

49th Annual ISA Convention
San Francisco, CA
Session FB31 Friday 10:30-12:15
“Theorizing Global Environmental Politics”

Theorizing the Institutional Dimension of the Global Ecological Crisis

Matthias Finger¹

Abstract

This paper problematizes the institutional dimensions of the global ecological crisis by arguing that it is ultimately institutions which incentivize actors to behave in ecologically unsustainable ways. Rather than seeing the global ecological crisis too narrowly as being a problem of inadequate technologies and lack of political will, or too broadly as a problem of capitalism and consumerism (to name just a few possible causes), this paper focuses on the intermediate level of institutions, namely nation-states, transnational corporations, global business associations, global environmental non-governmental organizations, international and multilateral organizations, and all combinations thereof summarized in the concept of “global environmental governance”.

The purpose of this paper thus is to outline a conceptual framework that helps understand the current ecological crisis of global proportions *as an institutional crisis* or problem. Grounded in a conceptual approach that builds on institutionalism, institutional economics, new institutional economics, and the sociology of technology, the paper develops – on the basis of some preliminary empirical analysis of the currently dominant institutions supposedly addressing the global environmental crisis – a first outline of a *theory of the global ecological crisis as an institutional crisis*. These theoretical developments stress, in particular and unlike traditional institutional theories, the role of technology, more specifically the role of the co-evolution between technology and institutions as both a cause of the current global environmental crisis and as a possible way towards a more sustainable development path.

Keywords: global ecological crisis, co-evolution of technology and institutions, institutionalism

¹ Professor, Management of Network Industries, College of Management of Technology, Ecole Polytechnique Fédérale Lausanne (EPFL), Château de Bassenges, Station 5, 1015 Lausanne, Switzerland; matthias.finger@epfl.ch

Industrial civilization is unsustainable, especially ecologically unsustainable. All ecological (performance) indicators support this statement; be it natural resources depletion, decline of the life support systems, biodiversity loss, water stress, emissions (e.g., CO₂), and many others more, all indicators and especially all trends show that current industrial development leads to a dead end. Examples abound and one could fill pages arguing about the extent to which industrial civilization is unsustainable. To the point that even presidential candidates (Al Gore) – and soon presidents themselves – argue convincingly that our civilization is driving straight into the wall. In other words, that industrial civilization is leading to a dead end has now become a mainstream argument, and very few people today contradict it. Every average citizen is now aware that things cannot continue along the current path. In short, the global ecological crisis is now a fact. The main question now is how to address it. However, this question of how to address the global ecological crisis cannot, in my view, be properly tackled if one does not proceed to a thorough analysis of what the main causes of the global ecological crisis are.

Indeed, a quick look at what people generally consider to be the cause of today's global ecological crisis indicates a serious analytical deficit. On the one hand, one finds overly simplistic causes such as lack of political will, unethical leaders, or “unsuitable” technologies, whereas, on the other hand, people blame capitalism, individualism, consumerism, and the like. What is however lacking is a more realistic analysis of the current global ecological crisis, which in turn can lead to actions that will indeed make a difference in terms of sustainability. Lacking such an analysis, people then turn to the usual institutions – e.g., governments, businesses, NGOs, and the international and multilateral institutions – in their hopes to address the global ecological crisis.

This paper argues that precisely these institutions – i.e., nation-states, global governance institutions, global market actors, in particular transnational corporations, but also global (environmental) non-governmental organizations – are not appropriate tools to address global ecological degradation. Worse, these institutions might actually exacerbate global ecological degradation, rather than stemming or reversing it. In other words, this paper argues that the above institutions – on which peoples generally put their hopes when it comes to addressing global ecological degradation, in part because of a lack of alternatives – are not neutral tools in the hands of their decision makers (i.e., politicians, CEOs, and other leaders), but rather have a destructive dynamics in themselves, as they are the ones that accompany, facilitate, and even actively promote industrial development and therefore ecological degradation. The paper makes this case theoretically and empirically. Its ultimate aim is to theorize the institutional dimensions of the global ecological crisis, hoping that, from such a theoretical understanding, institutional alternatives to the global ecological crisis can be explored.

The paper is structured as follows: in a first chapter, I will crystallize how institutions in the context of the global ecological crisis are generally perceived by mainstream thinking. I will also show that this dominant perception is at best naïve and in any case astonishingly at odds with the challenges we face. In a second chapter, I will then analyze the current literature about institutions, in particular new institutional economics and

institutional economics. This analysis will highlight the relevance of this literature in light of our problématique. It will also indicate some further needs for theory development so as to better understand the institutional dimensions of the global ecological crisis, focusing in particular on the co-evolution between technology and institutions. Chapter three is an empirical chapter, in which I will crystallize the role the various institutions play in promoting current industrial development, and thus in exacerbating global ecological degradation. In chapter four, I will make a first attempt at theorizing the institutional dimensions of the current global ecological crisis.

The current perception of the institutions poised to address the global ecological crisis

The popular perception of the institutions which are generally poised to address the global ecological crisis – i.e., national states (national governments), businesses (especially big transnational corporations), big global non-governmental organizations, as well as international organizations and new global governance institutions (e.g., the World Economic Forum) – is seriously at odds with the magnitude and the seriousness of the challenge. Indeed, if people are generally alarmed about the state of the global environment and the accelerating dynamics of its destruction, they still seem to trust the above institutions when it comes to addressing both the crisis and industrial dynamics more generally. Furthermore, people don't seem to blame these institutions as being responsible for such destruction, or, if they do (as is occasionally the case with “bad” transnational corporations), they somehow consider that these institutions can simultaneously be the cause of and the solution to the problem. It is as if these institutions are unrelated to the natural environment as well as to industrial dynamics leading to its destruction. It is as if these institutions, in the popular mind, were capable to miraculously extract themselves from this dynamics and intervene so-to-speak “from the outside” (as if they were located in space). I will take this point up again in chapter 4.

This apparent contradiction could be dismissed as popular ignorance, or, in psychoanalytical terms, as denial ... if it were not also widespread among academics. Two types of academic literature come to mind: global environmental politics and the literature on (global environmental) business responsibility. Both streams of literature recognize that ecological problems have now reached global and unprecedented proportions, which make them unsolvable by one single type of actor alone (e.g., governments or business) and that therefore both governments and business need to work together in new kinds of institutional arrangements – i.e., new institutions of so-called “global governance”. Business, especially transnational corporations (TNCs) need to become actively involved in solving global environmental problems, which, by the way, have been relabeled as “sustainable development challenges”. Generally, this literature calls for the redirection of the already existing international and multilateral organizations (such as the World Bank, the International Monetary Fund, or even the United Nations and its various agencies) or the creation of new similar institutions (e.g., Global Environmental Fund, UN Environmental Agency). Furthermore, some authors argue for the inclusion of civil society into such new institutional arrangements, generally by way

of the active involvement of (global and sometimes local) non-governmental (environmental) organizations. This is the credo of the literature on (global) environmental governance, regimes, public-private partnerships, and similar conceptual inventions, which generally use the word “governance”.

In short, global (environmental) governance appears to have become, among the mainstream scholars in political science, international relations, management, and political economy, *the answer to solving the (ecological) problems that “affect more than one state or region when there is no power of enforcing compliance”* (Wikipedia). To recall, the basic building blocks of such governance are nation-states, businesses (especially big businesses or TNCs), business associations (such as the World Business Council for Sustainable Development or WBCSD, WEF), NGOs (especially global environmental NGOs), and international and multilateral organizations. These are the institutions, so goes the consensus among academics, media, and peoples more generally, humanity seems to have to rely upon when it comes to addressing the global ecological crisis, as well as to find new paths towards more sustainable development. Needless to say that the various building blocks of these new institutional setups called “global (environmental) governance” are not very new, even though their combination may be quite original at times. Furthermore, not only are these building blocks not new, but furthermore their track record, as single isolated actors, in regards to ecological problems is quite problematic to say the least. The literature abounds which shows that national governments, TNCs, the World Bank, and even global environmental NGOs have not only been involved in but moreover actively promoted environmentally destructive practices. Why then should these actors – which taken individually have a dismal track record of ecological performance – be performing better when working together?

But there are good arguments why not only their combination, but even these institutional building blocks in themselves are not appropriate tools to addressing the global ecological dynamics and crisis. Rather than addressing the crisis, they generally manage to translate ecological challenges into business opportunities. In chapter 3 I will examine why this is so and argue that there is a problem in the very way these institutions are set up to begin with. In other words, I will empirically demonstrate that these institutions are by their very nature ecologically destructive, and therefore by definition cannot lead to solutions which would question their own existence. This argument will underlay and reinforce yet another critique which says that today’s global ecological problems are institutionally so interlinked with all other (technological, economic, social, cultural) dimensions of industrial civilization that they cannot be addressed *as ecological problems*. Or in other words, the way the above mentioned dominant institutions deal with ecological problems is to isolate them from their broader institutional and dynamic setup and then address them sequentially. This way of doing – i.e., without modifying the broader institutional setup – automatically will lead to translating them into new opportunities for development along the same old industrial development paths.

Problematizing institutions: building on which theories?

This paper takes its point of departure in the affirmation that today's (by default) institutions in charge of the global ecological crisis – nation-states (governments), TNCs, global business associations, global (environmental) NGOs, international and multilateral organizations, and all possible combinations thereof – are grossly inadequate and, worse, even detrimental to sustainable development. In other words, this paper sees institutions – and moreover the particular type of institutions identified above – as being problematic when it comes to addressing the global ecological crisis. While it is ultimately certain ecologically destructive practices that are problematic, institutions are setting the relevant incentives. Rather than questioning these practices, or the actors performing these practices (e.g., individuals, firms, professional associations, civil society associations, local government), this paper therefore questions the institutions which set the very incentives for these actors and their (ecologically destructive) behavior. Theoretically, this paper therefore falls into the context of institutional theory and more precisely into the context of institutional economics. In this chapter, I will examine the relevance of (anthropological and economic) theories of institutions for the purpose of this paper and identify their shortcomings when it comes to helping to understand and address the global ecological crisis.

At the most general level, institutions are rules of social order (cooperation and conflict) governing (determining, incentivizing) the behavior of actors.² Such actors, in turn, can be individuals or organizations. Organizations can themselves be institutions when they have their own rules shaping the behavior of the actors that compose it. This leads to so-called “institutional embeddedness”, a key argument of institutional economists. Williamson (1999), for example, distinguishes four levels of institutions, depending on the timeframe it takes to change the corresponding rules (i.e., the degree of “institutionalization”), namely resource allocation and employment rules (ongoing³), governance rules (1-10 years), basic institutional rules (10-100 years), and cultural rules (100-1000 years). In other words, no matter how well-intentioned the actors (individuals and organizations), their behavior is always framed by embedded institutionalized rules. Changing these rules is generally beyond the power of single actors, i.e., requires both a long-term perspective and coordination with other actors. Others have debated at lengths whether economic institutions are embedded in socio-cultural institutions or rather the other way round (Granovetter, 1985). But everybody – and today even economists – agree that institutions (and therefore incentive structures they set for actors who have to behave under their rules) matter, that institutions are historically grown and

² According to Michel Crozier (1963), actors always conserve a certain degree of discretionary power (“marge de manoeuvre”), no matter how constraining the rules are. As a matter of fact, says Crozier, the very aim of the strategic behavior of every actor (individual and organization) is to create for itself a certain degree of discretionary power (which Crozier equates to a certain degree of “freedom”). This permanent tension between the “actors” and the “system” (of rules) is, according to Crozier (1977), at the origin of the dynamics of institutions (see below). A similar argument is made by Giddens (1984) in his theory of structuration when identifying a permanent tension between “agency” and “structure”.

³ It is at this level of institutions where there is indeed a choice between three types of coordination among actors, namely markets (competition), government ordering (hierarchy), or networks, and where the choice of one of these types of coordination (or the combination thereof) results in different degrees of economic efficiency of institutions. It is also at this level (and perhaps also at the next level of governance rules) where new institutional economics makes its most significant contribution.

“institutionalized” as a result of a coordination process among social actors, that they come in embedded layers, and that the actors’ freedom to act within these institutional boundaries is always limited, but never zero. In other words, institutions – even economic institutions – are not neutral tools in the hands of otherwise free actors (individuals); rather, these actors are always behaving under rules which are precisely constraining and orienting their behavior. Or still in other words, no matter how powerful the actors, their discretionary power (and therefore their freedom to act) will always be constrained and oriented by the very institutions they try control and seek to instrumentalize. There is no reason why these abstract insights would not apply to the institutions that humanity is relying on to stem the global ecological crisis, meaning that political, economic, and civil society actors (leaders) are always behaving under various levels of institutionalized rules that constrain and orient their decisions and behavior.

New institutional economics (Ménard, North, Williamson, and others) has made many of the above abstract considerations on institutions, incentives, actors, and embeddedness much more concrete and applicable. Building on Coase’s observations of transaction costs determining the economic performance of different institutional arrangements, new institutional economists highlight and empirically demonstrate that institutions are not neutral, at least in economic terms. Indeed, different institutional arrangements (“institutional frameworks” in the words of North) have different levels of performance, depending upon the way the relationships among the actors are structured, which in turn determines the overall transaction costs associated with any given institutional arrangement. New institutional economics is not directly relevant as a theory to address the institutional dimensions of the global ecological crisis, as new institutional economists are only looking at the economic performance of institutional arrangements and as they think that institutions compete on a market (i.e., a market for institutions along economic performance criteria). I therefore want to refer to new institutional economics only by analogy at this point. However, I nevertheless believe that the original look new institutional economists have cast on institutional arrangements (as well as on the actors behaving under these arrangements) is relevant for our purpose: indeed, one can generalize their insights and argue that institutions not only can differ in terms of their economic, but also in terms of their social and especially environmental performance. Furthermore, there may actually be tradeoffs between these three broad types of performance criteria: it is perfectly conceivable that economically performing institutions (in terms of low overall transaction costs) are ecologically or socially underperforming, meaning for example that they waste resources, externalize environmental costs, generate social conflict, and others more. One might therefore want to enlarge the still quite limited (economic) transaction cost approach of institutional economics and extend it to social as well as environmental transaction costs. In this way, it would be possible, for example, to clearly identify the very institutional causes of environmental performance of any given institutional arrangement, as well as the incentive structures leading the various actors to behave in one or another way in ecological matters. Analogous to governance costs of any given institutional arrangement, one could therefore determine much precisely its ecological performance of any given institutional arrangement. Consequently, one could compare the ecological performance of institutional arrangements (even regardless of what this institutional

arrangement is set out to achieve). In short, different institutional arrangements have different financial, social, and ecological costs, and it is not all obvious that financially performing institutions are also ecologically performing, something which could be identified by empirical analysis.

Institutional economics (also called early institutional economics as opposed to new institutional economics) basically considers economic action in general and markets in particular as being socially embedded, if not socially constructed. Especially authors such as Max Weber and Karl Polanyi have shown how markets have historical social and cultural origins and have emerged at a certain point in Western history under very particular conditions. Economic sociology, in turn, considers that even today economic action is a form of social action, that it is still and always socially embedded (for example markets still require trust, institutionalized legal systems and others more to function), and that ultimately economic institutions are ultimately social constructions (Swedberg & Granovetter, 2001).⁴ On a more technical level, a similar debate is currently going on in matters of economic regulation, especially global regulation: indeed, it appears increasingly clearly that markets – as they gradually free themselves from the control of nation-states (either by way of privatization or because markets become supra-national in nature) – require regulation in order to properly function, and that such regulation is of course socially (politically, and culturally) constructed (see footnote 4). Institutional economics is therefore particularly relevant for the argument I am making in this paper: if the market – i.e., one of the core features of today’s industrial civilization and therefore also one of the core causes environmental degradation – is ultimately a socially constructed institution, today’s ecological degradation is not the result of a “natural” evolution but rather the result of particular institutional arrangements that have emerged over time. These institutional arrangements always reflect particular interests – i.e., interests put forward by actors and that have crystallized in particular institutional arrangements. Markets are therefore just one particular way of articulating (negotiating) social interest (organizing social action) and as such are being promoted by these actors who can take advantage of them. This is ever more true – i.e., institutional economics becomes ever more relevant – as markets integrate, firms concentrate, and the market mechanism is ever more reduced and replaced by cartels, (global) business regulation, and increasingly self regulation among globally powerful actors (of which the above referred to “global environmental governance” is precisely a typical illustration).

What we thus need is precisely a theory of the historical evolution of institutions: while authors like Polanyi, Veblen, or Weber have well identified how the market (as an institution) has emerged in particular historical conditions and has in turn shaped (incentivized) the behavior of most other relevant social actors, we are still lacking an equally profound analysis of the evolution of the nation-state (as an institution). As a matter of fact, the nation-state’s evolution must actually in my view not be seen as

⁴ Similarly, and as I will show in chapter 3 below, the current process of globalization and market integration leads to a situation where the market logic is being suspended again, and where therefore (social and political) coordination among market and government actors supersede competition. In other words, competition (market) may well have been a very short historical moment being replaced today again by a very socially constructed “market”.

separate and independent of the emerging market institution, but rather as its mirror and active contributor (see chapter 3 below). In addition to a better understanding of how the market institution and the nation-state as an institution co-emerge and co-shape each other, we also need a theoretical understanding of how, in the age of globalization, markets and states (and increasingly civil society organizations) co-evolve so as to give rise to new global (governance) institutions, which are neither markets, nor global nation-states, nor networks (to speak in new institutional economics terms), but some new combined forms of global institutions. Such a theory will help us understand which actors have played which role in shaping these increasingly global institutions (where the market logic is suspended), and how, in turn, these increasingly global institutions incentivize and shape the behavior of the various actors (including firms, which supposedly only respond to market incentives).

But such a theory of the historical evolution of institutions is however only half of the equation: to recall, I am interested in the question of how such evolving institutions relate to global ecological degradation (and ultimately how alternative institutions can address global ecological degradation). However, obviously this relationship between institutions and the natural environment is not immediate. Rather, this relationship is mediated by technology. Indeed, a given state of technology defines a society's (institutional) relationship with the natural environment.⁵ It is indeed the state of technology which defines indicators such as (the intensity of) resource use, waste, pollution, energy efficiency, mobility, and even technology induced comfort (or quality of life). It is also the state of technology which defines the degree of freedom a society has from the constraints of nature and therefore the degree to shape its own destiny, a typical Marxist argument. Unlike Marx, however, this degree of freedom comes at a price: the price of interference into the natural environment (or ecological destruction in the case of industrial civilization), which in the long run may well lead in turn to a reduction of a society's degrees of freedom. The next step in this argumentation is that technology itself is embedded in (socially constructed) institutions and ultimately socially (and culturally) constructed. Indeed, the literature on STS (Science-Technology-Society) (Kuhn, 1963, Noble, 1984, Winner, 1976) and more recently the literature on the co-evolution between technology and institutions (von Tunzelmann, 1995) unambiguously shows that technological evolution is itself embedded in socially constructed institutions. Therefore a relationship exists between institutions on the one hand and the technologically mediated relationship a society entertains with its biophysical environment. Moreover, this relationship is socially (and culturally) constructed and both technology and institutions do play a mediating role in this relationship between a society (culture) and nature.

In short, in this chapter I have shown how a relationship exists between institutions on the one hand and environmental degradation on the other, a relationship which is mediated by technology. I have also argued that these socially constructed institutions – especially markets and nation-states – co-evolve with technology to lead, today, to the current state

⁵ Regrettably, this argument has been made in the past mainly by cultural anthropologists namely Malinowski and Boas, but it is of course equally valid – and perhaps even more so – for industrial society.

of affairs in matters of environmental degradation. In the next chapter, I would like to illustrate this theoretical argumentation empirically.

Empirical analysis: institutions for unsustainable industrial development

In this chapter I will crystallize the role the above identified main institutions play in promoting industrial development and thus in exacerbating the global ecological crisis. To recall, industrial development – the root cause of today’s ecological problems of global and systemic proportions – is a dynamic process fueled by a combination of (militaristic) values, cheap non-renewable energy, a certain type of (cheap fuel consuming) technology, and especially modern institutions, among which historically the nation-state, and more recently TNCs and new global governance institutions play the key roles.

Industrial development is basically the product of the Industrial Revolution of the nineteenth century (Landes, 1969). Its main characteristic is the systematic use of fossil (non-renewable) fuels (first coal and now oil) for the purpose of first military, then political, and increasingly economic conquest and expansion (e.g., Cottrell, 1955). Not surprisingly, economic growth has become, since the Industrial Revolution, almost totally correlated with fossil fuel consumption (Hall, 2004). In the early days of industrial development the nation-state has been the main vehicle spreading the model, both geographically and societally (i.e., to all aspects of social life) (Clarke, 1971, McNeill, 1963). Indeed, the nation-state has first served as an actor of territorial conquest and has later evolved into a mechanism for organizing the ever-expanding market (McNeill, 1982). As of today, industrial development has reached every single corner and aspect of the world (e.g., Commoner, 1966) and the nation-state has been and continues to be an integral part and driving force of industrial development.

The nation-state is indeed a significant – if not the most significant – institution in the process of industrial development. Indeed, after the Scientific Revolution of the Renaissance and within the broader context of Western expansion and colonization, the nation-state emerged as the most appropriate unit for organizing the extraction of the necessary resources for warfare, including capital, and thus the most appropriate unit for organizing such warfare (Finer, 1997; Tilly, 1990). Furthermore, the nation-state is also the most appropriate unit for legitimizing such warfare, by involving citizens rather than relying on mercenaries (Giddens, 1985).

The mobilization of the citizens and resources necessary for waging war required indeed quite substantial organization. Such organization was done by the nation-state and, more precisely, by its administration. Max Weber (1922) described this process of “bureaucratization” in detail and highlighted in particular how the bureaucracy became the most efficient model of organizing complex activities in a hierarchical mode (e.g., government ordering in new institutional economic terms). He also described, in organizational terms, the very process of institutionalization (e.g., bureaucratization), which, by way of cementing rules, ultimately leaves little leeway for alternatives (see

above). In short, bureaucracy as the institutionalized version of the nation-state is able to mobilize natural and financial resources, as well as peoples, not only for waging war but also for promoting the development of the nation-state itself.

As such, the nation-state is still a rather “pre-industrial model” of territorial defense and conquest. However, within the context of industrialization of the late nineteenth century, the nation-state came to apply its capacity to mobilize peoples and resources to the pursuit and active promotion of industrial development (Cerny 1990). Indeed, within this new context of industrial development, the nation-state now developed – in addition to warfare and territorial conquest, which are not abandoned – its own infrastructures by means of electrification, roads, railway tracks, and other means, so as to enable and actively promote industrial development. Corresponding administrative entities – often public enterprises – were set up, so as to institutionalize by now combined military-industrial development, i.e., the so-called “national economy”. In other words, and in parallel to being a “war machine”, the modern nation-state also became a “industrial development machine”, approaching development as if it were just another form of (economic) warfare. In other words, natural and financial resources as well as peoples were still being mobilized by the nation-state, but now for purposes of combined military-industrial development. At this point, it should also be mentioned that the majority of today’s transnational corporations are either formerly state-owned enterprises or firms that have grown because of their respective nation-state’s protection or even active promotion (e.g., protectionism). Rare are the TNCs which have emerged solely by relying on their own strengths and leveraging a competitive market.

Until the end of the Second World War, industrial development was primarily organized and actively pushed forward by individual nation-states, generally with a military aim in the back of their mind. In other words, at least until the end of the War, and probably until the end of the Cold War in the late 1980s, the modern nation-state was in essence an institutional embodiment of combined industrial development and warfare (Meinecke, 1957). Because of the institutionalization of this combined militaristic and developmental logic, the nation-state continues to approach the problems with which it is confronted as a threat to be combated by warlike means, as a developmental opportunity, or as a combination of both. And this is exactly the approach nation-states are currently applying to global environmental problems, with the known results.

With the Second World War, the role of the nation-state in promoting industrial development declined somewhat, and the nation-state was replaced in its role, to a certain degree, by firms. To recall, most of these firms emerged from under the protection of nation-states, often thanks to military contracts or other exclusive relationships with national governments. Furthermore, many of these firms have originally been state-owned companies and manage to prosper and expand beyond national borders thanks to the active support of nation-states. Economic theory has it that these firms prosper because of a gradually liberalizing and increasingly global market. But this is only part of the story. The fact of the matter is that, thanks to the 2nd World War, and especially thanks to active government support (e.g., Marshall Plan) after the 2nd World War in Europe, North America, and Japan, firms managed to thrive as being part of a much

broader government-boosted economic boom (in turn made possible by cheap oil). As a matter of fact, similar state-led industrial development has been and is currently taking place in China and among other so-called “Asian tigers”, again with the consequence of boosting formerly state-owned firms to become true TNCs. As a result, these firms conquer first the markets of the industrialized countries, and after the 1980s thanks to (state- or rather WTO-led) deregulation, the global markets. They promote industrial development in exactly the same way nation-states had done this previously, namely by territorial conquest and market expansion. As a matter of fact, they appear to be much more efficient in promoting industrial development than were nation-states, constrained as they were by both their territorial boundaries and some ethical limitations. However, it is important to mention that firms always act from under the protective institution of the nation-state and increasingly from under protective inter-national (inter-state) institutions, such as the GATT, the World Bank, the IMF, and later the WTO, which always act as ultimate promoters, mentors, facilitators, protectors, and now regulators of industrial development. In this way transnational corporations have emerged, many of which now more powerful than nation-states.

In short and as a result of state-centric and military-driven industrial development up to the 2nd World War, the economy and society integrated at a higher level and give rise to new actors among which TNCs and international and multilateral institutions. However, nation-states did not disappear, but rather adapted to this new situation. Also, the Second World War triggered a certain awareness of a need to contain the militaristic ambitions of nation-states. The idea became to seek “peace through (accelerated industrial) development”, and this is precisely the underlying philosophical idea of the then-created United Nations. The main purpose of this section, therefore, is to show that and how, after the Second World War, reinforced and accelerated industrial development among cooperating nation-states (of the traditional kind) came to be considered as *the* answer to some of the problems of the nation-state. And this cooperation became institutionalized in turn, delegating the actual operations of industrial development to firms and increasingly TNCs.

However, this institutionalization of industrial development at inter-national levels triggered a dynamics of its own, during which nation-states were somehow “overtaken”, not only by new, state-created TNCs and inter-national actors, but also by multi- or supranational actors, who are now actively making use of the nation-state for their own purposes. This was particularly the case after the end of the Cold War, which opened the door for yet another even more accelerated industrial development, called globalization. As said, TNCs, over time, became more powerful than states themselves and increasingly succeeded in using state and inter-national institutions for their own “development” purposes (e.g., Ietto-Gillies, 2005).

To recall, the Second World War gave also rise to a new type, or rather to three new types, of international institution, namely the United Nations (UN), the Bretton Woods institutions, and the GATT (General Agreement on Tariffs and Trade). All three emerged at the same time, but with different functions. The UN was given the mission of peace, development, and human rights. The human rights function had never really been

embraced, and peace was quite rapidly said to be achieved through the active promotion of (industrial) development. In essence, this meant that the UN and its numerous specialized agencies saw their role in promoting industrial development, no longer at a national but now at a global level.

The Bretton Woods institutions are made up of four different organizations, the two most important of which are the World Bank (WB) and the International Monetary Fund (IMF). Both fulfill a so-called support function for the UN, as they actively contribute to the financing of such development. If the UN organizations today mainly serve a think-tank and technical expertise functions, the Bretton Woods organizations financially support industrial development. Over time, and especially because of their governance and their respective finance mechanisms, the Bretton Woods organizations have increased their power at the expense of the UN and have subsequently adjusted even their legitimization. This is especially the case of the World Bank, which has redefined itself more and more as a industrial development promoting organization in itself, rather than as a support function for the UN as a whole.

As for GATT, which in 1994 became institutionalized in the form of the World Trade Organization (WTO), the function is slightly different, although philosophically entirely aligned with the idea of "peace through development." The role of GATT and later the WTO is to open markets for further TNC-led industrial development, with the underlying assumption that trade not only leads to development (which leads to peace) but also weakens nation-states, with interlinked national economies making war among states less likely.

To recall, all these increasingly supra-national institutions have in turn led it to the substantial growth in industrial organizations. Not only have markets grown and become increasingly global, to a large extent because of cheap oil, also industrial organizations have become increasingly powerful non-state actors. From national origins, they have first become international, then multinational, and now transnational corporations (TNCs) (UN 1994). It should be stressed, however, that these large corporations are never separate from the nation-state and inter-national institutions: they may be the (privatized) results of state-owned enterprises, or remains of state-owned enterprises, or they may simply have very close ties with particular governments, supported as they are by government contracts, subsidies, or other regulatory favors. In other words, none of today's TNCs are separate from the nation-state, as they generally owe their existence and well-being to the nation-state and increasingly to inter-national or other global institutions.

Since the late 1970s one can observe a similar evolution of yet another type of non-state actors, namely so-called non-governmental organizations (NGOs) (Princen & Finger 1994). From a purely institutional perspective, this evolution has led to the fact that some of these NGOs (e.g., IUCN, WWF, WBCSD, WEF) have become equally powerful, if not more powerful, than some nation-states (Strange, 1996). Needless to say that these non-governmental organizations are in turn heavily dependent upon nation-states and inter-national institutions, be it through funding, accrediting, or other favors.

All these institutions – nation-states, TNCs, NGOs, international and multilateral organizations – now increasingly collaborate in so-called new ways of “global governance”. My point here is that, even if their relationships may be at times conflictual, they fundamentally all agree about the vision (industrial civilization) and the approach (war-inspired economic growth and industrial development). They are all similar institutions, which increasingly are interlinked and no longer in competition (firms) or in conflict (states) with one another. In short, global (environmental) governance is a new type of broad more or less integrated global institution, combining markets, hierarchy, and networks (to use the new institutional economics language) so as to promote more or less the same type of industrial development as was always the case (i.e., since the Industrial Revolution). And this is what I call the institutional dimension of the global ecological crisis.

Theorizing the institutional dimensions of the global ecological crisis

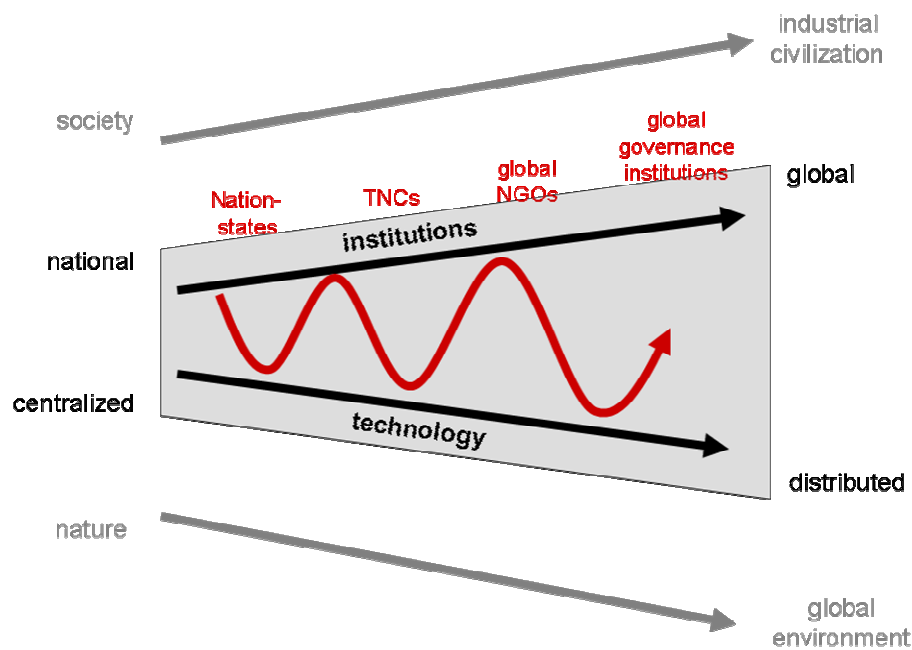
On the basis of the above description and the previous theoretical considerations it is now possible to make a first attempt at theorizing the institutional dimension of the global ecological crisis. This theory-building process is, in my view, a two-step process, consisting first of the theorization of recent institutional developments from the nation-state to global governance institutions, and secondly of the theorization of the relationship between these institutional developments and the natural environment.

In a first step one has to understand and theorize the very process of how the nation-state, as a novel institution starting in the late 18th century, has managed to shape the rules of a process of institutionalization lasting up to today. Along this process of institutionalization, other actors have emerged (e.g., firms and later TNCs), some of which actively created by nation-states (e.g., international and multi-lateral organizations). Furthermore, along this process some of the institutional rules have evolved so as to include and accommodate these and other newly emerging actors (e.g., rules about (global) business regulation). One also has to theorize the fact that, all along this process of institutionalization, the overall relationship these evolving institutional arrangements with the natural environment – i.e., a relationship of conquest and expansion – has not really changed, yet the institutions have been flexible enough to deal with occasional obstacles and limits.

The second step in this process of theorizing the institutional dimensions of the global ecological crisis therefore pertains to the relationships of these ever more integrated institutions at an increasingly global level with the natural environment. This, however, will require some further research, as the relationship between institutions and their natural environment is a mediated one. Indeed, such mediation occurs via technology, which, on the one hand, defines the impact of any given institutional arrangement via actors' behavior on the natural environment and, on the other hand, impacts on the possibilities (degrees of freedom) of these actors within any given institutional arrangement. More precisely, one will have to analyze, by way of concrete empirical

studies (cases), how nation-states first, firms later, and now global governance institutions have and continue to shape technology, i.e., promote certain technologies while hindering others. One will also have to analyze, by way of similar empirical (case) studies, how the various actors made use of any given technology within particular institutional frameworks, and especially what other usages would have been possible and how institutions would have changed as a result of such usages. Figure No.1. outlines the conceptual framework underlying such empirical analysis.

Figure No.1: co-evolution between technology and institution



Conclusion: towards alternative institutions?

On the basis of such careful empirical analysis one could then start to outline alternative paths of co-evolution between technology and institutions. Such paths would simultaneously imply alternative institutions *and* alternative technologies. While the alternatives would be minimal at first, differences with the current path would grow with time. This is of course not a very optimistic scenario, considering the urgency of the global ecological crisis, but it is nevertheless much more optimistic than either the call for more responsible leaders or the critique of capitalism.