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ECOLOGICAL DEBT AND HISTORICAL RESPONSIBILITY
REVISITED – THE CASE OF CLIMATE CHANGE

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The Case of Climate Change*

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Abstract

In spite of its strong appeal to NGOs, to certain governments and to some scholars, the concept of an *ecological debt* accumulated by developed countries due to their *historical responsibility* deserve a serious critical assessment. The paper provides this assessment in the context of climate change. It first shows how the rhetoric of *ecological debt* exploits confusion between a pre-modern concept of social debt and the modern one based on the contract figure. Two components of the climate debt are examined: a presumed duty of compensation of the damage imposed by climate change and rules of sharing out of atmospheric services when developed countries are presumed to have emitted GHGs in the past in excess of their fair share. The discussion considers successively the legal and the moral viewpoint. A review of arguments shows that both concepts of *ecological debt* and *historical responsibility* disintegrate under scrutiny in the case of climate change, as ill-founded backward-looking reparative concepts as well as additional obstacles to a forward-looking agreement in which responsibilities could legitimately be differentiated according to various variables referring to current states (emissions levels, needs, capacities, etc.). The GHGs emissions that cause problems are those that have taken place since 1990.

Keywords

Climate justice, debt, damage, global commons, responsibility, Lockean Proviso.

Introduction*

It has been twenty years since the international debate triggered by the global environmental crisis gave rise to the idea of an *ecological debt* that the North countries owe to the South ones. This ‘debt’ is the presumed counterpart of a *historical responsibility* of developed countries in the degradation of the global environment. This couple of notions and other related ones (fair shares to the atmospheric commons, carbon budgets of nations, fair access to ecological services, etc.) are the joint achievement of development-oriented NGOs, philosophers and social scientists and representatives of developing countries in international negotiations on topics such as the global climate change and threats on biodiversity. During the same period, in spite of multiple international conventions triggered by the Rio Summit in 1992, concrete progress of international cooperation has been limited, the solution for the most important and difficult issues being repeatedly postponed to future discussions and negotiations, as exemplified by the recent Rio + 20 Summit in June 2012. Matching both realities gives rise to the question: have negotiators not been good enough to catch the right concepts that they had at hands or were these concepts not really relevant or useful to make progress in the common management of the environmental crisis? More specifically, to which extent does the pair of notions *historical responsibility-ecological debt* offer a strong and legitimate ground to set-up a new international regime of governance dedicated to sustainable development through international cooperation?

While searching for answers to these questions, we need to go beyond raw intuition and genuine wishful thinking. Both notions deserve a critical assessment to elucidate their respective validity and scope and, when it is done, to test the reliability of the foundation that the first notion can bring to the second one. In considering the *ecological debt* pole, a thorough examination should include a consideration to the challenges and difficulties attached to the idea of an ecocentric approach of ecological harm – when harm to ecosystems and natural beings is considered for themselves without any reference to human welfare -, which differs from an anthropocentric environmental damage – when damage is qualified by impacts of ecological processes and transformations on human values, goals and activities (Godard, 2009). However for convenience and readability, I will bring two limitations to the analysis presented in this paper: the scope of the *ecological debt* will be limited to the standard concept of environmental damage suffered by humans and secondly the study of the concept of historical responsibility will be done in the sole context of climate change. At the same time we should acknowledge that the main developments of philosophical thinking of historical responsibility for environmental damage have been produced about climate change.

As a matter of fact, the association of concepts of *ecological debt* and *historical responsibility* points to a specific component of North-South political relations in the last decades. It puts us too on a different track from the delimited legal requirement of international law that States have to avoid or compensate for the environmental damage that they create outside their sovereign territory. The latter is subject to strict conditions of proof for identifiable harm and identifiable causal relationships in relation to unambiguously protected interests, generally for bilateral relations between riparian States linked by geographical proximity. On the contrary, the proposed concepts of *ecological debt* and *historical responsibility* have been developed in a scientifically uncertain context deprived of any straight causal relationships between identifiable events and activities. Issues related to rights definition, knowledge and control on responsible actions are critical to this regard.

* The paper is an outcome of the research programme on climate economics developed at the Economics Laboratory of École polytechnique, with the support of the EDF Chair on Sustainable Development. It develops part of an invited presentation given at the Executive Seminar on Climate Governance, organized by the Global Governance Programme of the European University Institute in Florence, 30 May - 1 June 2012. I am grateful to the Chair and the EUI for their intellectual and financial support to the preparation of the paper. I also thank Denny Ellerman, MIT and EUI, for inviting me to come to Florence for the second year.

With these concepts, we may thus wonder how far ideas, slogans and political rhetoric mobilized to denounce an existing order and develop a strategy of ideological and geopolitical influence might give an appropriate basis for the actual elaboration of a new international regime. To put it more sharply, when we want to be innovative and progressive towards the achievement of sustainable development, can we be satisfied with metaphorical uses of legal and economic concepts to begin with? Does it not entail a significant risk to lose touch with reality, beyond the media froth, and not to achieve anything sustainable, or even to add new barriers to the achievement of what is aimed at? In this line, can we understand the evolution of negotiations on climate change since 2005, when the Kyoto Protocol came into force, as a case of progressive destruction of the possibilities of reaching a sound agreement? Is this outcome not due to the persistent reckless claims from Parties on each side of the negotiation who deceived themselves by their inappropriate beliefs about the rightness of their concepts and the legitimacy of their claims?¹

The Architecture of the *Ecological Debt Doctrine*

Looking for a Definition and a Standing

Both concepts of *ecological debt* and *historical responsibility* have been forged in the nineties in a context of division of the whole world in only two blocks of countries: the developed North and the developing South. Specifically, invention of *ecological debt* is traced back to the Chilean NGO *Instituto de Ecología Política* (IEP) (Robledo and Marcelo 1992; Paredis et al., 2004; Delord and Sebastian, 2010), in the context of concern for ozone depletion and its health impact (skin diseases and cancers) in Southern Chile. The *historical responsibility* concept was formally introduced in the context of climate change by the Brazilian delegation at the Berlin Conference in 1997 as a principle for allocating abatement efforts among developed countries. It proposed to impose an abatement effort to each industrialised country in proportion to their historical cumulative CO₂ emissions² since the beginning of the industrial revolution, i.e. since 1850. Without considering emissions linked to land use change and forestry (LULUCF), the total gross carbon dioxide stock contributed from 1850 to 2009 was estimated approximately 332 GtC (Kanitkar, 2010).³ Of this total, 109 GtC were contributed from 1850-1970. Thus the greatest share of cumulative emissions (the atmospheric carbon stock) is due to emissions during the 1970-2009 period, of which around 66% are said to come from industrialised countries. Taking into account the non-CO₂ GHGs and LULUCF, cumulative emissions from Annex 1 and non-Annex 1 countries up to 2010 are in an approximate 50-50 proportion.

In spite of this balanced picture in the climate case, the North is said to be historically responsible for the global environmental crisis and for having unfairly grabbed the global commons (atmospheric capacity to absorb GHGs and other ecosystems services) in huge proportions. This representation is obtained by introducing per-capita entitlements and a general principle of equal per-capita fair share in accessing to global commons, to which is given a historical retroactive strength (see table 1 as an

¹ For example, during the Copenhagen negotiations in December 2009, D. Raghunandan, from the Delhi Science Forum, an Indian NGO devoted to demystifying the science-society interface, commented the draft proposal elaborated by the Danish Presidency of the Conference this way: "Predictably, the developed countries are up to their usual games, tabling outrageous proposals which they know will be unacceptable to the developing countries (...). The so-called Danish proposal which is in fact a draft jointly drawn up by the US, EU and some others, is one such." Raghunandan also contributed to a modeling of the carbon space underlining sharply the historical responsibility of developed nations through early occupation of this carbon space (See Kanitkar et al. 2009).

² CO₂ stands for carbon dioxide. GHGs stand for greenhouse gases. Amounts are measured in billion tonnes (Gt). GtC stands for a billion tonne of carbon, GtCO₂ stands for a billion tonne of CO₂ and GtCO₂e stands for a billion tonne of CO₂ equivalent. One Ct is approximately equivalent to 3,67 tCO₂.

³ On historical cumulated emissions by different countries, see Müller et al. (2009) for the results of a dedicated programme sponsored by the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the UNFCCC.

example). The South, taken as a whole, is said to be the historical victim of the actions of the North, so that the North accumulated a much bigger *ecological debt* than the financial debt incurred since 1960 by the South with international private banks and financial institutions as well with developed countries. As an outcome, both debts should at least compensate each other, in such a way that the South would now be entitled to refuse to refund its financial debt; on top of this neutralisation, the North is said to have an obligation to pay additional repairs by compensation and to accept the parallel obligation not to encroach anymore on common environmental resources. This radical requirement sometimes go to the point that, for some scholars (Khor, 2009, 2012), Northern emissions should be negative, by combining sharp immediate abatement of their own emissions and payments for emissions abatement in developing countries.

Table 1. Fair and Actual Shares of Carbon Space

Countries/Regions	Fair share of Carbon Space (2009 pop.)	Current actual share of Carbon Space (1850 basis)	Current Actual Share of Carbon Space (1970 basis)
United States	5%	29%	24.30%
Other Annex-I	14%	45%	41.50%
China	20%	10%	13.50%
India	17%	3%	3.20%
Other EE	15%	9%	12%
RoTW	29%	4%	5.50%

From Kanitkar et al., (2010)

To fix the content of *ecological debt* further, we can refer to the three components of accumulation summarised by Paredis et al. (2004) from a review of the literature:

- “a) the ecological damage caused over time by country A to other countries or in an area under jurisdiction of another country through its production and consumption patterns;
- b) the ecological damage caused over time by country A to ecosystems beyond national jurisdiction through its consumption and production patterns;
- c) the exploitation or use of ecosystems and ecosystem goods and services over time by country A at the expense of the equitable rights to these ecosystems and ecosystem goods and services by other countries or individuals.”

This broad definition includes both direct physical interactions between different sovereign territories, but also ecological impacts of actual economic interactions. For instance Martinez-Alier (2002) blamed mostly ecologically unequal exchange as the first cause of *ecological debt*, i.e. the fact that exports of raw materials and other products from developing and less-developed countries are sold at prices which do not internalize local or global externalities.

Much debate occurred on what to do with this debt. Should it be treated as an economic and financial concept, opening the way to actual financial repairs or compensations in relation to external debts of developing countries, as Torras (2003) chose to defend? Was it just a rhetorical resource to gain mobilization in the political defence of interests of developing countries? Was it a critical component for shaping the future regime of governance of the global commons?

In the original stance, *ecological debt* should be led to the stage of monetisation of damage in order to balance financial external debt of developing countries, but many environmentalist NGOs are reluctant to this idea of monetisation, being opposed to the entry of ecosystems services in the market culture. Putting aside the fact that here the environmental cause is strategically used to support a coup

in the economic and geopolitical North-South relations, but not considered for its own sake, basically the *ecological debt* construct is based on several pre-judgments regarding the validity of applying law and moral concepts to the past history of international relations and on metaphorical uses of concepts extracted from law, economics and moral philosophy, such as debt, rights, fairness, responsibility. These foundations deserve to be looked at.

An Example

Let us give an example of the kind of storytelling to which the concept of *ecological debt* has fostered (Godard, 1998). In the context of climate change, a London-based NGO launched by Aubrey Meyer, the Global Commons Institute (GCI), succeeded to be invited as an observer at meetings of IPCC and climate negotiations. It gained institutional support and media success in March 1993 when it released a figure establishing the extreme illegitimacy of the development patterns of industrialised countries and the underlying international economic order. It estimated that the poor Southern countries pay the industrialised countries an annual subsidy to consume fossil energy sources of \$3.4 trillion. In return, the Northern countries, through the Global Environmental Facility (GEF), were conditionally offering a sum equal to a mere 0.00006% of their annual 'debt' to the South! This revelation was presented as being based on the requirements of sustainability, here interpreted as a normative and legal principle giving birth to debts and obligations. The argument was as follows. Global CO₂ emissions having to be reduced by at least 60% in order to stabilise the atmospheric concentration of CO₂ at their 1990 levels, this would leave a residual annual budget of sustainable emissions of 2.4 GtC or a per capita annual equal share of 0.46 tC on the basis of the 1990 world population. This value is taken as a universal norm of sustainability and used to determine, on the basis of actual emissions, the countries 'in credit' (emitting less than the norm) and the countries 'in debit' (emitting more than the norm). Authors then put an economic value on these quantities by using the average rate of the macroeconomic coefficient of fossil fuel intensity to determine how much of GDP is produced with one tonne of carbon, i.e. a GDP/tC ratio. From this computation, they arrived at an evaluation of the unpaid over use of atmosphere by the Northern countries, which was interpreted as a 'debt' that Northern countries have contracted to the Southern ones.

This example shows how turning a specific interpretation of sustainability into a prescriptive norm depends on a set of intellectual operations and social decisions which, in this case, have not been carried out through a voluntary approving scheme but in the form of a legal fiction: defining scientifically a function of response of the climate and biodiversity to various levels of GHGs emissions; assessing the socio-economic impacts of ecological pressures, here of climate change, including an assessment of possible sustainability thresholds; reaching an international agreement that would fix a global sustainable cap on GHGs and defining how access rights to the atmospheric capacity to absorb GHGs would be shared in a fair way; interpreting fair sharing of GHGs as equal per capita shares; and defining obligations of States in terms of compensations and repayments whenever a country surpasses its emission rights.

This speculative and controversial way of putting things by mimicking legal norms and true economic assessments is based on questionable assumptions regarding the issues of rights, fairness and economic valuation methods. For instance, can we find plausible for the whole value of GDP of the Northern countries to be attributed to the mere use of fossil fuels? This announcement would surprise economists who used to think that the two main factors of production are capital and labour ... For 20 years many fictions of this ilk have been proposed.

What Does Debt Mean?

When calling the word 'debt' to the rescue of *ecological debt*, we may alternatively enter the realm of moral thinking, of law, of economics or of politics. We cannot possibly play on all scenes at once and

without even searching to reach the conceptual appropriateness required by each specific realm. If this debt is intended to 'offset' the debt owed by developing countries, it must be part of the existing legal order and comply with general standards of this order. If this word is expected to awake a sense of guilt among populations of Northern countries, the concept must be well-developed in moral theory and to this end exposes itself to a serious discussion in moral philosophy. But we can only take distance with an approach relying on a supposedly moral qualification to give birth to a legal claim to formal refunds or compensations for actual debts, whereas this debt has no content in positive law. Here comes the *historical responsibility* component. If need be this *ecological debt* proposal could be considered in a discussion about new rules for future governance, but its rationale is quite different, being built onto a re-interpretation of history. At its heart we find the assumption that the rules desired by proponents were in fact already 'naturally' operating during the whole period beginning one century and a half ago for the mere motive that proponents consider that it would have been fair and just, were it the case.

A conceptual clarification is thus important. First we should refrain playing easily with the idea of 'debt'. Through the ages it has been the subject of two major types of intellectual development. The first one (type 1), strongly inspired by the domination of traditional religions on the social order, see in the debt the primary element of the constitution of the human subject from birth: it designates the 'debt of life', dedicating the essential dependency of individuals to parents, to clan, to society, to the gods or to God. Here the individual is constructed by her/his birth as subject to a set of obligations and loyalties which she/he cannot escape. She/he must constantly mark in symbolical and concrete ways its acknowledgement to this primary debt by all sorts of rituals and practices. Needless to say, emergence of this debt is seen as ontological, taking place outside any legal framework and any particular contract, since it precedes them all. But it is also a debt that can never be fully repaid. Individual persons remain forever indebted to other humans. This type 1 attaches a principle of asymmetry to the human condition between what is received and what can be 'repaid'; asymmetrical, pre-contractual and never-ending are the key adjectives to describe this type of debt devoted to maintain dependencies that constitute certain social orders.

When we project this pre-modern concept into modern society, it is at best reinterpreted as the source of a conversion of guilt into recognition of social dependency and key relations of social providence (Memmi, 1984; Memmi and Pont-Humbert, 2005), hence of on-taken responsibility. Far from giving hold on the life of individuals to multiple persons in the social environment, it then gives to these individuals the responsibility to determine by themselves how they intend to assume certain loyalties and not others, and to determine what they see as the resulting responsibilities (Sarhous-Lajus, 1997). Still pre-contractual and asymmetric, such a reinterpreted type 1 of social debt is empowering the person, inasmuch as it breaks with the ideas of strict obligations to a creditor and of systematic symmetrical reimbursement. Instead it upholds symbolic demonstrations of gratitude and freely determined responsibility as substitutes: to the asymmetry of the pre-contractual debt then answers the asymmetry of the sovereign responsibility freely chosen.

By setting the idea of contract as a central form of sociability, in the field of economics and trade as well as in the thinking on society as a political body, without rubbing out the asymmetric background of dependencies of type 1, modernity has offered a way of freeing humans from the alienation imposed by the domination of archaic religious schemes of an inextinguishable debt that prevents individuals and peoples to get out of the tight network of imposed traditional loyalties. The contract generates a type 2 debt as a counterpart of defined and delimited services and benefits. It establishes principles of symmetry and delimitation. The debt here is limited in its object, its value and maturity. It is payable and must be paid. But once it is paid and delivered, contracting parties are released from any obligation linked to the contract. Needless to say, this type 2 debt necessarily proceeds from a prior explicit contract or of general social obligations coming from explicit civil law in a democratic State resulting from a social contract fixed in a constitution.

We may well have views on what constitutes a modern society and wonder whether the type 1 debt, imposing ontological and asymmetric dependencies or type 2 debt, instituting symmetrical and contractual relationships between members of the society is best realized in contemporaneous societies. We can discuss at leisure of the joints between the two types of debt, as in monetary theory (Aglietta and Orlean, 1998) or in political theory, always in search of a principle of transcendence. What we cannot do is to confuse them and to take one type for the other. Yet the intellectual process which underlies the main rhetoric of *ecological debt* is to merge the two types of debt, that is to say, to try to rehabilitate an archaic conception of an ontological, pre-contractual debt, which only reflects the nexus of geopolitical interdependencies forged by history, by giving it a pseudo contractual form, that of a debt that carries a right to a creditor and can and should be repaid by debtors. In other words, the *ecological debt* construct tends dangerously to be the expression of a historically regressive movement against basic concepts of modernity.

This threat of regression justifies a rigorous discussion of the components and underlying assumptions by conducting a critical examination on two fronts: legal and moral.

From the Standpoint of International Law

Positive international law derives mainly from international bilateral or multilateral agreements (treaties, conventions). As such it requires the consent of the States: it is their will which gives agreements the strength of binding rules of international law. Sovereign States are free to adhere or not to the new rules contained in treaties proposals, by not signing or not ratifying them. Rules and obligations instituted by international agreements only apply to States Parties that approve them. States can also withdraw from conventions to which they do not want to be Party any more, as Canada recently did by withdrawing in 2011 from the Kyoto Protocol after adhering to it in 1997. Customary norms are another source of international law. However they do create obligations for States only if States unanimously believe them to be founded and mandatory. As the International Court of Justice put it in a conflict settled in 1969 about respective rights of riparian States on the North Sea:

“Not only must the acts concerned amount to a settled practice, but they must also be such, or be carried out in such a way, as to be evidence of a belief that this practice is rendered obligatory by the existence of a rule of Law requiring it. The need for such a belief, i.e., the existence of a subjective element, is implicit in the very notion of the *opinio juris sive necessitatis*. The States concerned must therefore feel that they are conforming to what amounts to a legal obligation. The frequency, or even habitual character of the acts is not in itself enough.” (International Court of Justice, 1969, para 77, p. 44).

In other words, the concept of debt cannot be mobilized outside the framework of an agreement sealing the explicit will of the Parties or outside norms to which the Parties assent, seeing them as grounded and binding.

The idea of an *ecological debt* which would have emerged outside this voluntary framework, but without relying on the prior recognition of relevant specific and enforceable individual rights (e.g. ‘right to a given climate’, ‘right to rainfall’, ‘right to stable ecosystems’, and the like) can have no legal validity. Recourse to an archaic doctrine of immanent ‘natural law’, predating any legal formalization, but mobilized as a retroactive source of international legal obligations can only be rejected by every democrat committed to the recognition and respect for the preeminent value of democratic self-determination of nation states insofar the latter respect fundamental and universally acknowledged human rights.

Any progress in the direction of an acknowledgement of the legal value of an *ecological debt* would demand of ecology, as precondition, to enter and go deeper in the realm of rights. In any event, the affirmation of new rights by some States that would generate obligations to others cannot be done unilaterally, without the consent of affected Parties, and should not have retroactive strength -this

principle of non retroactivity is a necessary counterpoint of the principles of legal certainty and due respect for the democratic practice of norm creation.

In these conditions any reference to the idea of ecological damage to compensate, as do the definition used by Paredis et al. (2004) and all the others, assumes the existence of attacks to legally acknowledged and protected interests, i.e. the violation of rights duly recognized and protected by relevant legal orders. This prerequisite is decisive. This had been shown by the seminal article by Ronald Coase (1960) on the problem of social cost: one usage of environmental resources or qualities cannot be said to be pollution or a nuisance source of injury to some humans as long as rights on the environment have not been assigned to the parties involved. It is the state of law that will identify one agent as the ‘polluter’ and the other as a ‘victim of pollution’, the popular qualification of ‘polluter’ meaning here ‘an infringement to protected rights’ of the victim of pollution. In the absence of such primary assignment of rights, it is a *de facto* status of *res nullius* (natural elements may be appropriate and / or used by the first comer without having to compensate all others) which is to apply⁴. This situation offers no grasp to those who feel aggrieved on the basis of what they imagine to be the distribution of rights that they would have preferred.

As it stands, although customary international law has set the principle that countries have to refrain from doing harm to each other – the no-harm principle -,⁵ the precondition of rights assignment⁶ is not met for general natural conditions like global climate or biodiversity: by 1992, nowhere in binding texts of international law can we find a recognized right of States or individuals to benefit from unchanged natural conditions, whereas these conditions are submitted to a natural regime of substantial variability. No protected rights, no breach of rights. No breach of rights, no debt, no compensation.

This observation invalidates any retroactive legal use of the concept of *ecological debt* regarding a change in these natural conditions. But it does not rule out, at the level of principles, the possibility of establishing new rights for the future. Since 1992 the respective obligations of States are mainly defined by the international conventions on climate change and biodiversity and their derived agreements like the Kyoto Protocol and the Cartagena Protocol. These texts do not refer to an obligation of the developed Parties to pay compensation for an *ecological debt* accumulated by these countries since 1850.⁷ For the climate issue, the UNFCCC introduced a more general principle of ‘common but differentiated responsibilities’, which together with the principles of equity and capability founded the obligation of developed countries to take the lead in the fight against global climate change for the first implementation periods. The expected response is clearly a future-oriented, not reparative one.

Some legal campaigner scholars (Verheyen, 2005) think that general principles of international law could be mobilized too to go to the courts. Admittedly, it would only be a perspective for future emissions when tentative codification of rules of responsibility of States by the UN International Law

⁴ We will look later at the Lockean Proviso regarding fair conditions of first appropriation of natural resources.

⁵ Principle 21 of the Stockholm Declaration (1972), confirmed by Principle 2 of the Rio Declaration (1992) sets forth: “States have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction”.

⁶ Were such assignment into force, it would be possible to define the content of due diligence falling to States and the standard of care to which States would have been committed.

⁷ The preamble of the UNFCCC (1992) notes : “that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs”. Subsequently article 3.1 states: “The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.”

Commission is approved by all States. As it stands, by 2012, no liability case has been initiated before international courts. In fact beyond soft declarations on the environmental responsibility of States, the international community has proven very reluctant to make concrete steps in organizing its implementation.

Several obstacles should be overcome to go further. Empirically, for the climate issue as for biodiversity, we are dealing with a still uncertain and controversial science, and a science inconclusive on many aspects that are important to the legal formalization of liability for damage. On the one hand, problems arise mainly in terms of risk or potential damage, not damage already made. On the other hand, for the global issues under consideration, science may give indications about likely outcomes at a global or regional scale, but certainly cannot identify causal chains between individual human activities and localized and well-identified damage, even at the scale of inter-States relations. Indeed, this science does not causally connect any single event (a storm, a cyclone, a flood, a drought ...) but just identifies plausible tendencies apprehended by global simulations across the entire planet and macro-regions. Some scholars (Tol and Verheyen, 2004) think that general causation schemes of this sort may be enough to assign legal responsibility to countries. It remains to be positively proven and could only be true if the issue of rights assignment is solved beforehand.

From the Standpoint of Moral Reflection

The foundations of standard moral thinking on responsibility have individual persons as the basic units of any responsibility, although responsibility is limited to acts which are under their control. Attributing to someone a responsibility for acts which are the work of others is thought to be arbitrary and unfair, except when the bearers have received the responsibility to look after children or persons with disabilities. This is the framework in which the moral issue pertaining to the pair *historical responsibility - ecological debt* has to be examined.

In the context of climate change, two main issues arise that put our ideas of fairness and justice in the balance (Muller, 2001; Ikeme, 2003; Vanderheiden, 2008). First, it is assumed that climate change affects global and regional natural conditions in a way perceived as harmful by some populations (increase of average temperature, more frequent or more severe droughts due to water shortage, change of exposition to vectors of malaria, cholera and dengue, more extreme rainfall events imposing huge destructive flooding, threats to coastal lands and properties due to raised sea levels, etc.) and will plausibly do much more in the future. Should we place a cumulative debt on the shoulders of present and future inhabitants of Northern countries, in the name of corrective justice? Second, avoiding excessively detrimental climate change in the future requires a new regulation of access to the atmospheric capacity to absorb GHGs, in order to keep expected atmospheric concentration of these gases under a given threshold and, accordingly, emissions levels under global annual and periodic caps. For this second issue, the question is: should we take account of alleged past overuse of this capacity by Northern countries at the moment of defining the future apportionment of access rights to all States?

A Prior Moral Question About State Responsibility

There are certainly good reasons to locate responsibility on States: they are the basic agents of international law and international negotiations; the nature of pledges, policies and actions to undertake for mitigation and adaptation in regard to climate change exceeds what can be expected from individual agents in terms of cooperation schemes and volumes of resources to mobilize. Meanwhile, for both issues mentioned, a moral problem has to be fixed. Is it fair? Either States are considered as specific agents having specific modes of actions – what we call policies-; their action takes place among those of other types of agents – corporations, individuals, international organizations, NGOs- from which they are distinct but who also have margins to behave differently

and could be held responsible accordingly. Or States are viewed as synthetic representatives of all agents forming a nation-state, thus take on responsibility for all the actions of all agents placed under their sovereign control, in which case the solution assumes a morally defensible collective responsibility⁸. Both options are facing moral arbitrariness issues (Caney, 2006).

In the first case, the issue of fairness is posed by a procedure imputing all responsibility for environmental harm to one type of actors whose responsibility is only partially involved due to the active role of other types of agents. In the second case, the issue of fairness is raised because States do not live by themselves and necessarily redistribute their imputed responsibility on all the agents under their legal supervision. In the latter case, it is not difficult to find cases of clear unfairness and arbitrariness: those inhabitants whose parents were recent immigrants from developing countries; those persons whose lifestyles imply with very small level of GHG emissions; those persons whose emissions, even rather high, are imposed by external handicaps and the absence of reasonable opportunities, etc. The causally determined collective responsibility could not be morally defensible without considering the willingness of individual members of collectives and the actual opportunities opened to inhabitants of a country to take part into the collective orientations and policy design which causally contributed to generate environmental damage suffered by other countries. Without mobilising the concept of odious debt⁹ relevant for extreme cases of break between a State and its people (Howse, 2007), this democratic proviso is morally not met when we look back at political conditions established in developed countries during long periods since the mid nineteenth century: many persons, particularly women and foreigners, could not have access to vote for the choice of political representatives or for the approval of policy orientations. And if this condition of having opportunity to participate to policy decisions is extended to the issue of damage linked to past behaviour of dead persons, it is clear that presently living persons have no possibility to influence the past and cannot be held responsible for what happened...

Paying for Damage Pertaining to Climate Change

Assuming the existence of significant damage created by global climate change, is there any moral motive to consider that prime 'victims' – plausibly the poorer groups in specified regions of the world (sub-tropical, coastal...) - gain hold in proportion over other agents who should feel morally obliged to refund the damage-originated debt? Who should be the duty-bearers? In the literature several principles have been proposed to this regard (Shue, 1999, 2009; Neumayer, 2000; Gosseries, 2004a; Caney, 2005, 2006, 2009; Vanderheiden, 2008; Miller, 2007, 2009; Page, 2012).

Several candidate principles

The 'ability to pay' or 'capacity' principle is rather straight: paying for the burden of climate damage, as well as for the other components of climate-induced burden, should be asked to individuals or States in proportion to their capacities, here defined by income flows or by a wealth index. As such this 'deepest pocket' principle lacks any specific motive linking the climate damage to the behaviour of those who are asked to pay for the debt. It is certainly the weakest foundation for the *ecological debt* doctrine, although under particular circumstances, this principle may be used on the basis of assistance duties, not as a requirement of reparative justice.

The 'contributor pays' principle is nearer to standard legal concepts of domestic tort law and civil law but embraces several degrees of link between the victims and presumed duty-bearers (Miller,

⁸ For an extensive and thorough examination of the idea of national responsibility, which he supports, without adhering to a cosmopolitan viewpoint, see David Miller (2007).

⁹ 'Odious debt' can be legally defended as a legitimate motive to refuse refunding debt when three conditions are met: the debt is not serving the national interest but the interest of the persons at the head of State; the debt is contracted without the consent of the people; the lender is quite conscious of the previous points.

2007, pp. 86-104). The less-demanding one, ‘causal responsibility’, is only based on causal chains involved, without taking account of morally-relevant subjective aspects such as intent, diligence, negligence and predictability: be consequences deliberately searched or not, predictable or not, objective causal links are proposed to offer a sufficient foundation. On moral grounds, this is a rather weak principle since all bad luck events involving some agents as physically causal contributors to the damage suffered by others would imply compensation obligations to be put on the shoulders of the former, even if their action did not overstep their legitimate rights or were imposed to them by circumstances – think of traffic congestion as an analogy. With ‘outcome responsibility’, the causal component remains, but there should be other conditions related to genuine agency: a foreseeable connection between acts and consequences, avoidable consequences by cautious action, absence of coercion and manipulation. Actual intent and forecast are not necessary conditions but circumstances have to be such that reasonable normal persons who know about the risks involved for others would have taken action to avoid the bad consequences imposed to them. In spite of its intuitive appeal, this principle nevertheless commands a very demanding and not so plausible sense of responsibility. For instance, any winner of a competition should compensate the losers, or any efficient firm putting some less efficient firms out of business should refund losses of the latter. Additional conditions should be added to make the principle more plausible. Finally, there is the ‘moral responsibility’ involved when causal agents have acted in a faulty way, by not respecting pre-existing moral obligations, noticeably by breaching the rights of others. The latter is the clearer case for giving substance to the *ecological debt-historical responsibility* concept, if the conditions are met regarding breaches in moral obligations.

Following the intense critical discussion of the applicability of the ‘contributor pays’ principle to climate debt, some scholars (Gosseries, 2004a; Page, 2012) have advocated a ‘beneficiary pays’ principle. The argument is the following: even if an agent is not causally responsible of damage suffered by victims, but he still enjoys benefits from those actions that causally generated the damage, he would have a moral obligation to disgorge the benefits gained from injustice and refund them to the victims. Note that such a refunding may be higher or lower than the value of damage experienced by the victims. At this point Page (2012) introduces an interesting distinction between two sub-cases: (a) wrongful enrichment and (b) unjust enrichment.

According to (a), States should pay compensation to victims in proportion to the present benefits those States enjoy as a result of wrongful activities led in the past by dead persons. The extent of net benefits gained by beneficiary States would fix the upper limit to the compensation to disgorge. Implementing this principle is nonetheless conditional to the establishment of a clear violation of victims’ rights or of other ‘wrongful factor’. Due to difficulties of proof of the latter, Page prefers version (b) of the principle, assuming no fault from causally responsible agents. Applied to climate change, the claim is therefore that industrialised countries have been enriched by activities incorporating an ‘unjust factor’. The latter has still to be identified.

Several arguments are often put forward to this effect. We have first the unequal distribution of benefits and adverse effects, even in full respect of legal rights of all Parties: for decades, adverse effects were imposed on developing countries, whereas benefits were directed to developed countries. Secondly, it is said that developed countries have deprived developing ones of the opportunity to push their own present and future development without having to care about GHGs emissions; indeed developing countries are presently condemned to face with a trade-off between economic development and avoidance of a dangerous threat on the global climate, a trade-off that developed countries did not have to worry about several decades ago, and this is unjust. Thirdly, the atmospheric capacity to absorb GHGs, as well as a majority of ocean sinks, is said to be a global common property by nature, a property of which developed countries have made an excessive and unjust usage.

The initial propositions put forward in the climate negotiations did not distinguished arguments based on harm and on overuse, the latter being interpreted as a source of economic harm to developing countries. For instance according to the original Brazilian proposal introduced in the pre-Kyoto

negotiations in 1996-1997, industrialised Parties should have accepted to abate their GHGs emissions by an overall 30% in 2020, while sharing in responsibility of abatement in inverse proportion to their cumulated historical emissions since 1850; in parallel developing countries would have been imposed no quantitative target. The same line of argument has been formulated repeatedly the last fifteen years by different countries in various combinations with the idea of equal per-capita distribution of emission rights. They all have in common to stick to the historical responsibility concept that imputes to present States and their peoples the cumulated account of wrong or unjust actions done by their ancestors since the beginning of the industrial revolution.

This claim for historical responsibility has been contested at the table of international negotiations as well as in the academic debate. I consider objections and counter-arguments thereafter.

Past generations did not know about climate change and its impacts

Early scientific work introducing the idea of possible human influence on the global climate due to CO₂ emissions have been introduced during the nineteenth century, but in a theoretical, preliminary and speculative way. In fact generations who died before 1970 legitimately ignored that their use of fossil fuel and land use change will really have bad impacts across the planet through various channels (higher average temperature, sea level increase, extreme events, etc.): the science was still doubtful, rather imprecise and not conclusive. Even after 1970, the issue has not been really fixed, as it is revealed by regular controversies on the science and expertise of climate change. At best people after 1970 could reasonably have heard of a possibility of risks touching the evolution of the global climate, without being ascertain that it would be warming or cooling. Scientific knowledge was far from providing a precise assessment of harms that would strike people in different places. Therefore people before 1990 could not be held responsible for not changing their activities and living conditions for what was just a scientific speculation. They cannot be morally blamed too because of this lack of knowledge. Even the conditions of rightful use of the principle of 'outcome responsibility' are not met since the latter refers to what normal people would do and normal people by huge numbers all over the world have demonstrated climate unconcern until 1990 and largely on after that date.

Counter-argument: it may be that ignorance dismisses moral guilt, but in any case it does not dismiss liability, as shown by rules of strict liability admitted by most legal systems (Schue, 1999, 2009). But in Miller's terms the issue is: do we have a case of 'outcome responsibility' or mere 'causal responsibility'? We may plead for 'outcome responsibility' after 1990 but not before. This does not give much moral credit to the doctrine of *historical responsibility*.

Present generations have no control on past emissions

Present people cannot be held liable of cumulated emissions because they have no control on past emissions: they have no possibility to change the behaviour of their ancestors or of previous inhabitants. Since Aristotle, it has been admitted that one cannot be held responsible for something on which one had no control. If any, liability of developed countries should be limited to emissions of living people.

Counter-argument: present people are not directly liable for past misconduct of their ancestors, but they still enjoy benefits and wealth which are only permitted by the harmful or unjust activities of their ancestors. This is the argument supporting the 'beneficiary pays' principle (Gosseries, 2004a, Page, 2012). Since the same activities gave birth to harm for certain countries (the developing ones) and benefits for the others (the developed countries), present beneficiaries should disgorge unjust benefits. To be valid, this counter-argument should have its premise satisfied: there has been something wrong or unjust in the behaviour of past generations. It is not sufficient to observe differences in the distribution of benefits of industrialisation across regions of the world to claim for wrongfulness or injustice.

Other arguments: regarding benefits gained from past GHGs emissions, two significant points touching facts have to be advanced:

- a) Given the importance of international migration flows over a century and a half, the idea of imputing liability to States for historically cumulated emissions would result in morally arbitrary charges upon people who were unrelated to the incriminated behaviours, either directly or by inheritance, and who did not take part to the political process allowing these behaviours.

This argument has been given a counter-argument too: every present inhabitant of developed countries is offered the opportunity to take advantage of nationally provided public goods and services (access to basic infrastructures, technological development, education, etc.) that are still causally dependent on wrong or unjust past activities; whatever the personal trajectory and family history of beneficiaries, they currently benefit of wrongful or unjust past activities and development while other people in developing countries are victims of them; it may be that a pinch of arbitrariness is cast in the imputation to inhabitants of developed countries but it would still be more arbitrary if poor people in low-emitting countries had to be alone to bear the climate burden.

- b) Meanwhile, a question remains to which extent services and public goods presently provided by early industrialised societies still represent an extra benefit for living inhabitants and, in case they enjoy the benefits of affluence, to which extent the latter are attributable to past GHGs emissions. The first point expresses a concern about possible overestimation of long term benefits of past industrialisation, as shown by industrial and economic breakdown of ex-USSR, of East Germany since the eighties or of old-industrialised regions in every developed country (UK, France, USA...). Many of them have actually to bear the environmental and social damage cost of past industrial affluence linked to coal mining, iron and steel or textile industries, whereas they do not enjoy any longer the economic benefits of activities that have been delocalised in other regions, mainly in emergent countries. With the second point the question raised is how we should treat a multi-causal situation, i.e. when a given outcome causally depends on a multitude of necessary conditions to be obtained: is it plausible to impute the event to only one of these conditions? Is it possible to assign a right share to each condition? It is fair to say that in the view of many economists¹⁰ present wealth of developed countries, mainly the OECD membership, is essentially the joint product of a history of capital accumulation and technical progress, both of which mainly depending on the nature of economic and political institutions and very little on specific access to natural resources, including access to the atmospheric capacity to absorb GHGs. The proof they bring is to be found in comparative economic history (Djankov et al. 2003): wealth achievements are hugely contrasted between countries and these differences cannot be explained by limitations of access to natural resources or to global commons.

Up-to now the discussion focused on arguments about the real extent of present advantages enjoyed by present inhabitants of developed countries and on the presumed wrong or unjust way past inhabitants behave regarding impacts of their GHGs emissions on the population of developing regions. We now consider this precondition of wrong or unjust past behaviour under various viewpoints and turn first towards the implications of two theoretical puzzles: i) the ‘non-identity’ problem initially formulated by Thomas Schwartz (1978) and developed by Derek Parfit (1984)¹¹, and ii) the conditions under which it is appropriate to refer to concepts of ‘damage’ and ‘victims’.

¹⁰ See for instance Olson (1982) and Sobel (2008).

¹¹ In the context of global climate change, see Page (2006).

Implications of the 'non-identity' problem

The well-known 'non-identity' problem relates to a logical paradox arising when categories relevant to approaching relationships between contemporary people are used in the context of intergenerational relationships: from a moral viewpoint focused on morally singular individual persons, individuals composing next generations would never be in a position to blame previous generations about the state of the world they inherited at their birth since, had previous generations behaved differently at a large scale, all the clocks of mating relations would have been modified and these individuals would never have come into existence; other individuals would have been conceived, not necessarily as numerous. The identity of persons forming the new generations is necessarily linked in an essential manner to the physical and social world in which they are placed by birth. As Axel Gosseries (2004b) has shown, the category of damage is inappropriate when the personal state one is tempted to call this way is inseparable from the identity of those involved. This 'non-identity' argument dismisses any concept of intergenerational justice based on the potential blame of previous generations by future ones.

It is only by making a logical mistake that individuals of the next generations would imagine themselves as injured by actions of their ancestors because it would require them possibly living in another inherited world, had their parents and other ancestors behave differently, which makes no sense. And parents and grand-parents would have made a logical mistake for the same reason, had they imagined that their future great-grandchildren could blame them for their carelessness. Using the concept of debt in that context is fraught with logical inconsistency. Consequently present generations of developed countries cannot be held obliged to refund a debt that does not exist, as well as the present state of world, which includes a given level of GHGs concentration, can inspire no blame addressed to past inhabitants of developed countries and their successors.

To overcome the 'non-identity' problem several directions have been explored but none of them have given conclusive results regarding the validity of the *ecological debt* doctrine:

- a) A first solution is to define harm in an objective way by setting a decent well-being threshold under which people would be said to be harmed (Meyer, 2004). To do so, the author assumes two premises: (i) the problem raised belongs to the category of distributive justice, not reparative one, contrary to the doctrine of ecological debt; (ii) "persons are under a general and universal duty to fairly secure a decent standard of well-being for all currently living and future people." (p. 21). This solution does not confirm the doctrine of ecological debt, since it gives up the framework of reparative justice, and exposes itself to two objections:

*) how to determine a universal well-being threshold across time in a non-arbitrary way? Is it possible to refer to basic needs without considering available technologies, institutions, access conditions, socially organised solidarity and so on? All these factors change through time and space. At first glance, if the future state of the world is so unbearable that it is worth living in any more, it could be said that whatever the identity of future persons, they are suffering a major harm. However in the context of climate change this argument is empirically clearly irrelevant for the present time and the decades to come and highly uncertain thereafter: at all times, contemporary living persons may organize assistance to the less well-off in such a way that this extreme scenario does not happen. On a theoretical ground it is difficult to adhere to this extreme reference because there is no rational meaning in which an existing person can compare the utility of living with the utility of not having been born;

***) since the issue raised is about the impacts of climate change on living conditions, observing that some people are under the threshold says nothing about the causal role of the climate factor in that outcome. In the Meyer's definition, it is the fall of some persons under the well-being threshold that can be imputed to climate change. To determine this fall, it is necessary to compare a well-being state with climate change and a counterfactual one without climate change; here the non-identity problem comes again.

- b) Because interest for singular persons is at the root of the problem, why not abandoning any moral framework attached to singular persons in favour of, say, a raw utilitarian viewpoint? At this point we should mind ourselves that utilitarianism does not object sacrificing the utility of some agents if it allows to gain more in total utility, without requiring compensation to the losers. This framework would not offer a strong basis for the idea of refunding an historically cumulated ecological debt, unless it is proven that such refunding would maximize global welfare, taking into account the impact of international financial transfers on respective economic growth of various regions in the world; in turn impact on growth would depend on the respective capacities of countries to put financial resources to efficient productive usages; very plausibly the outcome would be different from the one obtained by the criterion of respective inversed cumulated historical emissions;
- c) Developing a moral argument, whatever it is – still to be provided -, according to which each generation, including the past ones, had a specific moral obligation to care for the welfare of future generations and for the preservation of nature, even if future generations could not blame them in case they fail to do so, due to the ‘non-identity’ problem. Hence as soon as the prospect of global climate change was revealed to be a threat, our ancestors would have had a moral obligation to adopt a prudent behaviour regarding activities responsible for significant GHGs emissions and they have not behaved accordingly. Naturally, the same requirement applies in a stronger way to current generations because of progress of scientific knowledge and of international consciousness. In short, past behaviour is assumed to have been wrong, but without generating a claim on the side of harmed Parties in next generations. The only principle that can be invoked in that case is the ‘beneficiary pays’ principle. The latter indirectly validates the *historical responsibility* idea but in a softer way, whereas it dismisses the other component, that of an *ecological debt* to refund. Present heirs would have to transfer some compensations extracted from the benefits they still enjoy from wrong past behaviours, if any.

What does damage mean?

Unlike current opinions for which damage is a primary concept that can be thought of in immediate physical terms, I assert that it depends on the scope of acknowledged rights. Ronald Coase (1960) demonstrated it in his seminal article “The Problem of Social Cost”: in case the respective rights have not been defined by an institution, it is impossible to describe a situation in terms of damage caused by one person and suffered by another, unless we use dubious ideas of ‘natural rights’ to natural resources and the environment, outside of history and institutions, and we consider that every individual has a ‘natural right’ to given environmental conditions.¹² In the case of climatic conditions, no such rights have ever been defined and recognized. So, strictly speaking, if damage is defined by a breach of rights, it is inappropriate to speak of damage caused by GHGs emitters: the latter have only been the users of the atmospheric capacity and, doing so, they have breached the protected rights of no one.

Counterargument: moral rights are quite distinct from legal rights; objective interdependency between humans suffices to create a moral community that founds moral rights and obligations assigned, *nolent volent*, to each member. However to be received, this argument has to be qualified: it refers to objective interdependency between humans and implicitly to conditions and circumstances of cooperation. The moral obligations and expectations should reflect these conditions. And there is not much sense in saying that distant, non overlapping generations are cooperating: reciprocity, a key feature of cooperation, cannot be achieved between distant generations. Regarding international relations in link to the protection of the global climate, cooperation is not an absolute imperative: at

¹² To claim a right to a thing at least requires the thing to be under the control of human agency. Clearly, this condition is not met with the climate, even at country-level, until geo-engineering technologies are mastered, proven efficient and introduced.

some points States may prefer to go along with adaptation and geo-engineering if they cannot find an agreement on the terms of cooperation with other States. The moral community that humans form around climate stakes cannot avoid taking these structural traits into consideration, even if, when placed under a Rawls-like veil of ignorance, their putative representatives are made unaware of which country and which generation they belong to.

Regarding intergenerational relations, utilitarian philosophy can only bring an illusion of a solution. Ignoring issues of rights and identity, it routinely supports the comparison of welfare positions of abstract collectives of individuals in different scenarios. This could result in statements such as: “people living in 2100 in a region X will have a lower welfare, due to climate change, than the people living in the same region if there was no climate change, provided that those different people share in the same preferences structure”. But this cannot be correctly translated as either “people living in 2100 with climate change will suffer damage that they will avoid if no climate change happened, and this is unfair” or “people living in 2100 with climate change will suffer damage that people in a scenario without climate change will not experience, and this unfair”. The last two judgments would not be acceptable for reasons already presented: *a)* people will not be the same according to scenarios; *b)* people in different scenarios do not coexist in the same world, and issues of justice and fairness can only be raised for coexisting people, i.e. people taking mutual advantage of their cooperation.

Once being born, the condition in which some individuals are placed can certainly be characterised in terms of handicaps compared to the average condition of their contemporaries; and a global society promoting a social value of ‘equality of opportunity’ would seek to mitigate or alleviate such handicaps, but this would entail no claim of damage and compensation asked of the descendants of past generations causally responsible of this state of the world. Indeed, there is no sense in the idea that later generations would have rights against previous, deceased generations.

Empirical objections against the idea of climatic damage generated by historical emissions

In the case of climate change, the *historical responsibility* component of the *ecological debt* concept results from what I call a ‘retrospective illusion’. The latter generates an interpretation of past history as an only-way determinist sequence viewed on the basis of the knowledge of end results. It then attributes to human agency, at different moments of the past, various wrongful factors that directly proceed from the knowledge of actual end-results. This illusion corrupts two dimensions of the presumed damage: knowledge and reality.

Not only did past generations not know about the threat of climate change as a possibility before the 1970s or as a serious while still uncertain threat since 1990, but historical emissions were the source of no significant damage until 1990. Here is why. Possible damages come from excess GHGs accumulation in the atmosphere, not from emissions by themselves. Last negotiations rounds since Copenhagen (2009) have been surrounded by pressure from NGOs claiming for a long term concentration target of 350 ppm CO₂ as the safe level ensuring the UNFCCC goal of avoiding a dangerous interference with the global climate. In fact, according to existing modelling exercises, a maximum average temperature increase of 2°C on pre-industrial level – the target mentioned by the 2009 Copenhagen agreement - would have a 50% chance not to be passed by a CO₂e atmospheric concentration of 450 ppm and the famous Stern report (2007) on the economics of climate change advocated a concentration target closer to 550 ppm in an effort to balance the costs in a fair way. On this basis, if we accept to see the more stringent CO₂ concentration target of 350 ppm as a level without danger, it is important to observe that this level has only been reached in 1990. This means that all emissions before this year were compatible with a safe interaction with the global climate and could not be claimed to be at the origin of significant harm suffered by present and future populations. What matters in terms of harm are emissions after 1990.

Moreover the recent course of GHGs emissions since 1990 was not a predictable fate, and people in, say, 1920 might reasonably have thought that future energy systems would be based more on more

diversified energy sources than coal, oil and gas. In fact other counterfactuals could then have led to a future without any climate change. Not only did past agents not know about the science of climate change but, at these past moments, climate change had no present and future reality, being just a conditional possibility among many other possible historic evolutions that would give birth to no man-induced climate change. Climate damage was not a determined, predictable fate. Other evolutions of the energy system could have occurred during the twentieth century. The final historical trajectory has been traced by the free choices of generations since 1950. It would be arbitrary to impute to agents living during the first half of the twentieth century the responsibility for decisions taken by people living in the second half of this century.

To give substance to the idea of responsibility of earlier generations, emission rights and limits should have been defined right from the beginning of the industrial revolution for each generation or each year to come; on this basis observers could have observed that some generations exceeded their allocated rights. We cannot choose this mere historical fiction, which is a direct product of our present knowledge, as a foundation for moral judgment. At least we can be sure of one conclusion: there is no moral foundation to look back to 1850 to determine the respective responsibilities for climatic damage.

Fair Sharing of Access to the Atmosphere

We are now considering our second problem. For the future, avoiding a dangerous interference with the global climate implies to introduce severe limits of net global emissions. What should be a fair worldwide share-out of the corresponding caps? Here discussions are no less intense than for the previous damage-related issue. We will not consider all the aspects of this problem, but only the ones linked to the *historical responsibility* doctrine. The question is: should the States emitting historically more GHGs than others receive, for this reason, a smaller share of a carbon cap in the future? Examining this question will be shorter because a huge proportion of arguments developed for the damage issue are valid for the carbon budget sharing one.

Introducing historical carbon budgets

According to the third component of the definition of the ecological debt by Paredis et al. (2004), the element constitutive of a historical debt to be refunded under the form of smaller carbon emission rights in the future is “the exploitation or use of ecosystems and ecosystem goods and services over time by country A at the expense of the equitable rights to these ecosystems and ecosystem goods and services by other countries or individuals.” In this vein Neumayer (2000) advocated equal per capita emissions combined with historical accountability in order to take account of historical inequalities in per capita emissions. This means the more a country has emitted in the past before 1990, the less rights it will receive in the future. The same way, Kanitkar et al. (2009, 2010) developed a concept of carbon space and carbon budget that is rather straightforward. They write:

“The total carbon space available is limited since human society cannot allow the cumulative emissions, or the stock, of carbon dioxide in the atmosphere to exceed a fixed amount without giving rise to impacts that will have profoundly negative consequences for human well-being. The fair and equitable utilization of this carbon space thus imposes a common responsibility on all nations. Since the available carbon space is part of the global atmospheric commons it is also evident that every nation's fair share of carbon space is proportional to its share of the global population” (2010, p. 3).

Typically their approach follows different steps: (a) determining a total carbon space budget during a reference period – they chose the 2000-2050 period; (b) computation of the actual cumulated budget of emissions of each country since two reference dates: 1850 and 1970; (c) determining the fair historical carbon budget share of countries on an equal per capita basis; (d) determining emission cuts based on whether a nation is above its fair share or below – the bigger the gap between the actual

budget share that has been consumed, the more stringent the cuts to make in the coming period; (e) allowing growth for countries below their fair share until they reach their fair share.

In this proposal as in several analogous ones¹³, the foundation of reasoning has five pillars. The first one is to declare the atmosphere to be a global commons, to which each human being has the same access right in the name of justice. The second one is to consider that this equal right already existed at the beginning of the industrial revolution. The third one is that States take on the responsibility of emissions of inhabitants living on their territories. The fourth one is that States are entitled to a fair multi-decades cumulated budget of emissions from 1850 based on their evolving population and the global cap to meet in the present and at different dates in the future. The fifth one is that States, the cumulated emissions of which are above their fair budget, should come to negative emissions, i.e. should severely cut their current emissions and finance emissions cuts elsewhere too.

In this vein Khor (2012, p. 1) writes:

“In the historical situation, estimates for the fair share for developed and developing countries is based on proportion of population for 1850 to 2008. Cumulative global emissions have totalled about 1214 Gtons in 1850-2008. Of this total, Annex I countries accounted for 878 Gton or 72% of the total. Their share of population was about 25%, so their fair share was 310 Gton and their overuse was 568 Gton. Non Annex I countries accounted for 336 Gton or 28% of the total. Their fair share was 904 Gton and under-use was 568 Gton. The carbon debt of Annex I countries was thus 568 Gton for the period 1850-2008”.

In the name of a cosmopolitan priority view, Lukas Meyer (2004, 2012) offers a different way of giving a room for historical responsibility in allocating fair access to the carbon space. As previously reported, Meyer places his proposal in the framework of a general distributive requirement, indifferent to issues of wrongness or injustice of past emissions. Hence historical emissions count in only two ways. First he assumes that a principle of equal per capita benefits from emission rights should be understood not for each point of time, but in a cumulative way for the whole lifespan of persons. Presently living agents should thus receive emissions rights for their future activities by a share taking into account the amount of emissions of which they have already benefitted since their birth. Because living inhabitants of developed countries have personally, on average, already emitted much more than those of developing countries, they should receive less than an equal share for their remaining time to live. Secondly, currently living inhabitants of developed countries are still enjoying some lasting benefits of past activities having GHGs emissions as by-products. So past emission rights of ancestors are still procuring benefits to currently living persons. Then according to a norm of universal equal per capita benefits gained from emission rights, those who presently enjoy bigger benefits from past emissions should get in proportion fewer new emissions rights in the future than the strict equal share.

This clever argumentation takes us far from the punitive or reparative viewpoint of the *ecological debt* rhetoric. It assumes several conditions: a universal well-being standard due to each human person to achieve a decent living, in the name of minimum cosmopolitan justice; an egalitarian lifespan carbon budget ensuring equal per capita benefits gained from emission rights; a determinist impact of emissions on the well-being of future persons, in isolation of the mediations brought by social institutions and technology.

A critical appraisal

Both reparative and distributive foundations of these rules to allocate a carbon budget have been argued against in several ways having unequally deep importance. Main criticisms are addressed to the

¹³ See for instance Höhne and Moltmann (2009) and Pierrehumbert (2012). See also Grasso (2012) for a systematic comparison of allocations of shares of carbon budgets accruing to countries according to eight rules: equal per capita, equal burdens, equal access, historical responsibility since 1990, ability to pay, beneficiary pays, distributive justice (survival versus luxury), and grandfathering.

justification of equal sharing of emission rights to all humans. However the historical component is too exposed to the same argument of retrospective illusion and historic fiction as the damage component of the debt.

What about terrestrial sinks?

First, as put forward by Blomfield (2012), the capacity of the global ecosystem to absorb GHGs emissions is not limited to the atmosphere; we have to take into account ocean and terrestrial ecosystems that work as carbon sinks. These sinks absorb roughly 50% of raw GHG emissions. The interesting point is that terrestrial sinks, which amount to some 25% of total raw emissions, are not global common pool resources; they are placed under the direct control of sovereign states like other resources. Due to the unequal sink resources of States, equal per capita emission rights would clearly be unfair by ignoring the unequal net contributions of States to emissions control through their sinks.

Why to focus justice on one isolated good?

With deeper consequences, scholars like Caney (2009) and Posner and Sunstein (2009) find it puzzling from a distributive viewpoint to fix the norm of justice on one good only (atmospheric service) isolated from people's access to all other goods. What matters for distributive justice is the access to bundles of goods allowing meeting basic needs of agents and achieving their life projects. Moreover contributions of States other than cutting emissions should also be taken into account, such as investments in non-fossil fuels technologies and technology transfers, or more generally investment in capacity building in developing countries. Thus, neither a sufficientarian nor a priority approach to economic and social rights would be able to make the emission of CO₂ and other gases an essential human right that, in the name of equity, should prevail over any other consideration (Hayward, 2007).

If we are interested in the well-being of people, we should then acknowledge that energy needs and corresponding needs of GHGs emission are legitimately different from one region to another, reflecting particularly geographical constraints, economic situation and actual opportunities to use non-fossil fuels (Caney, 2009). Equal access to a specific resource would not suffice to achieve fairness when we consider unequal ability to develop capabilities.

A new case of retrospective illusion

From an intergenerational viewpoint, the standard of equal benefits from lifespan emissions rights suffers from retrospective illusion because of the uncertainty regarding the evolution of future population: fixed carbon budget and the equal norm cannot be established before the end of the period under consideration, at the moment when population data is fixed. Uncertainty is all the more important that the time period under consideration should expand to several decades and, in some statements, forever. Consequently, before the end of the period, agents cannot know what their fair share is because the latter depends on future decisions of other agents to have children and of future living conditions which would affect their life expectancy (Godard, 2011). For a timescale of one century, levels of world population at the end of the period can vary in a range of 1 to 3, with the same proportion accruing to the equal sharing of emission rights. This is not a type of uncertainty that could be eradicated with the advancement of knowledge.

This situation, in which the rights of present generations are dependent on free choices made by others in the future, clearly raises the question of defining the limits of each generation's responsibility. Would it be fair to ask present generations alone, propelled by a supposedly 'ethical prudence' like the one Shue (2009) proposed as a final word to the controversy on justice, to bear in advance the consequences of possible choices made freely after them, by others than themselves, and to determine their own rights on the basis of what one could call a 'worst case demographic scenario'? In so doing, they would be displaying moral hubris since they would choose to take the whole responsibility for the consequences of worst-case decisions that will possibly be made by all others to

come. In fact, this claim would not respect the future generations' status as moral persons; instead it would be treating them implicitly as irresponsible.¹⁴

Atmospheric services are not a new manna

Another criticism is addressed to the idea that each human being has a natural equal moral right on the atmosphere as a global commons, and that a new international legal regime can only enforce this natural right by including a retrospective account of uses and abuses of rights by past generations: in this fable, rights are supposed to have been there since the beginnings of humanity. However, the atmosphere is not a new manna to be shared amongst everyone without taking into account past uses, not as a source of fewer rights and new duties, but as a source of user rights. The atmosphere has been used for centuries by all countries, although with different intensities, but with equal opportunity. The whole world has been fully aware of these uses for decades and, until recently, accepted them, even if this was with a disregard for their climatic consequences. Thus, past usage can be seen as a source of acquired rights of a customary nature. It would then be contrary to justice to violate such rights - a procedurally unjust action -, even if this were for the 'good cause' of protecting the environment. It would not only be unrealistic but also unfair to disregard these rights at the moment when a new regime imposing limits is being discussed. This is the argument behind 'grandfathering', which is not only a concession made to realism (Bovens, 2011).

This not to say that user rights existing in 1990 should be protected forever, freezing unequal usages of the atmosphere into full property rights. Customary user rights are frail, depending on general acknowledgement. Since 1990, when international negotiations on climate change were triggered, this agreement had disappeared. The point is that these user rights cannot be denied for the past and cannot either be written-off for the future without consideration to investments made by their bearers on the basis of legitimate expectations regarding their access to the atmospheric services.

Significantly, countries demanding recognition of indigenous populations' historical rights to their ancestral lands and the natural resources they contain use the same argument as grandfathering, one based on an alleged link between the current rights they claim and the past practices of their ancestors. If their arguments are deemed to have merit in these cases, it is hard to see why they should be rejected out of hand in the case of climate change. This leads us to discuss the conditions of initial appropriation.

On the Lockean Proviso

Of course, historical appropriation of atmospheric services does not respect dynamically the Lockean requirement to leave others with "enough and as good" resources. However put in infinite time, this requirement comes to a logical impossibility in a world of scarce resources and natural limits. For example it is not possible for each country during the twenty-first century to enjoy as much atmospheric capacity as the industrial countries had for their own development before 1990 if the threat of climate change is to be considered seriously. Continuously applying this requirement is not only extremely problematic empirically, it is also self-contradictory: were the conditions of the Lockean Proviso being met, there would be no place for the emergence of property rights; whatever the amount appropriated, there would remain enough and as good for all others; in such realm of generalized affluence, property rights would be useless and no market would be instituted. At best the Lockean Proviso has to be seen as a synchronic requirement at the very moment when a new regime of property rights is started. Once this step has been made, the reallocation of rights has to be based on existing property rights. Diachronic justice cannot be framed the same way as synchronic justice between contemporary persons.

¹⁴ As Liam B. Murphy (2000) puts it, it is central to the values of mutual respect that we should treat other people as agents who are responsible for their own behaviour, rather than as mere forces of nature.

It is often claimed that developing countries suffer from injustice because they are forging their development in an historical period imposing limited usage of atmospheric services and this is due to past usage of developed countries. In this argument injustice is double: on the one hand developed countries and developing ones did not historically enjoy the same opportunities to develop through the usage of atmospheric services; on the other hand lower opportunities for developing countries are the direct outcome of excess usage by developed countries. In spite of its intuitive appeal, this injustice statement is not plausible. It comes to an abolishment of historical time – everything is changing: technologies, natural assets, institutions, knowledge and ideas, the global environment and even political communities -. Most importantly it forgets a crucial part of reality: during all the period when developed countries were developing, other countries had the same unlimited opportunity to use the atmospheric services, seeing that no global limits were set. It was up to them to use or not to use this opportunity. Until 1990 the Lockean Proviso was in fact respected. No historical injustice has been imposed on developing countries and the computation of carbon budgets for the future should not go back before this critical year chosen as reference year by the UNFCCC.

Conclusion

Empirical facts and theoretical discussion about the pair of concepts *historical responsibility - ecological debt* converge on the same conclusions: the GHGs emissions that cause problems are those that have taken place since 1990. Before this reality, all countries who signed the Climate Convention share common responsibilities, although responsibilities could be differentiated according to various variables referring to current states (emissions, needs, capacities, etc.). There is no point in searching past responsibilities to exonerate present living people all over the world to consider their own responsibilities to address this huge global challenge of climate change. Both concepts of *ecological debt* and *historical responsibility* have disintegrated under examination because they mobilise historical and legal fictions and are caught by retrospective illusion. They are also flawed as an attempt to refurbish a pre-modern concept of debt based on asymmetrical and alienating social dependencies (type 1-debt) into a modern contractual framework founded on symmetrical and delimited liabilities (type 2-debt) that are keys for modern freedom. We cannot think and act as if specific rights existed where they did not exist. We cannot declare that past behaviours were wrongful or unjust when the presumed damage they are supposed to generate only happens in the future because of further actions of other agents.

Prospectively, the development of new rights in relation to the climate conditions will be difficult because the objects of concern (rain, temperature...) are subject to substantial natural variability as well as changes due to various causes. However putting aside ill-thought concepts of *historical responsibility* and *ecological debt* does not mean that any State can legitimately disregard its responsibility to take part to a global effort to maintain the climate threat at distance of the danger level or to take on duties of assistance towards States and populations who have the less resources to ensure in an integrated way their own development and their care for the future sustainability of the planet. Climate action can only be a collective endeavour resulting from voluntary pay forward moves. As far as justice is concerned, a reparative rhetoric should give precedence to future-oriented distributive motives. Do not refund an historical debt, but pay forward!

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