelevant – if not negative – ecological impacts, but also by the increasing difficulties encountered by market actors in justifying the narratives of green economy and sustainable growth (Descheneau and Paterson, 2011). The circular logic of the carbon trading dogma makes any alternative unthinkable: like any religious dogma, the confirmation of its truth claims is already contained in its fundamental assumption: since there is no effective politics outside of the market, global warming is solvable only in so far as it is possible to make a profit out of it. ‘Climate stability equals surplus value production’ is treated as self-evident truth.

What is most interesting here is the constitutive tension between the (putative) environmental goal of carbon trading and its (actual) monetary means. In fact, from an ecological point of view – the environmental degradation that carbon trading is supposed to remedy (through the reduction of greenhouse gases emissions aimed at slowing down global warming) – it is fair to say that carbon markets (as all other forms of ecosystem service trading) are useless when not nefarious (Spash, 2009). Quite simply, they do not achieve the expected results or, worse, actually prevent such achievements from occurring by locking-in policy imagination. From an economic perspective, however, such markets represent a gold mine for financial traders (as well as

heavy polluting companies). As Fraser puts it: “What such ‘green finance’ [speculation in environmental derivatives] portends is not only economic breakdown, but also ecological meltdown, as the promise of quick speculative super-profits draws capital away from the longterm, large-scale investment that is needed to develop renewable energy and to transform unsustainable modes of production and forms of life that are premised on fossil fuels” (Fraser, 2014: 555). Such practices constitute a manipulation of the *general intellect* as a form of labour which may be metabolically beneficial but completely loses its ecological potential once it is inscribed within commodity production, that is to say once it is exploited (hence subjected to the profit-imperative).

Overall, there seems to be a manifest disconnect between the *environmental goal* and the *economic means* of carbon trading. In fact, although no ecological improvement has been made, a huge amount of value has been created – through the exploitation of the *general intellect* as premised on its forceful conformity to the carbon trading dogma – and then transferred to fossil fuel-intensive companies through the production of what can be called *climate rent*.

This point about climate rent requires a clarification. In a compelling article, Romain Felli (2014) argues that carbon credits or permits should not be considered as commodities, since no socially-necessary labour time is crystallized in them. Thus, carbon trading would not constitute a new accumulation strategy since the *pseudo-commodities* exchanged in it are merely public entitlements to emit greenhouse gases. As such, they are essential components of *climate rent*, rent being assumed as “a *distributional* – not a *productive* – relation that plays a contradictory role in the dynamics of capital” (Andreucci et al., 2017: 8). In my opinion, this crucial analysis of *value grabbing* holds within the ‘classical’ value-nature nexus, where the realms of production and reproduction – as well as those of profit and rent – can be sharply distinguished. With regard to contemporary property regimes and entitlements, it correctly understands for example cap-and-trade allowances² and registered designations of origins which attests territorial excellence (e.g. wines from Champagne or Barolo).

My use of the term *climate rent* significantly diverges from Felli’s and Andreucci et al.’s since it specifically refers to the ‘new’ value-nature nexus. The main difference is that I see cognitive labour – and its exploitation – as actually prominent in the production of carbon commodities such as the Certified Emission Reductions within the Clean Development Mechanism. The mobilization of the *general intellect* as a distinctive labouring practice, however, cannot be measured in discrete units of socially-necessary labour time as the socialization of production has now partially included the sphere of reproduction. As a consequence, carbon commodities such as CERs *do* contain crystallized abstract social labour; simply, this labour is irreducible to chronological time as measuring unit. Carbon commodities should then be considered as *bundles of labour-nature* vehicled by *information* and exploited by the *market logic*. The value carried by a CER does not come from a tree or from the ocean, but rather from their sinking potential as politically calculated to fit financial markets’ accounting strategies; not from a seed but from the genetic sequence that makes it resistant to biotech pesticides. Thus, Neil Smith (2007) is right in pointing out that nature itself has become an accumulation strategy. Not ‘all’ nature, to be sure: the ‘new’ value-nature nexus does not substitute but rather supplements the ‘classical’ one. Nonetheless, the inclusion of certain ‘natures’ within financial circuits of capital valorization is a deeply significant

² Actually, Felli’s and Andreucci et al.’s argument holds firmly with regard to the *cap* part of the cap-and-trade (which requires a direct intervention by states), whereas I believe it should be complemented when it comes to the *trade* component, most notably once the (pseudo)commodity units are transposed from compliance (or primary) markets (for example the European Trading System) to financial (or secondary) markets, where they can be exchanged for derivatives and their commodity-nature comes into full view.

Moreover, it should not be forgotten that offsetting first emerged as a private sector innovation (Newell and Paterson, 2010).

phenomenon.

If this is true, then the social form of rent undergoes a significant transformation. Autonomist Marxist **Carlo Vercellone (2010)** has named it *becoming rent of profit*: the increasingly socialized and speculative character of capital implies that the core tenets of ‘rent’ partially overlap with ‘profit’. In classical political economy, ground rent depends on the ineluctable *scarcity* of land: the resulting income is then a form of value grabbing rather than value production. In carbon trading, however, companies’ competitiveness relies less on growing internal economies than on the capacity to capture cognitive and territorial resources developed collectively in the social factory, outside of the firm’s ‘official’ gates. Bounding knowledge-production to the carbon trading dogma, capital is able on the one hand to internalize parts of nature as sources of value, and on the other hand to defuse the political potential of envisaging and experimenting radical alternatives to tackle climate change. Moreover, capital exploits the *general intellect* as if it were a ‘gift of nature’, but it clearly is not: it is the product of the antagonistic confrontation between labour and capital in its XXI century fashion, whose main stake are precisely “the conditions of existence and reproduction of society” (**Akbulut et al., 2018**) as productive factors. In this specific sense, the “defence of the community, its territory and the environment against capitalist accumulation” (**Akbulut et al., 2018**) is an instance of contemporary class struggle.

7. Conclusion

In this article I proposed to re-assess the relationship between class and ecology in the present condition by means of a methodology based on the Autonomist Marxist concept of class composition. The reason to engage in such an analysis is that I believe a theoretical grasp of the historical transformation of the value-nature nexus could be beneficial to strengthen the connection between degrowth and EJ.

The main point I made is that in contemporary capitalism class and ecology are no longer *only* two distinct entities – the former involved in the sphere of production, the latter involved in the sphere of reproduction – but *also* (for example in the case of carbon trading) intermingled as bundles of labour-nature vehicled by information and exploited by the market logic. In such cases, defending territories and the environment against capital accumulation also means disarticulating the ‘new’ value-nature nexus and struggle for liveable cities (**Iserlohn, 2018**) and more generally for a great transformation towards sustainability (**Pelenc et al., 2018**). Thus, EJ movements and degrowth theorizing would benefit from (also) tackling the production and orientation of the *general intellect* and, as such, contest to capital the free usage of one of its most profitable sources of value.

It is my conviction that an important element degrowth and EJ would ‘gain’ by incorporating this class composition perspective is a *consistent political subject* to foster their agenda. By consistent, however, I do not mean pre-formed, or central, or structurally revolutionary. Rather, I mean inserted in the productive process, hence (potentially) capable to exert power on it by (possibly) stopping it and/or (hopefully) re-directing it. Being exploited, in fact means at the very same time being invested by a dynamic of expropriation and provided with an interposition force – capital needs the valorizing potential of labour power, and that is a political resource degrowth should reclaim. As Stefania Barca pointed out, “[it] will remain politically weak unless it manages to enter into dialogue with a broadly defined global working class – including both wage labour and the myriad forms of work that supports it – and its organizations” (**Barca, 2017a**). Moreover, assuming the working class as an ecological agent may lead to revisit the very origins of EJ and degrowth alike: it has been argued that political ecology *latu sensu* emerged in association with labour struggles, rather than despite them (**Barca, 2014; Leonardi, 2017a**).

I consider these issues to be of interest especially for degrowth (**Weiss and Cattaneo, 2017**), whose trajectory – from France to Italy in the early 2000s, then from its Catalan re-working to the current global

stage after 2010 – has been mobilized and re-shaped in multiple ways. In my opinion, starting with the influential *Degrowth: A Vocabulary for a New Era*, edited by Giacomo D’Alisa, Federico Demaria and Giorgos Kallis, there has been a shift of emphasis from sustainable degrowth as “equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions” (**Schneider et al., 2010: 10**), to “[a] commitment not just to protect nature or to manage or mitigate the impacts of capitalism, but also to create an alternative social ecology and a fundamentally different basis for action” (**Kallis, 2017: 25**). I do not mean to suggest that a focus on *different* substituted the insistence on *less*. Kallis himself made this point very clear in the roundtable on the *Vocabulary* at the ENTITLE Conference *Undisciplined Environments*, held in Stockholm in 2016 (**Chertkovskaya et al., 2017**). However, the new interest in a metabolism which needs to be smaller but above all different – and the idea that such difference can be achieved only through political struggles carried by social movements within as well as against existing institutions – significantly widened the audience for the degrowth discourse, most notably by including anti-capitalist radical traditions such as Anarchism and Marxism.

In this context, the interplay between the ‘classical’ and the ‘new’ value-nature nexus allows for a strategic articulation of the ‘less’ (smaller social metabolism) and the ‘different’ (alternative social-ecology) that may be worth further exploring. In fact, there is no doubt all sectors belonging to the entropic device should shrink. In this context, accumulation by dispossession as proposed by **Harvey (2003)** and accumulation by contamination as elaborated by **Demaria and D’Alisa (2013)** constitute a proper horizon for *anti-oppression conflicts*. When it comes to structurally modifying (a reduced) social metabolism, however, an additional layer may be considered. It is composed by those sectors which could freely ‘flourish’ once liberated from the seal of value and the growth-paradigm. An example would be the *Design Global, Manufacture Local* model (**Kostakis et al., 2015**): by fostering a convergence amongst digital commons, productive technologies, sustainable practices and social mutualism this framework may entail a reduction of social metabolism and a re-orientation of the *general intellect* from private profit-making to collective well-being. Thus, in the language of this article, a desirable transition would simultaneously entail class struggle *against* the ‘classical’ value-nature nexus to further deactivate the entropic remnants of Fordism and class struggle *for* an alternative use of the *general intellect* potential within the ‘new’ value-nature nexus. Perhaps degrowth may benefit from conceiving of the working class not only as an actor bound to support the wage-growth dyad, but also as a potential ecological agent in the fight against capitalist exploitation.

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