For an Ecological Democracy

Kerry Whiteside and Dominique Bourg

Our consumption never stops increasing and the planet is bled dry. Relying on technological progress for our salvation is an illusion. For the solution is political: We must seek to refound our representative democracy.

As our point of departure, we take up a hypothesis whose outcome, among environmentalists, is regarded as already settled, but that still too often receives a lukewarm reception as soon as one leaves this limited company. Whatever may be the outcome of the current financial and economic crisis, the world we are entering will be profoundly different from the one we have left. We are running up against finitude at every level: the biosphere's limited capacity to digest our carbon emissions, the limits of our fossil fuel endowment. Here and there across the planet, we are running up against the finitude of our fresh water reserves. Our inheritance of mineral resources, especially certain precious, semi-precious and heavy metals, is approaching exhaustion. We are reaching the limits of oceanic resources. The fragility of the ecological services provided by ecosystems is everyday more apparent.

It is likely that we will never manage to extract more than 100 million barrels of oil per day, while the International Energy Agency estimates that by 2020 we will need 120 million barrels. If a 2% annual consumption growth rate is maintained, we will have exhausted the fossil fuel supplies by the beginning of the next century. But in recent years the rate has continued to exceed 3%.[1] At current rates of consumption, reserves of gold, silver and palladium will last for around fifteen years; lead, copper and zinc, between fifteen and thirty years. The expression, "the

[1] See calculations by J.-M. Jancovici and A. Grandjean in *Le Plein s'il vous plaît*, Paris, Seuil, 2006, p. 38.

inversion of scarcity,"[2] about which much is heard these days, suggests quite well the shape of world to come. In addition, humanity is causing the disappearance of large number of species. The ecological services rendered by 60% of the world's ecosystems are damaged.[3]

To all of this must be added the on-going process of climate change. A one degree centigrade rise in the earth's average temperature – which we will reach by the middle of this century – will turn much of the American West, from Texas to the Dakotas, back into what it was for thousands of years in the past: an immense sandy desert. The arctic icefields, which will disappear in summertime in one or two decades, will shift the polar front to the North. As a result, rain patterns too will be disturbed. England can expect regular months-long droughts. Hurricanes, which have appeared on the coasts of Brazil and in southern Europe, will be more common and may extend into the Mediterranean.[4]

Some will continue to believe that human technological genius will allow us, in spite of these new and hostile conditions, not only to continue to fulfill the promises of the industrial feast, but to extend them to hundreds of millions of new consumers. But we doubt it, in spite of humanity's undeniable abilities. This faith rests on a relatively narrow form of inductive reasoning. True, there is no lack of examples attesting to the ability of various societies to get out of environmental dead ends. England's early deforestation led thirteenth century London to turn largely to coal for heating. Around the turn of the nineteenth century, an English engineer calculated that horse excrement would reach the second floor of London apartment houses by the end of the century. And successive green revolutions have contradicted Malthus' predictions of famine. These examples demonstrate only one thing: It has been thus many times. This does not at all prove that it will always be so and in every case. To believe that requires forgetting three things.

First, there exist many counter examples, as documented by Jared Diamond.[5] These

[2] «The inversion of scarcity» refers to the thesis that resources which were rare in the 19th century – knowledge, capacity for work and technological innovation – become abundant in the 21st, while those which were abundant in the 19th century – energy, natural resources – become rare in the 21st.
[3] Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being. Synthesis*, Washington, Island Press, DC, 2005. Document available at: www.millenniumassessment.org
[4] See M. Lynas, *Six Degrees: Our Future on a Hotter Planet*, Washington, D.C., National Geographic, 2008.
[5] See J. Diamond, *Collapse: How Societies Choose to Fail or Succeed*, New York, Viking, 2005.

include the Anasazis' abandonment of Chaco Canyon, impelled especially by deforestation; or the ruin of Mayan civilisation for the same reason; or the fall of the Viking settlements in east and west Greenland; or the collapse of the Easter Island civilisation.

Second, the crisis we are facing is systematic. We are up against finitude on every front. With the first picture of our blue planet seen from space, the world has seemed to us both small and fragile, just as Bertrand de Jouvenel suggested as early as the 1950s. The following decades taught us that there was no way that we could become "masters and possessors of nature," as Descartes thought. Yes, locally, in terms of space and time, we do manage to master an ever-growing number of phenomena. But with problems like climate change, depletion of the ozone layer, the effects of pseudo-hormones, nuclear pollution, we have also learned at our own expense that the domination of nature can cause, over time, effects that are as harmful as they are unpredictable.

Third, modern market societies are the only ones organized so as to satisfy what Keynes called relative needs, which are by definition infinite, as opposed to absolute needs. [6] Now they are called to satisfy relative needs for a human population whose numbers have never been equalled – and which is supposed to grow further. There are more and more of us on this planet, today around seven billion, soon nine billion. Among these, hundreds of millions of additional people share and will share the Western dream of increasing material consumption. This dream will run up against a planet that has been bled dry.

It would be wrong to believe that we are going to be able to face up to these new conditions only by using economic instruments such as the carbon tax. [7] Such policies will instead be the vector of more profound upheavals that touch the very organizational basis of our societies. In fact, from now on we will be forced to recognize that there is a direct contradiction between, on the one hand, the operating principles of our societies, inherited from the philosophy of the social contract, according to which each individual should be allowed to produce and consume as much as possible, and the protection of new public goods such as climate stability or

[6] J. M. Keynes, "Economic Perspectives for our Grandchildren," (1930) in *Essays in Persuasion*, London, Macmillan, 1931.
[7] See Patrick Criqui, Benoît Faraco et Alain Grandjean, *Les États et le carbone*, which is to be published in the collection « Développement durable et innovation institutionnelle » by PUF in November 2009.

the unimpaired functioning of ecological services. We are going to have to invent a new balance between the rights of the individual, the new public goods that are the condition of exercising those rights, and more broadly, collective interests.

Our purpose in this essay is to sketch out some of the implications of this problematic, especially in relation to modern conceptions of representative government. We begin with two affirmations: first, that reliance on the State is unavoidable in pursuit of this new conception of the collective interest, and second, that the form of the State must remain democratic. This second affirmation, however, only brings us to the threshold of the most difficult challenges. Today, "democracy" signifies some form of representative government, yet representative government, as it has been conceived over the last two centuries, is constructed in ways that greatly hinder its ability to address our worsening global environmental problems. Its disadvantages, moreover, are the outward signs of faults in its metaphysical foundations: it rests upon a modern conception of "nature" that knows no limits to technical manipulation and control. In the final part of our essay, we offer some preliminary reflections on how participation and deliberative bodies can be adapted to make them more responsive to the types of problems that we face with increasing urgency.

I. State and Environment: Democracy as precondition of ecological politics

The state is the only authority that can preserve and promote the general interest. The economic crisis has just reminded us of this fact, with its dysfunctions in the financial markets, and more generally, with all the accumulated results of forty years of deregulatory politics. In addressing environmental matters, the state takes on a function that is both traditional and new. The quest to determine the general interest is in fact inherent in any society, if only in the minimal form of preserving its own existence and that of its members. More broadly it is the state's function to assure a certain hierarchy of social goals, to prevent one part of the social body from instrumentalizing the rest of society for its own benefit, thereby transforming the entire social body into a simple means in the service of its own ends. The primary function of the state – to protect the national community's existence against its potential enemies – has undergone an extraordinary extension these last few decades. The present and future well-being of the national community – even its future existence – are no longer threatened only by other states, but also by

humanity's power over the biosphere and its regulatory mechanisms. Preserving these mechanisms and, more generally, protecting environmental public goods, is now part of the defense of the general interest. The challenge in this consists in the requirement that the state anticipate and prevent future and irreversible damage to the environment, and, in the name of future generations, support possible restrictions that might be necessary today.

Let us return to the classic question of preserving the general interest. This function will be carried out differently, of course, depending on whether a society is hierarchical or democratic, and on the ideas that guide it. For example, a utilitarian will seek the happiness of the greatest number or a Rawlsian will try to ensure the best possible condition of the least well off. Whatever the case, the state takes care that the conflicts arising within society do not cause it to implode. It watches, too, over the prioritization of social goals, with the top goal being the well-being of its citizens. This in turn presupposes the existence of a national community. No social stratum, no section, no activity within civil society can be allowed to become an end in itself. Each has a place as a means in the service of common well-being. Yet market mechanisms, economic growth, and even scientific inquiry have a tendency to become autonomous. The state's role is to see to it that no partial social logic becomes autonomous and becomes an end in itself -- even if this is hardly what we have seen in the contemporary world.

The new domain for the exercise of the general interest – that of preserving the biospheric conditions for common well-being – presents new challenges. Up until now, the defense of the general interest had to be carried out in relation to particularistic ideas, the norms of particular peoples. Henceforth, the uncompromising directness of the universal is required. At the end of the day, there are no winners where the deterioration of environmental public goods is concerned. If global warming causes average temperatures to rise by three degrees centrigrade, a tragic chain of feedback mechanisms could be unleashed : the Amazon could become arid ; the destruction of the Amazon forests would generate a massive release of carbon dioxide ; this could raise temperatures another degree, which would free gigantic amounts of methane, which would lead in turn to even more warming, leading to a drastic reduction in the amount of habitable land… The extreme complexity of our societies, the power of new technologies, economic powers, the threats weighing on environmental public goods (climate stability, well functioning ecosystems

and ecosystemic services), require new regulations. Without these, the defense of the general interest will be impossible to carry out.

What political form is best suited to respond to these new demands? A few thinkers have argued that global ecological problems will require attenuating democracy in favor of more authoritarian structures, ones with the power to enforce new ecologically justified norms. This view – in truth, held by only a tiny minority of environmental thinkers[8] – dangerously overestimates the ability of unaccountable authoritarian regimes to manage problems rationally. Amartya Sen's argument comparing the ability of democratic and authoritarian systems to respond to social catastrophes carries great weight: If famines do not occur in democracies, it is due to the circulation of information and the principle of universal suffrage. It is not easy to see how the people could re-elect leaders who condemn them to famine.[9] To a certain extent, the same argument can be extended to preventing environmental catastrophes. One cannot possibly imagine drawing the attention of citizens to the threats weighing on the future without the free circulation of information, especially scientific information. At any rate, authoritarian environmentalism wishes away countless difficulties of negotiation and persuasion, of overcoming imperfect compliance, of correcting corrupted information. Most seriously, it downplays the challenge of preventing abuses of power that would undoubtedly follow from attempting to force an ecologically-tempered way of life on populations accustomed to the pleasures of a consumer society.[10] It also endangers values of political equality and human dignity that are of extraordinary importance in their own right. So we affirm that ecological politics must stay democratic.

II. Liberty and Modern Representation in a Finite World: Tensions

At the same time, we believe that ecological democracy will end up being as different from present forms of representative government as modern representative government was from ancient Greek democracy. Indeed, the latter contrast, developed in Benjamin Constant's famous

[8] H. Jonas, *The Imperative of Responsibility : In Search of an Ethics for the Technological Age*, 1984 (orig. 1979), Chicago, University of Chicago Press ; William Ophuls, *Ecology and the Politics of Scarcity : Prologue to a Political Theory of the Steady State*, San Francisco, W. H. Freeman, 1977; R. Heilbroner, *An Inquiry into the Human Prospect*, New York, Harper and Row, 1974.
[9] A. Sen, *Development as Freedom*, Oxford, Oxford University Press, 1999.
[10] See D. Bourg, *Les Scénarios de l'écologie*, Paris, Hachette, 1996 and *Le Nouvel âge de l'écologie*, in the collection « TechnoCité », éditions Descartes et Cie, 2003.

essay of 1819, is a useful point of departure for a discussion of the magnitude of the coming changes. For just as Constant argued that "ancient" liberty, with its precondition, direct democracy, was unfitted to conditions in the "modern" world, so we propose to show that "modern" liberty and its corollary, representative government, today runs up against conditions that weaken its ability to avert environmental catastrophe.

Constant emphasized differences between ancient and modern forms of popular government in regard to geographical extent, power, collective ends, and liberty. Ancient republics assembled the people from a narrow territory and made their citizens sovereign. Modern democracies cover a much wider territorial base and embrace much larger populations, thus leaving individual citizens only a tiny fraction of power. Modern voters retain, Constant says, "only a semblance" of sovereignty.[11] The people's main civic activity is to elect representatives who make laws on their behalf. Where ancient citizens took pride in directly giving voice on matters of the greatest collective importance – often wars and alliances – modern citizens demand that their representatives respond to their quotidien interests. These interests stem in large measure from peaceful commerce and consumption. Constant explains that commerce, in turn, inspires a love of individual independence. It creates people who "experience collective authority as harassment."[12] Modern republics are adapted, Constant argues, to a world in which commerce replaces war as the primary way of gaining possession of things that people desire. The modern way of creating wealth relates people through voluntary exchange, not conquest. It uses free labor and mechanization to replace slavery. Meanwhile, increasingly well-educated citizens demonstrate their ability to take responsibility for their own happiness. By delegating authority to representatives, people free themselves to pursue their "private pleasures."[13] Representative government thus sustains the modern sense of liberty: Not the liberty of exercising sovereignty with fellow citizens, but instead that of achieving individual self-development by expressing opinions, choosing beliefs, exercising professions, making investments and enjoying consumption with a minimum of interference from government authorities.

---

[11] Benjamin Constant, « De la liberté des anciens comparée à celle des modernes », *De la liberté chez les Modernes*, présenté par Marcel Gauchet, Paris, Hachette, 1980 (orig. 1819), p. 496.
[12] *Ibid*., p. 500.
[13] *Ibid*., p. 502.

In the nineteenth century, when thinkers such as Constant, J. S. Mill and Alexis de Tocqueville championed the values of representative government, it was hardly imaginable that human practices could degrade the vast natural systems of the oceans and atmosphere. The scientific disciplines needed to study the complex ecosystemic interconnections that maintain conditions favorable to the flourishing of life were still in their infancy. Today, global problems like climate change and resource depletion constitute radically new conditions – ones fundamentally unlike more traditional problems of maintaining public order, reconciling competing material interests, assuring national defense, or even justly distributing social goods. The difficulty is that the essential character of many of these environmental phenomena sits uneasily with the organizational and ethical premises of modern representative government.

Consider first that many of today's ecological problems transcend the territorial basis of modern liberty. The model of representative government that, for Constant, allows modern liberty, is geographically defined. It integrates the interests of much larger and more diverse populations than did the ancient republics. Still, modern representation grows in nation-states, thus putting territorial limits on attempts to get people to identify with each other's concerns. This territorial foundation is reinforced when regular elections are organized in the geographically-delimited subunits of the nation-state. Individuals are represented by virtue of their inhabiting a particular place.[14] Territorial limitations are essential to the representatives' functions. They insure that concrete, local conditions and historically specific values get a share of power. Indeed, territoriality guarantees to representatives a powerbase from which to *resist* the development of norms requiring changes or sacrifices whose benefits will flow disproportionately to people outside their electoral district.

Yet it is an essential feature of many environmental problems is that they are not territorially contained. Pollution in rivers and seas spreads from one nation to another; endangered migratory species traverse borders. Thus costs and benefits of mitigating environmental damage often fall on different populations. For fifty years, Western democracies have struggled to invent more encompassing political arrangements (creating new regional levels of government, negotiating interstate compacts and international treaties) to deal with such

[14] A. Rehfeld, *The Concept of Constituency : Political Representation, Democratic Legitimacy and Institutional Design*, Cambridge, Cambridge University Press, 2005, pp. 58-60.

problems. Those arrangements (which constitute only minor adjustments in relation to modern representation) have met with variable success. Now, climate change and global resource depletion vastly raise the stakes. Not merely finding common interests with neighboring provinces and states, but encouraging practices in which people take responsibility for the health of global scale ecosystems is required.

Ecological issues force us to re-examine as well the internal link that Constant uncovers between representation, commerce and consumption. Constant suggests that the legitimacy of modern representation depends on its leaving citizens free in relation to their decisions about production and consumption. Representatives are entrusted with legislative power for limited purposes. John Stuart Mill famously argued that, to respect liberty, representative legislatures must confine themselves largely to passing laws that protect citizens from doing harm to one another.[15] The expansion of the regulatory state in the twentieth century does not alter the fundamental point: Citizens expect laws only minimally to affect their private life-style choices. Constant argued that representative institutions undermine their own legitimacy if they are perceived as overly intrusive into the daily lives of their citizens. Modern citizens must be left alone to decide what profession to practice, what groups to join, how to enjoy their wealth. Modern representative government is intrinsically tied to a view of liberty in which virtually limitless production and consumption are regarded as the chief means of individual happiness.

There is good reason to suppose, however, that solving today's global ecological problems will require societies to accept far-reaching changes in people's economic lives. Reducing the use of fossil-fuels will affect decisions about where people live and work, about what they consume and how they spend leisure time. Ensuring that multiple species can flourish along with human communities entails economizing humanly-built space and regulating habitat-degrading activities. Attaining ecological objectives will significantly alter currently familiar patterns of consumption -- ones constructed out of individual choice under conditions of modern liberty. Following Constant's own reasoning about the link between consumption, liberty and representation, representative democracy appears defective at two levels in relation to large-scale environmental problems. First, one of the original purposes of representation is to make people

[15] J. S. Mill, *On Liberty* (orig. 1959) in *Mill*, ed. A. Ryan, New York, W.W. Norton, 1997, p. 48.

free to consume. Far from getting citizens to reflect on the collective consequences of their consumption decisions, representative government supports a form of political life in which such reflection is made suspect in the people's eyes. The second defect flows from the first: It is therefore questionable whether modern representative institutions have enough *legitimacy* to legislate routinely in ways that affect individuals in their intimate, everyday life.

Today's ecological problems pose novel challenges in relation to the temporal dimension of representative government as well. In describing the organization of legislative power, Constant differentiated between two chambers, one representing current opinion through an elective assembly, the other representing "la durée" – continuity, the long-term – in an hereditary assembly.[16] In effect, modern representation tries to strike a balance between regard for the present and deference to the past. Lower houses assemble legislators elected on a relatively short cycle, two to five years in most Western democracies. Closely spaced elections force legislators to respond to rapid changes in public opinion. While tying the legislative process to public opinion is vital to representative government, it also creates the danger of erratic changes in policy and susceptibility to demagogically-inspired popular movements. Modern democracies thus make constitutional space for a second representative chamber whose members have longer terms (and are often selected on a different territorial basis as well). Longer terms of office and independent standing are calculated to make these representatives more cautious, more concerned to preserve continuity than their counterparts in the lower house. Although today most representative governments have abandoned hereditary chambers, it is still common for upper houses to represent "la durée," with members who are wealthier (and thus more invested in the status quo) and elected for longer terms. Upper house procedures are generally more freighted with tradition and dignity. Thus, modern representation gives legitimizing power to both the present and the past in its institutional design.

What about the future? It would be an exaggeration to charge that modern representation is simply blind with respect to the future. Arguments about the nation's long-term well-being certainly occur in lower houses. Anticipating the expenses of future retirees, preparing to defend the nation against future threats are the stuff of everyday legislative politics. But short term

[16] B. Constant, «Principes de politique» (orig. 1815), in *De la liberté chez les Modernes*, ed. M. Gauchet, Paris, Hachette, 1980, p. 280.

electoral vulnerabilities make representatives reluctant to consider difficult policy changes whose benefits accrue mainly to future constituencies. Perhaps, then, concern for the future resides in upper houses. There, caring for "la durée" implies a reflectiveness that includes a concern to protect present goods so that they can be extended into the future. In fact, however, upper chambers have generally been inclined to be backward looking. They are usually better at resisting innovation in the name of property, tradition, continuity and freedom than they are in getting their polities to anticipate novel challenges. Moreover, in regards to temporality, upper houses increasingly resemble lower ones. Democratic societies, as Tocqueville predicted, feel the increasing pressure of egalitarian sentiments, and these lead to less and less tolerance for forms of representation that substantially insulate representatives from the popular will. For this reason, most upper chambers today are elected, not hereditary, and the electoral cycle that applies to them is only slightly longer than that of the lower house. In other words, in today's world, the present is more advantaged than ever.

The future is the neglected constituency of modern representative politics. And it is in the future that a problem like climate change unfolds its most dangerous consequences. Inevitably, dealing with climate change or protecting against overfishing in the oceans is an inherently prospective enterprise. It requires prediction and precaution and policy innovation. This confronts modern representatives with difficult – sometimes politically impossible – choices. While current generations are beginning to feel the effects of climate change, many times their number of future generations may bear the brunt of the most serious problems if today's efforts to control greenhouse gas emissions fail. Representatives who defend the interests of future generations certainly cannot count on their support in the next electoral cycle. Meanwhile, those who cater to the concerns of existing voters – their desire for jobs, for consumer goods -- increase their chances of re-election. Not even Sen's argument for democracy is sufficient in this case. Those who, today, make the decisions that could lead to a future « famine » will not have to take responsibility for them. In other words, the fundamental incentives regulating the operation of representative institutions favor avoiding confrontations with slow-developing or temporally distant environmental problems.

III. The Metaphysics of Modern Liberty

It is not only the number of citizens and the consequences of that number for participation in sovereignty, nor only the object of liberty – its private character for moderns, public for the ancients – that separates modern democracies from ancient ones, but also two cosmologies, even two metaphysics.
In the spirit of Constant, we carry forth this comparison, on the way to highlighting a third challenge to the modern conception of representative government.

Greek democracy is tightly linked to a closed and hierarchical cosmology. More generally, it is tied to a metaphysics of finitude that finds its most perfect expression in the works of Aristotle. The ancient cosmos set limits as much to citizens' desires as to their possible actions. Recall that the cosmos or the universe was conceived in an intrinsically hierarchical way and it was divided into two parts. On the one hand, there was a celestial world that was inaccessible and divine, incorruptible, eternally self-identical, and moving only in perfectly necessitated ways. On the other, there was the sublunary world, the home of man and other animals, characterized by contingency : the contingency of human action just as the contingency of becoming of all sublunary being. Human action is thus limited in every way. In the eyes of the ancients, it was not at all the goal of technique to transform the world, but only to outfit it in a way that would make life easier. Unlike what happens with the moderns, the ancients see no political stakes in technique. Those political stakes will flow only from the moderns' recognition of technique's capacity to upset nature and thus, to change social conditions. The modern project is, to a large extent, to make possible – by technoscientific means -- an affirmation of the equality of all, in terms of dignity and material conditions. For the ancients, in contrast, slavery of the many seemed to be a necessary condition for the flourishing of the few. To better grasp this contrast, we must go into more detail on the status of technique, and more generally, the metaphysics that supported it, in the ancient world.

According to Aristotle, art (technique) « generally partly completes what nature cannot bring to a finish or partly imitates. »[17] Out of context, that sentence might suggest that art is superior to nature. That is not at all the case. Technical activity is limited by nature, whether it can only imitate a natural product or whether it imitates nature's productive force. By

[17] *Physics*, II, 8.

« complet[ing] what nature cannot bring to finish », man does nothing more than express his nature as a producer, by realizing possibilities inherent in nature – and what's more, all of this within the exclusive framework of one part of the universe, the sublunary world. In no case can man and his techniques rise above nature. On the contrary, both are entirely immanent in nature. Art does not lead to a condition that would complete or perfect nature. Even less does art transcend nature. It is instead a temporary diversion of the essence of natural things. Art's products are congenitally inferior to natural beings.

Of course, like nature, art can give form to matter. In relation to the presence of a final cause in nature, (which itself refers back to the formal cause), Aristotle asserts unhestitatingly that « if a house had been a thing made by nature, it would have been made in the same way as it is now by art. » The case would be the same in the opposite direction : « if things made by nature were also made by art, they would come to be in the same way as by nature. »[18] However, while the relation between form and matter depends on an internal principle in the case of natural substances, the case of artificial things is entirely different. The products of art do not have within themselves their own principle of fabrication : It is we who impose, from the outside, the bed-form, on wood. The ephemeral and superficial character of this association follows from this. As Aristotle points out, the bed is not born from a bed, as a human is born from a human. If one plants the wood of a bed, it will send out shoots and produce a tree, because only the substance wood, the natural in-forming of matter by the wood-form, has at its essence, « a principle of motion or change. »[19] Destined to a precarious existence, unable to reproduce themselves, the products of art are hardly more than the by-products of nature. In this sense, they are inferior to nature.

Moreover, since nature is a « source or cause of [a thing's] being moved and of being at rest ; [it is] that to which it belongs primarily, in virtue of itself and not in virtue of a concomitant attribute, » nature entails necessity (that which cannot not be other than what it is). Human action, on the other hand, whether doing or making, always belongs to contingency (that which can not be or be other than it is). In other words, technical action begins precisely where the reign of necessity ends. That is why technique can have absolutely no place in

[18] *Ibid*.
[19] *Physics*, II, 1.

the necessity-governed celestial cosmos. In fact for Aristotle there is no technique other than that in the sublunary terrestrial world, the realm that is not comprehensively subject to necessity. There, phenomena be caused by chance and by human action, as well as by nature. So the only domain for technique is in the space left by contingency. This implies that technique must not be confused with science, whose very object is nature's necessity. According to this ancient metaphysics, there is a radical separation between science and technique. Science is a noble thing that elevates us toward the necessary laws of the divine cosmos. Technique, in contrast, takes us back to the routines of artisans.

Understand well : this signifies that technique is incapable of producing anything truly extraordinary. For all time, its allotted role is modest. By no means could it ever allow man to surpass the human condition in any way whatsoever. The idea of man as *cooperator Dei*, to use St. Paul's expression, has no meaning here. Even less appropriate is the idea of man as « master and possessor of nature. » The possibilities opened up by technical invention are limited from the start.

Now, the situation is no different in regard to the desires of citizens. Finitude is just as significant in this area as it is for technical action. The ground of that finitude is ontological. Indeed, for Aristotle, to be a *being* is to be *one* being. It is the very limits of beings that define them. *Apeiron*, that which is indefinite, is lowered to the level of non-being. Nothing escapes this extreme sensitivity to finitude. There is no other space than the sum of all places, the space of all spaces being the cosmos itself, whose limits absorb every form of reality. There is nothing outside of this unique and finite cosmos. Now, desire itself is limited – unless it is motivated by hubris, which in any case can never open desire up towards the infinite, but only to nothingness, to formlessness. Here, it is enough to recall Aristotle's distinction between economic and chrematistic forms of exchange. In an economic context, monetary exchange is used to satisfy needs that are, by definition, finite : needs for food, clothing, shelter. In a chrematistic context, exchange aims at a hoarding of goods that goes beyond every limit – whence Aristotle's condemnation of it.[20]

[20] *Politics*, I.

In contradistinction to this ancient metaphysics of limits, modern democracy is grounded in a belief in the seemingly infinite potential of technologies and markets, in an open-ended universe. In this case, the vocation of human action is to transgress every limit. Modern democracy could even be said to be fruit of that obsession for transgression. With the principle of modern sovereignty, as Bertrand de Jouvenel demonstrated in *On Power* [21], moderns have conceived a form of power without limits, power that recognizes no limit outside itself. In this regard, Athenian democracy and modern democracy are on entirely different planes. While in both cases the autonomy of the city – it ability to give laws to itself -- is affirmed, the contexts are totally different. Ancient democracy has no plan to dislodge the gods of Olympus. It is inscribed in a finite cosmos that imposes its order on gods and men alike. Modern democracy, on the other hand, is inherently linked to humanity's attempts to tear itself free from the guardianship of an infinite and omnipotent god, in a cosmos that is now silent and without meaning. « *Come, let us march against the power of heaven,* wrote Marlow, Bacon*'s* contemporary, *And set black streamers in the firmament, To signify the slaughter of the gods.* »[22] Modern democracy opens up human desire as unlimited technical action without. It thinks of itself as the organisational mode of a society that allows each individual to maximise his or her advantage, that is, to produce and consume more and more. That is why not only modern democracy, and the self-limitation of power associated with it, resulted from the modern affirmation of autonomy, but also its Other, totalitarianism and its assertion of power without limits. For the essence of totalitarianism, as Hannah Arendt characterised it, is precisely its continual movement.

This program of transgression is not limited only to scientific, technical and political domains. A diffuse intolerance for moral norms in general is a trait of modern societies. These societies never stop producing various sorts of attempts to delegitimize morality : in the name of social classes, ressentiment, biocentrism. Modern aesthetics is essentially an aesthetic of transgression in relation to prior canons of artistic taste. Professional sports sets itself up as a continual movement to transgress the limits of the human body. All of these forms of exceeding limits have fed and continue to feed the general motion of economic growth, which itself is conceived as a process and a form of progress without end. It is this type of growth that leads to

[21] *Du Pouvoir, Histoire naturelle de la croissance*. Paris, Hachette, 1972 (orig. 1945).
[22] *Tamburlaine the Great* (Part II, act 5, scene 3).

exponential curves in the flow of material goods and to the global risks that result from it.[23] A type of liberty that no principle can be allowed to limit already allows each of us to contribute to the exhaustion of the biosphere. In the near future, the use of anthropotechniques will contribute even to the creation of new species within the human genus, if not to a new intelligent genus in its own right, the transhuman genus.

The fact is, we no long inhabit the modern world, even if modernity as a project continues on in many ways. More and more, and in every direction, we are running up against finitude : first, the finitude of our planet, second, the finitude of our technological power. We must state it once again : In the second half of the twentieth century, we have learned – at our own expense – through climate change, the depletion of the ozone layer, the effects of pseudo-hormones, nuclear pollution, that in the more or less long term the domination of nature can have affects that are as dangerous as they are unpredictable. Finitude affects our claims to have knowledge. In regard to developmental biology, for example, an epistemologist like Evelyn Fox Keller states that « the world is tortuous…, it is too complex to adapt itself perfectly to our models, our theories and to our explanations. »[24] The areas of scientific inquiry where one runs into a number of divergent interpretations are not lacking. The mathematician of probability, Nicolas Bouleau writes that whether one takes up « problems that are partial, local, contained within particular circumstances », or ones within the domain of engineering, or whether it is a matter of « large, global questions », « most of the time there are several ontologies. »[25] In a more general way, contemporary epistemology has ratified the historicity of scientific knowledge : the fact that the passage of time is sure to diminish the area in which scientific laws are held to be valid.[26] It is simply no longer an option to contrast, in Enlightenment fashion, the universality of reason, on the one hand, and the contingency and circumstances of a narrative, on the other. The development of reason and the sciences depend on a narrative – a narrative which, unlike Hegel's phenomenology of spirit, has no end and no certain structure. There is not even so much as an

[23] Cf. Steffen, W.; P. J. Crutzen & J. R. McNeill. 2007 «The Anthropocene : Are Humans Now Overwhelming the Great Forces of Nature ?» *Ambio* 36: 8, 614-621 (Royal Swedish Academy of Sciences); and Bourg, D., A. Grandjean, & Th. Libaert. 2006. *Environnement et entreprises. En finir avec les discours*. Paris : Village Mondial, 2006, 26-27.

[24] E. Fox Keller, *Making Sense of Life: Explaining Biological Development with Models, Metaphors and Machines*, Cambridge, MA, Harvard University Press, 2002.

[25] See N. Bouleau, « La Question ontologique. Mathématiques et ontologie. Pragmatisme et Quine. Relativisme et préjugé de supériorité analytique», forthcoming article.

[26] See J.-M. Lévy-Leblond, *Aux contraires*, Paris, Gallimard, 1996.

idea of the universal that does not require nuancing, in the manner of the anthropologist Philippe Descola with his notion of « relative universalism. »[27] The most recent developments in physics concerning the movement of galaxies, moreover, cast a shadow on one of the major contributions of Galilean physics : the idea that physical laws are universal.[28] That idea, which is part and parcel of the collapse of the hierarchical concept of the ancients, belongs to groundwork of the modern reinterpretation of democracy. It helped bring forth both the French revolution and the U.S. Declaration of Independence. For their part, classical economists postulated the existence of a world of superabundant resources. Neo-classical economists bet that humanity's technological abilities would enable always enable it to find substitutes for the natural capital that it had by destroyed by the activities of reproducible capital. In the place of all these ideas, we are hitting finititude and in the most concrete ways : the limit of the biosphere to digest our carbon emissions, the limit of our fossil fuel supplies, the limit of fresh water reserves here and there on the planet, the limit of our ocean resources. We run into the limits of our mineral supplies as well ; we are close to exhausting certain precious and semi-precious and heavy metals. We are running up against the fragility of ecological services rendered by ecosystems as well as the limits of our capacities for recycling.

When one considers what the modern dream was all about, there is something spectacular in this piling up of boundary markers and limits of all sorts. And yet, modernity is not giving up. Desire for continually growing levels of material consumption is still expanding, numerically, geographically and mentally. Transhumanism has taken over for the the old ideology of progress by now promising immortality – for a small number of the elect.

We, however, are betting on a paradigm shift in the near future, under the combined pressure of resource shortages – fossil fuels, minerals, water-related – and the effects of climate change. Now, such a shift cannot take place without having significant effects on the organisational foundations of our societies. From it should flow a new metaphysics of finitude. This metaphysics will bring together, on the one hand, the paradoxical character of our technical means, which are both powerful and limited ; the shortage of resources ; the expected shinkage of

[27] « Pour un universalisme relatif », interview with Ph. Descola, *Revue des deux mondes*, March 2009.
[28] See Etienne Klein, *Galilée et les Indiens, allons-nous liquider la science ?*, Paris, Flammarion, 2008. See the review on http://www.laviedesidees.fr/Y-a-t-il-eu-des-Galilee-indiens.html

the earth's inhabitable territories ; and on the other, the recognition of the equal dignity of all in the face of the new adversity of the environment. This metaphysics should support a new linking of individual rights and the survival imperative of the human species. And it will give rise to institutional arrangements that are just as novel.

IV. Representation and technoscience

These observations on the metaphysics of modernity pose a third type of challenge, beyond territoriality and temporality, to the case for representative government : the challenge of governing technoscience. The world-transforming possibilities associated with technoscience could of course barely be thematized when theorists such as Constant and Mill wrote in the nineteenth century. But in the hundred or so years following Mill's death, technoscientific innovations revolutionized everyday life in the West in ways no less drastic than the most far-reaching political upheaval.[29] Yet modern representation accommodated this revolution while only marginally altering its mode of operation.

Twentieth century governments vastly expanded the role of scientifically trained advisors in their operations and this expansion was made to appear consistent with the assumptions of modern representation. This is because, first, science can be portrayed as playing a key role in modern liberty: It expands the range of choices available to citizens, giving them new products, new forms of control over the world around them. Technoscience furthers the modern project of liberation. It is assumed to do so, second, in a value-neutral way. In modern discourse, science is portrayed as the source of unbiased knowledge about nature and technology's effects on it.[30] So when representative democracies turn to experts for answers to questions of public concern – Is this product safe? Does this technology have the potential to produce energy at a reasonable cost? – it expects objective answers. Furnishing the polity only with facts and tools, technoscience carries no danger of displacing the representatives' judgments about its *proper* orientation.

This *modus vivendi* between modern representation and technoscience has become increasingly problematic. First, the transgressive power of science, and the powerful technologies

[29] For a suggestive comparison between technological change and changes in constitutional order, see L. Winner, *The Whale and the Reactor : A Search for Limits in an Age of High Technology*, Chicago, University of Chicago Press, 1986.
[30] B. Latour, *Nous n'avons jamais été modernes*, Paris, La Découverte, 1991.

created in its wake, is revealed to cause massive environmental problems. The political problem of modern science is not tyranny, that is, the empowerment of a self-interested, dominating person or class. The problem is that technoscience reshapes the world in controversial ways. It carries values, it constantly transforms the quality of community life. Because it is inherently disposed to transform and instrumentalize the world, science no longer be portrayed only as neutral advisor to collective action. Yet modern representative governments are generally not organized in ways that foster reflection and discussion about these changes before they are woven, irrevocably, into the fabric of our common world. In 1996 and afterwards, the defiant reaction of Europeans to the introduction of GMOs into their fields and food supply – a policy allowed (even promoted) by their representative institutions -- was unmistakeable evidence of this gap.

At the same time, this defect in the relation between technoscience and representation must not be confused with a call to have the popular will decide questions about state of the natural world. There can be no question of democracy trying to resolve environmental problems by renouncing science, just as there can be no question of "democratizing" science in the sense of systematically involving the popular will in the process of evaluating scientific hypotheses.[31] Scientific expertise, with its refined methods of observation and controlled methods of experimentation, plays a key civic role in alerting the public to environmental problems. It takes meticulous scientific studies to reveal that today's cancer was caused by exposure to asbestos thirty years ago or that today's drought is probably the result of humanly-caused climate change.

This cognitive function was barely anticipated in the structure of modern representative government. The assumption behind modern representation is that ordinary citizens are in the best position to understand whether they are suffering from conditions that public policy could change. Citizens may not know what policies would best help them, but at least they know that they are feeling threatened, hungry, sick. The people's self-interpretation of their concerns supplies the raw material for the representative's art of mobilizing political support. These self-interpretations also accumulate in reservoirs of criticism and distrust when authorities fail to

[31] Latour sometimes appears to make proposals of this sort. For a critical appraisal, see K. Whiteside, *Divided Natures : French Contributions to Political Ecology*, Cambridge, MA, The MIT Press, 2002, pp. 134-140 and 249-257; and K. Whiteside, *Precautionary Politics : Principle and Practice in Confronting Environmental Risk*, The MIT Press, 2006, pp. 101-111.

address public problems. Such distrust powers the checking mechanisms that help protect representative government from veering toward arbitrary or irresponsible public policy.[32] Yet citizens' self-interpretations of their problems or aspirations cannot fulfill these functions in relation to issues such as climate change or pesticide accumulation that are virtually invisible to ordinary perception. The scientific community does help fulfill those functions, but its methods and structures operate on principles that are, and must remain, distinct from those of representative government.

Even so, science is insufficient to guide policy. In part this is because it cannot be assumed that scientific advisors have no policy agendas of their own. Through grants, commercial support and employment, today's scientists are commonly bound up with economic and political interests. Furthermore, however necessary science is to the perception of environmental problems and to devising solutions to them, it is also often shot through with uncertainties. These keep it from claiming final authority about what is to be done.

In sum, technoscience is simultaneously an important *causative* part of the environmental crisis and a *necessary*, but *not sufficient* part of the solution. As a result, just as modernity's transformative-transgressive approach to nature overturned ancient views of the cosmos, and with it, ancient conceptions of liberty, so an ecologically-informed concept of nature, taking account of limits, uncertainty, and caution calls for new relations between science and the popular will.

V. Representation and Deliberation in Ecological Democracy

In response to the conditions sketched out above, « modern » representative government has already begun to metamorphose in certain ways. New institutional contours, new practices – and new tensions – have begun to emerge in relation to territoriality, temporality, and the governance of technoscience. We refer to this emerging configuration as « ecological democracy » to emphasize its participatory and deliberative character.

The worsening of global scale environmental problems like climate change and biodiversity loss creates increasing pressure for supranational regulation. Single nations cannot

[32] P. Rosanvallon, *La contre-démocratie : La politique à l'âge de la défiance*, Paris, Seuil, 2006.

control greenhouse gas emissions enough to reduce global climate change ; it is almost useless to protect migratory species in one nation if their habitat is wiped out in others. Already, there is widespread recognition that creating norms capable of preventing many forms of environmental damage requires transcending the territorialized jurisdictions on which modern representation has been built. This recognition is evident in agreements like the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer or the 1997 Kyoto Protocol, as well as the environmental legislation of the European Union. Not unexpectedly, the reaction of representative institutions has often been to assert national interests in commerce and job-protection and thus to delay and obstruct the implementation of supranational agreements. Even before the notoriously anti-Kyoto administration of George W. Bush came to office, the United States Senate did not ratify the Kyoto Protocol that President Clinton had signed.

Modern representation is not simply going to disappear in the foreseeable future, so whatever form supranational institutions may take, they will co-exist – and necessarily compete – with national ones. We see two paths for ecological politics in this context. The first path is the further development of supranational representative institutions. The European Union offers the most striking version of a model in which transnational law-making institutions are gradually superimposed over the institutions of modern representative government. The powers of the European Parliament have notably increased in recent years, such that on about three-quarters of EU policy, it now has equal say ("co-decision") with national governments represented in the Council of Ministers. At the start of the 21st century, the European Union regulates numerous air pollutants and dangerous chemicals. It has laws protecting migratory species, reducing noise and controlling waste transport across national borders. It manages water quality in inland and coastal waters.[33] The European Parliament can even claim that one major piece of EU environmental legislation – the 2006 REACH directive applying new safety standards to thousands of chemicals in commerce – resulted from leveraging its supranational position against the objections of balking national governments.[34] To the extent that members of the European Parliament are organized into transnational political groups and are charged with deliberating over policies governing twenty-seven different member-states, they might be said to transcend the narrow

[33] See Andrew Jordan and Duncan Liefferink, eds., *Environmental Policy in Europe : The Europeanization of National Environmental Policy*, Routledge, 2004.
[34] «Wanted : A vigorous debate», *The Economist*, (June 6-12, 2009), p. 49.

territoriality of modern representation.

But in truth, the record of this model of supranational representation probably demonstrates as much about the difficulties of reconstructing representation as about its positive prospects. European Union institutions are built only after elaborate negotiations among states, each of which must be convinced to give up fragments of its national sovereignty. After over fifty years of development, member states and their national parliaments still have not surrended enough power to the European Parliament to enable it to introduce or pass legislation on its own. "Modern" representation still prevails. Moreover, European parliamentary elections are still organized in national jurisdictions. As a result they tend to end up more as referendums on the popularity of the sitting national governments than as opportunities to debate Europe-wide issues. Worse, a steadily declining rate of participation in these elections (the abstention rate was 56% in June 2009) can hardly be interpreted as a sign that the EU is creating a transnational civic consciousness.[35] The fact that European institutions must always be designed to mesh with pre-existing and more prestigious ones in twenty-seven countries has made them cumbersome, opaque – and not very popular. This is the price of a model that tries to update modern representation but does not supersede it.

The second path seeks new ways of opening up deliberative opportunities in the both government and corporate decision-making structures. One trend involves involves bringing environmental nongovernmental organizations (NGOs) into deliberative institutions. Well-known groups like the Friends of the Earth, World Wide Fund for Nature and the World Resources Institute, as well as innumerable, more local NGOs, such as the Fondation Nicolas Hulot in France, have coalesced in civil society, outside of the formal structures of modern representation. They count as what some political scientists call "self-authorized representatives", in the sense that they claim to speak for the public good, not just some limited, private interest. Yet they are not electorally validated.[36] As John McCormick has observed: [Environmental NGOs] "have contributed to the development of a global civil society within which humans have increasingly come to appreciate that most economic and social problems – and environmental problems in

[35] http://www.elections2009-results.eu/en/index_en.html.
[36] N. Urbinati and M. E. Warren, « The Concept of Representation in Contemporary Democratic Theory », *The Annual Review of Political Science* ,2008.11, p. 403, available online at http://polisci.annualreviews.org.

particular – are… part of the common experience of humanity and must be addressed accordingly."[37] International organizations such as the United Nations Conference on the Environment and Development have been particularly forthcoming in accrediting environmental NGOs and inviting them into their meetings.[38] Since 1983, the World Bank has met regularly with environmental NGOs to get feedback on the environmental impact of its projects. France is currently developing procedures that would seat some environmental groups on one of its official advisory bodies, the Social and Economic Council.

Environmental NGOs can be vectors of ecological democracy. They help overcome the shortcomings of modern representation. Many are international in scope or are organized in relation to environmentally-defined territories. They offer direct contact with widely dispersed populations. Their agendas are not bound to short-term electoral cycles. In many cases, in contradistinction to the politically passive, consumerist behavior favored by modern representation, they promote an activistic ethic in which both public policies and consumer decisions are subjected to environmentally-informed critique. To support their critical stances, environmental NGOs often set up research and environmental monitoring programs. "Their studies and expertise produce a good deal of the knowledge that is used in the global environmental discourse," observes Andrew Jamison.[39] It is this combination of traits that makes them worthy of inclusion in deliberative bodies at every political level.

The key word here is deliberative, not representative. At least in theory, representation suggests a mirroring of a pre-existing popular will and decision-making as a function of the relative numbers of citizens on each side of an issue. Deliberative democracy favors, in contrast, the public weighing of reasons. It implies a dialogue in which participants exchange reasons and try to persuade each other about the general interest by the force of their arguments.[40] Our claim

---

[37] John McCormick, « The role of environmental NGOs in international regimes, » in *The Global Environment : Institutions, Law, and Policy*, ed. N. J. Vig and R. S. Axelrod, Washington, DC, Congressional Quarterly Press, 1999, p.53.

[38] G. Porter, J.W. Brown and P. S. Chasek, *Global Environmental Politics*, Third Edition, Boulder, CO, Westview Press, 2000, p. 69.

[39] A. Jamison, « The Shaping of the Global Agenda : The Role of Non-Governmental Organisations, » in *Risk, Environment and Modernity : Towards a New Ecology*, ed. S. Lash, B. Szerszynski, & B. Wynne, London, Sage Publications, 1996, p. 226.

[40] W. F. Baber and R. V. Bartlett, *Deliberative Environmental Politics: Democracy and Ecological Rationality*, The MIT Press, 2005, p. 6.

for ecological democracy is that environmental NGOs have a special role to play on deliberative bodies : to highlight, with evidence and reasons, the environmental stakes – for the present and the future, for territories near and far -- of policies across the whole range of government activities.

Some environmentalists will worry that sitting on official bodies might co-opt their groups and weaken their critical perspective. With Andrew Jamison, they might see the environmental movement better advancing its aims more by conflictual means than consensual ones.[41] But there is no reason to imagine that *every* environmental NGO needs to see itself as a candidate for official accreditation. If Earth First! chooses oppositional activism as its favored mode of political influence, ecological democrats have no principled objection. In fact, they should applaud the additional level of "counter-politics" with which such activism criticises the lapses of official policy. At the same time, what defenders of green dissent need to recognize is this: As outsiders, green resisters can politicise particular issues, they can sometimes stop objectionable developments, but they are not in a position to participate in the deliberative give-and-take through which comprehensive policies aiming at the public interest are formulated.

This path for ecological democracy creates new puzzles and difficulties of its own. How will the officially-sanctioned NGOs be chosen? Undoubtedly, certain criteria for inclusion would have to be settled. This difficulty does not seem insuperable. As a starting point, France has proposed standards such as independence, capacity for mobilizing people, and capacity for promoting environmental discussion.[42] Still, there is every reason to take seriously critics who raise questions about the accountability of NGOs or who charge that the most prominent NGOs systematically advantage perspectives of the developed world.[43] It is vital to ensure that accountability – surely one of the great achievements of representative government – not be lost. It would also be important to make sure (perhaps via a rotation of groups) that a variety of environmentalist agendas got spokespersons on the relevant official bodies.

---

[41] Jamison, *op. cit*., p. 243.

[42] Groupe 5, Construire une démocratie écologique, Le Grenelle de l'Environnement. Synthèse et principales mesures. 27 September 2007.

[43] See M. Betsill and E. Corell, *NGO Diplomacy : The Influence of Nongovernmental Organizations in International Environmental Negotiations*, Cambridge, MA, The MIT Press 2008, pp. 205-206.

The matter of representing future generations poses even greater challenges. Indeed, the expression « future generations » offers, to use Frege's categories, meaning (*Sinn*) but not denotation (*Bedeutung*).[44] For that reason, there is no way to control its usage. In relation to future generations the very notion of "representation" is puzzling. How can anyone "*re*-present" someone who is not even *present* yet? What does it mean to speak on behalf of people who, because they have not even been born, have never had a chance to develop a particular personality with interests and cultural commitments? Doesn't representation mean that the "represented" have a chance to give voice to their own concerns and to react to political propositions, whatever they are? And doesn't this mean, at a minimum, that they have opportunities to contest legislative decisions in which they do not see their will reflected? The original promise of representative government stemmed from its potential for expanded inclusivity. As the franchise was extended to previously excluded groups like women or racial minorities, those groups could be mobilized and their interests brought into the political arena. But future generations are not mobilizable like that. So is speaking for future generations really representation at all? Moreover, if representing future generations means giving some people today proxy votes for future individuals, a troubling political consequence arises. Proxy votes would have to be distributed, presumably, in proportion to numbers. Since future generations will be much more numerous than today's population, those who represent them would have to be given overwhelming power. Paradoxically, trying to apply the model of modern representation to future generations yields a sort of dictatorship of the future, not democracy. For all of the reasons, it is not possible to represent future generations and their interests in a way analogous to classic modes of political representation.

What is needed are institutions whose mission is to care for the long-term and whose structure is designed to protect their ability to do so. We can imagine two ways of doing so. The first possibility is to take inspiration from bicameral models and to institute a new type of upper-house, one whose mission would be to represent long-term interests. To overcome the tendency of elected officials to give priority to short-term interests, one might elect members of this upper-house for longer terms, much as French senators were elected for nine years. Their task would be to embody specifically and exclusively long-term interests. This they would do in the name of,

[44] G. Frege, *Écrits logiques et philosophiques*, Paris, Seuil, 1995 for the French translation.

and with the legitimacy of the sovereign, because they would be elected on programs whose content would deal only with long-term issues.

This idea would pose two problems : first, that of distributing decisions between the short and the long term chambers ; second, that of determining the final reconcilation procedure. The first problem is only a seeming one. It would not be a matter of dividing legislative proposals according to whether they concerned the short or the long term. That would be absurd, since a decision affecting the short term can have significant effects on the long term. Rather, the idea is to have a legislative body whose members would be elected on divergent programs, to be sure, but ones having to do exclusively with the defense of the long term – whether in environmental affairs or other areas such as the future of the biological basis of our common human condition. All proposals examined by the lower house would also be heard in the upper house. The upper house would have the final say in cases of disagreement with the lower house. Such would be the solution to the second problem. It is also possible to imagine that any presidential candidate would have to defend, in addition to a traditional program, a program that specifically had to do with long term issues. The president would thus have a specific majority in each house. In such a context, prior impact studies would take on capital importance ; they would allow the orientation and justification of the upper house's decisions to appear clearly. These studies should rely on qualitative and quantitative indicators, both environmental and social – but not monetary. Since we have become capable of compromising the existence of our species, either by destabilising the regulative mechanisms of the biosphere, or by seeking to modify our own biological basis with transhumanism, democracy would lose a large part of its content if it did not find a way to give legislative guidance to these new matters of concern.

Let us be satisfied for the moment with recalling the principle of the incompleteness of representation[45] and the need for a more complex political system. A suitable solution might be to join to the representative system a means for other authoritative bodies, (on the model of the Constitutional Council, the French Council of State, various ad hoc expert commissions) to intervene in the legislative process, and to combine it with a participatory principle, even with direct democracy (on the model of popular initiatives in Switzerland or national referendums in

[45] See P. Rosanvallon, *Le Peuple introuvable. Histoire de la représentation démocratique en France*, Paris, Gallimard, 1998.

France). Given the complexity of the new environmental challenges, we must imagine interweaving the different arrangements through which citizens could influence public decisions : representative democracy, which allows citizens to affect the general trajectory of decisions ; participatory democracy, which allows a panel of specially trained citizens to enlighten decisionmakers with their own weighing of stakes in a particular decision or to introduce arguments into public debate ; even, on exceptional occasions, direct democracy. [46]

If this first proposal concentrates society's future-orientation in a few particular institutions and mediates popular participation through organized civil society, our second one imagines its dispersal throughout the polity as a whole and aims to increase *direct* public involvement in processes of hitherto dominated by expert decision-making. It would be a matter of selecting the best future-regarding practices, many of which have already been tried to some extent within popular government, and then applying them in new ways throughout a society's decision-making institutions. In this way, ecological democracy can be made to answer simultaneously to the defects of modern representation in respect to future generations and to the need for more popular engagement in evaluating technoscientific innovations. Thus, future-oriented democracy extends the practice of requiring environmental impact statements and public hearings before undertaking construction projects. It favors the proliferation of other prospective institutions – environmental research institutes, scientific advisory boards, citizen conferences on technological evolution. It turns bodies like those into more than consultative organs; it gives them a share of power. Faced with trade secrets and government refusals to disseminate results of its own studies, ecological democracy insists on values of openness and transparency. For secrecy and closure are strategies to protect the past, not to foresee the problems of the future. Ecological democracy debates and refines future-oriented norms like the precautionary principle. [47]

Ecological democracy multiplies opportunities for public input in the development of environmental norms more generally: not just through perfunctory hearings, but by means of devices such as deliberative polling and citizen conferences. In these special forums, people can

[46] See D. Bourg & D. Boy, *Conférences de citoyens mode d'emploi*, Paris, Descartes et Cie/Charles Léopold Mayer, 2005.

[47] In regard to the precautionary principle, see K. Whiteside Precautionary Politics, cited above ; also, D. Bourg & J.-L. Schlegel, *Parer aux risques de demain. Le Principe de précaution*, Paris, Seuil, 2001 and D. Bourg & A. Papaux, « Des limites du principe de précaution : OGM, transhumanisme et détermination collective des fins », *Économie publique / Public Economics*. n° 21 (2007/2), pp. 95 – 123.

be gotten to reflect on future consequences of development and regulatory decisions made in their name. Ecological democracy might choose certain groups to operate as designated "guardians" to monitor their community's life-support systems and give early warnings of incipent environmental degradation to them.[48] It should be noted that in none of these examples do we argue that non-experts have special expertise in evaluating scientific information. Rather the role of non-experts is to help expose possible biases embedded in expert testimony; to challenge unnecessarily constrained policy choices; to debate the desirability of certain risks; to express preferences among a wide range of alternatives; to inject humanistic values – concern for equality, beauty, fairness – into otherwise technical discussions. In this way, ecological democracy follows up modern representation in its concern to put checks on potential abuses of power. Yet it departs fundamentally from Constant's modern model by seeking to extend and stimulate participation, not by keeping it at a distance. It builds an extended notion of citizenship.

IV. Conclusion: Protecting nature as a test of good government

Unlike modern representation, ecological democracy does not measure itself mainly by its ability to satisfy people's immediate preferences. It expresses a determination to take seriously its responsibility to bequeath a healthy and beautiful world to its descendents. Of course, even modern representation was defended in terms of objectives more noble than the mere satisfaction of material interests. The greatest proponents of representative government argued for its beneficial effects on human character. Constant demanded that its institutions "complete the moral education of citizens."[49] John Stuart Mill argued that a key measure of good government was its tendency "to increase the sum of good qualities in the governed."[50] Both believed that representative government would be an agent of moral transformation, making citizens more active, independent and intelligent. They agreed too, however, that such an effect would be brought about, not by public, political activity, but mainly by the regular exercise of private liberty.[51] The modern perspective suggests that representative government is good precisely

[48] C. Raffensperger and N. Myers, « Becoming Guardians : Some ideas on how to move forward, » *The Networker* : The Newsletter of the Science and Environmental Health Network, September 2006, Volume 11, No. 5.
[49] Constant, « De la liberté… », op. ci., p. 514.
[50] J. S. Mill, *Considerations on Representative Government*, Indianapolis, IN, Bobbs-Merrill Educational Publishing, 1958 (orig. 1861), p 25.
[51] Mill also argued that a representative system would help stimulate people's « feeling for the public interest ». He imagines, however, this effect can be achieved if the people participate « even rarely » in public functions. See ibid., p. 54-55. Most of his argument on the moral effects of representation emphasizes its development of an active, pragmatic, even eccentric individualism in everyday private life.

because it engenders an attitude of self-reliance in practical affairs as well as a self-sustaining spirit of resistance to collective norms that might interfere with the secure enjoyment of their private pleasures. Its pride in making "independent" citizens is, at the same time, a validation of certain habits of mind. Not only does modern representation make room for citizens to pursue their desires; it sees actual virtue in this.

Ecological democrats worry when moral education is interpreted mainly in terms of people's abilities to understand and pursue their interests. To the extent that modern liberty, by definition, consists in heightening individuals' sensitivity to collective decisions that affect "private" matters, it risks forestalling action necessary to prevent severe, large-scale ecological damage. In an era when humanity's adverse impact on the environment is every day more apparent, it is disquieting to read Mill's reasoning that associates people's becoming "self-dependent" with achieving "a high degree of success in their struggle with Nature."[52] Modern liberty, at its very core, pits human intelligence and moral reasoning *against* nature.

What if moderns – believers in equality, advocates for the public's potential for intellectual growth – became convinced that humanity, today, is in danger of destroying the life-supporting basis of its own existence, *in part because of modern habits of mind*? The test of good government would then have to shift away from a view of independence that pits the individual against nature. Ecological democrats propose that, today, a crucial measure of good government is its tendency to engender a widespread concern for protecting "nature," in its multiple meanings.

For over a century, prescient environmentalists have tried to describe the virtues of such an ecological sensibility. An ecological consciousness perceives humanity not as an external dominator of nature, but as interconnected with it. It strives to make itself aware of indirect, distant and long-term effects of human activity on the health of ecosystems. Being reluctant to separate life-forms from their environmental context, it tends toward holism. It develops a sense of respect for life in all diverse forms, rather than seeing the value of non-human life only in

[52] Ibid., p. 43.

terms of its utility to humanity. It is sensitive to the beauty and integrity of natural things and, at times, sees in those qualities reasons to preserve them against temptations to consume or transform them. It is skeptical of the faith that simply assumes that technological progress will eventually overcome any adverse consequences the today's activities may have for the environment. It is willing to take seriously the idea that values of sufficiency and moderation, not the pursuit of limitless desires, could describe a good human life.

Undoubtedly, these virtues contain ambiguities and potential contradictions. Nonetheless, they share a feature that distinguishes an ecological sensibility from that of modern liberty: They make the definition and preservation of nature into a *political problem in its own right*. A commitment to ecological democracy includes preferring institutional forms that promote sensitivity to the environmental impacts of human activity and that generate an inclination to identify one's own good with community norms that protect ecological services. For both ancients and moderns, politics is about human-to-human relations. It is about creating dispositions in citizens that sustain a harmonious community; about regulating conflicts among competing interests through impartial law; about justly distributing the goods made possible by human cooperation; about protecting a community's traditions. These views take "nature" for granted. The material environment does appear in such thinking, but mainly at the margins. The environment is a place, a historical site, a people's territory, a source of raw material, a tradable good. Its fate is an after-effect, something settled as a result of of the community's pursuit of its other priorities. What moves an ecological sensibility beyond earlier views of politics is its refusal to treat nature as an after-effect. From the very start, it inserts « nature » into people's deliberations about the best way to structure their community. This « nature » is an entity whose identity cannot be reduced to our representations of it. Nor can its importance be reduced to the utility it brings us. The community's commitment to understanding and preserving these irreducible features then becomes an essential component of its conception of a good life for all.

We are not saying that ecological democracy must settle on some *particular* norms decided *a priori* by environmental philosophers. Environmental philosophers themselves are divided over the meanings of nature. Our predicament admits of no single, all-inclusive answer. For that very reason, the case for democratic debate is strong. Indeed, the most important part of

the liberal heritage that we must preserve, beyond freedom and the diversity of information, is the principle of freedom of expression in civil society, in all its diversity. This is essential to counterbalance the tendency of political decision-makers to take account of only those matters that favor them. Thus, ecological democrats call on many of democracy's most well-known virtues: Its ability to elicit information from all corners of society and to test that information in debate; its quest for inclusiveness and mutual respect; its openness to diverse values; its determination to get proponents of competing values into dialogue so that they reflect on how to prioritize them or reconcile their contradictions.

While environmental democrats can never allow themselves to underestimate the seductive appeal of modern liberty, they see no reason to despair for the prospects of inventing liberty on new terms. Modern liberty was invented to protect citizens from arrogant monarchs, religious zealots and passionate popular factions. It was the *arbitrariness* of the decisions, their partiality, or the obscurity of the reasons behind them that justified resistance to protect the people's "private" preferences. But ecological issues put pressure on "private" decisions in ways that bear little resemblance to the willful decrees of an unaccountable elite. The case for countering climate change and species loss is publicly accessible: subject to evidence, open to debate about appropriate principles for collective action. What is at stake today is the material grounds for our communities' flourishing. If ecological democracy would change patterns of production and consumption, it is because observed ecological problems necessitate adjustments for the well-being of the community, broadly conceived. A commitment to ecological democracy includes preferring institutional forms that promote sensitivity to the environmental impacts of human activity and that generate an inclination to identify one's own good with community norms that protect ecological services.

Future democracy will have to watch over the power of our technologies in a finite, crowded and fragile world, where one person's power to consume affects both the physical conditions of others' well-being as well as the very meaning of the human adventure itself. It will have to reconcile the rights and the duties of the individual and the supreme imperative of the survival of our species. The audacious conviction of ecological democrats is that it is possible to devise participatory structures that make environmentally-justified laws less onerous, because the

people come to understand their relation to the public good, play a role in their development, see burdens distributed fairly and have opportunities to use their power to prevent dangerous abuses of authority.

First published in laviedesidees.fr, sept 1st 2009