

## Material, social and theoretical aspects of Sustainable Development

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### Abstract

This paper explores some of the material, social and theoretical aspects of sustainable development. It starts from a critical scrutiny of some methodological and conceptual weaknesses or flaws of mainstream approaches. It also discusses the limitations of ecological reforms and of the efforts to create sustainability conditions under capitalism. Based on a Marxist perspective, it proceeds to identify and briefly analyze some crucial aspects or preconditions for a truly sustainable development, including externalities, the scale of production and growth limits, and the growing rift in the nature – society dialectical metabolism. Particular emphasis is placed on the material and social conditions as well as the historical perspectives, extending beyond capitalism, for creating the preconditions of sustainable development.

**Key words:** sustainable development, sustainability conditions, externalities, market failure, economic growth, scale of production, property regimes, metabolic rift, Marxism, capitalism, communism

### 1. Introduction

The exacerbation of economic, ecological, and arguably of a more comprehensive socio-ecological crisis has recently led to a multifaceted and often heated debate concerning the causes of crisis and the preconditions of ‘sustainable development’. The concept itself of ‘sustainable development’, which has dominated in mainstream approaches after the Brundtland Report (1987) and the Rio Summit (1992), has been largely framed according to a more general neoclassical approach and the requirements of the prevailing social relations of production (see WCED, 1987; UN, 2012 report; Söderbaum, 2012). As a result, the idea itself and the content of sustainable development are hotly debated (see Lélé, 1991; Foster, 1995; Castro, 2004; Liodakis, 2010b). At the same time, it is evident that, despite a very extensive literature in the last two decades concerning sustainable development, a planetary

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ecological crisis and a more general socio-ecological crisis continue unabated, or are exacerbated even further.

In an attempt to identify some missing points or misconceptions of mainstream approaches, which largely explain the ineffectiveness of mainstream policies towards a sustainable development, this paper will start by focusing on the theoretical approach and how we understand the economy, society, economic growth and sustainable development. Starting from the premises of a materialist Marxist approach, we could argue that, instead of a dialectical and historical conception of nature and social reality, the dominant theoretical approaches (mainstream) follow a series of unhistorical and arbitrary abstractions which do not allow an adequate understanding of ecological and social complexities, the underlying rich determinations of natural and social phenomena, and the dynamics of ecological and social co-evolution. Some of these theoretical abstractions have, of course, specific historical and social roots. The institution of private property, for example, which precedes capitalism, has played an important role in the separation and estrangement of humans from nature. On this historical basis, the culmination and qualitative elevation of private property under capitalism, along with the capitalist need to treat nature as an 'object' and an exploitable resource, have largely contributed to a conception of nature as an external and immutable reality. As is well known, this historical process, in parallel with the generalization of commodity production and wage labour under capitalism, has gradually led to a dis-embeddedness, not only of society from nature, but also of the economy from society (see Adaman et al., 2003). Thus, instead of recognizing that nature and the ecosystem is the context and the material basis for all societies, and that the economy is inextricably related with society, the mainstream approaches consider nature, society and the economy as independent entities and theoretical categories. Moreover, these approaches consider the economy and the prevailing capitalist relations of production in an unhistorical manner, as an eternal reality. In the literature concerning sustainable development, economic growth (the economy) is arbitrarily and un-dialectically juxtaposed to 'sustainable development' (protection of the environment), while economic growth, social equality and environmental sustainability are often considered as the three (presumably independent) pillars of sustainable development (see UN, 2012 report, 6).

Contrary to the mainstream, I will stress in the second section of this paper the importance of social structure and the prevailing mode of production (MOP) for the conditions of sustainability. This may have significant implications which will be considered in the following sections. In section 3, we examine the implications for the relationship between the part and the whole, and the significance of a comprehensive ecological approach and a corresponding conception of the currently faced crisis as *a socio-ecological crisis*. In section 4, we discuss the issue concerning externalities and the so-called 'market failure'. Section 5 will be a brief presentation of the problem concerning economic growth and the implications of a growing scale of production. In section 6, we briefly discuss the problematique developed within the Marxist tradition concerning the so-called metabolic rift in the relation between society and nature. Section 7 concludes with a critical consideration of mainstream or alternative policies towards sustainability as well as the required need of a deep transformation of society.

## **2. The significance of social structure and the specific mode of production**

The overtly abstract and arbitrary generalizations of most mainstream approaches commonly imply that individual choices and personal behaviour, aggregated on a social level, determine the character of society as a whole and the direction of social change. This theoretical framing has presumably a permanent (un-historical) validity, and this linear movement from the individual to society implies, particularly in what concerns the utilization of natural resources and environmental protection, that irrational individual choices and perhaps a greedy behaviour may imply environmental degradation or ecological crisis (see UN, 2012 report, 6).

Contrary to the mainstream approach outlined above, it can be argued that the social and class structure of a particular society, which is amenable to historical change, is crucially important, not only for the relations among people and social classes, but also for the relations arising between society and nature. The dominant MOP is even more crucial in this respect and the associated social relations of production are crucially important for the prevalence of competitive or cooperative relations among people and social actors, for social equality (or the contrary), and the values and culture developing in this context. It also has a determinant role for the environmental and ecological implications of the economic or social activities developing within the relevant society.

The significance of the prevailing capitalist mode of production (CMP) and its inherent characteristics for the degradation of the environment and the currently faced ecological crisis has been more specifically analyzed elsewhere (see Liodakis, 2010a, 109-110; 2010b). The particular characteristics and the systemic responsibilities of the CMP include the role of private property in shaping the society-nature relation, the profit-maximizing goal of capitalism and hence the trend towards a maximum production of exchange values (commodities) which implies a depletion of natural resources, the value form of labour and a valorization process ignoring the particular contribution of nature in the production of wealth, the contradictory (competitive) character of capital and the related trend towards increasing externalities, and the specific technology intentionally shaped to serve the goals of capital.

It should be pointed out more specifically that the currently dominant CMP on a planetary level has important implications for a number of factors or processes, which may be considered as the most crucial preconditions of sustainability, as well as for our understanding of these processes and the requirements of a truly sustainable development. These processes and relations concern both the relations or contradictions among people or social classes, and the relationship between society and nature. It will be the task of subsequent sections to more specifically analyze some of these processes and preconditions of sustainable development.

## **3. Theoretical implications of the prevailing mode of production for analyzing sustainability**

As already noted, the prevailing CMP decisively determines both internal social relations, namely the relations among people or social classes, and the relations between society and nature. It also determines the specific organic relations of any part of a society based on capitalism and society as a whole. Even more broadly, it

partly determines the relations of society as a whole with non-human nature within the ecosystem in its totality. Mainstream theory, for reasons already noted, commonly considers nature as an external and immutable material reality, and in this sense the abstract division between society and nature implies that the relations of society with nature are conceived as external relations. Contrary to this Cartesian divide, Marxist scholars adopt a dialectical approach concerning the determination of the nature – society relation and largely recognize the possibility of producing nature (see Smith, 1984; Castree, 1995; O'Connor, 1998). In this sense, the production of nature (of a 'second nature' or alternative natures) can constitute a strategy facilitating capital accumulation (see Smith, 2006). Rather than examining the impact of economic and social activities on nature as an external relation, as is the case with the mainstream, or considering the impact of capitalism on nature and the ecosystem, according to some radical or Marxist approaches, it is therefore more appropriate to speak of capitalism as a historically specific ecology (see Moore, 2011).

According to the same reasoning, the common distinction, in mainstream thinking but also in some Marxist analyses, between economic and ecological crises, or other forms of crisis, is partly misleading. Economic crisis is commonly considered as the drastic impairment of profitability and the conditions of reproduction of capital, while ecological crisis refers to the degradation or the disruption of the conditions concerning the sustainability of a particular ecological system. However, though it may be helpful to distinguish among these particular forms of crisis, as is more extensively argued elsewhere, the common material and social underpinnings and the root causes of all these crises make it more pertinent to speak of an overall *socio-ecological crisis* facing contemporary world capitalism (Liodakis, forthcoming). This is an example concerning the organic relation of a part to the whole, specifically determined by capitalism. Arguably, unless we adequately understand this organic relation, no amount of technically advanced research on the conditions of sustainability will be sufficient to ensure a really sustainable development.

It may be pertinent here to refer to two further examples concerning the relation of a part to the whole under capitalist conditions. In the first case and in economic terms, it perhaps makes sense for any individual capitalist or capitalist unit to technologically modernize production in order to increase competitiveness and raise profitability. However, if most capitalists do the same thing, this will not aggregately imply a higher profitability for capital as a whole. It will rather imply a decline in average profitability (the fallacy of composition!), apart from other environmental and ecological implications. Yet, most capitalists will continue to do so, coerced by the competitive logic of capital and the imperative of profitability.

In the second case, the same competitive pressure and the individualist optic of capital imply that the decisions and activities undertaken by any capitalist enterprise will unavoidably have some significant external effects (positive or negative externalities) for the rest of producers, for society as a whole, and for the ecosystem. Arguably, these externalities tend to increase insofar as the (spontaneous) socialization and the competitiveness of capitalist production increase. The cumulative bulk of evidence concerning the implications of these externalities could not be ignored for long. Even neoclassical economists were forced to recognize this case as a significant 'market failure', and as the extensive relevant literature indicates, this market failure may have important implications for the conditions of sustainable

development. Due to its importance for the sustainability of economic and social development, as well as for the ecosystem as a whole, it is perhaps necessary to proceed with a more detailed critical discussion of this issue in the following section.

#### **4. The significance of externalities for sustainable development**

The mainstream (neoclassical) literature on externalities and ‘market failure’ recognizes several cases of divergence between the actual allocation of resources through the market and what can be considered as a socially optimal allocation. This divergence is largely attributed to negative or positive externalities, and policy makers have paid considerable efforts over the recent decades trying to rectify such market failures by internalizing the total cost of production in each production line. After several decades, however, such attempts have proved rather ineffective, not only due to the class nature of the state, but also because these attempts and the market failure metaphor itself misleadingly end up with a policy lock-in which ‘deprives environmental policy of the dynamic adjustments necessary for achieving sustainability’ (Bromley, 2007, 678). In other words, tinkering on market failures and the margins of capitalism will not be sufficient to create or restore conditions of a sustainable development.

It can be more broadly accepted that externalities indirectly but significantly concern the relations among different producers as well as the relation to nature within a capitalist ecology. However, ruling social forces and several categories of market advocates are reluctant to proceed to deep social reforms, including property regimes, or to consider other forms of economic and social coordination beyond the market mechanism. While they are keen to argue that only private property would ensure environmental care, in the case of extensive externalities which tend to impair the common (social and ecological) conditions of production and hence the forces and efficiency of production, they fail to recognize the lack of (or insufficient) care about these common conditions (see Johnston, 2003). Under such conditions, a common property regime and a collective management or action would probably increase social efficiency (see Swaney, 1990). Remarkably, however, while some mainstream economists (see Schmitz, 1999) seem to recognize that collective efficiency may derive from (positive) external economies and conscious cooperation (joint action), they are trapped within methodological individualism and fail to see the implications of conscious collective action for social planning, which might raise efficiency and the potential of sustainable development.

Mainstream theory tends also to ignore a considerable recent literature which asserts that common property regimes and collective action may offer better chances, compared to a private property regime and individualist capitalist action, in establishing conditions of social equality and a long-run sustainable development (see Runge, 1986; Ostrom, 1990; Agrawal, 2001; O’Neill, 2001; Vatn, 2001; Burkett, 2006, 310–19). Thus, mainstream theory remains blind to the advantages of common property and common (or communal) production over private property and competitive capitalist production.

On the other hand, several Marxists are eager to reject any discussion of externalities and market failure as a mere and misleading influence on neoclassical economics. Such an attitude fails to recognize that this problematique correctly

reflects, even if in a partial and perverse way, the important problem concerning the external effects of production, which may have a detrimental impact on other social actors and the ecosystem. And this problem unmistakably reflects not a mere failure of the market, but of the whole capitalist system. What is misleading indeed and should be rejected is the market logic of the relevant ‘market failure’ metaphor, as the proposed reforms or adjustments in the economic mechanism are according to this market logic. In other words, the disease itself is proposed as a cure. But focusing on the externalities and interdependencies of production, under various socio-economic conditions, may be a fruitful line of research.

As the institutional research concerning the various common (or collective) property regimes indicates, but also the open research towards a communal (or communist) organization of production after the failed experience with what passed as ‘actually existing socialism’ (see Chattopadhyay, 2010), collective property and social planning can be constituted and organized at different levels (communal, local, regional, national, global). In all these cases, external effects and interdependencies, as well as the possibilities for cooperation and potential conflicts may contribute to a more specific determination of the spatiality of social and productive organization. It is crucial in these cases to formulate organizational conditions where all social actors bear the whole cost, but also the benefits of their participation or productive involvement. All actors participate in all relevant processes of production and social organization and are the real possessors of the resources involved. These conditions will tend to encourage participation and ensure social equity and ecological sustainability.

## **5. Economic growth and the scale of production**

Another important condition of sustainability concerns economic growth and the scale of production. As the profit motive implies a maximal production of commodities, both a spatially expansive production and an intensive development of capital amount to a seemingly unlimited growth of capitalist productive activity, and this in turn implies an increasing depletion of natural resources, a destructive pollution of the earth and the atmosphere, and a rapid degradation of the ecosystem on a planetary level. In other words, economic growth seems to have detrimental effects, not only on some social conditions, but also on the environment. A record of rapid economic growth of capitalism, particularly during the first decades of the post-war period, has been undoubtedly the main cause of an increasing environmental degradation and an exacerbated ecological crisis during recent decades.

Neoclassical economists often tend to overoptimistically ignore natural limits, expecting that technological developments, a substitution of important natural resources, and perhaps some ‘greening’ of capitalism will be sufficient to cope with any problems of environmental degradation. On the other hand, several researchers following a neo-Malthusian approach, like most mainstream analysts, consider nature as an external unchangeable factor. Assuming that natural resources are fixed, they interpret natural limits in an absolute manner, while usually blaming overpopulation for ecological crisis. As they are erroneously assuming that the market is the most efficient mechanism for the allocation of resources, they usually pose the scale of production (and economic growth) as the most relevant issue concerning the deepening

environmental and ecological crisis. Consequently, they submit theoretical proposals associated with a ‘steady state economy’ and de-growth or zero-growth policy for tackling the severe ecological crisis on a planetary level (see Daly, 1996; Latouche, 2007; Jackson, 2009). What is missed in this case, however, is that growth is an inherent tendency of the CMP. Capitalism is a grow-or-die system. As pointed out in the relevant literature, capitalism without growth cannot be sustained and there are hardly any chances that such policy proposals can be accepted and implemented (see Fotopoulos, 2007; Lebowitz, 2010; R. Smith, 2010).

Against the de-growth logic, one might further argue that, under the conditions of the current world economic recession, even a negative growth (recession) in several countries evolves together with further environmental degradation insofar as the capitalist rational of (human and non-human) resource exploitation remains unchanged, while the crisis and a rising unemployment and poverty tend to more intensely activate the poverty – environmental degradation linkage. What needs to be challenged, therefore, is not merely economic growth, but rather capitalism as a system regularly generating an unlimited and often destructive growth for the two fundamental sources of all wealth, human labour and nature.

## **6. The significance of metabolic rift for a Marxist approach**

As is familiar, Marx’s fruitful insight led him to depict the relation between nature and society as a metabolic relation increasingly disrupted by the development of capitalism, both in agriculture and industry (see Marx, 1967 I, 505; 1967 III, 813; Burkett, 2006, 299). This insight has served as the basis for a considerable recent literature concerning this growing metabolic rift and its implications for a sustainable and ecologically compatible development (Foster, 1999; 2000a; Moore, 2000; Rudy, 2001; Clark and York, 2008; Foster et al., 2010).

For Marx, the nature – society metabolic rift was largely due to the increasing disruption of the soil-humans-soil recycling of the soil nutrients that ensure the fecundity of agricultural land. For him, but also for a number of other 19<sup>th</sup> century researches, including H. Carey, J. Johnston and J. von Liebig, this metabolic disruption (rift) was mainly the result of a disintegration of agricultural production, a growing social division of labour and separation of industrial production from agriculture, a growing urbanization and polarization of the city-country divide, and a rapid development of long-distance international trade. This rift had important and multifaceted effects as it tended to a social and environmental (ecological) degradation both in the countryside and in the growing urban centres. The declining fertility of agricultural land, due to an over-cultivation and the disruption in the recycling of soil nutrients, was initially replenished by various additives (guano or bones) and later by the use of chemical fertilizers. However, the rapid expansion in the use of chemical fertilizers after the latter part of 19<sup>th</sup> century had considerable negative implications as it increased the cost of production and led to a rising soil pollution and water contamination, all the more so as the effectiveness of fertilization gradually decreased (see also Foster, 2000b; 2002).

In the course of the 20<sup>th</sup> century, the rapid growth of the chemical industry and the even more extensive use of chemical fertilizers and other agro-chemicals had an even greater impact on the degradation of land and the ecosystem. At the same time,

the increasing specialization of agricultural production, the dislocation and separation of horticultural from stock production, the rapid urbanization and development of world trade led the society – nature metabolic rift to explosive dimensions, with detrimental effects for the ecosystem and the quality of life. Thus, apart from severing the relationship of humans with their ecological environment, the rapid ecological degradation implies further an increasing cost of production which fuels economic crisis and this in turn leads to an exacerbation of a more general socio-ecological crisis.

The recent reinterpretation of the theory of metabolic rift has seen this rift, more specifically, in two ways. The first focuses more narrowly on the disruption of the nutrient cycle and the resulting degradation of soil fertility or the socio-ecological effects of this process. The second broader conception of the metabolic rift is used to ‘describe the complex, dynamic, interdependent set of needs and relations brought into being and constantly reproduced in alienated form under capitalism’ (Foster, 2000a, 158). As is also stressed, ‘This second meaning of metabolism goes beyond the physical laws of nutrient exchanges and addresses the transformation in labor relations and property tenure that must accompany ecological changes if long-term sustainability is to result’ (Clausen, 2007, 47).

This reinterpretation and development of the concept of metabolic rift has recently led to a constructive debate among Marxists. Some researchers consider that Foster and his associates (see Foster, 1999; 2000a; Foster et al., 2010) tend to relapse to the mainstream Cartesian divide between society and nature. Rejecting this divide, Moore (2011) adopts a more dialectical conception of the relation between humans and non-human nature, conceiving more specifically that capitalism and ecology are mutually constituted. This dynamic and relational conception is crucial for understanding economic and ecological (or rather socio-ecological) crisis and the technological or institutional (organizational) preconditions of a long-term process of capitalist accumulation. Others have argued for a conceptual reframing as ‘the metabolic rift is based on outmoded understandings of (agro) ecosystems and inadequately describes relations and interactions between labour and ecological processes’ (Schneider and McMichael, 2010, 461). They also argue that instead of prioritizing *organization* of labour, as the metabolic rift conception does, we should equally consider the role of productive (agricultural) *practice*. It is moreover stressed that ‘a unification of the social and the ecological, in practice and in thought, is the key to understanding how to address and possibly resolve ecological crises’ (Ibid, 482). Granted this necessary unification, one should however be sceptical about over-emphasizing productive *practice*, for while practice may have its specific and relatively autonomous role, it is nevertheless largely determined by the prevailing relations and the specific organization of production. In our days, capitalism is of paramount importance in determining both productive practices and techniques.

A number of researchers have also utilized the metabolic rift concept to explore contemporary ecological problems or investigated the necessary policies and the required transformations beyond capitalism that would contribute to a healing or overcoming of the exacerbated metabolic rift brought about under current capitalist conditions (see Clausen, 2007; McLaughlin and Clow, 2007; Wallis, 2008; Wittman, 2009). As it becomes clear from our preceding discussion and the relevant literature, the character of the prevailing (capitalist) mode of production and the scale of production, in each production unit but also in the aggregate, are absolutely crucial if



we are to embark on a serious attempt at healing this metabolic rift and creating the preconditions of a truly sustainable development.

Examining the ecological implications of modern agriculture, Marx was led to the conclusion that ‘a rational agriculture is incompatible with the capitalist system ... and needs either the hand of the small farmer living by his own labour or the control of associated producers’ (Marx, 1967 III, 121). As he further asserted, it will be only within a communal context that the associated producers will become capable of ‘rationally regulating their interchange with Nature ... achieving this with the least expenditure of energy and under conditions most favourable to, and worthy of, their human nature’ (Marx, 1967 III, 820). The task for the present and future generations, after the collapse of what was erroneously conceived as ‘actually existing socialism’, is to specify under post-revolutionary conditions the institutional configuration of the required land ownership and tenure regime, and the particular organization and scale of production which would allow that rational and sustainable interchange with the rest of nature.

## **7. On the policies and preconditions of a truly sustainable development.**

Mainstream research aiming at the creation or implementation of sustainability conditions has in recent decades developed in a number of different areas. These attempts mainly include policies focusing on internalizing cost and repairing market failures, ecological modernization and a ‘greening’ of capitalism, a dematerialization of production and decoupling of economic growth from its negative ecological effects, and the development of environmental governance to ensure a sustainable development on a global level.

As already discussed, however, policies to internalize cost and tinker with market failures or de-growth policies cannot be adequately effective in establishing conditions of sustainable development within capitalism. Markets themselves, one of the main culprits of environmental degradation and crisis, cannot be credibly proposed as a cure for the ecological problem (see Perelman, 2003). Ecological modernization has also been proposed in recent decades as a particular theoretical and policy approach aiming at an ecological restructuring and reform, or a “green” re-development of capitalism (see Hajer, 1995; Mol and Spaargaren, 2000). As pointed out in the relevant critical literature, however, this attempt towards a ‘green’ re-development of capitalism is found to be rather inadequate on both theoretical and empirical grounds (see Clark and York, 2005; Wallis, 2008; Næss and Høyer, 2009). This research and the related modernization policies are closely associated with the debate concerning the so-called ‘de-materialization’, which encompasses an attempt to substitute natural resources with technological means and human or produced resources, the expansion of a presumably ‘immaterial production’ as against material resources and energy intensive industrial production, an attempt to increase production compared to energy requirements, and a dissociation (decoupling) of economic growth from its negative environmental impact by means of improved – ecologically friendly – technological solutions. There are serious reservations, however, both theoretical and empirical, regarding this presumable ‘dematerialization’ and its potential ecological implications or the capacity of this ‘green’ restructuring to

ensure conditions of a sustainable development (see Unruh, 2000; Trainer, 2001; Perelman, 2003; Burkett, 2005a; Næss and Høyer, 2009).

Although technological transformations may play a role in alleviating or resolving some environmental problems, it should be clear that we cannot possibly substitute technological means to essentially resolve what in fact constitutes a social problem. Technology itself, as it is specifically shaped under capitalism, is in fact part of the problem and cannot constitute the means of its resolution. Even if a particular technology could, under different conditions, economize on natural resources and energy, under capitalist conditions it turns out as a vehicle for a massive depletion of resources and a rapid degradation of the environment. This is asserted in a number of cases associated with the so-called ‘Jevon’s paradox’ (see Foster, 2000b).

Searching on an institutional level to achieve sustainable development, mainstream researches and international Organizations often urge for a strengthening of institutional governance. It is more specifically argued that ‘we need to build an effective framework of institutions and decision-making processes at the local, national, regional and global levels’ (UN, 1012 report, 7). In this case, however, as in the literature more generally concerning (global) environmental governance, the specificity of the relevant governance is not sufficiently clarified. In other words, it is not clearly specified as to what end and for whom this governance should develop. Such an abstract analysis, ignoring the specific class structure and the immanent features of existing capitalism, as well as the class-shaped process of knowledge formation (see Bonds, 2010), is largely misleading insofar as it fails to identify the real conflicts and the underlying motive forces in the (global) development of production, international institutions, and the determination of environmental policies. Taking a materialist class-based approach, we can conceive of the non-neutral (class) character of the state and its role in promoting capitalist accumulation, and by extension the non-neutral character of international Organizations, which are not mere representations of the global community benevolently promoting the global good or conditions of global sustainability in particular. The specific constitution and operation of international Organizations speaks clearly to the particular practices and the policies promoted, aiming overwhelmingly at the maximum and most profitable accumulation of capital. As indicated in the relevant critical literature, these policies recently include processes of land grabbing and control, biodiversity conservation and exploitation, and natural resource protection and enclosure leading to an expanding and deepening process of primitive accumulation (see McCarthy, 2004; Kelly, 2011; Corson and MacDonald, 2012). And as it should be clear, these policies and practices, rather than ensuring the conditions of social and environmental sustainability, are in fact contributing to a further environmental degradation and socio-ecological crisis.

An alternative social and institutional structure would require, not merely another top-down model of capitalism or another relevant model of global governance, but rather a bottom-up revolutionary reshaping of society, starting from the local and extending to the global level. As various researchers have underscored (see Shiva, 2005; O’Neill, 2007; Söderbaum, 2012) and the evidence available confirms, democracy and economic equity are absolutely crucial for the achievement of sustainable development. As argued throughout this paper, however, due to the essential features of capitalism, it is impossible to have reforms of capitalism adequate to the task of creating conditions of social and ecological sustainability, not to speak of a truly sustainable human development (see Marx, 1967 III, 250; Burkett, 1999, 206-

207; 2005b). This does not by any means imply that we should forget about ecological reforms within capitalism. Certainly there is ample scope and usefulness to such reforms, but they obviously cannot be adequate to the task of essentially facing the dramatically exacerbated socio-ecological crisis on a global level. Such reforms should be considered important only insofar as they ‘can give us breathing space to carry out more fundamental changes’ (Næss and Høyer, 2009, 95).

If we are to seriously search for the establishment of sustainability conditions, we should clearly reject, on both theoretical and ideological grounds, the monopoly of dominant neoclassical economics and the attitude or practice of ‘business as usual’ (see Söderbaum, 2012). But, as argued, even ecological modernization and apparently radical changes within capitalism will not be adequate. And though a freedom of methodological choice or research orientation should be undoubtedly granted, theoretical pluralism, by itself, will not be enough insofar as the material-social reality and the underlying motives remain as they are today. All the more so as pluralism, which may be prone to a methodological eclecticism easily assimilated within the mainstream, is commonly conceived or practiced as ‘exclusive pluralism’, encompassing various mainstream theoretical currents, but excluding any Marxist or revolutionary approaches. On the other hand, despite the collapse of ‘20<sup>th</sup> century socialism’ and the relevant defame of communism, there are good reasons to believe that the theoretical and socio-ecological perspective offered by Marx’s work and the work of others in the Marxist tradition (see Burkett, 1999; 2006; Foster, 2000a; Chattopadhyay, 2010) is our best and still largely unexplored choice.

As argued elsewhere, the conditions of a social and ecological sustainability can be seriously searched for only within a communist perspective (Liodakis, forthcoming). There is, however, an enormous amount of theoretical and ideological work to be done, as well as social and class struggle, before we can hopefully proceed in this direction. As follows from our analysis in this paper, in the transformation process towards communism, common property regimes can be developed and tested at various levels, while social struggle and experimentation will contribute to a crystallization of socially and ecologically more rational institutions. Common property and collective action, along with a relevant institutional configuration, will most likely promote cooperative interdependence, capture any external effects and increase social efficiency, thus creating the most crucial conditions for a sustainable development and co-evolution with nature.

## References

- Adaman, F., Devine, P. and Ozkaynak, B., 2003, ‘Reinstituting the Economic Process: (Re)embedding the Economy in Society and Nature’, *International Review of Sociology*, 13(2), 357-374.
- Agrawal, A., 2001, ‘Common property institutions and sustainable governance of resources’, *World Development*, 29(10), 1623-1648.
- Bonds, E., 2010, ‘The Knowledge-Shaping Process: Elite Mobilization and Environmental Policy’, *Critical Sociology*, 37(4), 429-446.

- Bromley, D., 2007, 'Environmental regulations and the problem of sustainability: Moving beyond "market failure"', *Ecological Economics*, 63(4), 676–83.
- Burkett, P., 1999, *Marx and Nature: A Red and Green Perspective*, London: Macmillan.
- 2005a, 'Entropy in Ecological Economics: A Marxist Intervention', *Historical Materialism*, 13(1), 117-152.
- 2005b, 'Marx's Vision of Sustainable Human Development', *Monthly Review*, 57(5), 34-62.
- 2006, *Marxism and Ecological Economics: Toward a Red and Green Political Economy*, Historical Materialism Book Series, Leiden: Brill.
- Castree, N., 1995, 'The Nature of Produced Nature: Materiality and knowledge construction in Marxism', *Antipode*, 27(1), 12-48.
- Castro, C. J., 2004, 'Sustainable Development: Mainstream and Critical Perspectives', *Organization & Environment*, 17(2), 195-225.
- Chattopadhyay, P., 2010, 'The Myth of Twentieth-Century Socialism and the Continuing Relevance of Karl Marx', *Socialism and Democracy*, 24(3), 33-45.
- Clark, B. and York, R., 2005, 'Dialectical Materialism and Nature: An Alternative to Economism and Deep Ecology', *Organization & Environment*, 18(3): 318-337.
- 2008, 'Rifts and Shifts: Getting to the Root of Environmental Crises', *Monthly Review*, 60(6), 13-24.
- Clausen, R., 2007, 'Healing the rift: metabolic restoration in Cuban agriculture', *Monthly Review*, 51(1): 40-52.
- Corson, C. and MacDonald, K., 2012, 'Enclosing the global commons: the convention on biological diversity and green grabbing', *The Journal of Peasant Studies*, 39(2): 263-283.
- Daly, H., 1996, *Beyond Growth: The Economics of Sustainable Development*, Boston: Beacon.
- Foster, J.B., 1995, 'Ecology and Human Freedom', *Monthly Review* 47(6), 22–31.
- 1999, 'Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology', *American Journal of Sociology*, 105(2): 366-405.
- 2000a, *Marx's Ecology: Materialism and Nature*, New York: Monthly Review Press.
- 2000b, 'Capitalism's Environmental Crisis – Is Technology the Answer?', *Monthly Review*, 52(7), 1-13.
- 2002, 'Marx's ecology in historical perspective', *International Socialism Journal*, issue 96.

- Foster, J.B., Clark, B. and York, R., 2010, *The Ecological Rift: Capitalism's War on the Earth*, New York: Monthly Review Press.
- Fotopoulos, T., 2007, 'Is degrowth compatible with a market economy?', *The International Journal of INCLUSIVE DEMOCRACY*, 3(1).
- Hajer, M., 1995, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*, London: Clarendon Press.
- Jackson, T., 2009, *Prosperity Without Growth*, London: Earthscan.
- Johnston, J., 2003, 'Who Cares about the Commons?', *Capitalism Nature Socialism*, 14(4), 1-41.
- Kelly, A., 2011, 'Conservation practice as primitive accumulation', *Journal of Peasant Studies*, 38(4): 683-701.
- Latouche, S., 2007, 'De-Growth: an electoral stake?', *The International Journal of INCLUSIVE DEMOCRACY*, 3(1).
- Lebowitz, M., 2010, 'Change the System, Not Its Barriers', *Socialism and Democracy*, 24(3), 46-59.
- Lélé, S., 1991, 'Sustainable Development: A Critical Review', *World Development*, 19(6), 607-621.
- Liodakis, G., 2010a, *Totalitarian Capitalism and Beyond*, Surrey, UK: Ashgate Publishing.
- 2010b, 'Political Economy, Capitalism and Sustainable Development', *Sustainability*, 2, 2601-2616. ([www.mdpi.com/2071-1050/2/8/2601/pdf](http://www.mdpi.com/2071-1050/2/8/2601/pdf))
- (forthcoming), 'Considering (economic and ecological) crisis from a communist perspective', *Perspectives on Global Development and Technology*,
- Marx, K., 1967, *Capital I-III*, New York: International Publishers.
- McCarthy, J., 2004, 'Privatizing Conditions of Production: Trade Agreements as Neoliberal Environmental Governance', *Geoforum*, 35, 327-341.
- McLaughlin, D. and Clow, M., 2007, 'Healing the Metabolic Rift between Farming and the Eco-system: Challenges Facing Organic Farmers in Canada and in Sweden', *Socialist Studies*, 3, 7-29.
- Mol, A. and Spaargaren, G., 2000, 'Ecological Modernization Theory in Debate: A Review', *Environmental Politics*, 9(1), 17-49.
- Moore, J.W., 2000, 'Environmental Crises and the Metabolic Rift in World-Historical Perspective', *Organization & Environment*, 13(2), 123-157.
- 2011, 'Transcending the Metabolic Rift: A Theory of Crises in the Capitalist World-Ecology', *Journal of Peasant Studies*, 38(1), 1-46.

- Næss, P. and Høyer, G., 2009, 'The Emperor's Green Clothes: Growth, Decoupling, and Capitalism', *Capitalism Nature Socialism*, 20(3), 74-95.
- O'Connor, J., 1998, *Natural Causes*, New York: Guilford.
- O'Neill, J., 2001, 'Property, care, and environment', *Environment and Planning C: Government and Policy*, 19, 695-711.
- 2007, *Markets, Deliberation and Environment*, London: Routledge.
- Ostrom, E., 1990, *Governing the Commons: The evolution of institutions for collective action*, Cambridge: Cambridge University Press.
- Perelman, M., 2003, 'Myths of the Market: Economics and the Environment', *Organization & Environment*, 16(2), 168-226.
- Rudy, A., 2001, 'Marx's ecology and rift analysis', *Capitalism, Nature, Socialism*, 12(2), 56-63.
- Runge, C.F., 1986, 'Common Property and Collective Action in Economic Development', *World Development* 14(5), 623-35.
- Schneider, M. and McMichael, Ph., 2010, 'Deepening, and repairing, the metabolic rift', *Journal of Peasant Studies*, 37(3): 461-484.
- Schmitz, H., 1999, 'Collective efficiency and increasing returns', *Cambridge Journal of Economics*, 23(4), 465-83.
- Shiva, V., 2005, *Earth Democracy. Justice, Sustainability and Peace*, London: Zed Books.
- Smith, N., 1984, *Uneven Development: Nature, Capital and the Production of Space*, Oxford: Blackwell.
- 2006, 'Nature as Accumulation Strategy', in *The Socialist Register 2007. Coming to Terms with Nature*, edited by L. Panitch and C. Leys, 16-36, London: Merlin Press.
- Smith, R., 2010, 'Beyond growth or beyond capitalism?', *real-world economics review*, no. 53.
- Söderbaum, P., 2012, 'Democracy and sustainable development: Implications for science and economics', *real-world economics review*, no.60.
- Swaney, J.A., 1990, 'Common Property, Reciprocity, and Community', *Journal of Economic Issues*, 24(2), 451-462.
- Trainer, T., 2001, 'The "de-materialisation" myth', *Technology in Society*, 23(4), 505-514.
- United Nations Secretary-General's High-level Panel on Global Sustainability, 2012, New York: United Nations (available at [www.un.org/gsp/sites/default/files/attachments/GSP\\_Report\\_web\\_final.pdf](http://www.un.org/gsp/sites/default/files/attachments/GSP_Report_web_final.pdf))

- Unruh, G.C., 2000, 'Understanding carbon lock-in', *Energy Policy*, 28(12), 817-830.
- Vatn, A., 2007, 'Resource regimes and cooperation', *Land Use Policy*, 24(4), 624-632.
- Wallis, V., 2008, 'Capitalist and Socialist Responses to the Ecological Crisis', *Monthly Review*, 60(6), 25-40.
- Wittman, H., 2009, 'Reworking the metabolic rift: La Via Campesina, agrarian citizenship and food sovereignty', *Journal of Peasant Studies*, 36(4): 805-26.
- World Commission on Environment and Development (Brundtland Commission), 1987, *Our Common Future*, Oxford: Oxford University Press.