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Towards an Evolutionary Environmental Regulation: Sustainable Development 20 Years Later

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Introduction

Sustainable development has become a major object of study across various disciplinary fields in experimental and social science alike. It represents a major concern from the perspective of evolutionary political economy understood in its broadest sense. Aside from a few specific contributions, regulation theory surprisingly has not much engaged the topic. One strand of scholarship has focused on the relations between techno-economic paradigms and long wave accumulation dynamic (Mjøset and Kasa, 1994). Another has more specifically focused on how and how far political economy claims have an influence on the link between capital accumulation and core societal relations (Lipietz, 1995b; O'Connor, 1994). More recent views reflect upon potential institutionalised compromises between a finance-led growth regime and the broader understanding of social and environmental sustainability (e.g. Aglietta's (2005) notion of sustainable value). All of them attempt to include sustainable development concerns into regulation theory; yet they all remain largely disconnected from current developments in ecological economics and international political economy. This paper borrows from these two fields in order to assess and complement regulation approaches' inability to fully appraise environmental concerns.

The paper argues that by combining ecological economics, IPE and regulation approaches more closely, one may provide an account of the apparent contradiction between the utopian aspect of sustainable development and the ability of capitalism to pragmatically deal with ecological crises. It explores how ensuing institutional forms inevitably take sustainability claims into account. It assumes that such forms revolve around the emergence of a new type of evolutionary environmental regulation whose coherence is paradoxically at once open-ended, fragmented and hybrid. This feature clearly reinforces the extreme difficulty in thinking about ecological regularities. The paper analyses core elements of such institutional forms and how far they can be identified as a new type of fragmented evolutionary environmental regulation. Section 1 provides background on the notion of sustainable development. Section 2 examines the prospects and limits of regulation theory on global ecological issues and presents lessons could be drawn from ecological economics and international political economy approaches for opening new routes to appraise current and future environmental concerns of capitalism. Section 3 explores the emerging form of evolutionary environmental regulation reflecting the apparently paradoxical situation we have

reached, in which disillusion regarding sustainable development goes hand in hand with increasing awareness of the inescapability of a policy shift in its favour.

1. Background: common crisis and the future

The notion of sustainable development was crystallised and popularised in the 1987 Report of the UN World Commission on the Environment and Development chaired by former Prime Minister of Norway Gro Harlem Brundtland. The notion built upon long established lines of thought which had developed substantially over the previous 20 years. It provided the first comprehensive attempt to bring together development claims and environmental degradation concerns at a global institutional level. Roots of the conflict go far back. Whilst non-industrial systems of production had their own environmental problems, industrial capitalism has involved a major shift, making for the first time in history a whole material transformation process dependant upon fossil energy (Vatin, 2005). The Brundtland report also emerged out of North-South cleavages. As Indira Gandhi, India Prime Minister, put it in a speech at the UN Conference on Human Environment held at Stockholm in 1972: ‘Aren’t misery and need great polluters? ... We cannot improve the environment where misery reigns. And we cannot eliminate misery without the support of science and technology’ (Nations Unies, 1972, p. 18). That conference marked a crucial stage in the emergence of a global approach to social and ecological questions. Above all, it fixed in the popular consciousness the idea of “Spaceship Earth”, coined a few years earlier by Kenneth Boulding. On its own, the title of the preparatory report conveyed the message in a nutshell: *Only One Earth*. As René Dubos, one of its co-authors and instigator of the slogan *Think Globally, Act Locally*, declared, “we are now moving into the stage of global social evolution. The problems of Spaceship Earth affect humanity world-wide and can only be handled from a world-wide perspective” (Nations Unies, 1972, p. 22). Development was, however, deliberately ignored at Stockholm, even if later claims for a New International Economic Order included such radical proposals as “ecodevelopment”.

A wide range of formal and informal bodies pushed forward the twin agenda of development and environment in the decade following the Stockholm conference. Whilst transnational private councils such as the Trilateral Commission gave considerable importance to the subject, bodies more firmly rooted in the formal system of the United Nations launched several initiatives to keep the momentum in a context where North-South relations tended to prevail over East-West antagonism. Among others, the Independent Commission on

International Development Issues (the so-called North-South Commission) chaired by former German Chancellor Willy Brandt published in 1980 an influential report entitled *To Ensure Survival. Common Interests of the Industrial and Developing Countries*. The same year, several UN agencies brought governments on board of a World Conservation Strategy, which popularised the term sustainable use. Before long, however, the process appeared to be leading nowhere as renewed Cold War antagonisms tended to take centre stage. In 1983, the United Nations General Assembly set up a new commission, this time with an explicit mandate to consider the link between development and the environment.

Four years later, the Brundtland report *Our Common Future* marked a watershed in the political and environmental landscape of the contemporary world. It became the basis of the 1992 Rio “Earth Summit” – the first of a series of world conferences that followed the end of the Cold War. Once launched, the concept of sustainable development circulated so widely that its original definition is still referred to in the literature: “a form of development that meets the need of the present without compromising the need of future generations to meet their own needs”. Although criticised on various grounds, such a synthesis of environment and development underpinned the reinvention of international action on worldwide inequalities and the emerging global ecological crisis. The Brundtland Report acknowledged that this required the engagement of a wide range of actors beyond states and intergovernmental organisations, such as NGOs, expert communities and private firms. To this end, it pointed out three directions most likely to support a swift and comprehensive implementation of sustainable development. Whilst a higher level of global cooperation implying all those actors and the extension of the time horizon of development concerns were largely expected, quite surprisingly, the report also recommended a massive increase in economic growth – once estimated at a factor of 5 or 10 by Mrs Brundtland herself¹.

Responses to these new horizons of global capitalism have differed widely. Quite rapidly, however, two opposing views emerged from the constellation of power behind the new currency gained by the concept of sustainable development. On the one hand, there were those who saw in sustainable development a new utopia for saving the planet and its population; on the other, were those who shared a pragmatic view according to which inventive platforms of global governance, together with a reasonable growth rate following a new wave of technological innovation would be able to mitigate the global ecological crisis in the long term. Before exploring in more detail how such conflicting claims may have

¹ Benjamin Franklin Lecture, Washington DC May 2, 1989, quoted in Daly 1990 (EE 2).

impinged upon new forms of regulation in contemporary capitalism, we will first turn to the prospects and limits of regulation theory in this regard.

2. New routes for regulation theory

While regulation theory's first and foremost subject matter has been Fordism and its ongoing crisis since the early 1970s, quite surprisingly, it has not much engaged the link between the demise of Fordism and the emerging ecological crisis. In 1993, Lacroix and Mollard claimed that "regulation theory has until now given little heed to the environment issue"². Fifteen years later, things do not seem to have changed to a great extent. As the preceding section has shown, the demise of Fordism was clearly related to broader concerns regarding the environmental agenda, North-South relations and collective security on the global stage. This section discusses the prospects and limits of regulation theory on the twin crises of Fordism and ecology and presents how lessons could be drawn from ecological economics and international political economy approaches for opening new routes to appraise current and future concerns regarding environmental issues of capitalism.

2.1. Regulation approaches and the twin crisis of Fordism and ecology

Two strands of scholarship can be distinguished among regulationist-inspired studies of the twin crises of Fordism and ecology. Whilst the first provides long-term historical perspective on environmental problems related to successive stages of techno-economic paradigms, the second is more focused on conceptualising institutional compromises resulting from ecological pressures on capitalism. The first approach is inspired by a neo-Schumpeterian view on the link between long waves of the world economy and successive techno-economic paradigms embedded in social relations (Mjøset and Kasa, 1994). Whilst such techno-economic paradigms reflect particular supplies of energy, its transformation into a leading sector, and its impact on the social and natural environment, they rely on distinct modes of regulation and international coordination. Accordingly, each stage of capitalist development brings with it a specific form of environmental problems. As Fordism has massively and globally spread a paradigm based on oil and automobiles (from 53 millions in 1950 to 389 millions in 1986 (Mjøset and Kasa, 1994, p. 184)), it set the stage for situating environmental issues at the global level as compared to local and regional problems of the late eighteenth and nineteenth centuries. Acid rain, the reduction of the ozone layer and the emergence of

² Anne Lacroix, Amédée Mollard, "Prospects for the regulation of agriculture under environmental constraints", paper prepared for for the EAEPE Fifth conference, Barcelona, 28-30 October 1993.

global warming are only the first and most prominent troubles. According to Mjøset and Kasa, technological innovation can solve some problems, but a cumulative effect remains, which is likely to increase today's consciousness of environmental problems and the need for further technological change in addressing them in the future. The question for post-Fordism is therefore whether present-day technological trends can reduce emissions from burning fossil oil. Information and bio-technologies are regarded as the most likely candidates for eliminating a number of bottlenecks and dilemmas of the Fordist production process: 'both biotechnology and microelectronics facilitate savings on raw materials ... In any case the new production processes are probably less of a menace to the environment than the Fordist ones' (Mjøset and Kasa, 1994, p. 189). Such a view echoes those regarding a new green techno-economic paradigm as a potentially radical shift away from the high material- and energy-driven era of Fordism (Freeman, 1992). Resources in the hands of a hegemonic power are identified as the key framework conditions for such a shift. The current US position is seen, however, as the major hindrance for a more constructive environmental politics at the international level: 'the US is the only actor which would have the power to enforce environmental action at the global level. (...) the unwillingness to launch such action signifies that the US – just like England earlier – is tied to the growth model which it once pioneered' (Mjøset and Kasa, 1994, p. 192).

Such an account provides a striking emphasis on the material weight on which technological progress and their environmental impact rely. Moreover, the neo-Schumpeterian perspective on techno-economic paradigms echoes the prominence given to long wave accumulation dynamic by regulation approaches in discussing conflictual issues of growth regimes. The broader institutional and political context is also rightfully taken into consideration in addressing environmental-friendly technological changes. In stressing the weight of history and material structures, it marks the limits for likely epochal changes out of the current ecological crisis. Yet, the way such changes may occur is not discussed, except for naïve expectations on the benign role of the hegemonic power in the world economy. Accordingly, the United States is identified as both the knight in shining armour and the mischievous demon! The United States is so far undertheorised that we cannot understand the power base for any such potential change: shall we consider the US State and its position within the balance of power in the world order, the US way of life and its diffusion worldwide, the weight of the US economy and its production structure? Moreover, should all these aspects be included in the analysis, what would their relationship look like? In short, the depth of the

long-term historical understanding of environmental problems in capitalism impairs the conceptualisation required to discuss ways out of the twin crises of Fordism and ecology.

In contrast, the second stream of regulationist-inspired analyses provides a sophisticated conceptualisation of current and future environmental issues. It often lacks empirical and historical ground, however. The political ecology perspective of Lipietz has been the most straightforward attempt to analyse how a post-Fordist regime could fix the fate of the rise of global environmental problems. From this standpoint, labour-capital relations are entwined in ecological concerns (Lipietz, 1997). Scenarios on a new accumulation regime call for attention to the ever-mounting worldwide level at which institutional compromises could address the political economy of global environment: “For the first time, we are involved in the collective management of global ecological crises” (Lipietz, 1995b, p. 118). This involves thornier tensions than classical class struggles of industrial capitalism: “the pursuit of an institutionalised compromise, which will be interclass, international and intergenerational in the same time, would be infinitely more complex than a mere domestic capital-labour ‘New Deal’” (Lipietz, 1995a, p. 355). The way out of the twin global ecological and Fordist crises thus strongly reminds one of a grand bargain, against which “the North/South divide is crossed by another divide: the Do Nothing/Do Something” (Lipietz, 1995b, p. 132). This account provides new insight on global institutional compromises in a time when environmental and economic issues can no longer be dealt with within sovereign States. Moreover, the analysis stresses the intimate link between political ecology concerns and the international hierarchy in which the division of labour takes place. Yet, in appraising alliances most likely to drive a future grand bargain, Lipietz tends to rely excessively on a centralised and state-centric understanding of negotiation processes and outcomes. The model still seems to be the failed expectations of the 1970s claims for a New International Economic Order, at the time supported by a dubious coalition of oil producing states and radical Third World regimes. In addition, coalitions are conceived at a level of abstraction largely disconnected from actual institutions, legal instruments and sites of political contention in which concrete negotiation outcomes take place. Accordingly, the analysis fails to appraise the field of the possible where to situate the connection between labour relations and global ecology. Finally, such a normative analysis has become to a large extent outdated; the rising ecological consciousness and deep transformations of the international division of labour in the context of globalisation has resulted in a reconfiguration of the most promising coalitions within the North/South as well as Do something/Do nothing divide.

The most prominent argument within regulationist-inspired analyses of post-Fordist growth regimes ultimately revolves around the emergence of a finance-led stakeholders' regime. Aglietta has defined such a regime by "the increasingly preponderant role of the asset markets, which are the vehicles by which household wealth helps determine macroeconomic equilibrium" (Aglietta, 2006, p. 12)³. Yet, as he reminds us, a mere control by the market remains an unlikely candidate for implementing stability and ensuring sufficient social cohesiveness out of individual competition: "the feasibility of a mode of regulation geared towards social progress depends above all on the type of political mediation" (Aglietta, 2006, p. 16). Aglietta suggests that such mediations would target the three following issues: the ability to redefine the status of labour on a life-long professional basis, the social ownership of capital, and the promotion of women's social role. The cornerstone of the whole argument, however, focuses on capital ownership and how expanding the involvement of labour unions in order to rebalance performance criteria of pension funds: "By assimilating the logic underlying the stakeholder regime of growth, they would be lending substance to this novel aspect of the 'wage-earner society', i.e. the advent of a social ownership of capital" (Aglietta, 2006, p. 29).

How does the argument on the emergence of a finance-led regime impact upon the significance of environmental issues in appraising the future of capitalism? Explicit analysis of the various aspects of the ecological crisis has hardly surfaced in the massive debate on the supposed emergence of a finance-led stakeholders' regime. The centrality of the Board of Directors in such regime means that a counter-movement taking into account environmental concerns would parallel wage earners' claims targeting corporate governance and pension funds management. Aglietta assumes that a political control rebalancing shareholder value creation towards a "sustainable value" would include among its core objectives "human capital, innovation, and environment in a prospective model where value creation is underpinned on a time-based continuity of the firm" (Aglietta, 2005, p. 65).

Grounds for engaging the finance-led regime thesis are legion as the overall argument remains the one on which widespread trends in the regulation literature converge. Against this background, it is all the more telling that the core debate around which regulation approaches have revolved for a decade or so has hardly anything to say on global ecological concerns

³ This definition is quoted from an English version of a paper originally published in French in 2001 ; the finance-led regime argument was first presented in French in 1998 (Aglietta, 1998) ; a revised and broader version can be found in (Aglietta and Reberrioux, 2004).

largely recognised as one the most prominent issues of the 21st Century. Moreover, in a context deeply marked by globalisation, the questions pertaining to the international setting in which finance-led stakeholders' regime discussed by Aglietta and others could operate are chiefly confined to their monetary dimension (more particularly, the future of the dollar as the key currency of the international monetary system in the context of rising balance of payment disequilibrium at the global level). At best, the environment appears as a simple and untheorised add-on to a conception of social progress narrowly understood around capital-labour relationships⁴. Thus, the normative lessons drawn from the analytical assumption of the finance-led stakeholders' regime stand out as needing further elaboration. In calling for "a conception of social progress that is compatible with a stakeholder regime of growth, and above all, that is compatible with globalisation, and with the fact that technological progress is currently oriented towards the service sector" (Aglietta, 2006, p. 17), such an approach conceives post-Fordism as not intrinsically related to more satisfactory responses to the global ecological crisis.

However unlikely such a connection might appear at first glance, divergent regulationist interpretations of the interplay between the twin crises of Fordism and ecology ultimately reflect distinct appraisals of the Marxist tradition. According to the Green Althusserian perspective of Frieder Otto Wolf, the ecological crisis undoubtedly precedes the crisis of Fordism. If the former is not solved first, "the solution of any other contradiction of the present conjuncture will remain ineffective" (Wolf, 1988, p. 101). By denying the possibility of a joint issue out of both crises, such a perspective now appears extraordinarily deterministic as it disconnects one aspect of the problem from the other. O'Connor, for his part, analyses capitalist contradictions and the possibilities of a sustainable capitalism as an outcome of social struggles, which could eventually mediate between the ecological and Fordist crises: "There is a kind of war going on between capital and the environmental movements, a war in which these movements might have the effect (intentional or not) of saving capital from itself in the long run by forcing it to deal with the negative short-term effects of cost shifting" (O'Connor, 1994, p. 164).

In her appraisal of the tentative ecological sustainability of capitalism from an eco-Marxist point of view, Vlachou ends up with a more nuanced account of the contradictory nature of

⁴ It is not coincidental in this regard that the argument on the social promotion of women is the least detailed and persuasive in assessing the mode of regulation supposedly privileged for building a new European Left (Aglietta, 2006, p. 17).

the transformation of capitalism to a more environmentally defensible (still capitalist) alternative. According to her, “the process of sustainable development [remains] unstable and uncertain” (Vlachou, 2004, p. 945); yet “the possibility of a sustainable capitalism can be clearly derived from a Marxist analysis of the changes and adjustments made in capitalism in response to the ecological problems the latter creates” (Vlachou, 2004, p. 948). In a similar vein, the neo-Poulantzian approach of Brand, Görg, and other Germano-Austrian regulationist scholars draw on the Frankfurt school of critical theory to consider that so-called post-Fordist societal relations with nature are not given, but result from a highly contested process, likely to be stabilised by a new kind of global regulation conceived as the “internationalisation of the state” (Görg and Brand, 2006). Here too, social struggles are acknowledged as crucial elements in the outcome between environmental and material concerns in a post-Fordist context, yet more straightforwardly situated at a global level: “A critical theory of the internationalization of the state must examine the emerging forms of global domination and power relations without appearing disinterested in the multitude of details of the socio-ecological conflicts” (Görg and Brand, 2006, p. 120). Although resembling the picture of the glass either half full or half empty in identifying the current wave of accumulation, these accounts are apparently closer to an evolutionary-inspired regulationist interpretation of sustainable development issues than prior analyses of the twin crises of ecology and Fordism. The study of such socio-ecological conflicts can hardly discard some core insights from ecological economics.

2.2. Ecological economics and the questions of natural limits and throughput

Ecological economics marks an ontological shift as compared to neoclassical, institutional and most regulationist-inspired readings of the causal relations between the economic sphere and the biosphere. The biosphere can no longer be characterised as subservient to the economic sphere, which in turn rests upon an anthropocentric, utilitarian and instrumental view of the relationship of humankind to the environment. The fundamental interdependence between social life, its material base and nature can arguably go back to the origin of humanity. In the contemporary industrial age, though, the shift in the understanding of the economic process as indissociable from the environment appeared in the 1960s. The key innovation of the now acclaimed bioeconomist Nicholas Georgescu-Roegen was to incorporate the law of entropy into economics and its consequences on long-term growth and the future of the planet (Georgescu-Roegen, 1966). The laws of entropy as applied to physics, developed by the French physicist Carnot, notably stipulated that energy is subject to

irreversible degradation and, which results in increasing disorder (high entropy) and less energy. The lesson that Georgescu-Roegen drew from this law was that the economic process *in fine* transforms the low entropy of energy and materials inherited by humanity into the wastage of high entropy. Seen against this background, economic policy should have one, and only one, target: to minimise the throughput, i.e. the amount of energy and material used by the economic process. Georgescu-Roegen's catchphrase for this objective is still widely used today: *to do with less*. The iconic vision of *spaceship earth* launched in 1966 by Boulding is another formulation of the challenge that the material underpinnings of human life on earth were beginning to face at the time (Boulding, 1966). In that decade and the following one, several analyses and reports followed on such an understanding of a potential catastrophic future if no radical shift occurred rapidly. Among them, *The Limits to Growth* report published by the Club of Rome in 1972 was probably the most prominent. Interestingly, it was commissioned by a body created in 1968 by industrialists worried about the 'unsustainability' of the postwar industrial model.

Various progressive and radical perspectives have emerged from these beginnings. Among them, Herman Daly's steady-state communitarian economics has been very influential in the subsequent development of ecological economics. Although different views existed from the outset, this strand of scholarship understood growing environmental concerns as a splendid opportunity – or even a precondition – for upsetting the underpinnings of liberal cosmopolitan capitalism. Frugality, managed and limited trade, negative growth of the economies of the North would enable those of the South to grow (Daly and Cobb, 1989).

The overall argument of ecological economics is powerful and brings an important counterpoint to most conventional approaches. Particularly by emphasising that the economy will always remain a sub-system of the biosphere, it framed the questions of natural limits and ecological efficiency as inescapable issues regarding the future of capitalism. Whilst the notion of throughput has become central in ecological economics studies on how to minimise total input of energy and material and output of waste, industry concerns and political debates have also come to the conclusion that a shift towards eco-efficiency would eventually result in the rise of industrial ecology, dematerialisation, decarbonisation and the like. Yet, regarding the questions of limits and throughput, two major uncertainties remain on the scales at which situating ecological economic analyses. On the one hand, there is an ongoing debate on the physical scale at which the environmental degradation takes place. For instance, opinions on

the load capacity of the biosphere vary greatly. The alarmists, especially Daly (who constantly harps on this point), claim that humanity is already taking up 40% of the capacity for photosynthesis implicit in the amount of incident sunlight. Others, such as Le Bras (Le Bras, 1994, p. 118-144), consider this figure to be 2.5% at most. On the other hand, and most importantly, there is no proper criteria to define the time scale on which to appraise ecological limits and ways to respond to it by improved throughput. Geophysical time obviously differs from that of human history or economic cycles. A new balance between such divergent scales is a contested process contingent upon social struggles rather than science-based evidence. Moreover, ecological economics dodges the problem of wage-labour relations in assessing the relationship between capitalism and nature. Georgescu-Roegen has notoriously stressed that the control of exosomatic tools is a substitute for class struggles in the engine of history. Despite everything, ecological economics fails to define the scales of environmental problems resulting from the crisis of Fordism and excessively relies on normative values, not to mention quasi-religious conservationism, in appraising current and future limits to growth. Finally, ecological economics tends to under-theorise the global political economy of capitalism and, even when theorisation exists, normative considerations are omnipresent, if ambivalent. Their implicit normative project wavers between a kind of neo-medieval world order in which distinct communities could emancipate themselves from the interstate system (Helleiner, 1996) and a recurring call for “self-sufficiency of national communities” contentiously drawing upon Keynes’s famous text, *National Self-Sufficiency*, written in 1933 ((Daly and Cobb, 1989, p. 209-235) – for a critique, see (Damian and Graz, 2001a, p. 604)).

We now turn to how international political economy approaches may help us to better understand the power constellation in which situating such deeply disputed global environmental concerns.

2.3. International political economy and the rise of fragmented global hybrids

International political economy is a field of study which for the most part originates in political science and international relations departments. A basic assumption in much conventional international relations scholarship is that international power structures are neutral, be it with respect to environmental problems or other issues such as monetary order of collective security. This assumption is based in the widespread recognition that in the absence of world government able to enforce rules as states do at the domestic level, responses to global environmental problems are driven by constraints resulting from the

formal logic of collective action. Accordingly, much debate focuses on whether or not sufficient coordination is likely to be implemented in a decentralised interstate system. By contrast, critical approaches strongly discard any analysis confining global environmental problems to dependant variables of formal and neutral interstate power structures. They tend to privilege the global arena over international relationship and stress the transnational dynamic in which regulatory practices and structures constraints of contemporary capitalisms are situated. They do not treat the international separately, but as one among other key components of a holistic understanding of global social relations. As Palan puts it, the analysis is premised upon an understanding of “the transnational economy operating within a system of fragmented political authority”(Palan, 2000, p. 17).

Critical approaches which take environmental considerations seriously thus assume that responses to the twin global crisis of Fordism and ecology imply coordination mechanisms beyond mere international regimes. A central point in many studies is that this “cannot be understood separately from the broader shifts in authority in global politics. Such shifts drive, both positively and negatively, the development not only of conventional governance arrangements ... but also and simultaneously, of new governance arrangements, such as privatized forms of governance, new corporate NGO arrangements, multilevel governance and deterritorialized practices”(Paterson, et al., 2003, p. 7) In order to capture the power involved in the interactions between states and non-state actors, we should not merely target resources, outcomes and distribution of power focused on decision-making processes across issue areas; nor additional layers of governance whose functions would complement traditional state functions. States and non-state actors should be considered as a joint expression of one broad configuration of structural power.

Gramscian-inspired interpretations of hegemony closely related to transnational historical materialist approaches provide persuasive analytical tools to theorise the overall coherence provided by the relationship between state and non-state actors. The notion of hegemony refers to the ability to exercise power on such a consensual basis that the orderly structuration of interests it favours is less visible, recognised as given and reflecting the general interest. As Levy and Burnham argue, “the contested and contingent nature of Gramsci’s notion of hegemony finds a path between state-centered accounts of traditional regime theory and overly instrumental accounts of corporate power” (Levy and Newell, 2005, p. 64). Whilst this emphasises the importance of consent in a structural understanding of power on a global

scale, it remains unclear whether the ever-increasing fragmentation of economic, political and ideological forces underlying environmental concerns should be related to a new form of hegemony in the making or rather reflect a lack of comprehensive and consensual coordination mechanism in contemporary capitalism.

Fragmented and less centralised forms of coordination are core features of recent scholarship investigating new patterns and agents of power such as transnational private governance and international private authority (Cutler, et al., 1999; Graz and Nölke, 2007 forthcoming).

Brand suggests in this regard that we may live under conditions of “fragmented hegemony” world wide, according to which hegemonic social relations prevail within core industrial relations – but not in North-South relations (Brand, 2005, p. 171). Fragmentation could well define coordination mechanisms beyond the North-South divide.

In a broader context, the nature and the implications of the rise of less centralised forms of coordination look like global hybrids (Graz, 2006). This concept refers to the growing importance of fragmented authority on significant issues transcending national borders. More precisely, global hybrids blur the types of actors legitimately involved in authority, concern issues undermining the distinction between science and society, and pursue a fragmentation of the space where the endogenous logic of territorial sovereignty gives way to an exogenous logic reinforcing the transnational underpinning of capitalism. Hybrid actors, issues and spatial scope are three features which show how little agreement exists on what any compromise on the twin crisis of environment and Fordism may look like: the entanglement of state and non-state actors; the impact of a new class of object closely related to the political implications of science and technology in which situating global environmental problems; the increasing irrelevance of territorial units in which considering social forces most likely to influence such issues. The concept of global hybrid may thus clarify why fragmentation should be seen as constitutive of the new coherence sought in the outstanding shift in the articulation between the political and the economic spheres across the globe. Put briefly, fragmentation may well underpin coherence, and not the other way round.

International political economy literature reminds us that international regulatory frameworks should not be understood as conventional regime theory to which most regulation approaches still refer to. Instead of focusing on most likely collective action implementing coordination mechanisms in a decentralised interstate system, the transnational economic dynamic of capitalism is assumed to rest on a system of fragmented and hybrid authority of states and

non-state actors. Without the insights of regulation approaches and distinct strands of scholarship within ecological economics, international political economy studies would not be able to give adequate attention to the specificity of ecological dynamic and constraints, the large scale techno-economic paradigms in which situating global environmental problems, as well as the domestic compromises and institutional thickness constraining the shaping of environmental issues in a post-Fordist era.

2.4. Towards an evolutionary environmental regulation

The concept of evolutionary environmental regulation points towards an attempt to bring together ecological economics and international political economy scholarship in opening new routes to regulation theory. The concept may help us expand our understanding of competing modes of regulation in the wake of Fordism. The notion of regulation obviously reflects the centrality of lessons to be drawn from regulation theory. For their part, notions such as “environmental” and “evolutionary” bring insights from ecological economics and critical approaches in international political economy.

Regulationist-inspired studies situate responses to the twin crises of Fordism and ecology in the *longue durée* of successive stages of techno-economic paradigms and in the coherence sought out of various contradiction resulting from the accumulation regime. How can ecological changes in capitalism result in new forms of institutional compromises? Coriat, Petit and Schméder argue that a finance-led regime is less likely than others to substitute Fordism since it is more “unstable and open to fraud” than usually expected and may therefore “well have been part of a transition phase” (Coriat, et al., 2006, p. 97). They consider that on a long term basis contemporary changes are likely to bring about a more sustainable and internationalised demand-led regime driven by a shift in modes of consumption and ways of life. In their attempt to spell out how post-Fordism may result in a more “sustainable global order” (Coriat, et al., 2006, p. 312), they make the following assumption: “While the transformations in the realm of finance have been pushed forward by a set of agents with an international reach, in the domains of consumption and ways of life, the objectives have been much more fragmented and uncertain. These objectives ... are not likely to come out as some big programme or grandiose ideology, but as results of lengthy learning processes involving trial and error, through which a new conception of citizenship will emerge” (Coriat, et al., 2006, p. 333). This analysis is clearly an attempt to open new routes to regulation theory out of the centrality of the finance-led argument. Two core issues

remain unclear. First, there is a lack of clear hierarchy between the five canonical structural forms distinguished in regulation theory (state; money; international relations; competition; wage-labour nexus). Whereas Petit underlines the prominence of one institutional form (competition) over the others as “as it emphasises the central logic which conditions the evolution of all other forms” (Petit, 2006, p. 108), he does not exclude “the possibility of a more mixed combination of forms”(ibid.) and sides with his co-authors in stressing fragmentation and uncertainty. The term evolutionary in the concept of environmental regulation is precisely an attempt to provide further insight to such an understanding by drawing lessons from international political economy analyses of hybrid, fragmented and open ended forms of transnational regulation based upon the authority of a wide range of states and nonstate actors. From this standpoint, international relations not only gain prominence, but structural forms may well differ from the pentagonal framework watched over as the core business of regulation theory. Second, whereas the notion of sustainable global order is emphasised, the environmental dimension of the notion is neglected. Nowhere does the analysis engage the contradictory nature of the transformation of capitalism towards a more environmentally defensible alternative. The term environmental in the concept of evolutionary regulation conspicuously points to the assumption that ecological concerns can no longer be left as a marginal issue. However divergent ecological economic analyses may be, their contribution will be to have brought the question of natural limits and the necessity of ingrained ecological efficiency to centre stage in providing a response to the challenge of throughput in the economic process.

Against this background, evolutionary environmental regulation can be defined as a set of coordinated, yet fragmented, hybrid and open-ended practices which impact upon the growth regime, its inscription into nature and environmental constraints, and as well as its political and institutional embeddedness at a global level. This clearly supposes a more fragmented and evolutionary framework than the one envisioned in most finance-led regime analyses emphasising the strategic importance taken by the Board of Directors for shareholder value creation and distributional issues. By substituting grand narratives on potential worldwide compromises out of the global ecological crisis for manifold scattered initiatives and pragmatic programs, the potential evolutionary environmental regime epitomises one form among the many taken by global hybrids in a context of transnational private governance. Despite a high degree of fragmentation, it may result in a complex web of ad hoc arrangements which would not in themselves preclude regularities. Coherence should be

looked for elsewhere than in the hopelessness of centrally-organised comprehensive compromises backed up by hegemonic powers and intergovernmental organisations. As open-ended, fragmented and hybrid, the coherence of evolutionary environmental regulation reinforces the extreme difficulty to think about ecological regularities. The remainder of this paper examines how such an understanding of an evolutionary environmental regulation may provide an account of the apparently paradoxical situation we have reached, in which a shared disillusion regarding sustainable development joins shared awareness on the inescapability of a policy shift in its favour.

3. Towards a sustainable capitalism: survival in a quagmire?

Utopian expectations arising from the debate on sustainable development focused on a sweeping regime change, particularly in the domain of consumption habits (to do with less) and uneven capitalist development structures. A global transformation of contemporary capitalism following a radical understanding of sustainable development can be seen as utopia *par excellence* and, for the time being, remains out of sight. Yet this does not mean that environmental chaos prevails. On the contrary, recent developments provide strong evidence of emerging, if fragmented, environmental regulation.

Regarding consumer habits, 20 years of discussions and negotiations following the statement of US President George Bush Sr. at the Rio conference that the American way of life was not negotiable has taught us that there is more truth than not in this claim. Herbert Simon pointed out two decades before Rio that “Man is the insatiable animal. No matter what he has, he can conceive of having more. In the face of Man’s insatiability, how do we limit, as ultimately we must, the demands he places on Nature?” (Simon, 1973). Should one cast doubt on assuming inherent traits of human nature, the expected rise of a global middle class will inexorably impinge on consumption habits worldwide. As a recent World Bank Report on the prospects of the next wave of globalisation points out, faster growth in developing countries might result in disruptive threats to the global commons if, by 2030, fully 1.2 billion people in developing countries (15% of the world population) belong to the global middle class. This large group will participate in the global marketplace, demand world class products and have the purchasing power to buy automobiles, many consumer durables and travel abroad (World Bank, 2006, p. xvi).

Consumptions habits are one thing, levels of consumption are another though. World population has almost doubled since Paul and Ann Ehrlich published the *P Bomb*. In 15 years, the global waged labour force has also approximately doubled (from bn 1.5 to bn 3) and, therefore, doubled the number of people around the world expecting to rise their level of consumption. According to the world Bank, by 2030, the world's labor force will number some 4,1 billion workers, 90 percent of whom will live in the developing world (World Bank, 2006, p. xvi). If one adds GDP per capita growth to the impact of population growth, further doubts can be cast on the long term sustainability of capitalism, even with technical innovations (Dosi and Grazzi, 2006).

Regarding the failure of sustainable development to significantly enhance worldwide inequality, we should not forget that Gro Harlem Brundtland explicitly viewed sustainable development as a “political concept for human social, economic and environmental progress”, which would allow all of us “to move from one earth to one world” (Brundtland, 1993, p. 19 and 26). Few would deny that regulation of sustainable development at that level of institutionalisation is in no way within sight in the current context. Multilateral environmental agreements could have become privileged fora to negotiate compromises including monetary compensations and technological transfers. Yet, whenever substantial power and wealth issues are at stake at the global or domestic level alike, no agreement is reached, or at best that looks like window dressing. In a less sceptical tone, existing regimes are largely viewed as already entering into an “ossification” phase (Depledge, 2006).

A widely acknowledged pragmatic view against such a pessimistic understanding of environmental and ecological issues is instrumental in reinforcing the emergence of a fragmented environmental regulation. By and large, pragmatic claims rely on three assumptions. First, technical progress will always enable a substitution of natural capital for artificial or man-made capital (Solow, 1974). For instance, when global warming results in a lack of snow in ski resorts, snow cannons are designed to produce artificial snow. As Nordhaus (1973) (1973) noted, ‘backstop technologies’ exist to project the current state of technological innovation as a ratchet mechanism into the future.

A second core argument is that further liberalisation favours growth and additional resources available for sustainable development. This is for example the key issue of the contrasted pieces of evidence regarding a potential diminution of pollutant emissions once a defined peak has been reached in the growth of GDP per capita; the relevance of such an inverted U-

shape curve between pollutant emissions and growth stands at the core of the so-called environmental Kuznets curve. It is arguably the core and only theoretical framework behind the Agenda 21 mission statement adopted at the Rio earth Summit of 1992, namely to promote sustainable development by trade (Damian and Graz, 2001b). In that perspective, there is no more irresolvable contradiction between economic growth and the environment. On the contrary, the economy and the environment can be conceived as being mutually reinforcing to the benefit of society in general.

A third assumption of pragmatic approaches is that solutions to the global problem of sustainable development are to be found at the micro level of economic actors. As Stephan Schmidheiny, Chairman of the World Business Council for Sustainable Development, put it, “business should be the engine of sustainable development” (Schmidheiny and Business Council for Sustainable Development, 1992, in Damian/Graz 2001:31). The implementation of development and environmental policies at a global as well as local level widely disseminated that model. Moreover, in 1993, the Environmental Department of the World Bank swiftly laid ground for a very similar understanding of sustainable development as driven by three entwined economic, social, and environmental pillars (Munasinghe, 1993). Today hardly any analysis of sustainable development would be made without reference to three pillars. The managerial conversion of such an analysis is the ‘triple bottom line’ framework. (Elkington, 1998). The catchy *Planet Profit People* title of the 2001 Shell annual report may be seen as greenwash communication strategy (Shell Report 2001). Yet, at the same time, it reflects the challenge that major multinational corporations around the world now face. Undoubtedly, they remain far from fully accountable in this respect; they do however take up the expectations arising from accepting to be publicly concerned by sustainable development claims.

The three basic assumptions of technical progress, liberalisation and entrepreneurship represent pragmatic responses to sustainable development. Privileged instruments massively borrow from the neoclassical toolbox. Environmental taxes, property rights, pollution permits, emission trading are only the most prominent of the market incentives that contribute to the demise of public regulation identified as inefficient and undemocratic command and control policies. Yet difficulties faced in implementing such market incentives have been much tougher than expected and now represent a major problem even in the most advanced market-oriented economies of the OECD. For instance, states appear to be unable to legitimise a

forceful environmental tax regime to such a point that the most fervent advocates of market incentives see no way other than collective preferences to better obey economists' textbooks (Pearce, 2006)! Such an understanding reflects the assumption that mere economic calculation based on price signals remain largely unsatisfactory for tackling unsustainability (Sinclair-Desgagné, 2005).

Against this background, there is clearly a shared disillusion on the implementation of sustainable development since the publication of *Our Common Future* 20 years ago. In a recent issue of one of the leading journals on the topic, three economists – including a former President of the International Society for Ecological Economics – identify the post-Brundtland world as a quagmire. Nevertheless they consider that sustainable development can help us sort out the ongoing challenges of environment and development: “the case for pluralism in the analysis and normative construction of sustainable development, highlighting how an amalgam of ideas from recent work in ecological economics, political ecology, and freedom-oriented development might advance the sustainable development debate beyond its post-Brundtland quagmire” (Sneddon, et al., 2006, p. 255). Such a claim echoes those scholars summoning up more modesty in targeting a synthesis between ecological economics and neoclassical environmental economics, in contrast to the preceding debate opposing advocates of strong versus weak sustainability (Konchak and Pascual, 2006; Venkatachalam, 2006 in press; Wagner, 2006). It remains to be seen, however, whether the new ‘pluralistic, theoretically informed praxis of sustainable development based on a renewed commitment to practices of deliberative democracy’ (Sneddon, et al., 2006, p. 255) is not another case of wishful thinking, a third way out of the opposition between a cooperative global environmental governance and neoliberal economic globalisation.

And yet! A flurry of fragmented, hybrid, open-ended guidelines for survival in a time of global ecological crisis and post-Fordist restructuring has gained significance in the last 20 years. Each on its own terms has resulted in ad-hoc solutions gradually making headways and reinforcing recent initiatives. In this regard, climate change has made daily headlines since late 2006. No surprise if one remember the most recent conclusions reached by the Intergovernmental Panel on Climate Change: “Anthropogenic warming and sea level rise would continue for centuries due to the timescales associated with climate processes and

feedbacks, even if greenhouse gas concentrations were to be stabilized”⁵. Whilst Nicholas Stern, the UK’s government adviser on the economics of climate change and development, sent a stark message in a report predicting the prospect of an economic downturn on the scale of the great depression unless structural shift is implemented at a global level to slash greenhouse gas emission, countless organisations such as Climate Care in the UK, Action Carbone in France, or the privately-owned company Carbon Footprint offer on a largely fragmented basis ad-hoc solutions for offsetting carbon emission as a way to repair the damage that air travel does to the climate. Likewise, as a forceful regime shift regarding environmental taxes faces considerable limits, an ever wider range of corporate social responsibility initiatives invent new ways to include global warming concerns in private-public partnerships addressing development concerns and entrepreneurial ventures alike. It is all the more telling in this context that the 2007 Human Development Report of the United Nations Programme on Development specifically explores all sorts of responses to the ways in which climate change presents a clear and present danger for a large section of humanity by increasing vulnerability and widening income, gender and regional inequalities.

4. Conclusion

This paper provides a critical and disenchanted account of the problematique and implementation of sustainable development. Yet, 20 years after the launch of the concept, 40 years after the term environment entered the political arena, and even more than 60 years after what the historian of the environmental movement Worster (1992, p. 365) called the birth of the ecological age in reference to the testing of the first atomic bomb in New Mexico in 1945, we seem to be confronted by a paradoxical situation in which privileged Northern societies and the global South alike are faced by the problems of sustainable development on their everyday life. It has become almost idiomatic in any policy issue, even if no further agreement has been reached on what sustainability fundamentally means.

An evolutionary perspective appears to be of particular relevance shedding light on the shared disillusion regarding sustainable development. Issues pertaining to inter- and intra-generational equity, and ecosystems vulnerability and collapse cannot be solved by sound science; they will always reflect a political economy configuration of social forces that imply fundamental distributional struggles and conflicting discourses over the potential compromises sought out in such a context. Moreover, such an apparently paradoxical

⁵ Working Group I of the Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: The Physical Basis, Summary for Policymakers*, Paris, February, p. 12.

situation only reflects the continuum that spreads all along greenwashing and incremental change on the one hand, and radical change, notably inspired by Georgescu-Roegen's bioeconomic program on the other. Ultimately, if we take the impact of the entropy law on the intrinsic limits faced by any global political economy configuration seriously, we should remember Mayumi's (2001, p. 45) definitive statement: "The true question facing bioeconomic beings consists in *the choice of the suitable rate of increase in entropy in the long term*" (italics from the author). There is of course no standard for such a rate of increase, only institutional compromises reflecting ongoing political economy struggles. As Levy and Newell put it from a Gramscian-inspired account of global environmental governance, "corporate environmental management represents a series of strategies and accommodation that help to shore up corporate legitimacy and autonomy and deflect the threat of more drastic regulation. It is thus more about political and economic than environmental sustainability" (Levy and Newell, 2005, p. 59).

It is against such a background that the paper has explored evidence of an emerging form of evolutionary environmental regulation. In a recent special issue taking up the debates between regulation theory and sister approaches, several authors pointed out that regulationist theory continues to face a tension between structuro-cyclical approaches and more evolutionary perspectives replacing economico-technological determinism (Dannreuther and Petit, 2006). As Palan (2006, p. 247) points out, an evolutionary position "places the emphasis on an evolutionary process of trials and errors by which something that can be described retrospectively as a regime emerges". The emergence of evolutionary environmental regulation should be seen from such an institutionalist interpretation of history.

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