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Bringing the Political Back in: Essays in Economic Knowledge, Politics, and Ecology

presented by

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candidate for the degree of Doctor of Philosophy and hereby certify that it is worthy of acceptance.

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Bringing the Political Back in:

Essays in Economic Knowledge, Politics, and Ecology

A thesis presented

by

Franck Amalric

to

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Summary

This thesis is composed of two distinct parts: a paper on the meaning of Adam Smith's concept of "invisible hand" as used in the *Wealth of Nations*, and a series of papers on the issue of sustainability entitled *Towards a procedural theory of sustainability.*

The two parts are by and large independent. They share, however, a common theme: that because our knowledge about society, and in particular about the economy, shapes the interaction between different spheres of society, the possibilities for social transformations are greater then what is suggested by this knowledge, so that our capacity to take advantage of these possibilities does not reside in our knowledge of society but in the political process. This theme raises a methodological question with regard to the social function of economics: is the function of economics to reveal "laws" inherent to a modern economy, as advocated by positive economists? Or can economics be placed at the service of democratic deliberation by putting forward alternative institutional arrangements that would overcome the existing economic constraints?

The paper on Adam Smith provides a significant historical example of how economics can fulfill this second function; the chapters on sustainability argue that it has become urgent to adopt this alternative methodology in order to address environmental issues.

The prevailing economic theory at the time of Smith's writing was mercantilism. Mercantilism gave a central role to merchants in creating social wealth. Because of this, merchants were able to hold strong political power that they used to coerce other classes of society. There was thus a close association between the teachings of mercantilist theory, and the corruption of the political process in favor of private interests. Smith recognized this political association, and called upon the market to serve as a countervailing *political* force.

The value of an integrated conception of social sciences and the political is also evident in the contemporary discussion on environmental sustainability. For, as I argue in the second part of the thesis, there is no place for environmental concerns within the economic and political constraints as they are described by contemporary economic theory. Indeed, there is no conception of politics available which could take into account environmental issues while being compatible with mainstream economic theory. The purpose of the two first papers is to spell out this deadlock, while the third paper illustrates a possible alternative approach with an analysis of the discourses on the causes and consequences of population growth. The general theme to which these papers on sustainability are related is presented in an introductory chapter.

Contents

Preface

This thesis concludes six very exciting years spent between Cambridge, Pakistan and France. Over these years I have benefited from the guidance, kindness and encouragement of many teachers and friends, and it is my pleasure to acknowledge them here.

I am deeply grateful to Steve Marglin for his support, kindness, and patience with my impatience over the years. More then getting a degree in economics, studying in Harvard and writing a thesis has been a personal quest for me, and Steve Marglin has been in this endeavor the best of guides. I want to thank him for having always encouraged my curiosity, even when it was taking me beyond the disciplinary boundaries of economics. My intellectual debt towards him is immense, much beyond what is formally acknowledged in the following pages.

I originally came to Harvard University with the intention of staying one year. What changed my mind was Tariq Banuri's course on 'Modernization, westernization, and development' that I took during the spring. Tariq opened my mind to so many new horizons, at times in an almost painful way, that at the end of the course and after many conversations it had become impossible for me to turn away from them. I wish to thank him for that. I also want to thank him for having given me the opportunity to work in Pakistan, where I lived from September 1991 to December 1992. One of the papers we wrote together during that time is included in the thesis. I also wish to thank all of the staff of IUCN- Pakistan for welcoming me and making my stay so enjoyable.

I wish to thank Fabienne Peter for having helped me so much during the last six months in Cambridge. I have shared with her all my ideas and all my doubts, and she has played an important part in the final elaboration of the thesis. She has read many earlier versions and has always provided insightful and constructive comments. She has also helped me re-write almost completely the chapter on 'Environmental changes and individual rights' during one long week-end of August.

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The field of political economy is today marginalized within the economic profession. So I wish to thank Mary O Sullivan, Sanjay Reddy, Tarik Yousef, Francisco Rodriguez, and Fabienne Peter for having helped me to resist the appeal of the mainstream. Our weekly meetings around Steve Marglin in the political economy seminar has been a constant and important source of motivation.

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PART I

Knowledge, Economics, and Politics:

Re-Visiting Adam Smith's Invisible Hand

As every individual ... endeavours as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affection, indeed, not very common among merchants, and very few words need be employed in dissuading them from it.

Adam Smith, *Wealth of Nations*, 1776, IV.ii, 456

The expression "invisible hand" is used today in two different circumstances: in reference to general equilibrium theory; and in reference to historical processes through which some social phenomena come into being without having been the design nor intention of human will.

As a theoretical statement, the 'invisible hand' refers implicitly to the first theorem of welfare economics. The theorem states that, under particular conditions, the market equilibrium reached by a set of individuals and firms maximizimg respectively their self-interested utility and profits is optimal in the Pareto sense: no other allocation of resources accross individuals and firms could be made as to improve the welfare of one person without deteriorating that of someone else. In a nutshell, the market mechanism functions well, and leaving aside ethical considerations over the final allocation of resources, it works better than (or at least as well as) any other system of allocation of finite resources to competing ends. In retrospect, Smith's own use of the expression has been interpreted as the idea that 'the general (material) welfare is best served by letting each member of society pursue his own (material) self-interest' (Hirschman 1977: 112), that 'every individual in pursuing only his own selfish good, was led, as if by an invisible hand, to achieve the best good done for all' (Samuelson 1973). The other meaning associated with the invisible hand is that of a historical process through which social institutions "emerge" in society without having been intentionally designed or willed by any one mind. It is in this sense that Nozick (1974, 1994) speaks about 'invisible hand explanations' (see also Ullmann-Margalit 1978). Law, language, money, private property, the state are often cited as examples of such institutions. Naturally this contemporary use of the expression "invisible hand" is also proposed as an interpretation of Smith's concept.

The co-existence of these two interpretations is somewhat puzzling, for it seems that one logically excludes the other. The theoretical result suggests that there is some truth 'out there in the world', to use Rorty's (1989) phrase, and that the knowledge of this truth can be used to shape the world. Illustrations of this idea are to be found in the various experiences made in the South and more recently in Eastern Europe under the headings of development or transition policies. On the other hand, such policies appear wrong-headed if we take the stance that society cannot be arranged according to a pre-established plan: creating a market economy is itself a plan if the starting point is a planified economy. The tension between these two interpretations is present in Smith's own work. His theory of free trade was considered radical in late eighteenth century Britain. The question is, how could he put forward such a theory without being held as some social engineer, as an 'arrogant man of system'?

A related debate is whether the theoretical interpretation of the invisible hand should be understood as suggesting that economic incentives alone can account for the existence of society. Interactions through the market form a web of relationships, referred to by a number of nineteenth century commentators as the "cash nexus". An important debate then was whether the cash nexus was sufficient to sustain society. In fact many commentators believed that it was not, and tried to investigate what other form of interaction held society together. This investigation, originally led by poets and writers, would eventually have given rise to sociology, that is to the science of society (Mazlish 1989). A similar view is still held by a number of contemporary economists. For instance Buchanan (1975) argued that the existence of a 'social capital', by which he meant a number of shared informal beliefs, values, and rules of behavior, was a necessary condition for the proper functioning of a market economy. In a similar vein, Hirsch (1976) argued that Smith took the existence of this social capital for given when he devised his idea of the invisible hand, and furthermore that the expansion of the cash nexus was slowly eroding this capital.

The purpose of this paper is to propose an interpretation of Smith's concept of the 'invisible hand' as put forward in the *Wealth of Nations* (WN) that would somewhat reconcile these different debates. I show that Smith's concept of invisible hand should be considered from the standpoint of a conflict between merchants and politics. The conflict is not about classes or interest, but about behaviors and knowledge. To put it shortly, the conduct of public affairs requires Prudence, something which is vulnerable to economic power and must therefore be protected. The 'invisible hand' would epitomize the idea that legislators need not let themselves be influenced by merchants while conducting public affairs. Thus Smith would not have devised the idea of the invisible hand while taking the existence of a social capital for granted, as believed by Hirsch, but, on the contrary, would have envisioned it as a way to respond to the social threats raised by the merchants' increasing political power. As so many thinkers after him thinkers, Smith did not believe that society could rest entirely on the cash nexus. He clearly stated in the *Theory of Moral Sentiments* (TMS) the need for sympathy and justice. But unlike Buchanan's or Hirsch's, Smith's social philosophy does not rely on the existence of a social capital. Rather it emphasizes the existence of *processes* by which the cohesion of society is reproduced. To put it simply, social cohesion would be a matter of politics. Politics is to be understood here not as a set of constitutional rules, nor as an arena in which conflicting interests are played out, but as a sphere within which certain values like virtue and benevolence can be expressed. To put it differently, the preservation of a sphere within which considerations of justice can be expressed would be necessary to avoid that commercial relationships degenerate into a war of all against all.

This essay could have been organized starting with Smith's conception of politics, pursue with his view of how merchants came to challenge it, and conclude with the analysis of the passage of the WN in which he refers to the invisible hand. Instead I chose to present the argument in an order that highlights the logical consistency of my interpretation of the invisible hand. The first section presents this interpretation, while assuming that the main issue Smith was addressing is the conflict between merchants and politics, and contrasts it with other interpretations. The assumption is then defended in the subsequent two sections: section 2 shows how Smith's conception of politics can be understood as a sphere within which certain values are expressed; section 3 shows how, according to Smith, this sphere is undermined by merchants' political power. Section 4 explains why the idea of the invisible hand could be sufficient to undermine the merchants' power. Section 5 draws some lessons for today.

1. The invisible hand

Smith refers to the 'invisible hand' only once in the whole of the WN, in the second chapter of book IV. This book deals with different systems of political economy, namely mercantilism, to which Smith gives most of his attention, and the agricultural system of the physiocrats. As part of the discussion on mercantilism, chapter 2 deals with the effects of restraints on importation as they existed in England at the time.

There is little doubt, according to Smith, that the monopoly of the home market benefits to the branch of industry which enjoys it. The question, however, is whether society as a whole also benefits from it. According to mercantilist theory it does indeed, since restraints on imports are restraints on the amount of money that flows out of the country. But Smith's economic theory is not that simple: the wealth of a nation is not measured by the amount of money it possesses, but by the total amount of goods and services it produces. The effect of restraints on imports must therefore be analyzed by looking at how they affect production, and since total production is determined by the stock of capital, at how they affect investment.

Regulations of commerce will divert some of the capital available toward a direction that it might not have followed otherwise. But, Smith conjectured, 'it is by no means certain that this artificial direction is likely to be more advantageous to the society than that into which it would have gone in its own accord' (IV.ii, 453)[1]. Indeed the metaphor of the 'invisible hand' illustrates the view that distortions are unnecessary and inefficient. It is a purely rhetorical device which closes of a two-step argument. First, Smith shows that merchants will

[1] References are made to the bicentinary edition by Campbell, Skinner and Todd. Books are denoted by the roman numbers (e.g. IV), chapters by "i"s (e.g., ii), sub-chapters by roman letters (e.g., c).

naturally choose to invest in their own country, and second, that people who employ capital in support of the domestic industry necessarily contribute as much as possible to the general good. ('By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain... (456)') Now this second step is trivial within Smith's economic framework. It is merely a matter of incentives: the wealth of society depends upon the amount of capital and on the way this capital is used. Since merchants have a direct stake in the way they use their capital, they will manage it as best as they can and will thereby, unintentionally, benefit society as a whole more than anybody else could with the same capital. In fact the relationship between the stock of capital and the wealth of the nation is a very mechanic one according to Smith. So that, in the context of a closed economy, there would have been no need - not even a rhetorical one - to refer to an 'invisible hand'[2].

The first step, by contrast, raises a much more serious challenge, and it is to that step that Smith devotes most of his attention. The matter is the allocation of capital across different countries. Let us recall that, according to mercantilism as well as to Smith's own economic theory, any distortion of the capital market at home would be more advantageous to society than to see capital flowing abroad. Contemporary economic theories interpret restraints on imports either as taxes, as a way to protect national industries, or as a way to grant some advantage to a particular group of society. With respect to Smith's theory, they can be interpreted quite differently: as an incentive given to holders of capital to invest within the country rather than abroad, as a way to attract and keep capital at home.

In this perspective, economic power appears to have some leverage on political power. This is indeed the central hypothesis of this paper: that merchants were implicitly threatening the government to take away their capital and invest it abroad; and that in response, the government adopted the economic policies merchants were advocating - namely mercantilism. In this view, the relationship between political and economic power is the reverse of the one to which contemporary economics gives attention. It is not that economic advantages follow from political power (e.g., Krueger 1974); but rather that economic power provides political power which then leads to additional economic advantages.[3]

In the second part of the paper I shall defend this hypothesis with an analysis of Smith's own writings and indirect historical evidence. In this section, I present the interpretation of the 'invisible hand' yielded by this hypothesis. In a nutshell, Smith would

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[2] By contrast, there is no automatic or mechanic relationship between an individual's interest and that of society according to contemporary economic theory.

[3] For a presentation of this idea in a contemporary setting, see Lindblom (1977).

have argued that the merchants' threat is an empty one. That is, that even if no economic advantages is given to them, for instance under the form of restraints on imports, merchants will still invest in their home country because it is in their 'natural interest' to do so.

Throughout the WN Smith had repeatedly argued that merchants were only acting with respect to their own interest, so he could not possibly suggest that merchants would invest their wealth within their own country under patriotic motives[4]. What he had to show is that merchants have a natural interest to invest in their own country, that they naturally prefer the home trade to the foreign trade:

> the study of his own advantage naturally, or rather necessarily, leads him to prefer that employment which is most advantageous to society.
>
> First, every individual endeavours to employ his capital as near home as he can, and consequently as much as he can in the support of domestic industry; provided always that he can thereby obtain, or not a great deal less than the ordinary profits of stock. (IV.ii, 454).

Merchants prefer to invest at home rather than abroad because thereby they control better their capital. Their investments are less subject to external contingencies. Smith speaks of 'the uneasiness [a merchant] feels at being separated so far from his capital' (454). As a consequence merchants will try to bring as much of their capital as possible within their home country. But, as such, the argument is incomplete for it does tell us why a merchant decides to take residence in a particular country. Let us recall here some of the concluding remarks of Book III:

> A merchant, it has been said very properly, is not necessarily the citizen of any particular country. It is in a great measure indifferent to him from what place he carries on his trade; and a very trifling disgust will make him remove his capital, and together with it all the industry which it supports, from one country to another. No part of it can be said to belong to any particular country, till it has been spread as it were over the face of that country, either in buildings or in the lasting improvement of lands (WN, III.iv, 426).

The two views are not contradictory. According to the latter, merchants are not attached to a particular country; and at the same time, they want to invest their capital where they reside. In short, a merchant prefers to invest in his home country, but no country can properly be called his home. The point is that both merchants and capital possess a fleeting nature. Unlike a land-owner who is citizen because she is attached to the land itself attached to the country, the merchant is attached to his capital but neither merchant nor capital is necessarily attached to a particular country. Merchants invest in a particular country just because they live

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[4] The view seems obvious today. It was not at the time, for under mercantilist doctrine, it was argued that the 'merchant's ultimate guide ... was not the politically impartial logic of the market place but rather his identification with the power and prestige of his nation' (Teichgraeber 1986, 19).

there. We have reached the point where the remark made above about Smith's particular explanation for merchants' involvement in politics is important. It could have been argued that merchants live in countries where they can corrupt politics. Rather, Smith argued that merchants try to corrupt the politics of the country in which they live. And the reason they live in a particular country rather than in another one is a matter of Providence. But once they start investing in that country, which is in their natural interest to do, they will find a natural interest to remain in it.

The argument that merchants prefer to invest their capital close to where they live may not be very convincing. What matters for us is that shed light on Smith's use of the metaphor of the 'invisible hand'. Let me now compare the above interpretation with the more commonly held ones. The theoretical interpretation illustrated above with quotes from Samuelson and Hirschman, states that *every* individual contributes to the general welfare by pursuing his or her own self interest. By contrast, my interpretation emphasizes the fact that, in that particular passage of the WN, Smith was not referring to any individual, but to a very particular class of society, that of merchants[5]. It could be argued that the generalization of the theoretical interpretation would seem justified in the light of Smith's statement that in a commercial society every individual eventually becomes a merchant. Doing so however would disregard other and more significant evidence which shows that Smith did single out the class of merchants from other classes of society. We shall have the occasion to come back to this evidence later in the course of this paper, but as an example consider the concluding remarks of Book I in which Smith stress that, unlike other individuals in society, the merchants' interests are 'always in some respects different from, and even opposite to, that of the public'. And that, as a consequence, merchants should be prevented from influencing the political process:

> The proposal of any new law or regulation of commerce which come from this order ought always to be listened to with great precaution... It comes from an order of men whose interest is never exactly the same with that of the public, who have generally an interest to deceive and even oppress the public, and who accordingly have, upon many occasions, both deceived and oppressed them' (I.vi.p, 267)

This view supports of course the hypothesis that drives the interpretation of the 'invisible hand' defended here. The point is that the generalization of the principle of the 'invisible hand' to any individual of society leaves out a central element of Smith's argument: that merchants were in a significant way different from other individuals. First, because their interest did not automatically coincide with that of society at large, unlike workers and

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[5] In the passage of the invisible hand, Smith refers explicitly to individuals who invest and live by profits: they are merchants, not wage-earners or rentiers.

landowners whose interests are 'strictly and inseparably connected with the general interest of the society' (I.vi.p, 265). And second because they had gained political influence at the expense of other classes, in particular that of land-owners.

Another tack of the theoretical interpretation of the 'invisible hand' is the view that 'private vices' can lead to 'public goods'; that people are virtuous even when they only think about their own interest. What Mandeville had stated in a provocative way, Smith would have proved in a broad theoretical framework, thereby leading to the emancipation of economics from politics (Cropsey 1957; Dumont 1977; Minowitz 1993). But the existence of such a relationship is certainly not specific to the economic realm. Smith's entire philosophy revolves around the view that some providential hand connects the parts with the whole although such a connection is not necessarily intended by the parts. This organic view is in no way specific to the particular passages in which he refers to the invisible hand. It is in fact a central feature of Smith's theory of society in both the TMS and the WN, and more generally a characteristic of eighteenth century thought. Similar ideas can be found, for instance, in Montesquieu's *Spirit of Laws* or Rousseau's *Discourse on Inequality*. Furthermore, the idea of balance or harmony conveyed extends well beyond the scope of politics. Nature and society were regarded as harmonious systems, in which competing forces generate order and harmony. In his sociological account of eighteenth-century city life, Sennett (1977) compares society to a molecule whose constitution depends on the balance between different atoms. Smith's definition of the word constitution is very organic. He viewed society as an 'immense fabric', raised and supported by the 'peculiar and darling care of nature', and which can, at any moment, 'crumble into atoms' (TMS, II, ii, 3, 125). Private and public spheres are not opposed, but rather respond to one another and are harmoniously integrated within a larger whole. Similarly for nature and culture, freedom and authority, civil society and the State, needs and means.[6] Smith's work is replete of references to Providence, the 'wisdom of Nature', the 'wisdom of God'. In general he refers to wisdom as the art of bringing together the different elements of a system into a harmonious whole. The wise watch-maker adjusts admirably the wheels of the watch; the wise statesman adjusts the different interests of society; and Nature or God puts together those things that are beyond human understanding.

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[6] For example, Rousseau: 'It is thanks to a very wise Providence that the faculties which were potential in [the savage man] should have become actual only with the opportunity of using them, so that they were neither superfluous nor onerous before their time, nor late in appearing and useless when the need arose.' (Rousseau 1754: 97) Consider also the following passage from Montesquieu's *Spirit of the Law*: 'Honor sets all the parts of the body politic in motion, and by its very action connects them; thus each individual advances the public good, while he only thinks of promoting his own interest' (III, vii, 25). (Montesquieu was dealing here with the functioning of monarchies).

We should therefore consider the idea that a part contributes unintentionally to the good functioning of the whole as the general rule which prevailed at the time - we could almost say the natural rule - rather than as the exception[7]. From this standpoint merchants are an exception, not because they unintentionally contribute to the general welfare by pursuing their own interest, but because, in the political sphere, their interests diverge from that of the public. In short, merchants are a part which do not fit with the whole. As noted by Rothschild (1994) Smith seems to use the expression 'invisible hand' (three times in his entire work) with irony. In the WN, the irony would be, according to our interpretation, that *even* merchants can contribute unintentionally to the public good if they are restricted to the economic sphere. Smith would thereby create new "connections" between the nation and merchants, even when these latter cannot be said to be the 'citizens of any particular country'[8]. Let us remark that to create connections corresponds precisely to Smith's conception of science, as expressed in his 'History Of Astronomy' (ca. 1746-8):'Philosophy is the science of the connecting principles of nature'; it seeks to 'introduce order into this chaos of jarring and discordant appearances, to allay this tumult of the imagination, and to restore it, when it surveys the great revolutions of the universe, to that tone of tranquility and composure, which is... most suitable to its nature'[9]. The chaos, to come back to our topic, would have been the destabilization of the political process by the merchants' increasing power. To restore order required to find a new place for merchants in society, one conceptually free from the illusion that merchants were acting for the interest of society[10]. Behind the ironical metaphor the goal was then to undermine the merchants' political power. The intention was not merely to liberate the economy from politics; it was also to preserve the independence of politics from merchants' economic power. Politics, rather than commerce, needed protection.

So much for the comparison with the theoretical interpretation. At this point we cannot compare this interpretation with the historical one, for to do so demands a prior discussion of Smith's conception of politics. To this we now turn, and we shall come back to the historical interpretation in section 4.

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[7] This vision of the world, known as the 'Great Chain of Being', originated in ancient Greece and would have culminated in the Eighteenth century. See Lovejoy (1954).

[8] On the theme of connections, see Mazlish (1989).

[9] Cited in Mazlish (1989, 35).

[10] Just as, according to Appleby (1976, 502), mercantilism 'provided symbolic cohesion to a society being atomized by the market. Merchants and industrialists were able to establish there place in the social order in reference to this model'. Thus a criticism of mercantilism required to define anew the place of merchants in society.

2. *Smith's conception of politics*

The interpretation of the 'invisible hand' put forward in the precedent section relied on the hypothesis that merchants were implicitly threatening the government to invest their capital abroad; and that in response, the government adopted the economic policies merchants were advocating, namely mercantilism. The purpose of this section is to give support to this double hypothesis. The appropriate starting point is to look at the political situation that prevailed in eighteenth century Britain and at how it was (perceived to be) affected by the development of commerce (2.1). With the running of an important debt, merchants were able to gain political influence for a number of different reasons (section 3.1). The challenge was to find a solution to this problem which would not have negative side-effects. For some of the conditions which gave merchants the opportunity to seize political power were inherent to the emergence of a commercial society and could not therefore be tackled while preserving the more desirable effects of commerce (section 3.2). Remained the threat linked to merchants' mobility and which gave them political leverage, and to which, according to the interpretation presented above, the 'invisible hand' would have responded.

2.1 *The Political Setting in Historical Perspective*

An immediate condition of national prosperity is political stability and the avoidance of civil wars. One would not speculate about the 'origins of the wealth of nations' in the midst of a revolution. The point, obvious as it is, needs to be made because the fear of social upheavals, revolution, and war was very vivid in Britain throughout the eighteenth century. According to Hirschman (1977), the development of commercial activities in the eighteenth century was indeed praised for its political implications. Montesquieu in France, and Steuart in Scotland, among others, argued that commerce would render people more civilized and more peaceful, while at the same time holding back the passionate impulses of the Prince. But Hirschman identifies the publication of the WN as marking the end of this view. Smith would have justified commerce on its own terms, rather than for political reasons. The interpretation of the invisible just presented contradicts this view.

There is no question that Smith justified the expansion of commerce on economic grounds. But this does not imply that he did not consider the positive political consequences as at least equally important. Nor is it necessary to presuppose a hierarchy between these two goals. More

accurate is to hold the view that commerce was seen as beneficial because, to use the common expression, it could kill two birds with one stone. This was in part Hume's position, as illustrated by the following passage from his essay 'Of commerce': 'Trade and commerce are really nothing but a stock of labor, which in the times of peace and tranquillity is employed for the ease and satisfaction of individuals; but in the emergencies of the state, may, in part, be turned to public advantage' (Hume 1817, 281).

In order to understand the political challenge raised by the growth of commerce, we must pay due attention to the particular political setting that had emerged in England (and after 1707, Britain) in the aftermath of the Glorious Revolution (1688)[11]. The revolution settlement, as it is often called, instituted a subtle balance of power between the Commons (or Parliament) and the Crown which lasted until 1830. The sovereign was head of the Executive; she or he chose ministers and was directly concerned with policy-making. Some ministers such as Walpole were however clearly able to pursue policies of their own. Furthermore, the Commons could make it almost impossible for the Crown to keep a minister they did not want. In historical perspective, this mixed constitution[12] was portrayed as the only possible defense against the two threats to social peace which had been embodied in the revolutions. The 1649 Revolution made people weary of any move towards democracy. While the Glorious Revolution, ignited by James II's alleged attempts to impose Catholicism in England, had shown the drawbacks of absolute monarchy, although monarchy as an institution was never under attack. Not surprisingly then commentators of the time believed that only a balance of power between Parliament and the Crown could guarantee political stability. The power of the Prince had to be contained and protected at the same time as the only bulwark against anarchy.

Evidence of Smith's allegiance to this mixed structure of power is scattered throughout his work. We find it, for instance, in his stress of authority as a necessary principle of government[13], in addition to that of utility, thereby departing from Locke's views and showing his attachment to a vertical vision of society.[14] In book V of the *Wealth of Nations* he presents

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[11] On eighteenth-century Britain, I have made use of the following works: Dickinson (1977); Black (1993); Harris (1963); Willcox and Arnstein (1966).

[12] I shall henceforth use the word "constitution" in the sense used by Smith: as consisting of 'the manner in which any state is divided into the different orders and societies which compose it, and upon the particular distribution which has been made of their respective powers, privileges, and immunities' (TMS, VI, ii, b, 338) It thus refers to a make-up of society and structure of power rather than to a legal document.

[13] The principle of government is that sentiment from which allegiance to and respect of the government derive. In the wake of Montesquieu's *Spirit of Laws*, it was widely believed that each form of government rests on a particular principle: democracy on political virtue or utility; monarchy on honour and authority; despotism on fear.

[14] Recent historiographic work has shown that Locke's social contract theory was resisted throughout the century because it was seen as jeopardizing the hierarchical structure of society (Dunn 1969).

an account of the sources of authority (V, i, b), based on qualifications, age, fortune, and birth, and spends a section - although a short one - on the 'Expence of supporting the Dignity of the Sovereignty' (V, i, h).

Additional evidence to his allegiance to the mixed structure of government is the order in which he classified different forms of government. Unlike Montesquieu, Smith integrates in his own view of society an idea of progress (Forbes 1954). Different constitutions are not just specific to different states; rather they evolve according to a discernible pattern as society advances through different stages. Forbes even argues that Smith discovered a 'law of progress', a 'science of history'. What can scarcely be disputed is that Smith saw the British mixed constitution as superior to any other constitution, and notably to democracy and absolute monarchy. In his historical sketch of the different stages of society, democracy is depicted as fragile and eventually to be replaced by monarchy (LJ, I, 4). And by acknowledging the right to resistance he clearly denied absolute monarchy as a working system.[15, 16] There is nothing original in these positions; they were the ones prevailing in eighteenth century Britain once the revolution settlement had been secured. In an essay entitled 'Whether the British government inclines more to absolute monarchy, or to a republic', Hume speculated the former to be correct. More significant is that he thought it was the more desirable direction of change: 'I shall rather wish to see an absolute monarchy than a republic in this island' (1817, 79). For like Smith he associated a republic with social unrest and upheavals to be eventually overcome by the rule of one man. (Hume refers of course to Cromwell). We must keep in mind that political instability was a very vivid threat throughout the period. As Black puts it, 'continuity was sought for, not because of any easy complacency, but rather as a result of the realization of social fragility' (1993:17)[17].

A precision is called for with regard to the role of the Parliament. Members of Parliament are today supposed to represent the interest of their constituency. The Parliament acts as the representation of the people. By contrast in the eighteenth century, and in opposition to Locke's theories, it was argued that members of parliament should not be held

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[15] These views are more clearly expressed in the *Lectures* in the chapters 'Of the Rights of the Sovereign' (I, 14) and 'Of the Rights of Subjects' (I, 16).

[16] And also: 'That kings are servants of the people, to be obeyed, resisted, deposed, or punished, as the public conveniency may require, is the doctrine of reason and philosophy; but it is not the doctrine of nature' (TMS: I, i, c). And as is well known, Smith believed that society should be organized around principles of nature. For a discussion, see Cropsey (1957).

[17] The instability was partly related to the Jacobites' claim over the Crown (restauration of James II, and after his death of his subsequent heirs) a claim supported by some continental nations: France in 1692, 1696, 1708, 1744-6, 1759, and Spain in 1719 prepared to invade England on behalf of the Jacobites; partly to the many wars Britain had to fight on the Continent and later in America as well as at home in 1715 and 1745; and to the increase in commercial activities which was believed to corrupt politics.

accountable to a constituency, for creating such a link would render politics the subject of people's passions (Dickinson 1977). Formal parties were only to be created towards the end of the century, and were long opposed on the ground that it would implicitly mean that politicians defend particular interests. Burke, for instance, told the constituents of Bristol who had elected him to Parliament in 1774 that a Member of Parliament should be guided by 'the general good... He owes you, not his industry only, but his judgment; and he betrays you, not serves you, if he sacrifices it to your opinion' (in Black 1993, 68). The Renaissance had portrayed the politician or member of Parliament as a humanist, counselor of the Prince, and this tradition was still very much alive in eighteenth-century Britain (Pocock 1975). A necessary condition to be a member of Parliament was to be free, in the ancient sense of the term meaning freedom from having to engage in work.[18] Parliament, in short, was itself seen as above society, rather than as emanating from it. This was the 'age of aristocracy'.

2.2 *Politics and Justice*

Again Smith shows allegiance to this view. He was certainly no revolutionary. And he also rejected the use of self-interest as a general explanation of legislation.[19] According to him, a statesman must show prudence and act to preserve the constitution and certainly not to transform it as has sometimes been suggested[20]. Smith contrasts the folly and 'highest arrogance' of the 'man of system' -- the philosopher who tries to organize society according to reason and who imagines that 'he can arrange the different members of a great society with as much ease as the hand arranges the different pieces upon a chess-board' (TMS, VI, ii, 2, 343) -- with 'the man whose public spirit is prompted altogether by humanity and benevolence' and who respects 'the established powers and privileges even of individuals, and still more those of the great orders and societies into which the state is divided' (342). To accommodate the different interests of society within a harmonious whole was, for Smith, the defining trait of

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[18] 'As with Aristotle, the end of land is not profit, but leisure : the opportunity to act in the public realm or assembly, to display virtue' (Pocock 1975: 390).

[19] This point is notably a great surprise to Stigler (1971) who concludes his paper with 'How so, Professor Smith?'.

[20] Notably by West (1976). The point was stressed by Dugald Stewart in his biographical lecture delivered in Edinburgh in 1793: 'for the most celebrated works which have been produced in the different countries of Europe during the last thirty years, by Smith, Quesnai, Turgot, Campomanes, Beccaria, and others, have aimed at the improvement of society, - not by delineating plans of new constitutions, but by enlightening the policy of actual legislators. Such speculations, while they are more essentially and more extensively useful than any others, have no tendency to unhinge established institutions, or to inflame the passions of the multitude. The improvements they recommend are to be effected by means too gradual and flow in their operations to warm the imaginations of any but the speculative few; and in proportion as they are adopted, they consolidate the political fabric, and enlarge the basis upon which it rests.' (1811: 483-4)

the 'great statesman' or 'great legislator', thereby joining the humanist tradition. More specifically he believed that wisdom and prudence were necessary to reconcile the new with the old in general, and commerce with the constitution in particular:

> Wise and judicious conduct, when directed to greater and nobler purposes than the care of the health, the fortune, the rank, and reputation, of the individual, is frequently and very properly called Prudence. We talk of the prudence of the great general, of the great statesman, of the great legislator. Prudence is, in all these cases, combined with many greater and more splendid virtues; with valor, with extensive and strong benevolence, with a sacred regard to the rules of justice, and all these supported by a proper degree of self-command. This superior prudence, when carried to the highest degree of perfection, necessarily supposes the art, the talent, and the habit or disposition of acting with the most perfect propriety in every possible circumstance and situation. It necessarily supposes the utmost perfection of all the intellectual and of all the moral virtues. It is the best head joined to the best heart. It is the most perfect wisdom combined with the most perfect virtue. It constitutes very nearly the character of the Academical or Peripapetic sage, as the inferior prudence does that of the Epicurean. (TMS, VI. i, 316).

As a critique of this interpretation of Smith's conception of politics, some commentators may draw our attention to the following passage of the TMS:

> Society may subsists among different men as among different merchants, from a sense of its utility, without any mutual love or affection; and though no man in it should owe any obligation, or be bound in gratitude to any other, it may still be upheld by a mercenary exchange of good offices according to an agreed valuation. (TMS, II, ii, 3, 124)

But this passage should not be read out of context. For Smith immediately adds the following qualification: 'Society [however] cannot subsist among those who are at all times ready to hurt and injury one another'. This statement is of particular significance for us here for it suggests that a society of merchants will be possible *only* inasmuch as merchants do not try to injure others, only inasmuch as they respect the rules of the game. Now, as in many other instances, Smith identified some providential mechanism which ensures that usually people do act within the rules. However, in a complex economy, and for reasons to be analyzed in the next section, this mechanism will no more operate. Indeed a recurrent theme of the WN is that merchants are able to deceive the public. Let us look briefly at how the mechanism was supposed to work.

In the TMS Smith defended the view that the main motive of one's actions is one's desire for sympathy from others. Smith's individual is an actor who looks for the approbation of her audience[21]. If our attention is so much directed towards the pursuit of riches, it is because

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[21] 'It is chiefly from this regard to the sentiments of mankind, that we pursue riches and avoid poverty' (TMS, I, iii, 2, 70).

our audience is very well disposed to identify with the joy we derive from such riches. Getting access to, and approval from an audience is people's real ambition:

> Of such mighty importance does it appear to be, in the imaginations of men, to stand in that situation which sets them most in the view of general sympathy and attention. And thus, place, that great object which divides the wives of aldermen, is the end of half the labors of human life; and is the cause of all the tumult and bustle, all the rapine and injustice, which avarice and ambition have introduced into the world (TMS, I.iii.b, 60).

This race for honor and rank is profoundly ingrained in human nature. It is also what makes society what it is. As such, it is not morally condemnable. The problem arises when this race becomes excessive. When, instead of trying to outstrip one's competitors, one tries to eliminate them. But fortunately this limit is generally imposed by the impartiality of the audience. So the audience will sympathize with the competitor only inasmuch as she does not transgress the rules of 'fair play'. Beyond this point, the audience will sympathize with the offended party and tend to look at the offender from this standpoint. Hate, rather than love or admiration, will be the audience's response.[22] It is because the persons composing the audience have this sense of justice ingrained in their nature, the fact that they are impartial, that individuals refrain from hurting the weak, from becoming 'wild beasts' for one another (TMS, II, ii, 3). Note that the argument supposes therefore the presence of an audience. The sentiment of restraint comes into play only if the individual acts on a stage. Behind the stage, man is a lion.

Now one of the consequences of the expansion of commerce is to render the economy extremely complex, making it more and more difficult to judge whether or not people respect the rules of the game. In other words, the market creates a back-stage in which actors become 'invisible' to the public's eye. It is because of this that the statesman's virtue, and with it the conditions of justice, need to be protected.[23]

3. Commerce, the State, and Merchants' Political Power

3.1 The financial revolution and the involvement of merchants in politics

The growth of the public debt in Britain during the eighteenth century - what has been called the 'financial revolution' (Dickson 1967) - provided the occasion for merchants to seize some political power. According to both commentators of the time and contemporary historians,

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[22] '[The audience] readily, therefore, sympathize with the natural resentment of the injured, and the offender becomes the object of their hatred and indignation' (TMS, II, ii, 2, 120).

[23] A similar contention is central to Rousseau's *Discourse on the Origin of Inequality.*

the debt shook the balance between political and economic power by putting the executive power at the mercy of investors, and by increasing the importance of movable wealth in society. The size of the political debate it aroused shows how seriously the matter was considered. For some time, it constituted the central critique against the ruling government. Thus Bolingbroke, the main spokesman of this opposition, was denouncing the merchants' encroachment on the executive power traditionally held by the class of landowners (Kramnick 1968). In Winch's words, 'What was at stake was not simply a shift of power and initiative from the landowner to the City, but the delicate balance between the elements making up England's mixed constitution, and hence maintaining its stabilities and liberties' (1978: 123). Winch's choice of words is significant, for as we saw earlier, Smith defined the role of the statesman as that of preserving this delicate balance, although Winch himself did not try to interpret Smith's politics in this light. There is ample evidence that Smith took this threat more seriously than what Winch suggests, as for instance in the following from the WN:

> The capricious ambition of kings and ministers has not, during the present and the preceding century, been more fatal to the repose of Europe than the impertinent jealousy of merchants and manufacturers. The violence and injustice of the rulers of mankind is an ancient evil, for which, I am afraid, the nature of human affairs can scarce admit of a remedy. But the mean rapacity, the monopolising spirit of merchants and manufacturers, who neither are, nor ought to be, the rulers of mankind, though it cannot perhaps be corrected may very easily be prevented from disturbing the tranquillity of anybody but themselves.(WN, IV.iii.c, 493)[24]

Smith's economic theory, developed in Book I of the WN, enabled him to explain why merchants have an interest to deceive and oppress the public. Merchants' interest, he showed, is 'to widen the market and to narrow the competition'. If the former is frequently 'agreeable enough to the interest of the public', the latter 'must always be against it' (WN, I.xi.p, 267). Merchants' incentive to deceive the public is to gain economic privileges like restraints on the importation of foreign goods or bounties. Even colonization and foreign wars may be agreeable enough to merchants in spite of the losses of life they necessarily entail[25].

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[24] The passage also reveals the difference between Smith's goal and the intellectual tradition analyzed by Hirschman (1977). Whereas Hirschman focused on the need to restrain the passions of the Prince as expressed in the works of Montesquieu and Steuart, Smith is here mainly concerned with restricting the political consequences of the merchants' economic power. But the goal remains the same: political stability. See Stigler (1971) for a comprehensive list of different relationships between economic classes and political behaviour in the WN.

[25] For instance on colonies: 'It is thus that the single advantage which the monopoly procures to a single order of men is in many different ways hurtful to the general interest of the country./ To found a great empire for the sole purpose of raising up a people of customers may at first sight appear fit only for a nation of shopkeepers. It is, however, a project altogether unfit for a nation of shopkeepers; but a project extremely fit for a nation whose government is influenced by shopkeepers. Such statesmen, and such statesmen only, are capable of fancying that they will find some advantage in employing the blood and treasure of their fellow-citizens to found and maintain such an empire' (WN, IV.vii.c, 613).

To say that the financial revolution provided the opportunity for merchants to gain political power raises more questions than it answers. Why were merchants able to seize this opportunity? Why, once they had political power, did they use it against the public? And how could they continue doing so in complete impunity? Thus we want to understand the mechanism by which merchants were able to seize political power in order to confront our hypothesis that the idea of the invisible hand provided an institutional response to the problem.

Let us start with the debt. The immediate consequence of the debt was to create a movable form of wealth. Unlike land, this wealth was subject to opinion (e.g. speculation) and could easily be moved across boundaries. Smith remarked that in Britain, 'merchants are generally the people who advance money to the government' (V.iii, 918). Interestingly enough the introduction of movable wealth was in part seen as positive in that it permitted to restrict the sovereign's *grands coups d'autorite* (Hirschman 1977). But at the same time it gave merchants political leverage over a sovereign who needed to raise funds. Writing in the early nineteenth century about the period of interest to us, Sismondi noted that

> the merchants thus found a way to be listened, because they controlled almost entirely the finances of the State, while at the same time, they were independent of its authority, for they could elude their fortune from despotic actions, and take it with them to a foreign country (1951 : 53).[26]

Merchants' financial power and the threat that they could withdraw their wealth from one country and invest it in another one was thus at the basis of their political power. In historical perspective, the merchants' mobility had been one of the main reasons for which they were not trusted to act in the public interest. Merchant's interests were not physically attached to the nation, unlike land owners'. The idea is nicely synthesized in Bolingbroke's maxim that 'landed men are the true owners of our political vessel; the moneyed men, as such are but passengers in it'[27]. So that the creation of more movable wealth through the running of a debt could only increase the vulnerability of the government to merchants' interests.

Two other arguments that explain how merchants were able to increase their political power, and at the same time justify the policies they were advocating, are that merchants had a better sense of their interest and a greater capacity to organize as a class of society.

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[26] Also: 'The prevalence of this great mercantile association in Britain, has, in the course of the present century, become gradually more and more conspicuous... The voice of the mercantile interest never fails to command the attention of government, and when firm and unanimous, is even able to control and direct the deliberations of the national councils.' (John Millar; cited in Hirschmann 1977: 91).

[27] Bolinbroke, *Works*. Cited in Winch (1978: 123). Dickinson notes that this view was commonly held by Tories: 'whereas landed men had a genuine stake in the country and must protect their country in order to defend their own interests, the possessions of merchants and financiers were movable. In a crisis men of estates would have to stay and fight to preserve their interests, but merchants and financiers might be free to escape with their wealth' (1977: 51).

Justification itself was provided by mercantilism, 'a system invented by merchants' according to Sismondi (52). Smith himself provides a lively account of the role played by merchants in establishing mercantilism as the guiding doctrine of state economic policies (in IV.i). First, as has been noted by others, notably John Millar, merchants had a greater capacity to act collectively, which gave them an ascendancy over their country folk: 'Country gentlemen and farmers, dispersed in different parts of the country, cannot so easily combine as merchants and manufacturers, who, being collected into towns, and accustomed to that exclusive corporation spirit which prevails in them, naturally endeavor to obtain against all their countrymen the same exclusive privilege which they generally possess against the inhabitants of their respective towns' (WN, IV.ii, 462).[28] This 'corporation spirit' was coupled with a better understanding of their own interest. Merchants shared a common goal, to advance their industries, and they knew better than anybody else what kind of policies it required:

> [Merchants'] superiority over the country gentleman is not so much in their knowledge of the public interest, as in their having a better knowledge of their own interest than he has of his. It is by this superior knowledge of their own interest that they have frequently imposed upon his generosity, and persuaded him to give up both his own interest and that of the public, from a very simple but honest conviction that their interest, and not his, was the interest of the public.(WN, I.xi.p, 267)

The reason merchants possess this superior awareness about their interest is simply that '[i]t was their business to know it' (IV.i, 434). So that when merchants came up with a theory on the relation between foreign trade and the public interest, the legislators were easily convinced: 'To the judges who were to decide the business it appeared a most satisfactory account of the matter, when they were told that foreign trade brought money into the country, but that the laws into question hindered it from bringing so much as it otherwise would do. Those arguments therefore produced the wished-for effect... From one fruitless care [the attention of the government] was turned away to another care much more intricate, much more embarrassing, and just equally fruitless' (434). The general misunderstanding of political economy that prevailed in society, and more specifically within the parliament, had thus enabled merchants to foster their own theory for their own advantage. We would miss the point,

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[28] Compare with the optimism of John Millar: 'Villages are enlarged into towns; and these are often swelled into populous cities. In all those places of resort, there arise large bands of labourers or artificers, who by following the same employment, and by constant intercourse, are enabled, with great rapidity, to communicate all their sentiments and passions. Among these there spring up leaders, who give a tone and direction to their companions. The strong encourage the feeble; the bold animate the timid; the resolute confirm the wavering; *and the movement of the whole mass proceed with the uniformity of a machine, and with a force that is often irresistible....* the merchant, though he never overlooks his private advantage, *is accustomed to connect* his own gain with that of his brethren, and is, therefore, *always ready to join* with those of the same profession, in soliciting the aid of government, and in promoting general measures for the benefit of their trade' (John Millar; cited in Hirschman 1977: 90-1; emphases added).

however, if we just focused on the legislators' apparent ignorance. Their ignorance is relative to the merchants' knowledge.

The debt, merchants' mobility, greater capacity to organize and to know where their interest really lies, mercantilism, are the different elements which enabled merchants to seize some political power and to use it for their private interest and against that of society at large. These were therefore the elements which Smith had to address. His critique of mercantilism as theory and practice needs little elaboration here, and as a treatise in political economy, the WN provides an alternative to mercantilism. In order to provide a satisfactory response to the other elements, it was necessary to distinguish between those elements which were inherent to commerce, and those which could be tackled without affecting the wealth of the nation.

3.2 Commerce and Politics

Commerce has beneficial effects, notably to increase the wealth of all members of society. But at the same time, the class of merchants represents a threat to the traditional constitution described above. For if the emergence of the commercial spirit was in part welcomed as a way to hold back the violent impulses of the Prince, as Hirschman (1977) told the story, it was also believed to exceedingly undermine his authority and the independence of the Parliament. Some of the paradoxes of Smith's views on commerce appear thus related to the mixed nature of the British constitution[29]. The spirit of my argument is that Smith, well aware of the paradoxical consequences of commerce, attempted to find an institutional solution to this paradox, viz. to retain the beneficial economic consequences while restoring the independence of politics.[30] Smith's ambivalent views on commerce - how, for instance, it contributes to the wealth of the nation, has a "civilizing" effect, but also leads to a society in which 'the low people are exceedingly stupid' (LJ, II, II, 17, 256) - are well known and need not be repeated here. What needs consideration is the relationship between commerce and the different elements which supported merchants' political power.

First we may note that the advent of a commercial society created a number of new social needs which, according to Smith, had to be fulfilled by the State. In contrast to

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[29] Compare with Montesquieu: 'Great entreprises... in commerce are not for monarchial, but for republican governments' (XX, 4, 318)

[30] West (1991) interprets Smith's project similarly. However he tries to understand Smith's politics in economic terms, rather then defining the role of politics on its own terms. Similarly Teichbraeger (1986), in spite of noting that the Scottish Enlightment thinkers 'thought that the benefits of a free commercial society could be understood most unambiguously in political terms' (p. 18), went on to try to understand Smith's politics in economic terms. But if the benefits of commerce are to be expressed in political terms, than the role of politics cannot be reduced to creating the conditions for commerce.

contemporary discussions of the respective roles of the state and the market which tend to portray economic relationships as a possible solution to political issues (i.e. the state *or* the market), in book V of the WN Smith explained how the division of labor naturally increases the role of the state in society. He records that moment in which the modern state and the modern market emerge simultaneously. For instance, unlike in the previous stages of society (hunters; shepherds; agriculture), a standing army seems necessary to protect a commercial society from external aggression. Smith is of course taking side here in one of the important political debates of his time - whether or not to have a standing army in peace time. But some of his arguments in favor of a standing army - that, for instance, it is necessary to attain perfection in the art of war - should not conceal the more fundamental point : that in a commercial society, it is 'altogether impossible that they, who take the field, should maintain themselves at their own expense' (WN, V.i.a, 694). And hence the cost of war must be incurred by society as a whole, rather than by the individuals who fight it. Elsewhere, he had said that it 'would be an object of serious attention' to remedy to the facts that, in a commercial society, 'Education is despised, or at least neglected, and heroic spirit is almost utterly extinguished' (LJ, II, II, 17, 256). In the WN, he thus advocated making primary education universal with public money. His historical account of the different stages of society is in fact one in which the state comes to play an increasing role.

The logical consequence of an increase in the role of the state is the need for greater revenues. These revenues, notably during the different wars of the eighteenth century, were gathered by encouraging investors to lend capital to the state and resulted in the accumulation of an important debt. Although Smith was quite pessimistic about the consequences of the debt ('enormous debts which at present oppress, and will in the long-run probably ruin, all the great nations of Europe' (396)) he also portrayed it as quite inevitable, notably because of the recurrence of wars: 'During a peace of about seven years continuance, the prudent and truly patriot administration of Mr. Pelham, was not able to pay off an old debt of six millions. During a war of nearly the same continuance, a new debt of more than seventy-five millions was contracted' (408). The conclusion to be drawn from this discussion is that to try to reduce the debt was not the appropriate way to address the political challenge raised by merchants.

Similarly merchants' superiority in knowledge is presented as inherent to the emergence of a commercial society. In the language of the TMS, merchants display 'inferior prudence' of that sort which characterizes the 'Epicurean'. In contradistinction, politicians are to display many different virtues rather than one. They are to be like an 'Academical sage'. But even if they approach such a level of wisdom, they will remain less aware of their own interest or of the public's interest simply because it is not their business to know it. The

merchants' superiority in this matter is therefore inherent to a commercial society. The problem cannot simply be solved by arguing that the statesman should learn better. A statesman cannot *simultaneously* display virtue and be aware of people's interests at a level that would match the merchants' knowledge. In other words, the statesman's relative ignorance is a condition of virtue[31]. Montesquieu, who so greatly influenced Hume and less directly Smith, again made the point explicitly in the chapter on commerce and different forms of government:

> Cicero was of this opinion, when he so justly said, "that he did not like that the same people should be at once the lords and factors of the whole earth". For this would, indeed, be to suppose that every individual in the state, and the whole state collectively, had their heads constantly filled with grand views, and at the same time with small ones; which is a contradiction. (XX, 4, 318)

The complexity of a commercial society thus makes it difficult for people to understand how their interest connects with that of society, and how particular policies can hurt them for the benefice of some particular class. People with political influence, like merchants, can therefore deceive the public while pretending to act in the interest of the entire community without anyone noticing it [32]. The consequence is that, since nobody really understands what is going on, the restraining effect of an audience is no more operative. Merchants can become 'rapacious' without being blamed for such behavior. Quite on the contrary, they are admired for their riches. Because of its complexity, a commercial society thus creates a back stage in which the "hidden" actors can freely and destructively pursue their ambitions.

Finally, while commerce may have a "civilizing" effect on some classes of society, Smith believed it had a corrupting effect on those classes of society closer to the exercise of political power. In the chapter of the TMS entitled 'Of the corruption of our moral sentiments which is occasioned by this disposition to admire the rich and the great, and to despise or neglect persons of poor and mean condition' (I.iii.c) Smith noted that we are generally more inclined to respect the rich and the great rather than the wise and the virtuous. And since we desire to be respected, we will try to emulate the rich even at the cost of corrupting our moral sentiments, that is at the cost of our respectability. But this dilemma is fortuitously resolved in

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[31] Which explains why 'Smith gave a larger role to emotion, prejudice, and ignorance in political life than he never allowed in economic affairs' (Stigler 1971: 268). Stigler left virtue out of his list. Virtue, ignorance, emotion, prejudice go together and is opposed to the merchants' acute awareness of their self-interest. And without the possibility for virtue, there cannot be any politics.

[32] Compare with Rousseau: 'a devouring ambition, the burning passion to enlarge one's relative fortune, not so much from real need as to put oneself ahead of others, inspires in all men a dark propensity to injure one another, a secret jealousy which is all the more dangerous in that it often assumes the mask of benevolence in order to do its deeds in greater safety; in a word, there is competition and rivalry on the one hand, conflicts of interest on the other, and always the hidden desire to gain an advantage at the expense of other people'. (1754: 119).

the middling and inferior stations of life (another example of the organic view of society). For in that situation, 'the road to virtue and that to fortune, to such fortune, at least as men in such stations can reasonably expect to acquire, are, happily, in most cases very nearly the same' (86). For honesty, prudence, temperate conduct are the best strategies to fortune when people's success is dependent upon other people's opinion. Unfortunately, and by contrast, '[i]n the superior stations of life the case is ... not always the same'(87). In the courts of princes, flattery and falsehood may prevail over honesty if the Prince gives more attention to those who pleases over those who serve him. The 'solid and masculine virtues of a warrior, a statesman, a philosopher, or a legislator' are threatened when the frivolous accomplishments of the man of fashion are more admired.[33] This trend will be strengthened by the lack of understanding in political economy. Just as merchants can become 'rapacious' without being blamed for such behavior, policy-makers can let themselves be corrupted without incurring punishment from their peers. Quite on the contrary, they are admired for their riches. Thus, by its sheer complexity, a commercial society creates a back stage in which the "hidden" actors can freely and destructively pursue their ambitions.

In summary the debt and merchants' superior knowledge appear inherent to a commercial society constrained by external conditions as the ones faced by Britain in the eighteenth century. Merchants' political power could then only be undermined by confronting their capacity to organize or the argument about their mobility. Following the former route would eventually have implied to see politics as a mere confrontation of vested interests, and this, as we noted earlier, was something Smith was not ready to do: democracy was not ripe. Remains the mobility argument. And this takes us back to our starting point. According to the interpretation proposed in the first section, this is precisely the issue Smith was addressing when he referred to the 'invisible hand'.

4. Theory and Ideology

The analysis of the preceding section explains why it was necessary for Smith to find a response to the problem of merchants' mobility. But it does not tell us why his response - the idea of the 'invisible hand' meaning that the merchants' threat is an empty one - is sufficient. After all, arguing that merchants had an interest to deceive the public did not show how their

[33] The use of the adjective masculine must be qualified. In contradistinction to feminine, masculine is opposed to unpredictability. Interestingly enough, Pocock (1975, chap 13) noted that the emerging financial markets were femininized in political discourses. The duality continuity/unpredictability which translates into the the duality masculine/ feminine further translates into the duality constitution/ society. Statesmen are supposed to be masculine in the sense that they are supposed to preserve the constitution from historical contingencies.

doing so could be prevented. 'Why tell the sovereign that free trade is desirable, if one has no method of disarming the merchants and manufacturers who have obtained the protectionists measures?' wondered Stigler (1971: 273). Furthermore, between two ills, merchants' involvement in politics and capital flight, it could have been argued that the former was the less hurtful. Nor does it tell us why policy-makers could legitimately implement free-trade policies without being criticized for acting as arrogant men of systems. Indeed, although Smith believed that the constitution of a state could change with time, he thought such evolution cannot (and should not) be the design of any one person, thereby echoing Ferguson's famous view that private property and political institutions in general are 'the results of human action, but not the action of any human design' (1767: 122). But Smith's definition of constitution is so general that any legislation might well transform it, whether intentionally or not. In such a case it seems difficult to locate the boundary between the 'man of system' and the 'wise statesman'. One is led to ask how Smith could put forward his radical theory of free trade without being held as another one of those arrogant philosophers he so blatantly despised. In his words, one can only appeal to one's wisdom in such cases: it 'requires the highest effort of political wisdom to determine when a real patriot ought to support and endeavor to re-establish the authority of the old system, and when he ought to give way to the more daring, but often dangerous, spirit of innovation' (TMS, VI.ii.b, 340).

The two interrogations just raised - the one on the possibility of political action and the other on its desirability - spring from too narrow a conception of politics: Stigler's question stems from his assuming that politics is just another arena to play out conflicting interests; and the historical view, while denying that politics can be successfully purposeful, seems to suggest that the only purpose of political action is an instrumental one. Both conceptions disregard the function of politics as a forum of communicative interaction within which a shared and coherent view of the world, that is an ideology, is shaped.

Along with the broadening of our conception of politics along the lines just suggested, we may drop the distinction between positive and normative economics while reading Smith's work. That is, we may abandon the view that economic debates can be separated from political ones. Although this may sound anathema to mainstream economics, there are good grounds for doing so here. First the distinction is anachronistic since it was first made by John-Stuart Mill and Nassau Senior in the first half of the nineteenth century. Second, abandoning the distinction is warranted if the goal of scientific work is seen as influencing people's perception of the world. Scientific knowledge affects society in two ways: either by shaping an individual's perception of reality; or by being embedded in the tools we make use in acting in society. The former bears on our selection of ends; the latter on our choice of means. In contrast to

positive science which defines its social function exclusively in terms of this latter, Enlightenment thinkers were giving a lot of importance to the former. In political economy, this view is made particularly clear in the works of Jean-Baptiste Say and Jevons for example.

Finally, the idea that within the political forum, rather than merely within a separate scientific forum, different views of the world are being confronted corresponds well to the intellectual origins of the historical interpretation of the invisible hand. A good starting point to investigate the issue is Rousseau's *Discourse on the Origins of Inequality* (1754), which undoubtedly inspired Ferguson and can therefore legitimately be seen as close to Smith's views[34]. In the first part of the discourse, Rousseau's main goal is to debunk Hobbes's account of the State of Nature. The different passions Hobbes ascribes to the individual in that state are, according to Rousseau, mere projections in an altogether different setting of those passions that prevail in modern societies. As such, it is wholly inappropriate, for people's desires and perception of the world are shaped by the particular context in which they live. Their motivations and actions must therefore be explained with respect to the kind of world they experienced. Rousseau's central argument relates to language. Ideas can only be formed in a particular language, and the language itself reflects our experience of the world. It follows that modern concepts like private property, oppression, slavery, rights, on which the philosopher relies to elaborate political theories, could not possibly have been available to the savage's mind in the State of Nature, for such concepts are only to be experienced within society. Ferguson makes a very similar point: 'Mankind, in following the present sense of their minds, in striving to remove inconveniences, or to gain apparent or continuous advantages, arrive at ends which even their imagination could not anticipate' (1767, 122). So institutions cannot be the result of any one's design because the role they play is only understandable through particular concepts which, in turn, can only be elaborated in a world in which such institutions exist. Evolution is therefore a purely contingent phenomenon. Ferguson makes an additional point : 'Men, in general, are sufficiently disposed to occupy themselves in forming projects and schemes: but he who would scheme and project for others, will find an opponent in every person who is disposed to scheme' (1767, 122). This argument is remarkable for it implicitly denies the possibility to achieve consensus by referring to an absolute truth. The forms of society arise 'from the instincts, not from the speculations, of men', because philosophy can only produce speculations, not "Truths". So the reason why 'institutions are the result of human action, and

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[34] According to Rae (1898), Smith spoke of Rousseau 'with a kind of religious respect'. The discourse notably inspired him his'Considerations concerning the first formation of language'. Rousseau is also commonly attributed the paternity of the idea of 'alienation' as a consequence of the division of labour, an idea which Ferguson and Smith will take up in the *History of Civil Society* and the WN respectively. There is a strong suspicion that Smith accused Ferguson of plagiaranism, although it is not clear to which exact passages the accusation refers to.

not the action of any human design' is that no individual has sufficient power to impose upon others his or her own project. This does not deny the possibility of political agency; it simply denies that such agency can be reduced to any one mind. The 'wise' philosopher must therefore try to understand the meaning of institutions, the different components of a system, in the way they relate with one another and the whole. But she cannot pretend to step out of the world she inhabits to devise an all encompassing plan of action. Rather her assumption must always be that her knowledge is incomplete.

Similarly Smith rejected the traditional view that our senses are adjuncts to reason, as well as the classical principle that the contemplative is the best way of life for man. The point is aptly summarized by a sentence from Cropsey's more detailed discussion of the matter: 'The real nature of things having been placed beyond the combined reason and sense perception of man, to set real knowledge as the goal of life would be to waste life entirely' (1977, 7). Perfection, and "Truth", is for Smith unattainable, and it is a sign of greatness and of wisdom to recognize it: 'In all the liberal and ingenious arts, in painting, in poetry, in music, in eloquence, in philosophy, the great artist feels always the real imperfection of his own best works, and is more sensible than any man how much they fall short of that ideal perfection of which he has formed some conception, which he imitates as well as he can, but which he dispairs of ever equalling' (TMS, VI.iii, 365).

We may now come back to the two questions with which we opened this section. In regard to the historical interpretation, we note that Smith did not call for a new social order. If he had, he would have taken the place of Providence and become one of those arrogant men of system. Rather, he relied on Providence in order to adjust social changes (emergence of the merchant class) within the existing social order. As argued in the course of this essay, the relationship between merchants and the State was unbalanced because the State needed the merchants' money. As a consequence the merchants' mobility was a powerful means for imposing a line of economic policies to the government. But by arguing that merchants had in fact a natural interest to invest at home, Smith turned the merchant's threat in an empty one; that merchants, even if they are not given some economic advantages by policy-makers, will still find their interest in investing in their own country. Finally, the answer to Stigler's question follows from the view that merchants' political power was not based on the fact that the legislators were merchants, or that they wanted to defend merchants' interests. It relied on the legislators' credulity: in their belief that mercantilism was the "true" theory of political economy.

The main implication of the invisible hand was therefore to deny merchants any political leverage. This was a way to protect politics and society at large from the power

merchants derive from their economic situation. Merchants were indeed granted the conduct of economic affair. But at the same time they were confined to the economic stage[35]. And the price they had to pay for it was to embrace the theory of free trade. Not that free trade was to be implemented at once. In fact Smith recognized that some form of political intervention in economic affairs might be necessary in a number of instances (Viner 1927, Sen 1987). But free trade as a political principle which denied merchants any political role. We seem to connect here with the more traditional view of Smith as father of the separation between politics and economics. There is a difference however. With the WN Smith, unlike for instance Ricardo two generations later, was not writing a treatise on economics, but a treatise on the 'general principles of law and government'. Understanding the functioning of commerce served a more ultimate goal: to define the role of commerce in society with respect to the political organization of the nation.

4. Conclusion: Lessons for today

One cannot resist to remark the similarity between the support merchants gained from mercantilism in Smith's time, and the contemporary association between neo-classical economics and those groups of society which have more to benefit from liberalization and free trade policies. Today merchants have become transnational companies and financial institutions which can, in a matter of minutes, shift huge amounts of capital from one country to another. And it is increasingly believed that these free flows of capital impose "objective constraints" on the policy-makers of all countries around the world which have agreed to participate in the game. In the spirit of this paper, we can ask the question: is this a real "objective constraint", or a construct of the mind?

Although economic theory has much evolved since Adam Smith, it is still believed that the wealth of a nation is closely dependent upon its stock of capital, and therefore eventually upon the level of investment. To move from this statement to the view that a country is dependent upon access to international capital, one must make the assumption that a policy geared at generating savings within the country is not adequate. For our present purposes, let us grant this assumption. We then get the following proposition: that the wealth of the nation depends upon its capacity to attract international capital. Where the story gets confused

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[35] Note the similarity between this interpretation and what Rousseau would have attempted to do if he had written on political economy: 'Since wealth, nobility or rank, power and personal merit are generally the four principal qualities by which one is measured in society, I would prove that harmony or conflict between these several sorts of distinction is the surest indication of the good or bad constitution of the state.' (1754: 132).

is when it is deduced from this proposition that only those policies which correspond to the *desiderata* of the holders of international capital are economically rational.

The mistake comes from a confusion between ideology and interest. The availability of international capital does not depend upon the content of economic policies, but upon their outcomes. Investors are not interested in intentions, but only in results. Now of course there is a relationship between the content of economic policies and their results. But this relationship cannot be known outside of a theoretical framework. What "merchants" say is that only certain policies will produce the type of outcome within which it will be profitable for them to invest. So that one will believe them only if he or she believes in the correctness of their economic analysis. In other words, it is the success of policies that attracts international capital; not certain type of policies. In its crudest form, the idea is that money has no ideology: because "merchants" are profit-maximizers, their decisions to invest will not rest on ideological principles. As a consequence, their participation in the process of decision-making can only be justified on the ground that there exists a "true" and "objective" economic theory, the one they profess. The "objective constraints" imposed by international capital are therefore objective to the extent that there is such a thing as an "objective" and "true" economic theory. Once we have made this point clear, it becomes much easier to realize how subjective the constraints really are.

REFERENCES

Primary sources

Ferguson, Adam (1767) *An Essay on the History of Civil Society*, Edinburgh: Edinburgh University Press. 1966.

Hume, David (1739) *A Treatise on Human Nature*. 2nd ed. Oxford: Oxford University Press. 1989.

Hume, David (1817) 'Whether the British government inclines more to absolute monarchy, or to a Republic'; 'On Commerce'; in *Philosophical Essays on Morals, Literature, and Politics*, Philadelphia: Edward Earle.

Montesquieu (1743) *The Spirit of Laws*, Trans. T. Nugent, New York: Hafner Publishing Co., 1949.

Rousseau, Jean-Jacques (1755) *A Discourse on Inequality*, Trans. by M. Cranston, New York: Penguin, 1984.

de Sismondi, Sismonde (1951) *Nouveaux Principes d'Economie Politique*, 3rd ed., Genève : Jéheber. First edition 1819.

Smith, Adam

(1759) *The Theory of Moral Sentiments*. D.D. Raphael and A.L. Macfie editors. Oxford: Clarendon Press. 1976.

(1896) *Lectures on Justice, Police, Revenues, and Arms* (reported by a student in 1763), ed. by E. Cannan, Oxford: Clarendon Press.

(1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*. R. H. Campbell and A.S. Skinner, General Editors; W. Todd text editor. Oxford: Clarendon Press. 1976.

Stewart, Dugald (1793) 'An account of the life and writings of Dr. Smith', in *The Works of Adam Smith*, vol. V, London, 1811.

Secondary sources

Aplleby, J. (1976) 'Ideology and theory: the tension between political and economic liberalism in 17th century England', *American History Review* 81(3): 499-515.

Black, Jeremy (1993) *The Politics of Britain, 1688- 1800*, Manchester: Manchester University Press.

Buchanan, J. (1975) *The Limits of Liberty*, Chicago: University of Chicago Press.

Cropsey, Joseph (1957) *Polity and Economy*. Wesport, Conn.: Greenwood Press. 1977.

Dickson, P. G. M. (1967) *The Financial Revolution in Britain. A Study in the Development of Public Credit*. New York: St Martin's Press.

Dickinson, H. T. (1977) *Liberty and Property. Political Ideology in Eighteenth-Century England*. London: Methuen.

Dumont, L. (1977) *Homo Aequalis, I, Genese et Epanouissement de l'Ideologie Economique*. Paris: Gallimard.

Dunn John (1969) *The Political Thought of John Locke: An Historical Account of the Argument of the Two Treatises of Government*. Cambridge: Cambridge University Press.

Forbes, Duncan (1954) "Scientific Whiggism: Adam Smith and John Millar", *Cambridge Journal*, VII.

Harris, R. W. (1963) *England in the Eighteenth Century*, London: Blandford Press.

Hirsch, F. (1976) *Social Limits to Growth*, Cambridge, Mass.: Harvard University Press.

Hirschman, Albert O. (1977) *The Passions and the Interests*. Princeton, N.J.: Princeton University Press.

Kramnick, Isaac (1968) *Bolingbroke and his Circle: the Politics of Nostalgia in the Age of Walpole*. Cambridge, Mass.: Harvard University Press.

Krueger, A. (1974) 'The political economy of the rent-seeking society', *American Economic Review* 64: 291-303.

Lindblom, Charles (1977) *Politics and Markets: the World's Political Economic Systems*, New York: Basic Books.
Lovejoy (1954) *The Great Chain of Being: A Study of the History of an Idea*, Cambridge, Mass.: Harvrad University Press.
Mazlish, B. (1989) *A New Science: The Breakdown of Connection and the Birth of Sociology*, New York: Oxford University Press.
Minowitz (1993) *Profits, Priests, and Princes: Adam Smith's Emancipation of Economics from Politics and Religion*, Stanforld, Calif.: Stanford University Press.
Nozick, R (1974) *Anaechy, State, and Utopia*. New York: Basic Books.
Nozick, R. (1994) 'Invisible-Hand Explanations', *AER 84*, AEA Papers and Proceedings.
Pocock, John (1975) *The Machiavellian Moment*. Princeton: Princeton University Press.
Rae (1895) *Life of Adam Smith*, London: MacMillan.
Rorty, Richard (1989) *Contingency, Irony, and Solidarity*. Cambridge: Cambridge University Press.
Rothschild, E. (1994) 'Adam Smith and the invisible hand', *American Economic Review* 84..
Sennett, Richard (1977) *The Fall of Public Man*, London: Faber and Faber. 1986.
Samuelson, Paul A. (1973) *Economics*, 9th ed., New York: Mc-Graw-Hill.
Sen, Amartya (1987) *On Ethics and Economics*. Oxford: Blackwell.
Stigler, George (1971) 'Smith's travels on the ship of State', *History of Political Economy*, III.
Teichgraeber, R. (1986) *'Free Trade' and Moral Philosophy: Re-Thinking the Sources of Adam Smith's* Wealth of Nations. Durham: Duke University Press.
Ullmann-Margalit, E. (1978) 'Invisible-hand explanations', *Synthese* 39: 263-291.
Viner, J. (1927) 'Adam Smith and laissez-faire', *The Journal of Political Economy*, 35.
West, E. G. (1976), 'Adam Smith's economics of politics', *History of Political Economy*, VIII.
West, E. G. (1991) *Adam Smith and Modern Economics: From Market Behavior to Public choice*, Brookfield, Vermt.: Edward Elgar.
Willcox, William and Walter Arnstein (1966) *The Age of Aristocracy, 1688 to 1830*, Lexington, Mass.: D.C. Heath and Company.
Winch, Donald (1978) *Adam Smith's Politics. An Essay in Historiographic Revision*. Cambridge: Cambridge University Press.

PART II

Towards a Procedural Theory of Sustainability

Introduction:

Towards a Procedural Theory of Sustainability

I. INTRODUCTION

Human actions today are transforming the natural environment on a historically unprecedented scale. Whatever our allegiances, it is hardly disputable that the interaction between human societies and their natural environment has evolved significantly during the history of modernity and that the pace of change has accelarated sharply in the course of this century. This is not to say, of course, that we are today at a critical juncture.

These environmental changes can be interpreted in two ways, either as undermining some goals society has set for itself, or as undermining the understanding society has of itself. Let me start with the former.

The more common justification of our environmental concerns, at least among economists, is that present environmental changes transgress the rights of future generations. In this view sustainability would be, at bottom, 'merely justice with respect to future generations' (Costanza 1991, 8). The justification of policies geared at addressing environmental issues would then have to start by asking what we owe to future generations, and the answer to this question would determine the goal of policy-making. A somewhat independent debate would then follow on how to operationalize this goal. This approach to environmental issues is

consequentialist in that it defines a goal *a priori*, and separates clearly the tasks of defining the goal from that of choosing the means.

This approach is subject to two criticisms, summarized here and presented in more details later in this chapter and at length in chapters 1 and 2. The first criticism questions that considerations of intergenerational justice can be raised prior to addressing and implementing considerations of *intra*generational justice. The question "What do *we* owe to future generations?" supposes the existence of a "we" which can only be derived from a certain conception of society. The matter is not whether this conception is theoretically sound but whether it has some empirical support. In short, if we can raise questions of intergenerational justice only if certain social conditions obtain, and if these conditions are not actually met today, then our concerns over sustainability (defined in terms of intergenerational justice) must be preceded by concerns over how to change society so as it meets these conditions.

Second, even if we agree on what we owe to the future as well as on a theoretical conceptualization of these obligations, we may still question whether, in practice, it would be possible to implement the appropriate policies. The problem raised here has to do with the level of uncertainty surrounding environmental changes, notably with respect to their possible consequences. In the face of such uncertainty, we need to show prudence. Yet prudence in this context does not mean to avoid carrying out certain actions, but rather to act in order to reduce the scale of human activities, or at least to alter its course. Whereas inaction may not require any justification, thereby justifying the pursuit of present behaviors by default, political action (as to address environmental issues) would itself require justification. So the existence of uncertainty justifies almost automatically wait-and-see policies and undermines the possibility for action. To put it differently, the burden of proof is on the environmentalists, and in a situation of great uncertainty it is a heavy burden indeed.

The two criticisms just summarized have a positive facet, that of suggesting a different formulation of the problem raised by environmental changes. It consists in saying that modern societies rest on certain forms of justification which are being undermined by environmental changes. Indeed two prominent theories of justice, utilitarianism and libertarianism, suffer from severe shortcomings already in the case of one generation once environmental changes are taken into account. The practical relevance of utilitarianism is reduced as the level of uncertainty surrounding environmental changes increases. While libertarians are confronted to a dilemma in having to choose between protecting individuals from the state, or protecting people's rights against environmental degradation and for this purpose allow greater state intervention. Environmental changes thus trigger a crisis in our mode of justifying the state. These shortcomings undermine the legitimacy of the policy recommendations made in the name of these theories of justice, and thereby reduce the possibility for political action. Of course

these are not the only theories used to justify policies. A third prominent mode of justification is through democratic participation in the conduct of public affairs. The strengthening of democratic participation in order to address environmental issues would in fact solve the problems inherent to libertarianism and utilitarianism alike. Unlike libertarianism, democratic participation allows a greater role for the state, which is a necessary condition for addressing environmental issues; and unlike utilitarianism, democratic participation provides a procedural justification to action and thereby avoids the difficulty uncertainty raises for consequentialists approaches.

Yet it would clearly be insufficient to defend democratic participation on the ground that other approaches suffer from severe shortcomings. Democratic participation must be defended by showing, or . . . least suggesting, that it would encourage addressing a number of issues which are directly related to the challenge raised by environmental changes. For example, it can be argued that both population growth in the South and over-consumption in the North are to some extent a consequence of a lack of political debate on these issues. This is not to say that there is a deterministic link between radical democratization and sustainability. We should view the former, rather, as creating the appropriate conditions within which environmental concerns can be addressed. Nor does this mean that experts will not have an important role to play. Simply the role of experts will be transformed, from that of replacing politics to feeding the political process with alternative ideas for social transformation.

This introductory chapter is organized as follows. In the next sub-section I present a definition of sustainability as well as a frame that any theory of sustainability should meet. In the second part, I present in more details a criticism of sustainable development as a possible theory of sustainability. In the third part, I put forward an alternative approach to sustainability around the idea of radical democratization. This introduction goes beyond the ground I have covered in the three other chapters. Chapters 1 and 2 provide detailed discussions of two elements of the criticism of sustainable development, while in chapter 3 Tariq Banuri and I discuss the population issue. The reason for presenting a more general argument here is to clarify the specific purpose of each paper. These chapters do stand on their own, or so I believe. Yet, they were written as different pieces of a same puzzle, and now that the puzzle starts to take shape, it seems appropriate and helpful to draw the larger picture.

Sustainability: definition and theory

The issue of sustainability stems from the recognition that, as other creatures, humans cannot live apart of nature nor can they live in nature without changing it, but unlike other creatures, humans have a choice as to the kind and scale of the difference they make. The dilemma, as expressed by Wendell Berry (1987, 7), is that if humans 'choose to make too small a difference, they diminish their humanity. If they choose to make too great a difference, they diminish nature, and narrow their subsequent choices; ultimately, they diminish or destroy themselves'. Less prosaically, the policy problem comes down to integrating economic and ecological considerations in decision-making. Let us leave open, for the time-being, the question as to whether these considerations should effect the definition of ends or simply the choice of means.

This problem is characterized by two features which can either be seen as inherent in the human condition, as Berry would argue, or as empirical facts about the nature of present environmental changes. These features are our ignorance about the possible consequences of on-going environmental changes, and the public character of these changes. The publicness feature stands for both publicness in production and in the distribution of the effects. Thus present environmental changes do not result from any one individual's behavior, nor do they effect exclusively one individual. Rather, they stem from the accumulation of a great number of individual contributions, and may affect all of us.

The ignorance feature does not stand simply for the existence of uncertainty with respect to the possible consequences of environmental changes. It also captures the idea that this uncertainty is in part created by human actions. For example, scientific knowledge today creates uncertainty in two different ways: through technology it increases our power to act, and thereby our capacity to disrupt the natural environment; and through more precise tools of measurement, it increases our capacity to know about environmental changes. However, the gap between our knowledge of the changes going on and our knowledge of the consequences of these changes on human welfare increases (Jonas 1984).

The *possibility* to respond to on-going environmental changes may then be called the general problem of sustainability, while determining the adequate response is the task of a theory of sustainability. By theory I mean here something more general then a guide to policy-making. I refer to the various elements necessary for action organized in a logically coherent whole. The elements to be included should correspond to the two features of publicness and ignorance. Altogether I propose to retain three elements: a definition of the criterion to be used to assess sustainability; a politics of sustainability, which includes a justification for collective actions and the definition of a process of collective decision-making; the function of science in

achieving sustainability together with some specific research agendas. The frame of a theory of sustainability consists therefore of these three elements organized in a coherent way.

A theory of sustainability thus organized will then have to be tested against practical considerations. The two features of publicness and ignorance impose two particular constraints on any theory of sustainability.

First, the feature of publicness means that sustainability is first and foremost a collective matter. The individual alone has no impact, whether positive or negative. The various forms of collective responses fall between two extremes. At one extreme is the idea that a large scale cultural movement will alter people's behavior with respect to the natural environment, so that sustainability would be achieved by a shift in people's preferences. At the other extreme is the idea that only a dictator could impose the societal changes that may be necessary for the achievement of sustainability, so that sustainability in the ecological sphere could only be achieved at the cost of a loss of political freedom. Between these two extreme positions which have in common a denial of politics (the former because the cultural change is external to politics, and the latter because it stands against politics), we may investigate the possibility for political action in bringing about sustainability. This raises two questions: who acts, and with what legitimacy? In other words: what politics of sustainability? Two positions in response to this question are worth mentioning. The more common response among economists and international organizations is that experts should act, but that experts should first convince the public of the need for action, and second that experts should always remain under democratic supervision. It is in this that this position, that we may call expertocracy, differs from that of dictatorship. Note that no cultural change is here involved, for experts do not appeal to people's preferences, but only to people's reason. They attempt to convince people by suggesting that their real interests lie in addressing environmental issues. The other response builds on the idea that a cultural change is necessary, but that it is not sufficient and furthermore that it cannot be brought about independently of institutional changes. The politics of sustainability envisioned relies on this idea to justify a greater scope for politics as well as to direct the attention towards the process of decision-making. Political empowerment through further democratization may generate what Gorz (1991) and Beck (1995) call a 'politics of self-limitation'.

Whatever conception of collective response is held, it must be defended in two ways: first, by showing that this conception is compatible with sustainability itself; second, and this is a crucial, often overlooked point, it must be shown not only that there exists a path between the actual political structure and this conception of collective responses, but also that the political transformation along this path can take place *prior* to a major environmental crisis. To say, for instance, that the occurence of an environmental crisis will inevitably lead to

dictatorship cannot be an argument in support of the view that dictatorship is necessary to achieve sustainability.

Second, a theory of sustainability cannot rely on a form of knowledge which, to be acquired, would require to test the limits of unsustainability. This simple point has quite far-reaching implications. Among them is that the knowledge we are to make use of, for instance to set the limits on certain human activities, cannot be supported by real world experiments. Questions like "What will be the consequences of current changes in the gaseous composition of the atmosphere?" or "What will be the consequences of current losses of biodiversity?" do not admit answers that can be tested, and which therefore could be considered as positive scientific knowledge, *within a sustainable path* of societal changes. For the non-occurrence of a crisis merely keeps the question open - to the extent, of course, that pressure on the natural environment is sustained - while the occurrence of a crisis marks the break away from sustainability. So sustainability is not compatible with asserting whether the risks are real. As Giddens puts it, 'The risks involved are necessarily "unreal", because we could only have clear demonstration of them if events occurred that are too terrible to contemplate' (1990: 134).

This is not to say that no experimentations are possible to assess the possible consequences of a number of environmental changes. Yet, such experimentations become more difficult as the level of aggregation at which sustainability is assessed rises. This level depends upon two factors: an ecological factor which specifies within which ecological or biospheric system the consequences of the environmental change are to be assessed; and a politico-economic factor which specifies the politico-economic system to be considered. The level to be retained for the analysis of sustainability is then the higher of the two. When we speak about global environmental changes, we usually have in mind issues like the change in the gazeous composition of the atmosphere or the depletion of the ozone layer. At this level it is clear why direct experimentation is incompatible with the idea of sustainability. But local environmental changes, like desertification for example, are also national or global issues if we decide to assess them with respect to some definition of sustainability at the national or global issues. In this sense, our assessment of these changes cannot be subject to experimentation for the same reason that environmental changes which are global in the ecological sense are not.

II. THE CRITIQUE

My intent here is twofold: first is to present the theory of sustainability which underlies current thinking on the issue, and which comprises the concept of sustainable development as well as the approach to environmental issues favored in more developed

countries; and second to criticize this theory on practical grounds. I thus view sustainable development as one possible strategy towards sustainability, which can be characterized by the different elements of a theory of sustainability.

Sustainable development defined

The practical policy problem of sustainability can be understood as either integrating economic and ecological considerations in the definition of ends, or as taking into account these considerations in the choice of means. In fact it has been understood in both ways in the recent past: the environmental movement of the 1960s and 1970s was a debate over ends; whereas the more recent emphasis on sustainable development is a debate over means. One of the factors that may explain this shift in the environmental debate is the desire to avoid political conflicts as much as possible.

Let us recall that we are concerned here with political actions. One source of conflict inherent to collective decision-making is the choice over ends. Uncertainty introduces a new source of conflict in the process of collective decision-making, one over the relationship between means and ends. The four possibilities generated by combining these two conflicts (over ends and over knowledge) is presented in the two by two box below, taken from Douglas and Wildavsky (1983).

		Knowledge: Certain	Knowledge: Uncertain
Consent over ends	Complete	Problem: *technical* Solution: *calculation*	Problem: *Information* Solution: *Research*
	Contested	Problem: *dis-agreement* Solution: *discussion, coercion*	Problem: *Knowledge and consent* Solution: ???

Source: Douglas and Wildavsky (1982).

Consider the case in which ends are contested and there is uncertainty (lower-right box). Most often in this case the two types of conflicts - over the choice of ends and over the relationship between means and ends - will not be easily distinguishable, in part because the choice of ends is always subject to pragmatic considerations over what is and what is not feasible. One way to deal with such a case could be to treat disagreement about knowledge as a disagreement over ends and rely on the political processes used in other instances to deal with such disagreements (i.e., shift to the lower-left box). The problem of collective decision making under uncertainty would thus be transformed into a problem of political discussion under

'conflicting certainties' (Schwarz and Thompson 1990). Another approach consists in using the existence of uncertainty as an opportunity to achieve consensus over ends. In a situation of uncertainty, we may indeed imagine some end over which we could all agree, and then shift the burden of achieving this objective to the scientific community (i.e., shift to the upper-right box). The idea carries some degree of generality: conflicts can be addressed by appealing to an hypothetical state of society within which these conflicts would be harmonized, and then by working towards bringing about such a state of society. The political problem is thus transformed into a technical one, thereby shifting the burden from political deliberation to scientific research.[1,2]

This simple frame sheds some light on the evolution of the environmental debate in the last twenty years. The environmental debate of the 1970s corresponded pretty well to a situation in which ends and knowledge are contested. Thus it can be characterized as conflictual and political. On the side of ends was a criticism of economic growth as a social goal, epitomized by the "Limits to growth" motto. The criticism was grounded partly in the belief that the natural environment imposed limits on the scale of human activities, and partly in the larger cultural movement which was questioning the "rationality" of modern societies. The two questions "Is more economic growth possible?" and "Is more economic growth desirable?" undoubtedly gave resonance to one another.[3]

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[1] Note that the shift from political to technical that characterizes this strategy does not leave the conception of uncertainty, or more generally of undeterminacy, unaffected. That is, undeterminacy must now be conceptualized in a way which is compatible with the technical approach. To use Knight's (1922) famous distinction, indeterminacy will have to be conceptualized as 'risk', that is as a form of indeterminacy which is calculable, or probabilizable. What this leaves out are forms of indeterminacy which are non-calculable, or non-probabilizable, and that Knight referred to as 'uncertainty'. I have emphasized here one side of the relationship between policy and conceptualization. The other side of it, explored in detail by Reddy (1995), is that the claim that all forms of indeterminacy can be conceptualized as risk, as suggested by the economic theory of uncertainty (i.e. risk) for instance, justifies and fosters the shift from political to technical approaches.

[2] This route from the political to the technical has been traveled many times before. It is, after all, a long tradition in modern Western political philosophy to consider modern science as a way to avoid political conflicts, as a way to generate truths independently of people's subjective beliefs. See Toulmin (1990). Ziman (1968) rightly points out that the social function of science is to produce 'common knowledge'. More mundanely, a similar shift has long been at work to avoid social conflicts over economic redistribution: economic growth has been held as a way to solve political conflicts over distribution. The achievement of growth was then seen as a technical matter to be handled by experts.This idea is clearly expressed by Keynes (1930). To solve the economic problem of mankind is the purpose of economic growth. For the achievement of this goal, economists should be considered as 'dentists'. Now this goal, as well as the economists' social role associated with it, was not the one envisioned by earlier political economists, and notably Adam Smith. The 'Keynesian accomodation' refers to the views that the goal of economic growth is independent from that of distribution, and that the pursuit of growth could be a way to solve distribution problems. By contrast, as I argued in another paper, Smith's work can be interpreted as meaning that the achievement of distribution justice is a pre-condition for economic growth. A just system of cooperation is instrumental in achieving social peace, but it is also the one which leads to the wealth of nations. The metaphor of the 'invisible hand' does not simply say that there is a correspondence between an individual's self-interest and the social good. It also states economic growth is an incidental and desirable by-product of social justice.

[3] For a comprehensive history of environmental movements in the US, see Gottlieb (1993), notably chapters 3, 4, 5. The political facet of the environmental movement of the 1960s came in part from its association with the New Left. As Gottlieb notes, 'for many, in and around the New Left, environmentalism came to be associated with the search for alternative institutions and a new way of living' (1993, 97).

Underlying this conflict over ends was a major conflict within the broad scientific community, between natural scientists on the one side and economists on the other side. Their visions of how human societies interact with the natural environment seemed impossible to reconcile. Each side used its own techniques to construct images of the future, and precisely because these are images of the future their relevance could not be assessed according to usual scientific methods.[4] What must be stressed is that this "scientific" conflict had political overtones due to the larger cultural movement. So called "doomsdayers" were providing additional arguments for those persons questioning modern life-styles.

By contrast, the environmental debate that arose in the 1980s with its emphasis on sustainable development appears consensual and technical. Indeed development and environmental objectives are now presented as complementary to one another rather than as conflictual. While it is acknowledged that further economic development would not be possible without taking into consideration environmental concerns, it is also stressed that environmental objectives are best met through development. The environment would be a normal good for which the demand would rise with an increase in wealth (World Bank 1992). And conversely, poverty rather than affluence is held as a prime cause of environmental degradation (WCED 1987). So the emergence of the concept of sustainable development can be interpreted in the perspective of the second path described above: as defining an end over which both parties involved in the debate of the 1970s could agree, and then shift the burden to the scientific community for achieving sustainability. It has notably been argued that the concept of sustainable development was coined to rescue development despite the social and environmental disruptions it has led to in the past (Sachs 1993). Once the objective is set, viz. to achieve sustainable development, then the policy problem can be put in technical terms: how can we achieve sustainable development? Thus *Our Common Future* starts as a political statement, as a plea for policy-makers around the world to acknowledge the urgency of addressing environmental problems, and to do so in a solidaristic manner. Yet, by stressing the need for consensus and the existence of a common interest - "Our common future" - it ends by shifting the burden away from the political sphere and onto technical expertise.

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[4] See Lecomber (1975).A large litterature related to the disagreement between economists and natural scientists is cited in Norgaard (1984). Influential criticisms of economic growth include Galbraith (1958), Mishan (1967), Meadows et al. (1972), Hirsch (1976). Defenses of economic growth include Beckerman (1972, 1974), Solow (1974), Simon (1980). For a discussion in a history of thought perspective see Arndt (1978), specially chaps 7, 8. Arndt commented on the fall of economic growth as an objective of economic policy in the late 1970s. Retrospectively, the fall seems to have been just a parenthesis. The 1980s have witnessed a strong revival of economic growth in political discourse, although it was not always translated into voluntary policies of a Keynesian style. Nevertheless, the stabilization policies of the 1980s and 1990s are still presented as instrumental in creating the necessary conditions for growth. And the countries held as models to defend this stance - like East Asia - are those which have enjoyed the highest levels of economic growth in the recent past.

What is sustainable development, and in what sense can it claim to be consensual? Sustainable development is 'development that meets the need of the present without compromising the ability of future generations to meet their own needs' (WCED 1987, 43). The important word here is 'ability'. Following this famous and widely endorsed definition, there has been many attempts to give substance to it and to derive some conditions of sustainable development. Although there is no agreement in the details, economists tend to agree that sustainable development means to preserve productive capacities intact. The proxy commonly adopted for this matter is the stock of capital. Sustainable development is thus defined as a constant stock of capital (Pearce and Warford 1993). There is some controversy as to whether the proxy should be limited to the stock of natural resources, or whether it should also include human-made capital and human capital. The difference is not, however, crucial for the present argument. What matters is that opportunities, rather than things or resources, are to be preserved and if possibly expanded. So no particular resource is sacred. By shifting the attention from specific resources to opportunities, the concept of sustainable development dismisses a potentially very controversial question, viz. what specific resources are to be preserved.

One consequence of the foregoing as well as second source of consensus is the separation of the issue of intergenerational equity from the issue of intragenerational equity.[5] This is not to say that no particular attention was given to poverty alleviation in the formulation of sustainable development, for the issue was emphasized indeed, for instance by WCED (1987). It was justly recalled that poverty alleviation is the ultimate purpose of development. In addition, it was presented as a condition for achieving sustainability since poverty itself was identified as a main cause of environmental changes. Sustainability and development are thus caught in a circle, which can either be virtuous, i.e. "sustainable development", or vicious, what is often called the "poverty trap". In the one case, development would alleviate poverty, thereby creating the conditions for a long-term oriented management of resources and further development. In the other case, poverty would lead to environmental degradation thereby reducing people's ability to meet their own needs and thus leading to further impoverishment.

So achieving sustainable development requires first to jump from the vicious to the virtuous circle, and this could be done in one of two ways: by a spurt in economic development, or through redistributive policies. The concept of sustainable development separates intergenerational issues from intragenerational ones in the sense that it views a spurt of

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[5] Beckerman (1974, 4-5) writes: 'it is one thing to criticize the way in which society at any moment of time distributes resources between, say, the environment or public health or transport facilities, and, say, consumer durables, and quite another thing to criticize the way that society distributes its resources over time - which is what the growth problem is really about'.

development, rather then re-distributive policies, as the solution. This follows logically from conceptualizing sustainable development in terms of opportunities rather than as the preservation of certain resources which subordinates, in the short-run, poverty alleviation to economic development. By contrast, the preservation of a particular resource would raise problems of distribution. Constraints on the usage of resources cannot be imposed on some parties without opening the door to considerations over distribution, not only across generations but also within a generation. By defining sustainability in terms of opportunities, the difficulty is bypassed. The framework of environmental economics can thus deal with all environmental changes, while the issue of sustainability is reduced to the level of productive capacities we bequeath to future generations.

Of course the entire strategy of sustainable development remains subject to the condition that we agree that we owe something to future generations. It is on this point that consensus requires political will, and hence, it is on this point that international reports like *Our Common Future* or *Our Global Neighborhood* put the emphasis. Even if we cannot agree among ourselves about how the world should be organized, we may agree that our children should not be worse off then us (on an individual by individual basis), and so agree on the goal of sustainable development. The problem here is thus simply to justify policies taken for the sake of future generations, or more generally, to justify that the state act as the trustee for future generations. But once this is achieved, the actual politics of sustainability consists merely in applying the definition and is reduced to a matter of technical expertise.

In sum, the theory of sustainability to which the idea of sustainable development belongs is characterized by the following elements:

- a definition of sustainability in terms of productive capacities or of a general measure of capital which *excludes* any specific ecological criterion.

- a vision of politics according to which the state acts as the trustee for future generations, democratic participation serves to legitimize the goal of sustainability as just defined, and decision-making is in the hands of experts.

- the function of science is to determine conditions of sustainability. In particular, an important topic on the research agenda is to measure the stock of natural capital.[6]

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[6] It is true that the literature on sustainable development is more diverse than what suggested by this synthesis. The account given can be seen, however, as the outcome of academic discussions on the issue. It does represent, I think, the emerging mainstream position. In chapter 2, I present in more detail this position and compare it with other alternatives.

Sustainable development: practical shortcomings

In chapters 1 and 2 I criticize the theory of sustainability associated with sustainable development on the ground that this theory is not applicable. It would fail therefore on practical grounds. My arguments are not, however, empirical in the sense that I do not support the claims made with specific facts. I do not analyze, for example, the actual politics with respect to the environment. Nor do I deal directly with the state of the art in environmental sciences. My arguments are conceptual, and consists in showing that there is no path between the actual structure of politics and social function of science, and a politics and science of sustainable development. I attempt to show thus that the elements of the theory are inconsistent with the constraints imposed on any theory of sustainability by the features of ignorance and publicness.

Let us begin with the latter. The idea that society as a whole should bequeath to future generations a certain level of productive capacities seems to account for the feature of publicness. The justification for doing so may be related to a sense of equity for future generations, or to the notion of usufruct rights. The first justification suggests that, if we live in an *un*sustainable way, it is because we do not care enough about future generations. A lack of moral commitment for the future would explain present behaviors. The solution advocated, then, is preaching. This call for a greater sense of equity lacks any institutional support: sustainability will be achieved if we *first* change ourselves. This position conflicts with the condition that a theory of sustainability should not be reduced to a reliance on a hypothetical cultural change. The notion of usufruct appears therefore more promising. It is, indeed, but for reasons which are now in opposition with one of the purpose of the strategy of sustainable development, the avoidance of conflicts. The notion of usufruct rights is used to support the view that the state should act as the 'trustee for unborn generations' (Pigou 1952, 29). Yet it is questionable whether the state can act as the trustee for the future without engaging into more re-distrbutive policies in the present. That is, the principle used to justify the state's acting for the future may perhaps be invoked to call for greater social justice today. If this logical relationship holds, then the lack of social justice today would reveal our lack of concern for the future. So it would only be once it has addressed distribution issues that the state could then pretend to act as the trustee for future generations. This argument is developed in chapter 1.

Even if we grant that the state can act as the trustee for future generations, it will still have to justify the particular policies it takes in favor of future generations. More precisely, it will have to answer the question: how much should be left over to future generations? The question must be addressed both at the moral level, and at the practical level. But if the

practical question cannot be answered then the ethical question becomes meaningless, or at least just a matter of academic amusement. To answer the practical question is the purpose of the research agenda. This agenda, I argue in chapter 2, is very unrealistic. The definition of sustainable development as the maintenance of a stock of capital above a certain level is an attempt to define rules, and thereby make the pursuit of sustainability objective in the mechanical sense. However, the definition of these rules requires to evaluate comprehensively the natural environment in monetary terms. To do so would require a level of ecological knowledge beyond what can be reasonanbly expected from ecological sciences. The problem is not so much that there is uncertainty as such, but that because of this uncertainty the kind of consensus that may have existed for the adoption of one criterion of decision-making breaks down as soon as this criterion is applied in practice.

Another way to present these two arguments is by asking whether there exists a path between the existing form of politics and the kind of politics necessary for realizing sustainable development and, if there is, whether we can reach the new form of politics in time for preventing a major environmental crisis. In this perspective, the argument I put forward in chapter 2 and which has been summarized above, is that there is no such path towards expertocracy, or at least not one which would take us there in time. For if collective action is to be justified by science, then any action will require an amount of empirical evidence that cannot be gathered without testing the limits of sustainability. Rather than anchoring decision-making to expertise, that is to what is known, we would like it to respond to increasing ignorance. Democratic participation which would react against the inability of experts to manage sustainability could thus provide the political impetus. The alternative, then, is democratic self-limitation. Such a shift will be possible, however, only if it addresses a large range of issues, the distribution issue being on top of the list. This is the argument of chapter 1: the recognition of a need for greater political participation must imply that issues of intragenerational justice be given precedence over issues of intergenerational justice.

The quest for consensus and unanimity thus leads inexorably to inaction. Beckerman (1995) is right to point out that the concept of sustainable development seems to be stuck between a position which is 'morally repugnant' and one which makes the concept 'redundant' to that of development. We must therefore take a step backwards and look for another way to proceed beyond the debate of the 1970s. The sacralization of some specific environmental resources remains undoubtedly politically, if not morally, indefensible. On the other hand, to retain economic development as the social goal leads to the deadlock just described. So we must accept that the practical policy problem of sustainability cannot be reduced to the definition, and then pursuit, of a single goal. This excludes also the definition of pre-established rules that would define how the various goals of policy-making, for example economic and ecological

ones, would be related to one another. The alternative, then, is to envision self-limitation as the outcome of a particular *process* of decision-making designed to mediate between the various, incommensurable, social goals. In other words, we are looking for a procedural theory of sustainability. The emphasis is shifted from the outcome to the process of collective decision-making.

III. AN ALTERNATIVE PATH TOWARDS SUSTAINABILITY

The practical policy problem of sustainability, we may recall, is to find a balance in the way humans interact with their environment. The two extreme positions, the one which holds that nature is sacred, and the other which holds that nothing is sacred, are equally unsatisfactory. The consequentialist approach criticized in the preceding section tried to combine a scientific approach as to where to draw the boundary between the sacred and the non-sacred, while achieving political consensus on the need to respect this boundary. This approach, I have argued, fails inexorably. Hence the proposal to shift the emphasis from the outcome to the process of collective decision-making.

To come back to the initial problem of collective decision making under uncertainty, we treat now the disagreement over the relationship between means and ends as a conflict over ends, rather than using uncertainty as an opportunity to achieve consensus. Political conflict is therefore not to be avoided but rather encouraged, with the idea that in a proper institutional setting this conflict can be productive and advance society on a path towards sustainability. It might be argued, at this point, that through greater democratic participation people will agree *not* to achieve sustainability. Although this point is a logical possibility, at the empirical level we may argue that within modern societies there is a potential for political conflicts which, if allowed to take place, will raise concerns related to the issue of sustainability. We shall come back to this point further down. Meanwhile it is necessary to say a few words on the conception of politics that underly this approach.

The main difficulty identified previously in trying to achieve political consensus with respect to environmental issues is our lack of understanding of the functioning of ecological systems. In a first move uncertainty provides an opportunity to achieve consensus over the ends. Yet this consensus is at the price of increasing the burden put on both natural and social sciences. If it cannot be reasonably expected that these sciences will be able to respond to this demand, then it appears inevitable that scientific disagreement will eventually prop back at the political level. What we need thus is to conceive a theory of sustainability which would not have to rely on a complete theory of the functioning of the biosphere. If a politics of

sustainability cannot rely on "truths", it must rely on a "pratical reason". We must recognize that even if 'a question remains unanswerable by science or that it does not attain the status of a truth does not mean that a reasonable opinion cannot be formed about it or that it cannot be an opportunity for rational choice' (Mouffe 1993, 14). Thus the politics of sustainability must be a region where 'the reasonable prevails over the demonstrable' (ibid, 14).The political sphere should not therefore be seen as a sphere of truth, but rather as the realm of opinion which has its own criteria of validity and legitimacy.

The view that only consensus could provide legitimacy is closely tied to the liberal unitary conception of the self. If we start from a conception of the self as multiple rather than as one, and imagine that some of the conflicts present within each individual can be mirrored by conflicts at the political level, then we are led to a concept of legitimacy, not based on unanimous agreement over the outcome or the goal, but on participation in the process of decision-making itself (Manin 1987). We may support such a conception of the self on psychological ground. We may also see it as a consequence of the existence of uncertainty. In situations of radical uncertainty, we argued, people will disagree on the relationship between means and ends. But there is no reason that the individual herself should not be subject to doubts as to what to beleive. Although I may defend a certain position in a debate, I may recognize that, because of the level of uncertainty involved, I cannot present any conclusive argument in support of this position. And this may imply that my own thinking about the issue is not definitively finalized. So just as uncertainty created the possibility for consensus by imagining a world in which people's views would be harmonized, it also opens the possibility that people's views will be altered through discussion.

Let us emphasize that the goal of such a politics is not to design a blueprint towards sustainability. Rather, it tries to bring together different life experiences and social possibilities into a coherent framework, and from there imagine new institutional arrangements which could give them resonance. To put it differently: we do not imagine from scratch how the world could be, but rather emphasize that the world *is* much more diverse than what our theories can account for, so that by adopting different standpoints we can imagine and then choose from a number of possible paths of social transformation.

People's behaviors and the process of decision-making

As already mentioned, a critique of the idea of radical democratization as a path towards sustainability may consist in arguing that individuals will decide unanimously not to address environmental issues. I argue here that, at least with respect to the two main forms of

behavior which determine the level of human activity, namely consumption and reproduction, there is a potential for political conflict.

In chapter 3 Tariq Banuri and I analyze the debate on population in this perspective. We argue that this debate can be organized in two main discourses. The first one stresses the institutional structure of society as the main determinant of fertility rates. It suggests that there exists a consensus among all the parties involved - men and women in the South who have many children, policy-makers, and environmentalists. So population growth would not reveal a conflict between divergent goals in society, but simply a lack of development. The solution: more development. But there is another discourse, equally supported by empirical evidence. This discourse emphasizes the existence of a conflict in society, between people for whom it is rational to have many children and those who want, for one reason or another, to curb population growth. The solution advocated is greater political participation, in order to bridge the gap between individual interests and national priorities.

Although I do not do so in the frame of this work, a similar argument could also be made with respect to consumption, although the argument is somewhat the reverse. The view held by economists that consumption would simply reveal people's preferences has come under serious criticisms by a number of social scientists. Among alternative theories is the theory of conspicuous consumption - the "keeping up with the Jones" hypothesis - which holds that people consume, not to fulfill innate preferences, but to express a certain social standing, the manipulationist theory according to which people's preferences would be created by advertisement, and the adaptive theory according to which people would adjust their preferences to their social and economic environment. All these theories as well as others not mentioned here, criticize the view that people have infinite wants and fixed preferences.[7] A fundamental piece of evidence in support of these views are the results of a number of studies questioning the connection between consumption and happiness as assumed by neo-classical economists. For example, Easterlin (1973) has showed that, if happiness is positively correlated with the level of income in a country at a specific time, the correlation breaks down in intercountries comparisons as well as comparisons between different points in time. Thus, if on average rich Americans are happier than poor Americans, it is not the case that on average Americans are happier today then they were forty years ago, nor that they are happier than, say, Nigerians.

So in support of the approach to sustainability outlined here, we can find empirical evidence that the sphere of politics can be broadened beyond what suggested by economists

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[7] For a good summary and discussion of these different theories, see Campbell (1987, chap 2). For the conspicuous consumption thesis, see Veblen(1899), Frank (1985); for the manipulationist thesis, see Galbraith (1958); for the adaptative theory, see Duesenberry (1944), Schor (1992).

among others without necessarily leading to coercive rule. Let us note, in passing, that doing so will re-establish a certain symetry between the consumption and population factors. From an ecological point of view, the population and consumption factors play a completely symmetrical role. A sustainable society could either be characterized by a large population with relatively low levels of consumption per capita, or by a smaller population enjoying higher levels of consumption per person. Yet, in actual debates as well as in the literature on sustainability, the consumption and population factors have received very different attention. One possible reason for that, besides the obvious fact that the North has a greater capacity to set the international agenda and can therefore divert the attention away from consumption and onto population, is the strongly held belief that population growth reflects non-modern and thus undesirable and undesired forms of behavior, while consumption would reflect people's real preferences. In both cases politics is excluded. With respect to population because it is believed that experts, by bringing about development, will also solve the population issue. And with respect to consumption because there is nothing to discuss. Yet, by enlarging the scope of politics, we may reduce our dependence upon expertise in addressing population issues, and open possibilities to reduce consumption levels among the economically rich.

A procedural theory of sustainability

A procedural theory of sustainability, alternative to that of sustainable development, would be developed around the basic idea of deliberative democracy. Although in the frame of this work, I have not been able to proceed in this third stage of the argument, let me present some general themes. I first lay down the procedural theory of sustainability as constituted by its three elements, then discuss briefly each element in turn, and conclude by confronting it with the features of publicness and ignorance.

A procedural theory of sustainability would be composed of the following elements:

- a definition of sustainability in terms of the responsiveness of society (i.e. institutional structure and individual behvior) to environmental changes.

- a vision of politics according to which political deliberation serves as the forum for the interaction of 'conflicting certainties', and through which these certainties would be shaped thereby bearing on people's behaviors. The process of decision-making is characterized by democratic participation.

- the function of science is no more to bring about consensus by claiming objectivity, but to strengthen political deliberation by feeding the discussion with all sorts of alternatives: alternative technologies, alternative institutional setting, alternative economic policies and so

on. This is not to say that anything goes: the different positions defended in public fora will need to be justified and science will retain its function of critic.

In order to open a space for politics, it is necessary to adopt a definition of sustainability free from any determinism, whether ecological, economic or political. Rather than focusing on the need to *integrate* economic and ecological considerations, we now focus on the ability to enlarge the scope of politics so that each consideration can be played out against one another. The emphasis is not on the outcome, but on the capacity of society to *listen* to environmental changes and be influenced by them. Sustainability is now characterized by the level of responsiveness and of adaptability of the institutional structure of society. It is in this sense that we may call this theory procedural. The criteria of sustainability do not refer to specific things, like a stock of capital, but to processess of interaction between human society and its natural environment. The concept of co-evolution between the economic and the ecological systems, put forward by Norgaard (1984, 1985), replaces both the goal of conservation and the goal of management. It differs from them by abandoning a hierarchical relationship between the two spheres: human society is not to be subordinated to ecological principles, but neither can it pretend to subordinate the biosphere to its own goals.

Second, the procedural theory of sustainability rests on increasing democratic political engagement. It is not sufficient, however, to argue that the scope of politics should, or even could be enlarged. The educational effect of politics, the one to which we have pointed to above in relation to the formation of people's motivations, can only be a by-product of the process of decision-making (Elster 1986). That is, it is not sufficient to discuss in a public forum our ways of life, whether in terms of consumption or of reproduction, and hope that the results of this discussion will actually bear on our private behaviors. Indeed, as Dasgupta and Mäler put it, '[p]eriodic 'affirmative action' on the environment is not the right way of going about things' (1994: 320). The alternative approach must consist, rather, in raising a number of institutional questions related to the issue of sustainability, which, as they are discussed in a public forum, have the capacity to bear on people's motivations. At its core is therefore a dialectical conception of the relation between people's preferences and institutions based on political deliberation. We can avoid, thereby, the necessitarian twist of contemporary economics which led to the deadlock described in the first part of the argument, as well as reliance on empty calls for more responsible behaviors.

This takes us to the third and last element of the theory, namely the function of science or equivalently the role of experts in society, as well as some specific research agendas that should be pursued. The relationship between experts and the process of decision-making I have already discussed: science is to strengthen the political debate rather then merely to describe the conditions within which decisions are to be made. Disagreements among experts is

therefore not to be seen as a hindrance to action, but on the opposite as opening new opportunities for political actions. To this alternative social function of science, and in particular social sciences, corresponds a different methodology as well as opportunities for new research agendas. The purpose of this alternative methodology is to put social sciences at the service of democratic deliberation. It is therefore relevant for a wide range of social issues, among which sustainability is a particular one. I want to discuss here briefly what this methodology could be for the field of economics, as well as one possible research agenda relevant with regard to sustainability. Needless to say that the description of this alternative methodology would require a more thorough discussion. But the real work would only start then: it would consist in using this methodology for addressing environmental issues.

Economists define their social function as finding laws to which a market economy or even any social organization would be subject, and provide this information to policy-makers so that they may make enlightened decisions. This corresponds to the project of positive economics, as stated in turn by John-Stuart Mill, Nassau Senior, John-Neville Keynes and Milton Friedman. Policy-makers may use this economic knowledge for two purposes: to gauge the compatibility of the various goals they may choose to pursue; or to select the appropriate instruments to attain the goals set. When they write about methodology positive economists have usually in mind the latter purpose and yet, quite obviously, the former purpose is at least as important since it affects directly the choice of objectives. To focus on the first purpose would, I contend, generate an alternative methodological approach at the service of democracy.

Let me illustrate the distinction between the two purposes and the two methodologies attached to them with the help of a simple and classic example: the problem of involuntary unemployment. Neo-classical economists would generally argue that unemployment is the result of excessive state intervention in the labor market, for example in the form of minimum wage legislation. The solution advocated to reduce unemployment is therefore to liberate further the labor market. This solution follows directly from the theoretical construct of general equilibrium analysis: under certain assumptions, markets are efficient (i.e. no unemployment). So if there is unemployment, the solution entailed by the theory is to change the world as to make it meet the conditions of the theory.

Suppose now that minimum wage legislation is considered as a goal in itself which expresses certain social values. For instance, that every person who works has the right to a certain level of income. In this case, the government may want to pursue two goals at the same time: preserve minimum wage legislation on the one hand and reduce the level of unemployment on the other hand. Note in passing that this is more or less the situation as we find it today in many West European countries. Economic theory would say that the two goals are inconsistent with one another, and that the government should make a tradeoff between

them. The point is that this conflict is presented as inherent to a modern society rather than as stemming from a particular institutional setting. It is by emphasizing this necessitarian view, rather then by investigating the link between the institutional setting and the functioning of the economy that economic theory stands in opposition to politics (Unger 1987). Yet the assertion that the two goals are inconsistent with one another is simply false. The assertion only reflects the methodological bias of present economic theory. But economic theory cannot assert that there is no institutional way to reconcile a minimum wage legislation with full employment for the very reason that it does not address the issue. The effect of the minimum wage is indeed considered as if it was the only distortion in the economy. So the possibility that a new distortion could have the effect of reducing unemployment while preserving the minimum wage legislation is never considered. Interestingly enough, that such possibilities exist is itself a result of economic theory, known as the theory of the second-best: 'if some parts of the economy are misbehaving in the sense that they are not fulfilling the conditions [necessary for Pareto optimality], there is no reason to believe that welfare would be greater if other parts of the economy were to be convinced (or forced) to fulfill these conditions'.[8] From there we may make the following remarks: if the possibility of distortions is infinite, that is, if there are an infinite number of ways of institutionalizing a market economy, then there is also an infinite number of alternatives to any policy issue. By investigating these various possibilities, economists would then strengthen the political debate.[9] To put it differently, the social role of economists would be to liberate again and again politics from the prison of the market, to refer to Lindblom's metaphor (Lindblom 1982).

So much for the methodology. Let me illustrate its import with respect to one central issue related to environmental problems, the multiple function played by economic growth in society. Economic growth plays at least three roles. First, it fulfills our modern cultural inclination for material progress. Second, it may be helpful in stabilizing market economies. And third, it plays the important political function of attenuating conflicts over distribution. In the face of these three possible functions, a positive economist may investigate the validity of the second statement. It is indeed a matter of economic debate whether or not economic growth is a necessary element for macroeconomic stability. But this alone cannot foster a political debate. A political debate is only possible if it can be shown that, under certain institutional arrangements, stability would be possible without growth. This is not a question that a positive economist can ask for it is a matter of speculation rather then of positive inquiry. I have

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[8] Mansfield (1982, 462). The theoery was developed by Lipsey and Lancaster (1956-57).

[9] I am much indebted here to Roberto M. Unger for the view that a market economy can be organized in many different ways, thereby opening new domains for politics. See notably Unger (1987).

already suggested that the first point may not be unsurmountable, or at least that it can be a subject of political deliberation. This potential will be brought to bear on political discourse only once possible paths of transformation are envisioned. But then the very issue of distribution will also take a different light. For it will not be considered in the perspective that everyone wants more, but in the perspective of reducing our level of consumption.

In conclusion, we may note that the three elements of the procedural theory of sustainability just discussed form a consistent whole. The definition in terms of flexibility is compatible with a politics of sustainability based on political participation, and with a research agenda geared at providing alternatives. The politics and the research agenda are made compatible by the methodology used, committed to feeding political deliberation rather than to replacing it. Of course, this consistency is necessary but not sufficient to defend the theory. Let us recall that the theory of sustainability related to sustainable development could also claim such consistency.

The second test of the theory, besides internal consistency, is to look at how well it fares when confronted to the two features of publicness and ignorance. The procedural theory is, by construction, free from the conflict between the feature of publicness and the need for political consensus that characterized and undermined the strategy of sustainable development. High-level political participation accounts for the feature of publicness, and at the same time liberates politics from the requirement of consensus. The feature of publicness is therefore taken into account. The feature of ignorance raises a more serious difficulty. We may note, first, that the demand for ecological knowledge in the procedural theory is reduced in comparison to what it was in the other theory, for the simple reason that the criterion used to define sustainability is the possibility to respond to the actual state of knowledge, rather than the possibility to measure the value of natural resources. So the response is not dependent upon the realization of an ideal level of knowledge, but will emanate from the process of political deliberation in which individuals will interpret each new piece of information in different ways. To put it differently, the responsiveness of collective decision relies on the diversity and incommensurability of individually held values, and not on our capacity to assess these values according to a single benchmark. So the procedural theory also seems to fare better than the sustainable development theory with regard to the feature of ignorance. We may wonder, however, whether the procedural theory is a theory of sustainability at all since it does not explicitly take into account the consequences of our actions, either on the natural environment or for future generations. But the very formulation of this question betrays a nostalgia for control. Indeed, if we accept the feature of ignorance, we must abandon the illusion that we could justify

certain actions on the ground that they lead to consequences which are compatible with sustainability.

REFERENCES

Arndt, H. W. (1978) *The Rise and Fall of Economic Growth: A Study in Contemporary Thought*, Chicago: The University of Chicago Press.

Beck, U. (1995) trans. by M. A. Ritter*Ecological Enlightment*, New Jersey: Humanities Press.

Beckerman, Wilfred E. (1972) 'Economists, Scientists, and Environmental Catastrophe', *Oxford Economic Papers* 24: 327-44.

Beckerman, Wilfred (1974) *Two Cheers for the Affluent Society*, New York: Saint Martin's Press.

Beckerman, Wilfred (1995) *Small is Stupid: Blowing the Whistle on the Greens*. London: Duckworth.

Berry, Wendell (1987) *Home Economics*, San Francisco: North Point Press.

Campbell, C. (1987) *The Romantic Ethic and the Spirit of Modern Consumerism*, Cambridge, MA.: Basil Blackwell.

Costanza, R. (1991) *Ecological Economics: the Science and Management of Sustainability*, New York: Columbia University Press.

Dasgupta, Partha and Karl-Göran Mäler (1994) 'The environment: the environment and emerging development issues', in R. Layard and S. Glaister (eds.) *Cost-Benefit Analysis*. New York: Cambridge University Press.

Douglas, Mary and Aaron Wildavsky (1982) *Risk and Culture*, Berkeley: University of California Press.

Duesenberry, J. (1949) *Income, Saving, and the Theory of Consumer Behavior*, Cambridge, Mass.: Harvard University Press.

Elster, Jon (1986) 'The market and the forum: three varieties of political theory', in Elster and Hylland (eds.) *Foundations of Social Choice Theory*, Cambridge: Cambridge University Press.

Elliot, Robert (1995) *Environmental Ethics*, Oxford: Oxford University Press.

Frank, Robert (1985) *Choosing the Right Pond: Human Behavior and the Quest for Status*, New York: Oxford University Press.

Galbraith, J. K. (1958) *The Affluent Society*, Boston: Houghton Mifflin.

Giddens, A. (1990) *The Consequences of Modernity*, Stanford: Stanford University Press.

Gottlieb, R. (1993) *Forcing the Spring: The Transformation of the American Environment Movement*, Washington: Island Press.

Gorz, André (1993) 'Political ecology: expertocracy versus self-limitation', *New Left Review* 202.

Hirsch, F. (1976) *Social Limits to Growth*.'Cambridge, Mass.: Harvard Univesity Press.

Jonas, Hans (1984) *The Imperative of Responsibility: In Search for an Ethics for the Technological Age*. Chicago: University of Chicago Press.

Keynes, J.M. (1930) "Economic Possibilities for Our Grand-Children" in *Essays in Persuasion*, New York: Norton & Company.

Knight (1922) *Risk, Uncertainty and Profit*, Chicago: Chicago University Press.

Lecomber (1975) *Economic Growth Versus the Environment*, New York: Wiley.

Lindblom, Charles (1982) 'The market as prison', *The Journal of Politics* 44: 324-336.

Lipsey and Lancaster (1956-57) *Review of Economic Studies* 24 (63): 11-32.

Manin, Bernard (1987) 'On legitimacy and political deliberation', *Political Theory*, 15: 338-368.

Mansfield, Edwin (1982) *Microeconomics: Theory and Application*, 4th edition. New York: Norton.
Meadows, D. H. et al. (1972) *Limits to Growth*, New York: Universe Books.
Mishan, E. J. (1967) *The Costs of Economic Growth*, New York: Praeger.
Mouffe, Chantal (1993) *The Return of the Political*, London: Verso.
Norgaard, Richard B. (1984) 'Coevolutionary agricultural development', *Economic Development and Cultural Change* 32 (3): 525-546
Norgaard, Richard B. (1985) 'Environmental economics: an evolutionary critique and a plea for pluralism', *Journal of Environmental Economics and Management* 12: 382-394.
Pearce, D. W. and J. J. Warford (1993) *World Without End: Economics, Environment, and Sustainable Development*, New York: Oxford University Press, for the World Bank.
Pigou, A. C. (1952) *The Economics of Welfare*. 4th ed. London: MacMillan.
Reddy, Sanjay (1995) 'Claims to expert knowledge and the subversion of democracy: the triumph of risk over uncertainty', Harvard University, mimeo.
Sachs, Wolfgang (1992) 'Global ecology and the shadow of "development"', in Sachs (ed.) *Global Ecology: A New Arena of Political Conflict*, London: Zed Books.
Schor, Juliet (1992) *The Overworked American*, New York: Basic Books.
Schwartz, Michiel and Michael Thompson (1990) *Divided We Stand: Redefining Politics, Technology and Social Choice*, New York: Harvester Wheatsheaf.
Simon, Julian L. (1980) 'Resources, Population, Environment: an over-supply of false bad news', *Science* 208: 1431-37.
Solow, Robert (1974) 'The economics of resources and the resources of economics', *American Economic Review*, 64 (2): 1-14.
Toulmin, Stephen (1990) *Cosmopolis: The Hidden Agenda of Modernity*, Chicago: The University of Chicago Press.
Unger, Roberto M. (1987) *Social Theory: its Situation and its Task*, Cambridge: Cambridge University Press.
Veblen, Thornstein (1899) *The Theory of the Leisure Class*: New York: Mac Millan.
World Bank (1992) *World Development Report 1992*. New York: Oxford University Press.
World Commission on Environment and Development (1987) *Our Common Future*, New York: Oxford University Press.
Ziman, J. M. (1968) *Public Knowledge: An Essay Concerning the Social Dimension of Science*, Camridge: Cambridge University Press.

1

Individual Rights and Environmental Changes

If the earth must lose that great portion of its pleasantness which it owes to things that the unlimited increase of wealth and population would extirpate from it...I sincerely hope, for the sake of posterity, that they will be content to be stationary, long before necessity compels them to be.

John Stuart Mill, Principles of Political Economy

The issue of sustainability comprises two elements. First is the recognition that there are a number of serious environmental problems which, if not dealt with, might jeopardize people's well-being or undermine some of their rights. Second is a moral imperative that we should deal with these issues, notably for considerations of intergenerational justice: 'In an important sense, sustainability is merely justice with respect to future generations' (Costanza 1991, 8). The translation of this imperative in specific policy recommendations depends of course upon what theory of justice is considered.

The literature on intergenerational justice starts with a particular conception of justice and investigates whether it can be extended to comprise future generations, or whether indeed we have any specific obligation or responsibility with respect to the future.[1] Although this literature often refers to the existence of environmental issues, its treatment of the question of

[1] On integergenerational justice see Barry and Sikora (1978) and Partridge (1981). On more general approaches to environmental ethics, see Elliot (1995), Regan (1984).

intergenerational justice is largely independent from any conception of the relationship between society and its natural environment. Furthermore, it sets the problem as a conflict between "us" who live today and "them" who will live tomorrow, without any reference to the conflicts present within each generation. Put differently, it separates the issue of intergenerational justice from the issue of intragenerational justice, although the same principles may be used to address both. Another characteristic of this literature is that its approach is largely consequentialist, centering on the question as to what we may or may not owe to the future, without considering the morality of the actions independently of their effects. Finally, the question is mainly considered as an academic one and does not address the political feasibility of caring for future generations indeed. Our moral commitment, or lack thereof, is to be realized through the state, charged to act as the trustee for future generations if we so desire.

The purpose of this paper is to present and discuss an alternative approach to sustainability. Rather then extending some given principle of justice to take into account the effect of environmental changes, I investigate how environmental changes affect the *circumstances* or material conditions in which those principles apply. This approach will enable us to shed some light on what stands today as the main strategy towards sustainability, viz. sustainable development.

The paper is divided in two parts. In the first part, I investigate the political consequences of environmental changes from a libertarian perspective. In order to deal with environmental issues, the role of the state must be expanded beyond that of the minimal state. But would the extended state not have then the legitimacy to undertake distributive policies? A tradition of thought, which finds its roots in Locke's theory of appropriation and which I call "inclusive libertarianism", finds a way out of the dilemma by making an assumption of relative abundance. Inclusive libertarianism is discussed in the second part of the paper. Sustainable development, I then argue, is best understood in this perspective. At the same time, its shortcomings become more obvious.

I. THE POLITICAL CONSEQUENCES OF ENVIRONMENTAL CHANGES

In this first part, I lay down the particular circumstances of a liberal politics of sustainability created by environmental changes. In order to address environmental issues, a level of pollution or of resource use, henceforth an environmental norm, must be chosen. My focus is on the process that leads to this choice. This process is constrained by three considerations: due to the particular environmental issues considered, the choice cannot be made in direct reference to people's rights; second, the compatibility between the choice and the existing

structure of rights must be assessed; finally, the process must itself be compatible with sustainability. The first and the second consideration lead to the following dilemma: either we endorse the libertarian minimal state, where priority is assigned to the existing pattern of rights, that is to the second condition, and then environmental problems cannot legitimately be addressed by the state; or we enlarge the role of the state in society with respect to its power to choose an environmental norm, in which case addressing distributive issues stand as a pre-condition to addressing environmental issues due to the infringements of new rights with the existing pattern of rights. Proponents of sustainable development try to find a way out of this dilemma by referring back to a tradition of thought I define as "inclusive libertarianism". The prospects of this attempt will be discussed in the second part of the paper.

1. The incomplete definition of rights

From a liberal point of view, the problem raised by the existence of externalities -- defined as activities with effects which are not taken into account in the process of decision-making -- stems from the fact that they impinge on people's rights (whereas for utilitarians it is a question of efficiency). Whatever the property rights are, they are never defined precisely and completely enough as to fully protect one's rights against other people's actions. To take an example, consider a case of deforestation in the uplands and suppose that it inflicts damages on the lowlands because there is an increase in flooding. These damages infringe on people's rights; but deforestation also proceeds from the exercise of one's rights of property. Thus there is a parallel between the economists' usual focus on efficiency, and the liberals' focus on rights. A complete assignment of property rights matters to the former because it supposedly leads to a (Pareto) efficient allocation of resources, while it matters to the latter to the extent that it guarantees respect for these rights.

This last point must be emphasized further. According to libertarians, for example, the moral imperative of sustainability cannot take precedence over respect for people's rights. Libertarianism proposes to defend, first and foremost, what Isaiah Berlin (1969) has called 'negative freedom': freedom from others, and notably from the group. With environmental changes, however, the state is no more the sole, nor even the main, source of harm from which the individual needs to be protected. The group, that is the sum of individual actions, becomes harmful, not through the state, but through the biosphere[2]. A person who loses her land

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[2] Two remarks: first, the biosphere is not the only sphere, besides the state, to provide an arena of coercion. Many authors see the market as such a sphere. But such an identification depends upon the economic theory considered to account for the functioning of the market (see Berlin 1969, 123). Second, the fact that the coercion is unintended does not make its existence less real (Berlin 1969, 123).

because of floods triggered by deforestation is deprived of her property as surely as if the government had taken it away abusively. There is nothing new of course in the fact that humans are at the mercy of natural disasters. What is novel and morally significant is that the whims of Nature are now, to some extent, the result of human actions. So the biosphere provides an arena through which the group can oppress the individual, just like the state does according to libertarians. The German sociologist Ulrich Beck puts the point sharply: 'After all, the ecological issue, considered politically and sociologically, focuses at heart on a *systematic, legalized violation of fundamental civil rights* - the citizen's right to life and freedom from bodily harm' (Beck 1995, 8).

In some cases environmental problems can be addressed by adjudicating between the rights of the persons living in the uplands and the rights of the persons living in the lowlands. This kind of adjudication can be done by relying on the existing body of law.[3] Or it can be done through direct bargaining between the parties involved, in which case the state just enforces the agreement reached (Coase 1960).

In general however, environmental changes do not involve two clearly identifiable parties but are rather of a public character, and this renders a recourse to the language of rights more problematic. Many environmental changes combine publicness in the production and distribution of the external effect. In production it means that the cause of the environmental change, say air pollution, is not one individual's behavior but the accumulation of a great number of individual actions. In distribution it means that many individuals are affected. It is publicness in production which makes it difficult to use the language of rights to protect people from environmental changes (Kernohan 1995). The problem is the following. Any assignment of right must specify the duties owed by other parties to the right holder. Thus if I have a right over this property, this means that you have a duty not to use this property without my prior consent. The fact the environmental problem is public in production implies that the marginal contribution of any one contributor is negligible. So a change in any one's behavior alone will not affect the outcome. In the upland/lowland example, the increase in flooding will be caused by the accumulated effect of deforestation, while the marginal effect of cutting down one more tree will be negligible. In these conditions it is hard to conceive how any one landowner in the uplands could owe a duty to those living in the lowlands. For the assignment of this duty supposes that fulfilling it will have a positive effect for the right holder. Yet this is not the case since the marginal contribution of any one individual is negligible.[4]

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[3] See, for instance, Wanda (1991) for some interesting as well as amusing cases of disputes between neighbors.

[4] For a more thorough discussion see Kernohan (1995).

This does not imply that the state cannot address such environmental issues. The point is that doing so cannot be justified in the language of rights. So for example even if the state had recourse to tradeable permits in order to implement environmental policies, thereby relying on a system of property rights, it will first have to literally create the thing over which the right is to be claimed by setting a norm for total resource use.[5] The size of the pie is not determined by physical conditions to which society is subject; it is determined by a collective decision. How much CO2 can society emit ? The enclosure movement that takes place is first between human activities and the biosphere, then between present and future generations, between countries, and only ultimately, perhaps, between individuals. This solution was notably advocated by Agarwal and Narain (1991) for the emission of CO2, and Lipietz (1992) could thus interpret the UNCED process as a vast enclosure movement. Boulding's proposal to create transferable birth licenses as a way to control population growth can be seen as the ultimate step in this direction.[6]

2. Three constraints on addressing accumulative environmental issues

In order to address environmental changes in a liberal perspective, it is therefore necessary to view the definition of rights as a continuous process rather than as a once and for all event like in the classical two-stage liberal framework.[7] The process by which an environmental norm is defined is subject to three constraints:

- the environmental norm cannot be justified in the language of individual rights,
- the compatibility between the principle of justification used in setting the norm and the distribution of existing rights must be assessed.
- the process of doing so must be compatible with sustainability,

Let us discuss these three constraints in turn.

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[5] Rights to emit units of pollution can be auctionned off or attributed to individuals, countries or social groups. See Kneese and Schultze (1975) and Daly (1993a, 1993b).

[6] Boulding (1964). The idea is to entitle each individual with the right to one birth. A couple would therefore have right to two children. These rights will be transferable, meaning that they can be exchanged in the market, thereby supposedly leading to an optimal allocation of children in the different families. For a defense of the proposal from an economic perspective, see Daly (1993b).

[7] The first stage is that of the social contract in which an initial distribution of rights is defined. On the basis of this distribution, and under the protection of the 'protective state', post-constitutional transactions and contracts take place. See Buchanan (1975). Note that this project, to view the definition of rights as a continuous process, provides a definition of politics. Gorz (1993) writes:'the political is defined at the outset by its bipolar structure: it should be, and cannot be anything other than, an endlessly redrafted public mediation between the rights of the individual, rooted in his autonomy, and the interests of the whole society which accomodates and conditions those rights'.

The definition of an environmental norm raises a specific problem of legitimacy. There will be necessarily infringement on what individuals may consider their moral rights. Reproductive rights, for example, have been asserted in response to increasingly aggressive state policies which, in their attempt to reduce population growth, were in fact affecting what individuals consider as their right to procreate as they desire. Similarly, the imposition of a tax on the emission of CO2 might be considered as an infringement of rights, although again there is no explicit recognition that each individual is free to emit as much CO2 as she pleases.

The second constraint is that if the definition of an environmental norm is to be done in a politically legitimate way, it has to be investigated whether this can be done without affecting the existing distribution of rights. For the principles to be invoked to justify the environmental norm might well be invoked to undermine the legitimacy of *existing* rights. The matter can be put differently: can cooperation between individuals take place in a piecemeal fashion, the conditions of cooperation being set anew each time a new collective problem arises? Or can such cooperation only arise within a society considered, say, as a fair system of cooperation in Rawls's sense (Rawls 1993)? The former corresponds to the libertarian view, and the basic intuition as to why it might be insufficient is well captured in the following passage written by a leading environmental economist:

> So, perhaps *the* fundamental theoretical and policy issue in the domain of externalities is how to reconcile these seeming contradictions between the idea - in both theory and popular wisdom - of extreme atomization and the abundance of opportunities thus created for the rise of externalities, and the need to address those externalities with collective action (the state). (Bromley 1991, 61)

That the process of defining an environmental norm should be compatible with the purpose of setting the norm (third constraint) seems obvious enough. Yet, in some instances, the assignment of rights has been done in a way which has led to the plundering of the resources that were to be protected. For example, under the allegation of a higher national interest, many national parks have been established in Southern countries under the sole authority of the state and sometimes against the will of local populations (Ghimire 1991). In some cases, the result has been outright conflicts between local communities and the state, at times leading to the voluntary degradation of the resources that were to be protected : 'despite having an ancient tradition of respect for forests, including the preservation of sacred grove for religious ceremonies, the Ho [state of Bihar, India] have turned to forest clearance as a means of asserting their rights to use the lands which forestry law denies them' (Colchester 1991).

3. The dilemma: how much power for the state?

What is the status of those resources which are not yet appropriated, and over which an environmental norm is to be imposed? The answer to this question will depend upon the theory of appropriation to which we appeal in order to justify the existing pattern of rights. As for all social contract theories, the creation of new rights is described by reference to an original position, a state of nature. Within the liberal tradition, two different ways of characterizing the original situation can be identified: either resources belong to all persons in common, either they do not belong to any one. The first situation may be referred to as a situation of guardianship, the second one as a situation of repository. The creation of new rights or the setting of a norm characterizes then a shift from an original situation of repository or guardianship to a situation of ownership (whether private or collective).[8]

The choice between these two original situations will determine the nature of property rights, as well as the role of the state in society. Libertarianism can be seen as adopting, at least implicitly, the stance of repository, while Rawls (1971, 1993) describes the original position in his theory of justice as a situation of guardianship.[9] Either choice is somewhat problematic for the proponents of sustainable development. The stance of guardianship, at least to the extent that it leads to Rawls's theory of justice as fairness, because it would mean that addressing distribution issues is a prerequisite to addressing environmental ones. And the stance of repository because, as I shall show presently, it seems to deny enough power to the state as to justify its creating new objects of rights.

If the stance of repository is adopted, there is no legitimate way to address environmental issues which would require the setting of a norm to be solved. The minimal state that emerges from this interpretation cannot be considered as the trustee for future generations. It merely protects legal individual rights, and provides a forum through which individuals come in agreement to provide public goods.[10] The state is viewed as having a purely instrumental role, just like any other (private) association. What it lacks, is the power to claim a right over newly defined objects of rights.

To see this, let us note the difference between a rule of behavior and a price incentive scheme as alternative solutions to an environmental problem. To illustrate the point, consider the two following schemes to regulate the emission of CO2. One is to ban the use of cars in cities.

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[8] I borrowed the distinction between ownership, guardianship and repository from Sandel (1982: 96).

[9] By libertarianism I refer to those liberal theories which hold that only a minimum state is justifiable. For example Nozick 1974, Buchanan 1975, Friedman 1963.

[10] See Buchanan (1975), specially pp. 91-106.

Another is to attribute to each individual a yearly ration of CO2 emissions. It could consist in a sort of credit card which would be debited each time the holder, say, buys gas or travels by plane by the equivalent amount of CO2 emitted. In addition, these rations would be tradable. For the sake of the example, we can suppose that both solutions lead to the same level of total emissions of CO2.

The first solution requires a contract between all individuals through which they agree to restrict voluntarily their behavior (they cannot drive in cities) under the condition that everybody does the same. Each person decides to exclude herself from the right to consume a certain good. Traffic regulations are typically of this kind. The only requirement is an enforcing agency.

The second solution is quite different. It is not based on self-exclusion from the right to consume a certain good; it is based on appropriation, which means the exclusion of others to consume the good. Since we are dealing here with non-exclusive goods, this exclusion is not embedded in the good itself. Rather it is embedded in the monopolization, by the state, of the right to issue the cards giving right to CO2 emissions.[11] The possibility for the individual to appropriate and trade rights to emit CO2 is dependent upon the initial capacity of the state to claim the monopoly over the right to emit CO2. Thus the degree of freedom gained at the individual level is at the cost of accepting a larger state than necessary for realizing the first solution. In the first solution, people recognize that they cannot emit as much CO2 as they would like to. In the second solution, they assert that society, as a whole, *has the right* to emit a certain amount of CO2, and this supposes a different theory of the state.[12] I contend that only the first scheme is compatible with libertarianism, but whether this will be sufficient to achieve sustainability depends upon the possibility of achieving unanimous agreement over this goal.

So, to come back to the general line of the argument, we are left with the following dilemma: either adopt the stance of repository and there is no way to address environmental

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[11] There is of course a strong analogy with the state's monopoly to violence.

[12] The incompatibility between relying on a market solution to solve a case of market failure and the sort of political structure it requires has been noted in other instances. A particularly interesting one relates to the regulation of utilities like gas, electricity or water. The general argument in defense of regulating commissions for these services, as they exist in the United States, is the existence of natural monopolies. Building on the seminal works of Stigler and Friedland (1962) and Demsetz (1968), a large litterature has mounted a general attack against these commissions with some significant influence on policy makers. As a more efficient way to regulate these monopolies, Demsetz proposed to auction off the right to provide the different services, say gas or electricity, to competing firms. The solution thus consists in finding an indirect market mechanism to solve a case of market failure. But, as pointed out by Priest (1993), this solution supposes that the municipalities or states in charge of the regulation have much more power than what they needed to regulate through a commission. First, the governmental entity must possess the exclusive authority to grant or deny a company to provide the service, and second, it must own the infrastructures (e.g. power plants) and only bid away their management (Priest 1993: 304). But, as Priest argues, these conditions were not met at the time the commissions were set.

issues; or adopt the stance of guardianship and accept that policies towards sustainability, that is the protection of people's rights against environmental degradation must begin by considerations of distribution.

Now at this point we may simply embrace the second horn of the dilemma, and join those writers who contend that a politics of sustainability must be a politics of radical democratization.[13] My intention here is not to discuss this alternative, but to examine critically a path presented as another possible way out of this dilemma, one which refers back to a long tradition of liberal thought and which is implicitly, and at times somewhat surprisingly, adopted by proponents of sustainable development. This tradition I call "inclusive libertarianism".

II. INCLUSIVE LIBERTARIANISM

The dilemma identified above under circumstances of environmental changes can be related to a the more general question as to how to manage the dialectical relationship between the individual and society. More precisely, how to manage the effects of society as a whole, understood as the compound (wanted or unwanted) effects of individual actions, on the individuals. The reduction of the state to the instrumental role of enhancing the individuals' personal projects has traditionally been defended to protect the individual from *intentional* coercion by the group. Yet coercion may well stem from the spontaneous, and thus unintentional, order generated by de-centralized individual actions. Rawls's idea of society as a fair system of cooperation is an attempt at striking an equilibrium between the different institutions of society, what he calls the basic structure, as to prevent both intentional coercion through the state, and unfair outcome generated unintentionally by people's behaviors in the market sphere (Rawls 1993).

I want to explore here another solution to this problem which inscribes itself in the liberal tradition, and which would characterize a branch of thought I tentatively call "inclusive libertarianism". Inclusive libertarianism can be defined by the following general proposition: individual rights (including property rights) cannot be transgressed, except in certain circumstances which would never occur under a system of perfect liberty. The qualifier "inclusive" distinguishes inclusive libertarianism from other forms of libertarianism by recognizing the existence of a hierarchy among people's rights, so that an individual's property right may be subordinated to the claims made by another individual in the name of a higher right, for example the right to life. At the conceptual level then, people's rights are not

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[13] See Beck (1992, 1995), Giddens (1995), Gorz (1991).

exclusive but conditional upon certain social circumstances. Inclusive libertarianism adds to this somewhat moderate position in political philosophy the theoretical and mainly economic claim that under a society organized according to the principles of perfect liberty the conditions that justify the state's transgression of people's rights would never obtain. A system of perfect liberty is therefore justified, not because a larger state cannot be justified as libertarians would contend, but because it creates the very conditions under which no state intervention is necessary. Now this theoretical claim cannot be disputed on empirical grounds to the extent that a system of perfect liberty is not actually realized. So the fact that, in society, the conditions under which a system of perfect liberty would be justified do not obtain does not invalidate the theory, and for that matter nor can it be used to justify state policies. For inclusive libertarianism will always interpret the existence of a social problem as caused by a deviance from the system of perfect liberty.

The difference between inclusive libertarianism and other libertarianisms at the practical level is that the former, unlike the latter, justifies state intervention beyond the attributions of the minimal state to the extent that this intervention broadens the system of perfect liberty. It could thus create the rights necessary for addressing environmental issues, while not having to address broader distribution issues. What I propose to show, however, is that there is an incompatibility between the purpose of creating these rights, namely the existence of ecological constraints limiting human actions, and the assumptions that have been commonly used to defend the view that a system of perfect liberty cannot be (unintentionally) coercive. The incompatibility comes from the fact that the pattern of existing rights has traditionally been defended against any collective claims by making an assumption of relative abundance.

I relate this tradition of thought back to Locke's theory of property. The assumption of relative abundance is explicit in his theory of appropriation, as well as in his theory of the creation of a political society. As a short digression from the main line of the argument, I shall present some evidence on the importance of this assumption in historical perspective. In the third section, finally, I connect the strategy of sustainable development with this tradition of thought, and then discuss the limits of this strategy from this perspective. In other words, what sustainable development is best understood from the perspective of this tradition, but as soon as we look at it from this perspective its shortcomings become more obvious.

1. Locke's theory of appropriation

In the *Second Treatise of Government* Locke starts his analysis of property with the statement that 'God [has] given [the earth] to mankind. But this being supposed, it seems to

some a very great difficulty how any one should ever come to have a property in anything' (§16). If the earth is in common to all individuals, how can one claim any property over a parcel of it ? We are all equal as owners of the Earth, but in what sense is this equality to be understood? We may be equal in the sense that we all have an equal right to participate in the management of resources; or in the sense that we have a right to an equal amount of resources; or finally in the sense that we may all use the resources as we please to the extent that we do not deprive others of the right to do similarly.

The idea of ownership conveys first and foremost the idea that we have a right of decision. The right to participate on equal terms with others in the management of resources would thus follow directly from Locke's stance of guardianship. This right, however, cannot exist outside of a political society in which the state would provide a forum for collective undertakings. So we face a dilemma: either we assume the existence of the state and use the idea of a social contract to derive rules for the use of common resources, as done by Rawls (1971), but then we cannot separate the existence of the state from redistributive policies[14]; or we use the idea to explain the state but then we still need an account as to how common ownership is legitimately transformed into individual rights. A similar dilemma with respect to Locke's theory of appropriation was raised by Rutherford and is summarized by Horne(1990, 125): 'if labor could create private property rights, others must not have had rights to the common, but if others did not have rights to the common, there was no reason for there to be limits on how much could be taken. Conversely, if there were limits, others must have had rights, and if others had rights, consent must be obtained before what belonged to all could belong to anyone'.

As I shall argue, by making an assumption of relative abundance (in a sense to be clarified), the transformation of common ownership into private property rights can be accounted for without violating the former. Equality of ownership can then be interpreted as equality of opportunities to use the resources of the Earth without requiring the consent of all co-owners.

According to Locke, one thing belongs exclusively to the individual, her labor-power. The logic is set : since one's labor-power is one's own in an exclusive sense, the products of this power will also be one's own inasmuch as it does not deprive others of the *opportunity* to make a similar appropriation: 'For this labor being the unquestionable property of the laborer, no man but he can have a right to what that is once joined to, *at least where there is enough and as good left in common for others*'(§17; emphasis added). So labor legitimized the original

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[14] Walzer (1983, 65) notes that 'the idea of redistributive justice presupposes a bounded world within which distribution takes place: a group of people committed to dividing, exchanging, and sharing social goods, first of all among themselves'. We could paraphrase Walzer and write that redistributive justice embodies the idea of a bounded world.

appropriation inasmuch as doing so did not deprive others to do similarly. By picking an apple I indeed deprive you of the right over that apple; but I do not deprive you of the right to *an* apple if there are apples left in the orchard. So we can lay claim of ownership over particular goods to the extent that we do not deprive others of the opportunity to acquire similar goods.

The 'enough and as good left over' proviso stands for how the rights of others *qua* co-owners of the Earth limits how much one can legitimately appropriate. The proviso does not apply to goods as such, but to opportunities. The relevance of such a proviso supposes a world of scarcity, for if we assumed complete abundance with costless appropriation, there would be no need for ownership at all (Grunebaum 1987, 65-67). The total amount of goods available (X) must therefore be finite, which means that the sum of each person's possible appropriation (c_i) is itself upwardly bounded. This we can write simply as $\Sigma c_i \leq X$. Legitimacy of appropriation requires, according to the proviso, that a similar good is available for all persons who desire to make a similar appropriation. If n is the number of individuals in society, this means that c_i is legitimate if $nc_i <= X$. It follows that if people are allowed to appropriate as much as they can legitimately do according to this proviso, and if they do desire to do so, only a completely egalitarian appropriation of resources could be legitimate (i.e. $c_i = X/n$).

As is well-known Locke used another proviso to limit the right of appropriation, a moral injunction which forbids spoliation : 'As much as any one can make use of to any advantage of life before it spoils, so much he may by his labor fix property in; whatever is beyond this is more than his share and belongs to others' (§19) The 'spoliation' proviso is a moral injunction of religious nature. As such, it is external to society. Consumption beyond a certain level and spoliation are morally wrong because they do not respect the goods which are a gift of God. Existence is morally superior to non-existence, and consequently, destruction for no other purpose then the pleasure to destroy or consume is condemnable. Reference to other persons is not necessary in this argument. Even a Robinson Crusoe would not be justified, according to Locke's moral point of view, to spoil the resources of the island, however abundant the resources are. To simplify the further discussion, we can write the 'non-spoliation' proviso as a limit (s_i) put on each person's appropriation (c_i): c_i is legitimate if $c_i <= s_i$.

The two conditions of legitimacy in appropriation can therefore be written as $c_i<=s_i$, and $c_i<=X/n$. Which of the two conditions is actually binding will depend upon the relative values of Σs_i and X. The case $\Sigma s_i > X$ is not very interesting, for the 'non-spoliation' proviso would then simply be redundant. Much more interesting is the case $\Sigma s_i < X$.[15] It is interesting for it discards an important problem linked to the 'enough and as good left over' proviso. I have

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[15] This interpretation of the relation between the two provisos, viz. that the spoilation proviso is binding, is also made by Waldron (1979, 1988), and stands against the interpretation put forward by MacPherson (1962).

pointed out above that if only this latter proviso binds (i.e. $\Sigma s_i > X$) and if people try to appropriate as much as they can, then the only legitimate state of nature is characterized by an egalitarian allocation of resources. But it is unclear how such a state could be arrived at. Appropriation in the state of nature can only be an individualistic process. One goes in the forest and picks an apple. The right to appropriate this apple cannot have been legitimated by the community *ex-ante*, because there is no organized community or commonwealth[16]. Appropriation takes place first, and legitimization follows. One will legitimize picking up an apple by telling others "go and get your own". And if they go and get their own, or say that they do not want any apple, the initial appropriation will be legitimized. The problem will arise if when they go, they find out that there are not enough left over for every one. For in that case, this apple I claim mine cannot be said to be legitimately mine since there are not enough apples for everyone. But to say that this apple is not legitimately mine does not legitimize any body's claim to my apple, for no one but me went into the forest to pick it up. Yet, it occurred. In such cases, we would face a conflict between equally legitimate rights, a type of conflicts we may call *legitimate* conflicts. And the resolution of such a conflict would require a theory of redistribution. As A.M. Honoré points out: 'However one interprets Locke's requirement that the acquirer must leave enough and as good in common for others... the intention behind it is not satisfied unless entitlements are adjusted from time to time according to what there remains for others'[17].

The 'enough and as good left over' proviso is therefore not sufficient to justify appropriation in the state of nature because, as it allows exhaustive appropriation and since exhaustive appropriation achieved without coordination is very unlikely to generate equality in resources, it would eventually generate legitimate conflicts and thus require a theory of redistribution. The 'non-spoliation' proviso, when binding, prevents the occurrence of this difficulty. Labor creates property rights only if everyone has the opportunity to do so. Accordingly the 'enough and as good' condition stands merely as an intermediary step in the transition between the idea of guardianship, which relates to a social group, to the individualistic notion of property. The important assumption is that of *relative abundance*, which is the view that the sum of people's legitimate needs (according to the non-spoliation principle) is less than the total sum of resources available (i.e. $\Sigma s_i < X$). This view is expressed most clearly in the following passage:

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[16] Similarly, Dworkin (1981) has pointed out that the idea of equality in resources makes sense only when there exists a scale with respect to which to compare resources, for instance when there is an organized market.

[17] Cited in Waldron (1988, 214). See also Nozick (1974, 176)

> The measure of property nature has well set by the extent of men's labor, and the conveniences of life. No man's labor could subdue or appropriate all, nor could his enjoyment consume more than a small part, so that it was possible for any man, this way, to entrench upon the right of another, or acquire to himself a property to the prejudice of his neighbor, who would still have room for as good and as large a possession - after the other had taken out his - as before it was appropriated (§21).

There is more direct evidence that Locke considered the state of nature as one of abundance. One of Locke's argument is that 'there are still great tracts of ground to be found, which ... lie waste, and are more than the people who dwell on it do, or can make use of, and so still lie in common' (§45). His favorite example is of course the Americas, but at one point he also refers to Spain (§36). As he put it, 'in the beginning all was America', and since America is abundant, in the beginning all was abundant (§49).

In summary, the shift from guardianship to ownership supposes (1) that there is a good which is mine (labor-power) and which enables me to claim ownership over the goods it produces and (2) that the goods are abundant enough. I can say "this is mine" if I can also say "go and get your own", which supposes that there are indeed things available out there. The important point is that the absence of *legitimate* conflicts justifies claims of ownership. Under the condition of relative abundance, 'there could be no doubt of right, no room for quarrel' (§39); nobody could 'think himself injured by another's appropriation' (§33).[18]

2. *The creation of scarcity versus the creation of abundance*

In the state of nature Locke relied upon an assumption of relative abundance to justify individual property rights against claims of collective ownership. This theory of appropriation may be distinguished from economic theories which explain the emergence of claims of ownership, and then the delimitation of rights, as stemming from a situation of scarcity[19]. In this section, I want to show how this assumption of relative abundance made in the theory of appropriation is then carried forward to legitimize the distribution of rights in political society. The difference between those libertarian theories - Buchanan's for example -

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[18] Although I have focused here on Locke, the problem of how to reconcile the exclusive right to property with the right to a decent life is a general theme in liberal thought. See notably Horne (1990) for a comprehensive discussion of this issue in the form of a conflict between what he calls 'exclusive' and 'inclusive' rights. To give but one example of this debate, Spinoza argued in the *Tractatus Politicus* that the prohibition of private property was necessary to avoid disputes arising because of the finiteness of the resources available. For a discussion, see Hirschman (1977, 75). One legacy of this debate is to be found today in the debate over the welfare state. On the one hand, people's right to property, as expressed in market exchanges, is emphasized. On the other hand, some commentators suggest that people have a right to welfarist policies, thereby justifying the taxes necessary to finance welfare policies. On rights to welfare see, among others, Marshall (1981).

[19] See Demsetz (1967), Buchanan (1975), Barzel (1991).

which assume scarcity as the outset, and inclusive libertarianism which assumes a situation of abundance originally, lies in their management of situations of scarcity. According to the former, scarcity is the inescapable condition of political life. The constitution is the agreed-upon way to address the issue, so there is no place for what I have called legitimate conflicts. Any conflict over distribution would question directly the constitution and thus threaten everyone's security. There is no middle path between the war of all against all, and complete respect for people's rights.

Inclusive libertarianism allows a little more flexibility, which is the reason why it allows the creation of new rights. Relative abundance, rather than scarcity, characterizes the original situation. So situations of scarcity we may witness in society, for example scarcity in land in seventeenth century England, must be seen as socially constructed. The appearance of scarcity will in part question the legitimacy of those actions (for instance, appropriation of land) which have led to that situation and thereby deprived some individuals from the opportunity to carry out similar actions. If abundance justifies individual rights, and if the enjoyment of these rights eventually create a situation of scarcity, then the legitimacy of the rights may be questioned. But these potential collective claims to ownership may again be pushed back with recourse to a new assumption of abundance. By arguing, for instance, that the existing pattern of rights, as it has led to a situation of scarcity, has also opened new opportunities for individuals to lead a worthwhile life. So, to recapitulate, an assumption of relative abundance needs to be made each time a new situation of scarcity emerges in order to respond to claims of collective ownership. The idea is first illustrated with Locke's theory of the beginning of political society, is then presented in more general terms, and is finally illustrated by some examples of the assumption of relative abundance in historical perspective.

2.1. The Introduction of Money and the Beginning of Political Society in Locke

It is well-known that the non-spoliation proviso is relaxed with the introduction of money. With money, individuals are going to be able to accumulate goods without transgressing the proviso. MacPherson (1978) has argued that Locke thus justified infinite accumulation. According to the above interpretation, however, the relaxation of the non-spoliation proviso and the accumulation of goods made possible by the introduction of money will eventually lead to a situation of relative scarcity in which the 'enough and as good left' proviso would eventually become binding. Locke is very explicit in relating the introduction of money with the emergence of a situation of relative scarcity. Indeed, 'where there is not some thing, both lasting and scarce, and so valuable to be hoarded up, there men will not be apt to enlarge their

possessions of land' (§48); 'where the increase of people and stock, with the use of money, had made land scarce...' (§45). Money provides the motivation for enlarging one's possessions.

The introduction of money thus leads eventually to a situation of relative scarcity and thereby generates what I have called above legitimate conflicts: conflict between the right of using one's property as one pleases and the right derived from the original stance of common ownership and represented by the 'enough and as good left over' proviso. These conflicts are not inherent to the theory of appropriation, but only to the introduction of money to which individuals have given their tacit consent (§50). One of the purposes for entering in a political society is precisely to solve such conflicts, and thereby preserve one's life, liberty and estate (§124).

In setting the social contract, the individuals must therefore choose between the right to property based on labor and the right to property as co-owners of the Earth. If the individuals forego the former, then the role of the state will be to embody the idea of common-ownership, and will thereby be justified to embark in welfare and redistributive policies as it judges fit. On the other hand, if the individuals forego the latter, the state will stand to protect people's individual right to property against any claim of collective ownership. Indeed there is some controversy as to whether a person's possession, when entering in political society, becomes the property of the community, or whether the state is there to protect one's property against other people's claims.[20]

The evidence in Locke's writings gives support to this second interpretation. According to Locke, 'men, when they enter into society, give up the equality, liberty, and executive power they had in the state of nature' (§131). Out of the three possible forms of equality distinguished above, the claim to equality they relinquish, it seems, can only be equality in opportunities to appropriate. Equality in resources was already abandoned with the introduction of money; and equality in decision making is meaningless outside of a political society. In the state of nature, individuals are only equal in having similar opportunities to appropriate. It is this natural right, their right to appeal to the 'enough and as good left over' proviso, which they relinquish by entering a commonwealth. Locke's theory of property would thus be composed of three steps: 1) equality to appropriate under conditions of relative abundance; 2) emergence of inequalities and a state of scarcity with the introduction of money; 3) protection and regulation of property under government.

This interpretation does not invalidate the theoretical validity of the other one so we may ask on what ground Locke chose between the two of them. We can point here to Locke's introduction of a second assumption of relative abundance. The statement that 'in the beginning

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[20] For a defense of the former view, see Tully (1980). For a criticism, see Waldron (1988), pp. 232ff.

all the world was America' can be reversed: America provides the opportunity for a new beginning for whomever does not accept the rules of the commonwealth. Each individual is 'naturally free' indeed, and nothing can 'put him into subjection to any earthly power, but only his own consent' (§ 119). This freedom is presented as a historical fact. Many examples show that people have had the opportunity to leave a particular society and settle in some other, or even begin one anew (§115-118). The individual's consent to being a member of society and accepting its rules is therefore expressed by the fact that the individual does not choose to leave. The opportunity to emigrate justifies the rules of society.[21]

There is another way in which the assumption of relative abundance is important. For Locke, 'the *raison d'être* of property is sustenance'[22]. In the state of nature, the existence of opportunities to appropriate warranted one's ability to preserve oneself. Since by working one appropriates, the opportunity to work is the opportunity to own. Labor and property are related to each other in a circular way, and similarly so are opportunities and property: opportunities lead to property through work, and appropriation is justified to the extent that there are opportunities left for others.

In political society, the denial of claims over opportunities to appropriate must be compensated by a guarantee that other means of subsistence are available. The right to appropriation was instrumental in ensuring the fundamental natural right of subsistence. Other opportunities must therefore be opened and guaranteed to fulfill the latter. The assumption of relative abundance takes the form that there is no conflict between a person's infinite desires to accumulate resources, and a person's right to opportunities of subsistence. Just like in the state of nature, the existence of opportunities within political society stands against any individual's claim to the particular resources another individual may possess. The right to a minimum standard of living, for example, cannot be imposed upon society unless the individual is denied the opportunity to fulfill her needs. I cannot claim a right to your property simply because I am in need. This claim will be justified only if I have no opportunity to make a decent living by relying on my own assets.[23]

As to render the parallel with our previous discussion quite clear, we can again use simple equations to draw out the distinction between the two alternatives. Let us denote by l_i

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[21] Compare with Rawls (1993, 277): 'Thus the right to emigrate does not affect what counts as a just basic structure, for this structure is to be viewed as a scheme into which people are born and are expected to lead a complete life'.

[22] Waldron (1988, 216). See also Manent (1994), chapter 4.

[23] Note the parallel with some theories of sustainable development. For example, Solow (1992:15): 'The duty imposed by sustainability is to bequeath to posterity not any particular thing -- with rare exceptions such as Yosemite, for example -- but rather to endow them with whatever it takes to achieve a standard of living at least as good as our own and to look after their next generation similarly'.

the amount of work produced by the individual, and c_i her level of consumption; w^n and wP_i are respectively the return from labor in the state of nature (assumed equal across individuals), the return to work per unit of time for individual i in political society (assumed constant, i.e. independent of the amount of work). To simplify we can assume that there is no savings, so that $c_i = wl_i$ where w is equal to w^n or wP_i. Finally, denote by l the maximum amount of work any individual can produce, n the number of individuals in society, Q the level of production realized, and X the maximum amount of goods that can be produced in the economy, as defined by external conditions (technology, amount of land and so on) and independently of the amount of labor. Thus, we assume a world subject to external constraints, in the sense that whatever the amount of work total production cannot exceed X. Individual consumption is constrained in two different ways:

$$c_i = wl_i \leq wl \qquad \text{and} \qquad \Sigma c_i = Q \leq X$$

In political society, just like in the state of nature, we may distinguish between two types of situation depending upon the relative values of l and X:

- if $\Sigma wP_i l \leq X$ we face a situation of relative abundance.
- if $\Sigma wP_i l \geq X$ we face a situation of relative scarcity.[24]

A situation of relative abundance means that there are always economic opportunities open to the individual for him or her to ensure a decent level of income through his or her labor. That is, the total level of production Q is constrained by the total amount of labor rather than by external factors. So the individual's right of survival is guaranteed by this condition of relative abundance, just like in Locke's state of nature. Unlike in the state of nature, however, it is not sufficient to ensure people's right to subsistence. It can be assumed that people consent implicitly only if the political society does not make them worse off. That is, if min $(wP_i) \geq w^n$.[25]

Now of course this supposes that there are no institutional barriers between the possibility to expand production with more work at the level of society, and the individual's

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[24] In the state of nature, these two conditions are written:
$$c_i = w^n l_i \leq w^n l \qquad \text{and} \qquad \Sigma c_i \leq X$$
The assumption of relative abundance was simply that $nw^n l \leq X$.

[25] Thus Locke mentions how a day-labourer in England is better-off than some king in the Americas (§41). This equation provides also a possible theory of exploitation. That is, exploitation would be defined by the fact that $(wP_i) < w^n$. See Roemer (1982) The assessment of w^n raises however a serious problem, the 'baseline' problem in Nozick's terminology.

ability to work more if she so desires. For example, Sen (1981) showed that the cause of a number of recent famines did not lie in the impossibility to expand further production, but in the fact that individuals were deprived of entitlements to food. There may therefore be institutional problems in a situation of relative abundance preventing people from seizing existing opportunities.[26] In a situation of relative scarcity, by contrast, the fact that the individual cannot consume more by working more reflects external constraints which are independent of particular institutional problems.

2.2° *The assumption of relative abundance in historical perspective*

As a short digression from the main line of the argument, I want to present here some arguments that would support the view that, behind the theoretical assumption of relative abundance, are some social facts which can be seen as embodying it. In other words, I wish to suggest that this assumption is something real, although tracing it in different social forms would take us beyond the scope of this paper. What particular social circumstances made it possible for people to believe in relative abundance?

The frontier

Locke, we may recall, justified the distribution of property in England in part by appealing to the fact that, in America, 'there are still great tracts of land to be found which... lie waste' (27). The assumption of relative abundance was thus justified on the ground that, indeed, there is open land available out there. From the seventeenth to the twentieth century, the Americas, and the United States in particular, have represented for the rest of the world (although mainly Europe at first) this open land of opportunities. Now it is not my intent nor within my qualifications to draw the history of the sociological impact of the Americas on people's world-view. It is sufficient to note that the frontier has been important in shaping the political culture of the United States.

The great American sociologist Carl Becker, for instance, argued that Americans interpreted freedom as freedom from responsibility for the community because it was always possible to push back the frontier (Becker 1945). A similar thesis had been originally put forward by Frederick Taylor Turner in his famous essay on 'The significance of the frontier in American history' announced in 1893. The frontier, Turner argued, is 'productive of

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[26] Compare to to the debate in economics over the nature and causes of involuntary unemployment.

individualism', of 'antipathy to control', but also, and more importantly, it has promoted democracy in the United States as well as in Europe through a sort of domino effect (Turner 1972, 24). But with the closure of the frontier, this democracy might suffer from the very same factors which, at first, gave it its strength:

> But the democracy born of free land, strong in selfishness and individualism, intolerant of administrative experience and education, and pressing individual liberty beyond its proper bounds, has its dangers as well as its benefits. Individualism in America has allowed a laxity in regard to governmental affairs which has rendered possible the spoils system and all the manifest evils that follow from the lack of a highly developed civic spirit. (1972, 24).

Laissez-faire

We may relate the assumption of relative abundance to the empirical statement that a Lockean system of private property leads to an economic outcome which is itself abundance. Inclusive libertarianism would then differ from external libertarianism precisely by the fact that its legitimacy is conditional upon the outcome. It is here impossible to dissociate the two usual liberal and utilitarian arguments in defense of property rights. The utilitarian argument states that property rights are desirable as an institution of society because they promote productive efficiency and social prosperity. The liberal argument states that property is an intrinsic individual right that cannot be transgressed for the welfare of society. The two arguments negate one another. They can be made compatible, however, by introducing an empirical hypothesis. The inclusive libertarian argument is then something as the following: private property is a right that cannot be transgressed except under some specific conditions, which do not arise under an economic system of private property.

Inclusive libertarianism would therefore depend upon economic theory in a very particular way. Note that exclusive libertarianism is independent of economics altogether. For utilitarians, economic theory is instrumental in bringing about the more desirable social outcome. For inclusive libertarians, by contrast, economic theory is important to justify *ex-ante* the validity of the moral theory. If society is in a situation in which the conditions for transgressing legitimately the right of property, then the move to a system of private property requires faith in the inclusive libertarian vision.

It is in this regard that we may understand the moral role function of economists, notably in the nineteenth century. Economists were writing popular books so that the public at large learned the laws of political economy. Economists saw their role as the moral guide of society. The perfect illustration of this view, in relation to inclusive libertarianism, is in the words of the great nineteenth century French economist, Jean-Baptiste Say:

> A people not knowing the established truths of political economy can be portrayed as one condemned to live in a vast underground with all the goods necessary for life. But darkness stands between the people and the goods (...) Confusion, violence, damages reign, when suddenly a ray of light enters the fence. People blush at the harm they imposed on each other; they discover that everyone can get what he desires; they realize that these goods are the more plentiful as everyone mutually help each other. A thousand reasons to love, a thousand ways to enjoy life with honor spring from everywhere. A single ray of light has done it all. (Say 1840 : 33-34).

This ray of light is of course the knowledge of political economy. To take but another example, consider the following passage from Jevons's popular treatise in political economy, published in 1879:

> People wish to follow their own impulses and prejudices, and are vexed when told they are doing just what will have the opposite effect to what they intend. Take the case of so-called charity. There are many good hearted people who think that it is virtuous to give alms to poor people who ask for them, without considering the effect produced upon the people. They see the pleasure of the beggar on getting the alms, but they do not see the after effects, namely, that beggars become more numerous than before (1879, 19).

Modern science as the new frontier

Turner witnessed the closure of the frontier and argued that it was then the end of an era in the history of the United States. Some years later, however, he envisioned the existence of a new and endless frontier: 'In place of old frontiers of wilderness there are new frontiers of unwon fields of science' (in Rothschild 1985, 130). The idea was later given vivid illustration by a study published by the American scientist Vannevar Bush right after World War II, and entitled *Science: the New Frontier* (Rothschild 1985).

We must distinguish clearly between two different things. There is, first, the view, discussed by Rothschild (1985), that science became increasingly seen as the main source of economic growth[27]. This is a utilitarian argument, one which is very different from the idea of science as the new frontier when interpreted in the perspective of the "Turner thesis". According to this latter view, science is instrumental in bringing about economic growth, but economic growth is not the ultimate goal; rather it is instrumental in allowing a political organization of society based more on individualism than on civic spirit. The assumption of relative abundance, which previously was embodied in the physical frontier of the West, now takes the form of faith in science.

The idea has taken a number of more refined forms. One, which it is interesting to note here, is the view that scientific management - whether of the firm or of the entire economy -

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[27] Rothschild cites, among others, Kuznets: '[a] high rate of growth in the stock of useful knowledge and of science itself [is] the major permissive factor in modern economic growth' (1985, 131).

can solve conflicts of interests. A good illustration within the firm is Taylor (1911)'s defense of scientific management: 'The majority believe that the fundamental interests of employees and employers are antagonistic. Scientific management, on the contrary, has for its very foundation the firm conviction that the true interests of the two are one and the same... that it is possible to give the workman what he most wants - high wages - and the employer what he wants - a low labor cost - for his manufactures'. (1911: 10) At the national level, the idea is embodied in the Keynesian economic policies adopted after Word War II, what some authors have called the 'Keynesian accommodation' (Bowles and Gintis 1986; Marglin and Schor 1990). Conflict between employers and employees in the workplace, and between wage-earners and capitalists at the societal level, would have been solved by an implicit agreement to pursue economic growth and to re-distribute the fruits of this growth through a steady increase in wages. Conversely, belief in science - or in relative abundance - served to justify a particular organization of the economy.

3. Sustainable development

In this last section I wish to make two points. First, that the strategy of sustainable development, at least according to the latest formulations, is best understood in the perspective of inclusive libertarianism. The basic reason why this is so is not that the proponents of sustainable development are libertarians, but rather that they have attempted to devise a strategy for addressing environmental problems which would be as consensual as possible. One of the conditions was therefore to separate intergenerational issues from intragenerational ones, and it is this project that puts them in the tradition just analyzed. The second point is that, once we view sustainable development from this perspective, we become aware of its shortcomings: the preservation of opportunities for future generations is an attempt to oppose, as before, the existence of opportunities to claims for redistributive policies. But this cannot be done without imposing limits on the opportunities open to present generations, and thus undermine the purpose of speaking about opportunities rather than about resources.

3.1 *Understanding sustainable development*

The concept of sustainable development defined as preserving the opportunities of future generations to lead fulfilling lives recalls Locke's proviso that appropriation is justified to the extent that enough and as good is left over for others. As discussed previously, the application of this principle is not, however, sufficient to prevent exhaustive appropriation,

although unlike in the state of nature, there is now the possibility to rely on political deliberation as to ensure the fairness of the process of appropriation.

The strategy of sustainable development can then be understood as trying to replace the second proviso used by Locke: impose limits on human activities in order to preserve opportunities for individual freedom. This second proviso had, we may recall, two components: a moral injunction on how much one can appropriate in relation to one's needs; an empirical statement about the limited capacities of human labor. Interestingly enough, a large amount of the literature on environmental issues has argued, although usually without explicit reference to Locke, that under the present circumstances neither of these two elements holds anymore. Environmental problems are thus explained, not in terms of a lack of commitment for the well-being of future generations, but as the pursuit of behaviors which were only justified under circumstances of relative abundance.

Consider the moral injunction of non-spoliation. It finds its negative image today in the view that people's desires are insatiable. The French sociologist Baudrillard has even argued that waste has become the hallmark of a consumer society (Baudrillard 1970). It has become difficult to defend the level of consumption enjoyed by a privileged minority around the world as the fulfiliment of needs. An extensive literature has shown that the perception of needs is a social construct, and that modern societies tend to increase, rather than restrain, desires. For example, competitive consumption - keeping up with the Jones - would render impossible the satiation of needs (Veblen 1899), all the more as some goods - like education - are essentially of a social nature: the utility we derive from them is not absolute but relative to how much other people consume (Hirsch 1976). The sense of scarcity would also be enhanced by rendering goods commensurable through the market: scarcities in different goods would be transformed in the never ending Scarcity of money (Xenos 1989). In another direction, Illich (1978) argues that modern technologies (transport), and modern institutions (education, health) create scarcity. Interesting and related is Fromm's distinction between being as "to have" or being as "to be" (Fromm 1976). By emphasizing the "to have" over the "to be", modern societies would exacerbate the sense of scarcity. Fromm notably underlines how the language reflects these changes as, for instance, in the shift from "I am educated" to "I have a degree". We could also cite the particular desire for money, that a number of authors like Marx, Simmel or Keynes believed to be infinite. And so on.

In this perspective, the issue of sustainability is related to what we may call the 'paradox of affluence'. Although modern societies have grown extremely rich, the sense of scarcity felt by its members has not been attenuated but on the contrary exacerbated. The psychological component of the issue is the increased frustration that stems from the fact that

economic growth does not provide the good, namely satisfaction or happiness. It is a form of addiction, where always more fuels a sentiment of never enough.

The second element of Locke's second proviso, the statement that an individual's capacity to act is limited, has itself been proved wrong by technological progress. The development of nuclear weapons epitomizes this fundamental change. As Passmore (1974) has argued, concerns for sustainability precisely arise from the recognition that nature is vulnerable to human actions, and through nature fellow humans. That increases in our capacity to act has outpaced our capacity to predict the consequences of our actions is arguably a major change in the circumstances of a theory of justice (Jonas 1984). It is also a major source of environmental concerns: we know that human behaviors are today transforming the biosphere in a radical way. This datum appears indeed at odds with a political tradition built on the premise that people's power to act is limited.

3.2 The limits of sustainable development

Let us recall that the important feature of Locke's second proviso was its stemming from considerations external to society. External circumstances, summarized by the idea of relative abundance, could thus be invoked to justify the rights of the individual against the rest of society. The only factor today which could play, and indeed plays for some writers, the same function is the idea of technological progress. But if we have recourse to this factor then, in fact, we discard the issue of sustainability, for we suggest that environmental issues can be tackled without state intervention.

Just as in the beginning of political society, the role of the state can thus be seen as managing the new scarcity which takes the form of environmental changes. Managing this scarcity, I argued in the first part of the paper, will require the creation of new objects of rights. The problem that this paper has tried to address is whether the creation of the new object of rights, which necessarily restrain the opportunities people have in society, can be justified without addressing distributive issues with respect to the entire pattern of rights (rather than just with respect to the distribution of new rights). This constitutes the project of sustainable development. We have seen in this part of the paper that such a separation could only be justified by having recourse to an assumption of relative abundance. I can be justified certain opportunities only if it can be argued that the new system thereby created will generate even more opportunities for me to lead a worthwhile life. So even is some specific resources are scarce, opportunities are themselves abundant. Proponents of sustainable development recognize that some resources are scarce, but deny that this should entail us to save those resources for future generations (see fn 22). What needs to be preserved are the opportunities of future

generations to lead worth while lives. This is a recognition, then, that these opportunities are themselves scarce. That is, that the present generation should not use all the opportunities open to it in order to preserve some for the future.

The problem can be presented differently. If we consider just one particular resource, for example land, then the management of scarcity in that resource can be done by appealing to abundance in other resources. This is basically how Locke justified inequality of land holdings in political society. But obviously the reasoning cannot be used if there is scarcity in all resources. Even if no specific resource need to be preserved as such because there is a possibility of substitution, the reasoning becomes fallacious when generalized. Each resource is depleted because it can be substituted by another resource, so in the end, all resources are depleted.

REFERENCES

Agarwal, A. and S. Narain (1991) *Global Warming in an Unequal World : A Case of Environmental Colonialism.* Delhi : Centre for Science and Environment.

Barry, Brian and R. I. Sikora (1978) *Obligations to Future Generations,* Philadelphia: Temple University Press.

Barzel, Yoram (1989) *Economic Analysis of Property Rights.* Cambridge: Cambridge University Press.

Baudrillard, J. (1970) *La Societe de Consommation,* Paris: S.G.P.P.

Beck, U. (1992) *The Risk Society.* London: Sage. 1986.

Beck, U. (1995) trans. by M. A. Ritter*Ecological Enlightment,* New Jersey: Humanities Press.

Becker, C. (1945) *Freedom and Responsibility in the American Way of Life,* New York: Knopf.

Berlin, I. (1969) *Four Essays on Liberty,* Oxford: Oxford University Press.

Boulding, Kenneth (1964) *The Meaning of the Twentieth Century.* New York: Harper and Row.

Bowles and Gintis (1986) *Democracy and Capitalism: Property, Community and the Contraditions of Modern Social Thought,* New York: Basic Books.

Bromley, Daniel W. (1991) *Environment and Economy: Property Rights and Public Policy,* Oxford: Blackwell.

Buchanan (1975) *The Limits of Liberty. Between Anarchy and Leviathan* Chicago: University of Chicago Press.

Coase, Ronald (1960) 'The problem of social cost', *Journal of Law and Economics,* 3: 1-44.

Costanza, R. (1991) *Ecological Economics: the Science and Management of Sustainability,* New York: Columbia University Press.

Daly, Herman (1993a) 'Introduction to *Essays toward a Steady-State Economy*', in Daly and Townsend (eds.) *Valuing the Earth: Economy, Ecology, Ethics*

Daly, Herman (1993b) 'The Steady-State Economy: toward a political economy of biophysical equilibrium and moral growth', in Daly and Townsend (eds.)*Valuing the Earth: Economy, Ecology, Ethics*

Daly, Herman and Kenneth Townsend (eds.) (1993) *Valuing the Earth: Economy, Ecology, Ethics.* Cambridge, Mass.: The MIT Press.

Demsetz, Harold (1967) 'Toward a theory of property rights', *American Economic Review,* 57.

Demsetz, Harold (1968) 'Why regulate utilities', *Journal of Law and Economics,* 11.

Elliot, Robert (1995) *Environmental Ethics,* Oxford: Oxford University Press.

Friedman, Milton (1962) *Capitalism and Freedom.* Chicago: The University of Chicago Press.

Fromm, Erich (1976) *To Have or To Be,* New York: Harper and Row.

Galston, William A. (1989) 'Pluralism and social unity', *Ethics* 99: 711-726.
Giddens, A. (1995) *Beyond Left and Right: the Future of Radical Politics*, Stanford, Cal.: Stanford University Press.
Gorz, André (1993) 'Political ecology: expertocracy versus self-limitation', *New Left Review* 202.
Grunebaum, James (1987) *Private Ownership*, London: Routledge and Kegan.
Hirsch, F. (1976) *Social Limits to Growth*. Cambridge, Mass.: Harvard Univesity Press.
Hirschman, Albert O. (1977) *The Passions and the Interests*. Princeton, N.J.: Princeton University Press.
Horne, Thomas (1990) *Property Rights and Poverty*, Chapel Hill, N.C.: The University of North Carolina Press.
Hubin, D. Clayton (1976) 'Justice and Future Generations', *Philosophy and Public Affairs*, 6(1): 70-83.
Hume, David (1739) *A Treatise of Human Nature*. Second Edition. Oxford: Clarendon Press. 1978.
Illich, Ivan (1978) *Toward aHistory of Needs*, New York: Pantheon Books.
Jevons, S. (1879) *Political Economy*. New York: Appleton and Company.
Jonas, Hans (1984) *The Imperative of Responsibility: In Search for an Ethics for the Technological Age*. Chicago: University of Chicago Press.
Kernohan, Andrew (1995) 'Rights against polluters', *Environmental Ethics* 17: 245-255.
Kneese, A. V. and C. L. Schultze (1975) *Pollution, Prices, and Public Policy*, Washington DC: The Brookings Institution.
Lipietz, Alain (1992) *La Préparation de la Conférence des Nations Unies sur l'Environnement et le Développement (Rio de Janeiro, 1992) comme Processus de Négociation: Rapport à l'UNESCO*. Paris: Unesco.
Locke, John (1690) *The Second Treatise of Government*. New York: MacMillan. 1956
MacPherson, C. B. (1962) *The Political Theory of Possessive Individualism*, Oxford: Clarendon Press.
MacPherson, C. B. (1978) *Property*, Toronto: The University of Toronto Press.
Marglin, S. and J. Schor (eds.) (1990) *The Golden Age of Capitalism: Re-Interpreting the Postwar Experience*, Oxford: Clarendon Press.
Marshall (1981)*The Right to Welfare and Other Essays*, New York: Free Press.
Manent, Pierre (1994) *An Intellectual History of Liberalism*, Trans. by R. Balinski, Princeton: Princeton University Press.
Nozick, R (1974) *Anarchy, State, and Utopia*. New York: Basic Books.
Partridge, Ernest (1980) *Responsibilities to Future Generations: Environmental Ethics*, Buffalo, NY: Prometheus Books.
Passmore, John (1974) *Man's Responsibility for Nature*, New York: Scribner.
Priest , George (1993) 'The origins of utility regulation and the "Theories of Regulation" debate', *Journal of Law and Economics*, 36.
Rawls, John (1971) *A Theory of Justice*. Cambridge, Mass.: Harvard University Press.
Rawls, John (1993) *Political Liberalism*. New York: Columbia University Press.
Regan, Tom (ed.) (1984) *Earthbound: New Introductory Essays in Environmental Ethics*, Philadelphia: Temple University Press.
Roemer, J. (1982) *A General Theory of Exploitation and Class*, Cambridge, Mass.: Cambridge University Press.
Rothschild, Emma (1985) 'Science and society - a changing relationship', in Gibbons, Michael and Björn Wittrock (eds.) *Science as Commodity: Threat to the Open Community of Scholars*, Harlow (UK): Longman. pp. 130-142.
Sandel, Michael (1982) *Liberalism and the Limits of Justice*. Cambridge: Cambridge University Press.
Say, J.-B. (1840) *Cours Complet d'Economie Politique*, 2nd ed., Paris: Guillaumin.

Sen, Amartya (1981) *Poverty and Famines: An Essay on Deprivation and Entitlement*. Oxford: Clarendon Press.
Solow, Robert (1992) 'An almost practical step toward sustainability', Invited Lecture on the Occasion for the Fortieth Anniversary of Resources of the Future. Washington D.C., October 8.
Stigler, George J. and Claire Friedland (1962) 'What can regulators regulate?', *Journal of Law and Economics*, 5.
Taylor, F. (1911) *The Principles of Scientific Management*, New York: Harper.
Tully, James A. (1980) *A Discourse on Property: John Locke and his Adversaries*, Cambridge: Cambridge University Press.
Turner, Frederick Jackson (1972) 'The significance of the frontier in American History', in Taylor, George R. (ed.) *The Turner Thesis*, 3rd edition, Lexington, Mass: Heath and Company.
Veblen, Thornstein (1899) *The Theory of the Leisure Class*: New York: Mac Millan.
Wanda, Mark (1991) *Legal Rights of Neighbors in Dispute*, Clearwater, Fl.: Sphinx Publishing.
Waldron, Jeremy (1979) 'Enough and as good left over', *Philosophical Quarterly* 29
Waldron, Jeremy (1988) *The Right to Private Property*, Oxford: Clarendon Press.
Walzer (1983) *Spheres of Justice*, New York: Basic Books.
World Commission on Environment and Development (1987) *Our Common Future*, New York: Oxford University Press.
Xenos, N. (1989) *Scarcity and Modernity*, London: Routledge.

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Ecology, Economics, and Politics: The illusory path towards expertocracy

Human actions are today transforming the natural environment on a historically unprecedented scale. Some of these changes are desirable and necessary as humans must live in and from their natural environment. Others are not when, for instance, they undermine people's well-being or reduce the possibilities for well-being in the future. Where do we draw the line? That is, what is environmental degradation? To answer this question in a consequentialist perspective requires first to select a criterion of valuation, and second to apply this criterion in practice. Choosing the criterion to be used is of course a political and disputed matter, as it generally is for any social evaluation. Applying the criterion is a technical matter which requires some knowledge about the relationship between means and ends. This can also be a disputed matter if there is scientific disagreement over the knowledge used.

The purpose of this paper is to show that there may be a tradeoff between achieving consensus in the political sphere over what criterion to use, and achieving consensus in the technical sphere over the result yielded by the application of this criterion. I say 'may be' because my argument is mainly a conceptual one, so that in practice the constraint created by this tradeoff may not be binding. I shall suggest, however, that it is binding with regard to many environmental issues.

More precisely, I investigate the relevance of the criterion of efficiency in assessing environmental changes. Economists tend to believe that the criterion of efficiency provides a

minimal criterion over which all individuals should agree. Efficiency is understood in the Pareto-sense as characterizing a social state in which nobody can be made better off without making someone worse off. It is consensual precisely because it tries to make everyone better off. However, as I propose to show here, the application of this criterion in practice has a cost in the sense that it requires a level of ecological knowledge possibly beyond what the use of other criteria would. A similar point is made with regard to the economic interpretation of the concept of sustainable development in terms of a constant stock of capital. Again this interpretation has the advantage of theoretically avoiding conflicts, but the practical caveat of being very demanding in terms of ecological knowledge.

Let me emphasize right away that I am not concerned here with the view, held by some economists, that there is no environmental problem. Rather, I consider the view held by many environmental economists that applying the criterion of efficiency is a powerful way to reveal the extent of present environmental degradations, or, equivalently, of the irrationality of present environmental changes. These economists do not see themselves in opposition to environmentalists, but rather believe that they can bring about consensus on a position close to the one held by environmentalists. That is, they think that the rationalization of politics could make the state more responsive to environmental issues. This is the view I wish to examine criticially.

The paper is divided in three parts. In the first part, I analyze the requirements the economic approach to environmental issues imposes upon natural sciences for the definition of externalities as well as for the definition of sustainable development. This shows that the economic definitions of environmental degradations and of sustainability require more inputs from environmental sciences than ecological definitions would, simply because the consequences of environmental changes must be expressed in terms of people's well-being.

In the second part, I analyze the relationship between the economic approach and collective-decision making using cost-benefit analysis as the exemplar of the former. In a situation of uncertainty, the informational basis used to carry out the cost-benefit analysis will need to be justified. Reliance on subjective probabilities, like in the economic model of rational choice under uncertainty, is not a solution unless the probabilities chosen can themselves be justified, that is, if they are "objective" rather then "subjective". Choosing these probabilities is in fact similar to the problem of deciding what informational basis to be used, and it is under this form that I should approach the problem.

The possible incompatibility between the two tasks of economics can then be formulated more precisely: the unmet demand for ecological knowledge necessary for the economic approach (part I) undermines the claim of objectivity of this approach by rendering the informational basis used (for example, in cost-benefit analysis) unjustifiable and therefore

arbitrary (part II). Ironically, the quest for neutrality, which was to make economics a science, would reduce the relevance of economics for policy-making. In the third part, I provide some arguments as to why this may be the case with regard to environmental issues. I also suggest, although briefly, ways to respond to it.

I. THE INFORMATIONAL BASIS OF THE ECONOMIC APPROACH TO ENVIRONMETAL ISSUES

1. Environmental economics

Environmental economists apply the criterion of efficiency to discriminate between "normal" environmental changes and cases of degradation. What gives doubt about the efficiency of a social state is the existence of externalities. This is the reason why most treatises in environmental economics open with a theoretical discussion of "market failures", and prominently among them, of "externalities"[1]. It is quite appropriate to do the same here. I then proceed to analyze the informational basis used to solve cases of externalities, with specific focus on the demand for ecological knowledge.

1.1. Externalities

An externality occurs when a party is affected by an activity without this effect being taken into account in the decision of carrying out the activity. Although in general this effect can either be positive or negative, with respect to environmental issues mainly negative effects are considered, so I shall henceforth use the term externalities in reference to negative ones if not otherwise indicated. I also leave aside relations within the market system which would be externalities according to this definition.

Let me make a brief side remark. It is perhaps useful to distinguish between two uses of the concept of externalities. First, the idea of externalities may be invoked to account for environmental changes. Pollution, for example, may in part be explained by the fact that the polluting effect is not taken into account in the decision of carrying out the activity. Yet the presence of an externality is just an exacerbating factor, since environmental changes are also obviously produced in the absence of externalities. The other and more proper sense in which

[1] Among many others, Mäler (1974), Dasgupta (1982, 1991), Baumol and Oates (1988), Dasgupta and Mäler (1994).

the concept of externality is used is to qualify an environmental change as a form of degradation.[2] In this sense it is a normative concept. It is in this sense that I consider it here.

The concept of externality qualifies a conflict between (at least) two parties, in which the parties can be individuals or groups. If A's activity affects negatively B's welfare, reciprocally restoring B's welfare by reducing A's level of activity will necessarily reduce A's own welfare. Indeed, 'environmental policy is nothing if not a dispute over the putative rights structure that gives protection to mutually exclusive uses of certain environmental resources' (Bromley 1991: 3).

What makes this conflict an externality is the existence of a potential for trade. It is the fact that this conflict, as it is played out, is not efficient. That both A and B could win by applying the criterion of efficiency. This is not to say that there may be a consensual way to solve the dispute. It states simply that determining what is a form of environmental degradation could be determined in a consensual way, while the dispute between A and B could be resolved independently through monetary transfers. To illustrate the point, let me have recourse to a classic analogy. A's activities increases her welfare, and thereby the total sum of welfare in society, a pie in the analogy. B's loss of welfare, on the other hand, reduces the size of the pie. Independently of who wins or loses, economists argue that A and B could and should agree in maximizing the size of the pie, and then discuss as to how to share it between them. When A's win and B's loss are directly measurable with the rod of money, the principle raises little controversy. Assume, for example, that A and B are two firms engaged in productive activities, and that A's activity reduces the value of B's production. The value here refers unambiguously to the monetary value as measured by market prices. In this setting, there is no major impediment against using efficiency as the criterion to assess the dispute. To maximize the total value of production is a meaningful goal, and concerns over distribution can be settled independently through transfers. This is notably the case Coase (1960) considered in his seminal article.

This simple case does not correspond, however, to the situations commonly encountered with regard to environmental issues. More frequently the external effect will not bear on a commercial activity. As a consequence the principle of efficiency cannot be applied directly, because there is no *direct* way to compare the value of A's activity with the value of B's loss since the latter is *not* expressed in monetary terms.

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[2] A leading environmental economist reminds us 'that an environmental problem exists whenever there is a gap between the *accounting* price of a natural resource and its *actual*, or *market*, price' (Dasgupta 1991, 83). For economists in fact, whenever and *only when* there is such a gap. Also:'In short, economists saw the problem of environmental degradation as one in which economic agents imposed external costs upon society at large in the form of pollution' (Baumol and Oates 1988, 1).

In general therefore, either the criterion cannot be applied, or to apply it requires first to find a method for comparing A's win with B's loss. Ever since Robbins's well-known critique, economists have agreed that this cannot be done scientifically by making interpersonal comparisons of utilities. An alternative method builds on the suggestion that if A and B had had the possibility to trade they would have reached, through agreement, an efficient outcome. If A has apples and B pears, and each would like some of what the other possesses, they can mutually benefit from an exchange. The terms of this exchange compares *de facto* apples and pears. When direct bargaining can take place, there is indeed no need for some external intervention, and therefore no need to derive principles according to which values are to be compared.

The idea then is to compare people's wins or losses in terms of people's willingness to pay in hypothetical markets. Pigou (1952, 11) had argued that the range of economic inquiry is 'restricted to that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money'. The application of the principle of efficiency was thus limited to what is measured in monetary terms. Environmental economists have somewhat reversed this principle: by measuring everything with the rod of money, they create the conditions within which the principle of efficiency can be applied. As we shall see further down, a similar reversal is at the heart of the metaphor which assimilates the environment to a form of capital.

At the risk of repetition we must emphasize that the need to compare hitherto uncommensurate values stems from the willingness to use the criterion of efficiency to define environmental degradation. It is not a prerequisite for decision-making, but only one for *rational* decision-making when the idea of rationality is understood as the application of this criterion.

How do we know that there are missing markets? We know this by recognizing that we benefit from the natural environment in many ways which are not taken into account in market transactions. Thus environmental economists have developed a sophisticated taxonomy for all sorts of values attached to environmental goods. Direct use value refers to goods which are consumed directly and purposefully. Products of the forest like mushrooms or medicinal plants, the fishes of an open-access river possess non-monetized direct use value. Indirect values, as their name indicates, refer to services that natural systems render but which are not directly used. A forest, for instance, may play a variety of ecological functions beyond the production of wood. Indirect values are closely connected to the integrated nature of ecosystems. Option values refer to people's willingness to pay for the preservation of some good in view of use in the future. Existence value refers to valuations of things or non-human beings which are independent of use in the present or future. A natural scenery, for example, has existence value

if a person derives some utility from the existence of the scenery even though she knows that she will never demand *in situ* the services it provides.[3]

This taxonomy serves the first purpose of a theory of environmental management: by identifying possible cases of externalities, it distinguishes cases of environmental degradation from what we should consider "normal" uses of the natural environment. This approach has been criticized on many different accounts. A recurrent criticism has targeted the assumption of commensurability of values, the idea that everything has a price[4]. Without taking side in this epistemological debate, I wish to make the following point: that commensurability has a cost, in the form of an increased demand for ecological knowledge.

1.2 The demand for ecological knowledge

The goal of this section is to render explicit the function of natural sciences in the theoretical framework of environmental economics. For this purpose it is useful to make a distinction between the *determinants* of well-being and the *constituents* of well-being (Dasgupta and Mäler 1994, 323). The determinants are the factors that enable the realization of well-being, like factors of production. The constituents characterize well-being itself, e.g. health, welfare, freedoms. Environmental changes are usually measured in terms of determinants of well-being, for instance in stocks of natural resources, in quality of the air, etc. Environmental determinants of well-being are an intermediary point between the well-being of people whose behavior is at the source of the external effect, and the well-being of those who are victims of the effect. The role of natural sciences is then multiple: 1) to measure changes in the environmental determinants of well-being; 2) to establish causal relationships between sources of the external effect and the environmental determinants; and 3) to establish causal relationships between the environmental determinants and the constituents of people's well-being[5].

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[3] For a general presentation see, for example, Pearce and Warford (1993), chap 5. On existence value see Krutilla (1967), Krutilla and Fisher (1975) and McConnell (1983). On option value see Weisbrod (1964). His telling example is that of national parks: people who do not visit the park a particular year might still be ready to pay for the opportunity to visit it in the future, something which would be denied to them if the park was developed for alternative uses. A good treatment of this issue as a more general category of market failures is Kahn (1966). Option value also include quasi-option value which is the expected value of information gained from postponing an irreversible development. See Arrow and Fisher (1974).

[4] For philosophical presentations of this criticism, see O'Neill (1993), Anderson (1993).

[5] This three-way distinction is also helpful in understanding the responsibility of modern science both in creating environmental problems, and in solving them. Thus modern science has sometimes been indicted as the main culprit in creating the present environmental crisis. This is to some extent true in that modern science, through modern technology, has enabled an expansion in human activities. Nevertheless modern science is a necessary part of finding a solution to the present predicament for only through modern science can we know about many of the present environmental problems (i.e. its first role in the text). But it does not imply that modern science is sufficient. For, as will be argued below, it might well be unable to fulfill the third task assigned to it by environmental economics.

Let me give a very simple example that illustrates the distinction between these three tasks. Consider second-hand smoking. The environmental determinant here is the presence of cigarette smoke around you, say in the room. To determine the presence of this smoke is one task. The second task is to determine who is smoking. The third task is to know what is the effect of second-hand smoking. One may enjoy or dislike the smell of cigarette smoke. In that case, the environmental determinant (the presence of smoke in the room) of well-being is also a constituent of well-being. At another level, studies have shown that second-hand smoking leads to health hazards comparable to direct smoking. Here the effect is indirect, and can only be known through a more refined form of knowledge. The point is that, even if one is indifferent about the smell, the smoke will still have an effect on one's constituents of well-being because of these health hazards. Now the link between the environmental determinant of well-being and the constituent of well-being is not obvious. Indeed, it took many studies to establish it.

The point is then straightforward, although it may sound somewhat paradoxical: although the economic definition of an environmental degradation does not rely directly on natural sciences, it requires nevertheless, indirectly, more ecological knowledge than an ecological definition would. The reason is that the third task to be fulfilled by natural sciences is specific to the theoretical framework of environmental economics. It would not be necessary, for instance, in a theory which defined environmental degradation in ecological terms, i.e. according to the environmental determinants of well-being. So the attempt to use the criterion of efficiency as a comprehensive approach to environmental problems raises the demand for ecological knowledge.

We may note that the need for ecological knowledge is somewhat new for environmental economics. As a matter of fact, environmental economics was developed to deal with cases in which the environmental determinants of well-being were other people's constituents of well-being. This is, for example, the very idea captured by the concept of existence value: the felling of the forest is considered a form of degradation because some people would have been willing to pay for its preservation but did not have the opportunity to do so. To take another example, environmental economics was in part developed to deal with projects for the use of water. The benefits of preserving a canyon had to be compared with the benefits of building a dam. Answering these questions required little ecological knowledge.

By contrast, with respect to those forms of environmental changes which have received attention more recently (e.g., climatic change, loss of biodiversity) the (risk of) externality is not identified by the victims themselves, in most cases the victims are not even born, but by scientists who draw our attention to sharp changes in environmental determinants of well-being, like changes in the gazeous composition of the atmosphere. But it would not make much sense to think that people could express preferences over those changes. One does not care about

changes in the composition of the atmosphere. One will care only if these changes have consequences which will affect one's life. In this case, the externality will arise because indirect values, and not existence values, have not been taken into account. So there is now a gap between the environmental determinants of well-being and the constituents of well-being, a gap which is a new source of uncertainty. The crux of the matter is that this gap, and the uncertainty associated with it, is a theoretical construct inherent to the environmental economic framework.

This specificity of the environmental economics framework is compounded by an important difference between the second and third tasks assigned to natural sciences. The second task consists in identifying causes that lie behind identified consequences; the third task in determining possible consequences of an identified cause.[6] In some cases, when the causal relation is simple enough, the distinction will be trivial. But in other cases it will not be so, and the distinction will have important consequences with respect to the environmental economists' claim of objectivity.

We may relate the above analysis to the difference between environmental economists and some other environmentally conscious commentators like the American folk philosopher Wendell Berry. According to environmental economists, degradation is largely irrational and takes place because environmental assets are not properly valued. Bridging the gap between the determinants of well-being and the constituents of well-being is simply a condition for understanding how much human welfare is dependent upon its natural environment. More knowledge is thus the necessary condition for addressing environmental issues.

Berry and others, by contrast, would argue that the kind of uncertainty revealed by the environmental economic framework is inherent to our human condition, that of living in an environment that we have not created and that we cannot fully understand. In the words of Berry (1987, 54-55), '[t]he thing that troubles [them] about the industrial economy is exactly that it is not comprehensive enough, that, moreover, it tends to destroy what it does not comprehend, and that it is dependent upon much that it does not comprehend'. The problem is not the lack of knowledge *per se*. It is that we act assuming full understanding rather than assuming ignorance. For them 'notions such as the "rights of nature" or "fragile values"' are very important because they are a 'surrogate for reasoned collective decisions, a bow to the

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[6] Note that this distinction corresponds to Hayek's distinction between the methods of the social sciences and of the natural sciences, the former he called analytic, the latter compositive or synthetic: 'While in the [social disciplines] it is the attitudes of individuals which are the familiar elements and by the combination of which we try to reproduce the complex phenomena, (...) the physical sciences necessarily begin with the complex phenomena of nature and work backwards to infer the elements from which they are composed' (Hayek 1952, 38).

complexity we have not yet mastered and must therefore not disturb too much' (Brooks 1976, 122).

2. *Sustainable Development*

The concept of sustainable development draws our attention to the allocation of resources across generations. With this concern in mind, the criterion used to qualify environmental degradation cannot be simply that of efficiency, but must be derived from a philosophical discussion or political deliberation about what we owe to future generations. We may, however, distinguish between the characterization of a particular path of development as sustainable and the moral injunction to pursue this path. As in the previous section, I first lay down the general theoretical framework, and then move on to analyze the requirements it imposes upon natural sciences.

2.1 Conditions of sustainable development

We should distinguish clearly between definitions of sustainable development and conditions of sustainable development which are operationalizations of the definition. There is little controversy about the definition itself, and broad agreement around the definition put forward by the "Bruntland Report": sustainable development is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987, 43). More simply, 'sustainable development is development that lasts' (WB 1992, 9). The relevance of the qualifier "sustainable" hinges on a recognition that there may be a conflict between short-term and long-term development. Sustainable development takes meaning therefore in contradistinction to optimal development (Pezzey 1992).

There is, by contrast, great controversy in the operationalization of this definition. I do not intend here to make a systematic survey of the literature for this would require a lengthy paper of its own.[7] I just propose to examine the informational basis of the approach which assimilates the environment to a form of capital and which arguably consitutes the mainstream position within economics today.[8]

The "environment as capital" position focuses on the word 'ability' of the Bruntland definition, and on the idea of opportunities or of capacity of producing well-being (Anand and

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[7] Surveys of the litterature I have found particularly helpful in writing this section include Brookfield (1991), Victor (1991), Turner (1993), and the list of definitions provided in the appendix of Pezzey (1992).

[8] See Anand and Sen (1994), Pearce et al. (1990), Pearce and Warford (1993), Solow (1992), the World Conservation Strategy (IUCN 1980), Turner (1988b).

Sen 1994, 28). Sustainability is then the 'obligation to conduct ourselves so that we leave to the future the option or the capacity to be as well off as we are' (Robert Solow 1991, 3). One reason for speaking about capacity to well-being rather than about well-being directly is that it avoids presuming the preferences of future generations, since future generations cannot express themselves. For example, grounding a definition of sustainable development on the identification of certain basic needs would conflict with the view that a similar method of social evaluation is not to be used to assess present societies.

An analogy is often made with Hicks's definition of income (Hicks 1946, 172). The concept states that 'we should define a man's income as the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning'. It thus hinges on the distinction between flow and stock, or between income and capital. We may consume the former, but concerns for sustainability would compel us to keep the latter from decreasing. In the words of Robert Solow (1992:15): 'The duty imposed by sustainability is to bequeath to posterity not any particular thing -- with rare exceptions such as Yosemite, for example -- but rather to endow them with whatever it takes to achieve a standard of living at least as good as our own and to look after their next generation similarly. We are not to consume humanity's capital, in the broadest sense'.

We can also note the connection between the "environment as capital" position and the Hicks-Kaldor criterion of Pareto-improvement. Kaldor (1939) and Hicks (1939) tried to find a way to evaluate social changes without having to make interpersonal comparisons of utility. Changes which make everybody better off are obviously extremely rare. Most often changes will benefit some individuals and hurt others, that is, they have redistributive consequences. Qualifying a social change as good or bad seems to imply therefore to take side in a political dispute. To avoid this, Kaldor and Hicks put forward the idea that social changes are desirable if those who benefit could compensate those who lose and still be at least as well off as in the situation without the change. The criterion is independent of whether the transfer is actually made. The same idea is at work here: any environmental change is justified to the extent that the present generation gains enough to compensate future generations for the loss they may incur. This time, however, the transfer would need to be actually made, thereby embodying our moral commitment to sustainability (Pearce and Warford 1993, 51).

There is some controversy about what constitutes adequate compensation for future generations. The controversy hinges on the degree of substitutability between natural "capital" and human-made capital. The neo-classical school, as represented by Robert Solow for example, assumes complete substitutability so that what must be preserved is the general level of capital which includes human-made, natural and human capital. The so-called "London school" led by Pearce, Barbier and Turner has argued, by contrast, that complete

substitutability cannot be assumed and that one condition of sustainable development is to keep the stock of natural capital constant. Neither position is fully satisfactory. The "London school" position has been criticized on the ground that it lacks flexibility as it does not take into account actual possibilities of substitution between natural resources and human made capital. On the other hand, the concept of sustainable development as interpreted by neo-classical economists is completely free from any direct reference to the natural environment. Sustainability stands simply as a criterion in addressing the tradeoff between consumption and investment, in contradistinction to other criteria like optimality or survivability[9]. Sustainable development only means that *all* generations, present and future, should be able to make their future generations better off in terms of opportunities.[10]

Furthermore, both schools face the difficulty of having to measure the stock of natural capital. As soon as some degree of substituability between different natural resources or between natural resources and human made capital is allowed, then the same problem of commensurability as the one raised in the preceding section arises. For the valuation of the environment as a form of capital requires to value all the benefits derived from natural resources and ecological systems. Unless natural "capital" is measured in physical terms, thereby denying the possibility of substitutions, the "environment as capital" position is thus open to the same remark as made above: it generates a demand for ecological knowledge. To this point I wish to add here a comment on the metaphor itself.

2.2 *Is the environment a form of capital?*

Is it valid to think about the environment as a form of capital? A capital can be defined either as a stream of income, or by things which have a capacity of production, for example machines. In either case it is a human artifact, an integral part of human society, which includes those natural resources which have been integrated in the human economy. The concept of capital has indeed been defined as 'anything which yields a flow of productive services over time and which is *subject to control* in production processes' (Herfidhal and Kneese, cited in Victor 1991, 193; emphasis added). So when the environment itself is defined as what is *not* within the control of human society it cannot be assimilated, by definition, to a form of capital.

How should we then understand the metaphor? Perhaps as an intention, as meaning

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[9] Optimality is a path of development that maximizes the present value of future gains in human welfare; sustainability is human welfare that rises or at least does not fall; survivability is a path of development that lies above a minimum level of welfare. For further discussion and proof of the distinctiveness of the three criteria, see Pezzey (1992).

[10] For further comparison of the two views within the 'environment as capital' position, see Victor (1991).

that even if we do not control the natural environment we are going to institute ways to do so. Our control here is then limited by the extent to which we can *describe* the natural environment. Classical forms of capital are defined by social relations. Ecological knowledge may play a role, but only in refining the use of an environmental form of capital previously defined in terms of these social relations. By contrast, the assimilation of the environment as a form of capital relies first and foremost on ecological knowledge. This knowledge will be instrumental in establishing social relations that will make the environment akin to a more classical form of capital. The sequence between the actual existence of social relations and the naming of these relations is thus inverted. So, in Pearce's words, 'the constant capital rule requires that environmental assets be *valued* in the same way as man made assets, otherwise we cannot know if we are on a "sustainable development path"'(Pearce 1991, 2). So the environment can be assimilated to a form of capital only to the extent that we are able to describe it, supposedly through environmental sciences. The conceptual distinction between the environment and the environment-as-a-form-of-capital that I am trying to establish here hinges therefore on the limits of our understanding of the environment.[11] It is this understanding - rather than the environment out there - which can properly be assimilated to a form of capital. And this leaves out all that we do not know, and which nevertheless affects our well-being.

II. THE POLITICAL LIMITS OF THE ECONOMIC APPROACH

In the preceding part, I have showed how the economic approach to environmental issues, because of its emphasis on commensurability, increases the demand for information from natural sciences, and thereby exacerbates the uncertainty under which decisions are to be made. By stressing that only what is evaluated can be preserved, economists in fact assert that only what can be *known* can be preserved. The remark applies both to attempts to apply the criterion of efficiency, as well as to attempts to treat natural resources as a form of capital. The economic approach is therefore open to the criticism leveled by a number of commentators that it is our incapacity to respect what we do not know which is the fundamental cause of present environmental problems. In this part, I turn to political aspects of the issue. The economic approach is closely associated with a conception of politics that we may call rational. According to this conception, the process of decision-making should be reduced to the

[11] Note that the argument is independent of any epistemological assumption as to whether or not there is a "true" environment to be known.

implementation of certain principles. Politics would therefore be a matter of expertise rather than, say, of political deliberation.

One of the purposes of this conception is to address the problem of power, that is, the possibility that those who control the process of collective decision-making use this position to enhance their private interests rather than that of society. The two ways economists have dealt with the issue is either by reducing the scope of government on the ground that markets failure cannot always be improved upon because of state failure (Coase 1960), or, more traditionally, by trying to "rationalize" the process of decision-making in order to liberate it from private interests. Obviously the former solution is not relevant for us here, for it suggests that the doing nothing strategy is less costly in terms of welfare than state intervention. So, according to the latter view, politics should be put in the hand of benevolent experts, whose benevolence would be ensured by democratic supervision.

To circumscribe the argument, I shall consider cost-benefit analysis (CBA) as the exemplar of the economic valuation approach. I first present briefly the purpose of CBA in the process of decision-making, and then examine the extent to which this purpose is undermined by the fact that CBA, as more generally the economic approach, raises the demand for ecological knowledge and thereby creates uncertainty.

1. Cost-benefit analysis and collective decision-making

The relationship between CBA and policy making is somewhat ambiguous: is the goal of CBA merely to provide additional information to policy-makers, or does it constitute the process of decision-making? The matter is a disputed one. Yet, starting from the presumption that there are a number of environmental problems that need to be addressed I wish to examine critically the view that CBA could provide an instrument in support of more environment friendly policies. So let us assume that we agree on using CBA as a mechanism for policy-making, and for the sake of the argument take side with the view that CBA is 'carefully designed to ensure that public decisions accurately reflect what it is that the society wants to accomplish' (Stokey and Zeckhauser 1978, 136); and in particular that an 'aggressive and effective use of [CBA] in the areas of natural resource and environmental quality programs can serve to "redress the balance between private interests and the public interest" by reducing the extent to which special interest groups are able to get their way at the expense of the public as a whole'(Campen 1986, 133, citing Haveman 1973, 876).

My argument is based on the following remark: since the results of CBA depend upon the informational basis used, the quality of the result of CBA will crucially depend upon the quality of its informational basis. Put differently, the "rationality" and "objectivity" of CBA

will depend upon the "rationality" and "objectivity" of its informational basis. As a matter of fact, CBA consists simply in deducing from a given informational basis the desirability of a project according to a given criterion. CBA does not create information, but merely organizes information in a way which makes it more easy to interpret. The contention that CBA leads to better decision-making must therefore rest on showing that it is easier to select the informational basis to be used in CBA then to make a good decision without recourse to CBA. Suppose, for example, that the matter is to choose between policy X and policy Y. One way to proceed is to compare X and Y without CBA, another is by carrying out a CBA for both projects. Call the information basis to be used in each case I (X) and I (Y). Then CBA will lead to better decision making if and only if it is easier to define I (X) and I (Y) then to choose between X and Y directly (i.e. without CBA). In other words, if the margin of error in selecting I(X) and I(Y) is greater than in choosing between X or Y, then a CBA may lead to a more rather than less likelihood of error in decision-making. My contention, then, is that in some cases it is not possible to justify the informational basis that is used to carry out CBA, and thus that the results which are generated are not helpful. In particular, CBA does not provide a simple solution to the problem of power because the problem re-appears when defining the informational basis.

Note that my argument takes for granted the objectivist epistemological stance of rational choice theorist. It is not an epistemological argument of the sort made, for example, by Hayek (1945) and Marglin (1992). That is, the point I wish to make is not that the goal of CBA cannot be attained because it leaves out important kinds of knowledge, notably that which has to do with knowledge of the here and then. The argument I wish to make here is about *quantities* of knowledge.

2. Is there an objective informational basis?

The problem of the informational basis is seldom raised because the answer seems obvious: the information to be used is constituted of people's preferences, as measured for instance in willingness to pay (WTP). Ideally thus, people would express their WTP for particular goods and the analyst would merely collect this information and deduce the result of CBA. Things are of course not so simple because individuals need to be informed about the various possible consequences of a project. Information will therefore flow in both directions: from the policy-maker to the analyst in informing them about the different facets of a project, and then from the individuals back to the analyst. In practice, analysts are often reluctant to ask people about their WTP for different goods or services directly, and prefer to rely on indirect methods to assess people's WTP. In this case the problem is to determine what effects

of a project or a policy are to be taken into account. Asking how much effort should be put in determining all the possible consequences of a particular project is in fact equivalent to asking how much information should be given to individuals about the project.

So the informational basis will be composed first of information about the possible consequences of a policy, and second of people's informed preferences. My concern is with the former. We can think of two principles for selecting this information. The first one would justify the level of information used according to external criteria the objectivity of which is independently determined. One that comes to mind is that we shall rely on the state of the art, that is on all the information we have. The second way of justifying the level of information used would be to make it itself the object of CBA. To the extent that information has a value and a cost, the level of information to be used in a CBA could perhaps be determined according to a prior CBA.[12]

This second solution, unlike the first one, does not close the problem but merely pushes it back at another level. If we use a CBA to determine the informational basis to be used in a subsequent CBA, then clearly we need to investigate what informational basis will be used in carrying out this first CBA. So the difficulty is transferred at a meta-scientific level: if we cannot agree on an informational basis, for instance on scientific results, then can we agree on how much more research needs to be done in order to reach agreement? And we could imagine that the question could be taken at yet another level by resorting once more to a CBA. And so on. In the end, recourse to an external criterion, at whatever level, will be necessary to validate the result of one CBA, and in its wake, the informational basis used in the other CBAs.

I shall limit the discussion to two levels only: whether external criteria can justify directly the informational basis of the original CBA (i.e. the one which leads to a decision about the project); or whether they can justify reliance on a CBA to justify, in turn, the informational basis of the original CBA. To clarify the presentation, let us call the first issue direct justification, and the second indirect justification.

Direct justification is merely the view that we should use the amount of information available, that is that we should rely on the state of the art. At this point, proponents of CBA must introduce some epistemological assumption about what is the "state of the art", one which is compatible with the aspiration to neutrality. Only agreement within the scientific community can fulfill this role: the state of the art is the body of constituted knowledge which

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[12] Little and Mirrlees (1991) provide, to my knowledge, the only attempt in the literature to value the information provided by CBA in a situation of uncertainty. Their approach is however inadequate. They pose the problem as having to choose between project 1 and project 2 and try to assess the value of carrying out a CBA when the real values of each project is not known. But surprisingly they measure the value of this information as if they were themselved external observers who knew the real values of each project. That is, the real values are used to assess the value of CBA.

gathers consensus among the scientific community. It is not necessary here to introduce epistemological considerations to make this point. The user of scientific knowledge cannot herself judge the validity of the information she receives from the scientist. The authority of the scientist does not reside in her claiming knowing a truth, but in her using of knowledge which is supported by the scientific community. In other words, the scientist's authority resides in the fact that she is a member of the community of scientists. So it is asked that science fulfills its traditional modern social function, in Ziman's expression, that of creating 'public knowledge' (Ziman 1968).

We can see that the limit of direct justification corresponds exactly to the existence of uncertainty. Uncertainty implies that a decision will have to be made, not according to the state of the art, but according to beliefs. In the present perspective, uncertainty is indeed defined either by the fact that scientists refuse to answer a question, or by the fact that they disagree among themselves. Now economists have developed a sophisticated theoretical framework to deal with uncertainty which consists in assigning numerical probabilities to our subjective beliefs. This framework is however incomplete. For even if we can assign subjective probabilities to the occurrence of different states of the world in order to extend the usual model of rational choice to situations of uncertainty, in the case of collective choice and unlike in the case of individual choice, the probabilities used will have to be justified.[13]

Probabilities have commonly been interpreted in two different ways: as representing a stochastic process, as when we throw a dice; or as representing a degree of belief. The choice of interpretation will undoubtedly bear on the discussion we pursue here. Yet, since the eventual purpose of this conceptual discussion is to shed light on the economic approach to environmental issues, we can limit the analysis to considering probabilities as degrees of beliefs. For if arguably some cases of uncertainty related to environmental issues fall under the first category, in most cases however, the uncertainty surrounding environmental issues has more to do with our ignorance then with stochasticism. In other words, it cannot be said that the probabilities we are to make us of are objective, as notably shown by a large and growing sociological literature on risk[14]. Furthermore, the issues we are facing today are very often new so that appeal to past experiences is of little help.

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[13] As a side remark, we may note that the validity of assigning numbers to subjective beliefs was defended by Ramsey (1931) on the ground that we can measure our beliefs by looking at the way we act. Subjective probabilities are thus revealed by our actions. Yet, when actions are to be justified, either for moral or political reasons, then appeal to subjective probabilities is insufficient. Utilitarians, for instance, argue that an action is good if it maximizes the happiness of all. In a situation of uncertainty, relying on subjective probabilities would imply that an action is good whenever there is a mere possibility that it will maximize the happiness of all. Such a definition would obviously have little moral import. Indeed, as Smart (1973, 41) remarked, 'until [utilitarians] have an adequate theory of *objective* probability utilitarianism is not on a secure theoretical basis'.

[14] This literature is known as the sociology of risk. See notably Douglas and Wildavsky (1982), Shrader-Frechette (1991), Schwarz and Thompson (1990).

So we may assume that recourse to probabilities reflects our lack of information. This implies, conversely, that the level of information at our disposal will bear upon how we assign different probabilities to various possible occurences. The level of information to be used becomes a matter of choice which precedes CBA and must be justified. Information itself has now an economic value, which corresponds to how it affects our decisions, as well as a cost.[15] So the question as to how much effort should be invested in gathering more information is independent of the economic treatment of uncertainty. It is orthogonal to it, if I may say so. The concept of "state of the art" has therefore no clear meaning as soon as we are in a situation of uncertainty, and with it goes the possibility of direct justification.

There remains the possibility of indirect justification.[16] The question is now the following: can the decision to invest in more knowledge itself be made according to a cost-benefit analysis? The economics of research and development has dealt with this kind of question with some success (for instance, Dasgupta and Stiglitz 1980, 1981). It has answered questions like the following: Given some characteristics of the technology to be discovered, how much money should a firm rationally invest in this direction ? And when should it stop funding when no breakthrough has been made? In such cases, the level of knowledge to be used in CBA can be determined in an economically rational way because there is a long experience in problem solving which can be used to guide the decision of whether to invest in more research.

Against indirect justification we can reproduce the same argument as the one made against direct justification. The possibility to carry out a CBA to determine how much effort should be invested in creating knowledge will depend upon an informational basis which will have to include some knowledge about how knowledge is created. Now there is bound to be some uncertainty on this respect too. In this case, we are facing uncertainty not just over what may happen, but also over how much we know relatively to how much there is to know.

In a situation of uncertainty, lacking a method for determining the informational basis to be used, one wonders how CBA could yield neutral or objective results. Arguably the problem arises quite often in practice in the form of political biases in the analysis. Indeed the main

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[15] On the economic value of information, see Gould (1974), Dasgupta and Heal (1979), pp. 388 ff.

[16] The imperfection of ecological knowledge is not in itself sufficient to dismiss the economic valuation approach. The approach retains its 'pragmatic advantage': the fact that it delivers a good, if not *the* good. Even if we know that we do not know, a cost-benefit analysis based on what we do know provides a simple mechanism to solve conflicts over environmental issues. Nordhaus (1991)'s treatment of the greenhouse effect using cost-benefit analysis is a model of the genre. While recognizing all the uncertainties involved, and the extreme simplicity of his model both on the economic and on the ecological sides, he can nevertheless produce an answer to the question "To slow or not to slow?" Doing so, he challenges us to provide a better answer within the framework he laid down. Thus, although our knowledge of the consequences of a line of action may not be perfect, there may still be ground to compare different decisions, and economic valuation may well enable us to improve our process of decision-making. So the validity of the pragmatic advantage rests on the assumption that a cost-benefit analysis is qualitatively better than any random answer. For a criticism of Nordhaus along similar lines, see Funtowicz and Ravetz (1993).

criticism against CBA in practice, according to Campen (1986, 52-3), is that it 'is used to justify particular positions' while being 'presented as a scientific, unbiased method of analysis'[17]. This kind of bias is easily introduced in the analysis by selecting the informational basis, and in particular the secondary effects to be included. If the problem is widely recognized, including by economists, the belief endures that the tool in itself lacks substantive content. This is however erroneous. It is true that in theory CBA could be used to defend any position, and thus that the tool is not biased in this sense. The rationale of the tool, however, was to bring about rationality and neutrality in decision-making. So the neutrality of CBA should be gauged not in the abstract, but within a field of power relationships. CBA will not appear neutral then if it is unable to resist relations of power. If my analysis is correct, the fact that CBA has been abused in the past does not reveal just the difficulty of applying it in practice, but more profoundly a conceptual flaw which originates from the possible logical impossibility of determining the information to be used in a neutral way.

Let me put this is a slightly different way. The ethical foundation of CBA is the Hicks-Kaldor criterion of Pareto improvement described earlier. The point of the criterion, we may recall, was to provide a way to assess social changes without having to take side in the political dispute over the redistributive consequences of a change. To put it very simply, a policy is good according to the criterion if it increases the size of the pie so that the winners win enough as to be able to compensate the losers and still remain winners. The fact that in practice compensation does not take place is of course a major shortcoming of the criterion. The argument presented above takes this criticism a step further: if there is no obligatory compensation and if the criterion is used to justify policies, then those who are to win from a policy have an interest in showing that the policy meets the criterion. That is, they have an interest in showing that the size of the pie will increase. The neutrality of the criterion is therefore subject to our practical capacity of measuring the size of the pie in a neutral way, and this capacity is undermined by the existence of uncertainty.

III. FACING THE DILEMMA

Let me summarize the two points made in the two first parts of this paper. In the first part, I have shown that the application of the criterion of efficiency to environmental issues generated a demand for ecological knowledge beyond what may be necessary for a different

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[17]Among many other sources, Campen cites the conclusion reached by a congressional sub-committee on the use of CBA: 'The most significant factor in evaluating a benefit-cost study is the name of the sponsor. Benefit-cost studies generally are formulated after basic positions on an issue are taken by the respective parties. The results of competing studies predictably reflect the respective positions of the parties on the issue.' (In Campen 1986, 55).

procedure of decision-making. In the second part, I have shown that the political legitimacy of rationalizing politics with such tools as CBA required to justify the informational basis used. The two points together introduce a dilemma: on the one hand, the application of the model of rational choice generates a demand for more information; on the other hand, the legitimacy of this form of decision-making rests on a claim of objectivity, and thus on the possibility of *justifying* the information used. This dilemma arises in fact from the very role environmental economics proposes to play, that of an intermediary between natural sciences and policy-making. When dealing with policy-makers, economists act as experts and must therefore justify their positions by making claims of objectivity; when dealing with natural scientists, economists make a demand for knowledge possibly beyond what scientists may be able to provide.

As just stated this dilemma is merely a logical possibility and needs not arise in practice. Yet, we can provide some arguments as to why the dilemma will arise with respect to present environmental problems. This is my purpose in the following two sub-sections. In the last one I draw some conclusions with respect to the politics of sustainability.

1. Ecology and economics

One can only be surprised by how little ecology there is in environmental economics. The main reason is that economists have tended to look at environmental resources just as commodities on the shelves of a store, rather than as active elements of integrated ecological systems. Some commentators have even argued that economics and ecology are in fact incompatible with one another, that environmental economics is a contradiction in terms (Norgaard 1985). As previously in this paper, I do not want to pursue this matter at an epistemological level, but wish rather to draw attention to the dilemma that arises from the triangular relationship between economics, ecology, and politics[18].

The dilemma is related to the tension between the fact that, for economists, the science of ecology has an instrumental value, whereas natural scientists view it as an end in itself, sometimes even as a source of wonder.[19] In the economic perspective, the production of

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[18] We can still expect something from a theoretical integration of economics and the science of ecology, that is a theoretical understanding of how market failures arise. This is what general equilibrium models of resource allocation based on the flow of material across economic and ecological systems attempt to do (Ayres and Kneese 1969, Perrings 1987). But the results thereby derived are only valuable as general guidelines. For they assume perfect knowledge, not only of the conditions of production within the human economy, but also of all ecological relationships.

[19] 'Now to the very heart of wonder. Because species diversity was created prior to humanity, and because we evolved within it, we have never fathomed its limits. As a consequence, the living world is the natural domain of the most restless and paradoxical part of the human spirit. Our sense of wonder grows exponentially: the greater the knowledge, the deeper the mystery and the more we seek knowledge to create new mystery. This catalytic reaction, seemingly an inborn human trait, draws us perpetually forward in a

knowledge is an economic good which serves as an input in the process of achieving sustainable development. The consequence is that the economic agenda - to reach a decision - will not do justice to the complexity of the natural world. We can generalize the point: there is a latent conflict between the defense of CBA as providing a clear answer (what we called its pragmatic advantage), and the assertion that it is scientific and unbiased. In practice this conflict may not arise as long as the scientific knowledge to be used is uncontroversial. But when it is controversial, the fact that an answer must be given runs counter to the view that objectivity, in science, is to be defined by consensus.[20] To put it simply, the economist or entrepreneur will always have to leave aside some details in order to apply the principle of efficiency, whereas ecologists 'work on the assumption that all of the details matter in the end, in some unknown but vital way' (Wilson 1984, 8):

> Eliminate just one kind of tree out of hundreds in such a forest, and some of its pollinators, leafeaters, and woodborers will disappear with it, then various of their parasites and key predators, and perhaps a species of bat or bird that depends on its fruit - and when will the reverberations end?... In either case the effects are beyond the power of present-day ecologists to predict (Wilson 1984: 8).

2. *Manufactured uncertainty*

I have argued that the dilemma presented above will arise as soon as scientists tend to disagree on issues of direct public importance. One reason scientists will disagree in the present context has to do with a change in the relationship between science and technology. The tension between the need for disagreement between scientists as a necessary element for the creation of knowledge, and the social role of science based on its capacity to create consensus was traditionally solved by the "superiority" of scientific knowledge over technological know-how (Beck 1992, chap. 7). Disagreement among scientists supposedly only takes place at the "frontier" in the process of creating new knowledge[21]. Technology, by contrast, would only rely

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search for new places and new life. Nature is to be mastered, but (we hope) never completely. A quiet passion burns, not for total control but for the sensation of constant advance'. (Wilson 1984, 10) This view is characteristic of a long tradition of field ecologist. Gilbert White, in the *Natural History of Selborne*, wrote: 'The most insignificant insect and reptiles are of much more consequence, and have much more influence in the economy of nature, than the incurious are aware of; and are mighty in their effect, from their minuteness, which renders them less an object of attention; and from their numbers and fecunidity. Earthworms, though in appearance a small and depiscable link in the chain of nature, yet, if lost would make a lamentable chasm'. (Cited in Worster 1994, 7-8). Can the economist be curious about nature? As Worster notes, 'ecological study is the means by which the naturalist establishes communion with nature' (11).

[20] SeeZiman (1968), p. 15 and Gibbons (1985, 3) who discusses opposition 'between the scientific entreprise as an open community of scholars and the knowledge production entreprise as an academic research system".

[21] I am fully aware of the controversy among philosophers of science over this conception of scientific knowledge, notably in the wake of Thomas Kuhn's work. Again I believe that my argument can be made without entering these deeper epistemological waters.

on confirmed knowledge, and thus on propositions over which scientists do agree. But this hierarchy between science and technology is to some extent reversed when we deal with environmental issues. For the problem then is not to make technology work, but rather to assess the full consequences of using certain forms of technology. Indeed, it seems that our greater capacity to act has merely led to greater uncertainty.[22] The point was well expressed by the 'Brundtland Report':

> When the century began, neither human numbers nor technology had the power to radically alter planetary systems. As the century closes, not only do vastly increased human numbers and their activities have that power, but major, unintended changes are occurring in the atmosphere, in soils, in waters, among plants and animals, and in the relationship among all of these. *The rate of change is outstripping the ability of scientific disciplines and our current capabilities to assess and advise. It is frustrating the attempts of political and economic institutions, which evolved in a different, more fragmented world, to adapt and cope.* It deeply worries many people who are seeking ways to place those concerns on the political agendas. (WCED 1987, 22 - emphasis added).

There is an additional tack to the issue. The usual hierarchy between knowledge and science was closely linked to the possibility of replicating in the "real" world some theoretical results derived in laboratories. The *ceteris paribus* clause of common scientific results means that we can consider as a given the external conditions in which the experiment takes place. Now if we want to understand the impact of human activities on its environment, no similar assumption can be made. This means that we cannot rely on, say, falsificationist forms of scientific knowledge to know the consequences of our action on the environment while at the same time preserving this environment. For the destruction of this environment is the risk we would have to run in order to develop this kind of knowledge. This risk is, in many cases, not compatible with our idea of sustainability. In short, our approach to sustainability cannot rest on a form of knowledge which, to be acquired, would suppose that we test the limits of unsustainability.

Note, finally, that scientific disagreement is present within economics itself, as we have seen. The dispute about the degree of substituability between natural resources and human made capital, for example, cannot be solved on empirical grounds, for to do so would require to test the limits of sustainability. What makes this disagreement paradoxical is that, despite it, economists still impose upon themselves the constraint of neutrality. They propose to rationalize politics in order to achieve sustainability although the very basis of their

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[22]As the German philosopher Hans Jonas puts it, 'The gap between the ability to foretell and the power to act creates a novel moral problem. With the latter so superior to the former, recognition of ignorance becomes the obverse of the duty to know and thus the part of the ethics that must govern the evermore necessary self-policing of our outsized might'. (Jonas 1984, 8) See also Beck (1992), Giddens (1990, 1995).

conception of rationality, namely knowledge of a causal model that explains how means affect ends, is not available.

3. What politics?

We should view this failure within economics as revealing the impossibility of a politics for sustainability which would be based on a search for consensus. To put it differently, the attempt at rationalizing politics is at the cost of raising the demand for ecological knowledge, and the impossibility of environmental sciences to meet this demand creates a gap which is also a possibility of disagreement from which a resurgence of non-rational (in the sense of economists) politics will take place. Ulrich Beck (1995) has aptly called this process 'reflexive politics'. Reflexive because the very attempt at reducing the scope of politics creates new possibilities for disagreement and thus for politics, as soon as it is recognized that the objectivity of rules of decision-making (e.g. CBA) does not rely on a stable basis.

For example, a possible reply to my criticism of CBA could be that we should simply carry out not one but a number of CBA using different informational basis. In some cases, this strategy might reveal that the disagreement over informational basis is irrelevant because it does not lead to different policy recommendations. Although this is possible it obviously cannot be assumed to be the case in general. When it is not, then the very use of CBA is greatly undermined. For recall that one of its central purpose was not only to settle political disputes, but also to yield one answer, what Anderson (1993) calls its 'pragmatic advantage'. To call for a number of different CBA is like saying that any political position should be justified, among other things, on an argument of efficiency. By contrast, the original purpose of using the criterion of efficiency laid in its capacity to achieve consensus on a minimum policy.

The dilemma can be put in yet a different form. Either we rely little on scientific knowledge to design policies in which case we cannot justify political decisions with the criterion of efficiency. Or we try to apply this criterion to "rationalize" politics in which case we generate a demand for knowledge beyond what can be provided consensually by the scientific community, and thereby generate disagreement among scientists which is bound to bounce back at the political level. In the process, according to some authors, the issue of decision making under uncertainty has been transformed into an issue of decision making under 'conflicting certainties' (Schwarz and Thompson 1990), or of 'decision under *controversy*'(Hourcade et al. 1992).

A possible criticism of the above analysis must be dispelled. One may conclude too fast that the analysis simply discards the possibility of rational decision-making due to the existence of radical uncertainty, and in the process that it dismisses the relevance of scientific

knowledge. Since natural sciences cannot enlighten us on the more desirable line of action, any line of action would be equally warranted. Such a conclusion is erroneous. As was emphasized previously, knowledge from natural sciences is crucial to inform us about changes in the environmental determinants of well-being, thereby making us aware of the risks we are running. But it would be asking too much from it to know what the effects on people's well-being will actually be. What natural sciences create at this point is greater uncertainty and ignorance. So that an appropriate strategy for sustainability would be one which would use this ignorance as an engine of change, rather than one which rests on the illusion of knowledge. The general problem of sustainability is not therefore, "What would we do if we could have a complete theory of ecology?", but rather, "How can we achieve sustainability without having to rely on a complete theory of ecology?" What environmental economics provides is an illusion of management. What we need, instead, is a politics of self-limitation.

References

Anand, S. and A. Sen (1994) 'Sustainable human development: concepts and priorities', paper written for the fifth *Human Development Report*, Cambridge, Mass.: Harvard University.

Anderson, E. (1993) *Value in Ethics and Economics*, Cambridge, Mass.: Harvard University Press.

Arrow, K. and A. Fisher (1974) 'Environmental preservation, uncertainty, and irreversibility', *Quarterly Journal of Economics* 88: 312-319.

Ayres, R. and A. Kneese (1969) 'Production, Consumption and Externality', *American Economic Review* 59: 282-298.

Baumol, W. and W. Oates (1988) *The Theory of Environmental Policy. 2nd ed.*, Cambridge: Cambridge University Press.

Beck, U. (1992) *The Risk Society*. London: Sage. 1986.

Beck, U. (1995) *Ecological Enlightment*, New Jersey:

Beckerman, W. (1995) *Small is Stupid: Blowing the Whistle on the Greens*. London: Duckworth.

Berry, W. (1987) *Home Economics*, San Francisco: North Point Press.

Bromley, D. (1991) *Environment and Economy: Property Rights and Public Policy*, Oxford: Basil Blackwell.

Brookfield, H. (1991) 'Environmental sustainability with development: what prospects for a research agenda', in Stokke O. (ed.) *Sustainable Development*, London: Frank Cass.

Brooks, H. (1976) 'Environmental decision making: analysis anmd values', in Tribe, L., Schelling, C. and J.Voss (eds.) *When Valuues Conflict: Essays on Environmental Analysis, Discourse, and Decision*, Cambridge, Mass.: Ballinger Publishing Co.

Buchanan, J. and W. Stubbeline (1962) 'Externality', *Economica* 29: 371-84.

Campen, J. (1986) *Benefit, Cost, and Beyond*, Cambridge, Mass.: Ballinger Publishing Company.

Coase, R. (1960) 'The problem of social cost', *Journal ofLaw and Economics* 3: 1-44

Dasgupta, P. (1982) *The Control of Resources*, Oxford: Basil Blackwell.

Dasgupta, P. (1991) 'The environment as a commodity', in Vines, D. and A. Stevenson (eds.) *Information, Strategy, and Public Policy*, Oxford: Basil Balckwell.

Dasgupta, P. and Heal (1979)

Dasgupta, P. and K.-G. Mäler (1994) 'The environment: the environment and emerging development issues', in R. Layard and S. Glaister (eds.) *Cost-Benefit Analysis*. New York: Cambridge University Press.

Dasgupta, P. and J. Stiglitz (1980) 'Resource depletion under technological uncertainty', *Econometrica* 49 (1): 85-104.

Dasgupta, P. and J. Stiglitz (1981) 'Industrial structure and the nature of innovative activity', *Economic Journal* 90: 266-293.

Douglas, M. and A. Wildavsky (1982) *Risk and Culture*, Berkeley: University of California Press.

Funtowicz, S. and J. Ravetz (1993) 'The worth of a songbird: ecological economics as post-normal science', mimeo.

Gibbons, M. (1985) 'The chaniging role of the academic research system', in Gibbons, M. and B. Wittrock (eds.) *Science as Commodity: Threat to the Open Community of Scholars*, Harlow, U.K.: Longman.

Giddens, A. (1990) *The Consequences of Modernity*, Stanford: Stanford University Press.

Giddens, A. (1995) *Beyond Left and Right: The Future of Radical Politics*, Stanford: Stanford University Press.

Gould, John (1974) 'Risk, stochastic preference, and the value of information', *Journal of Economic Theory* 8: 64-84.

Haveman, R. (1973) 'Efficiency and equity in natural resource and environmental policy', *American Journal of Agricultural Economics* 55: 868-78.

Hayek, F. (1945) 'The use of knowledge in society', *American Economic Review* 35.

Hayek, F. (1952) *The Counter-Revolution of Science*, Glencoe, Ill. : The Free Press.

Hicks, J. (1939) 'The foundations of welfare economics', *Economic Journal*, 49: 698-712.

Hicks, J. (1946) *Value and Capital*, 2nd edition, Oxford: Clarendon Press.
Hourcade, J.-C., Salles, J.-M. and D. Théry (1992) 'Ecological economics and scientific controversies. Lessons from some recent policy making in the EEC', *Ecological Economics* 6: 211-233.
IUCN (International Union for the Conservation of Nature and Natural Resources) (1980) *World Conservation Strategy: Living Resource Conservation for Sustainable Development*, Gland, Switzerland: IUCN-UNEP-WWF.
Jonas, H. (1984) *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*, trans by the author with the coll. of D. Herr, Chicago: The University of Chicago Press. (1979)
Kahn, A. (1966) 'The tyranny of small numbers', *Kyklos*
Kaldor (1939) 'Welfare propositions of economics and interpersonal comparisons of utility', *Economic Journal*, 49: 549-552.
Krutilla, J. V. (1967) 'Conservation reconsidered', *American Economic Review*, 57(3): 777-786.
Krutilla, J. V. and A. Fisher (1975) *The Economics of Natural Environments: Studies in the Valuation of Commodity and Amenity Resources*, Baltimore, Md.: Johns Hopkins Press for Resources for the Future.
Layard, R. and S. Glaister (1994) *Cost-Benefit Analysis, 2nd ed*, Cambridge: Cambridge University Press.
Little, I.M.D. and J. A. Mirrlees (1991) 'The costs and benefits of analysis: project appraisal and planning twenty years on', in *Proceedings of the World Bank Annual Conference on Development Economics 1990*. Reprinted in Layard and Glaister (1994).
Mäler, K.-G. (1974) *Environmental Economics: A Theoretical Inquiry*, Baltimore, Md.: the Johns Hopkins University Press.
Marglin, S. (1992) 'Economics as a system of knowledge', Harvard Institute of Economics Research, Discussion Paper 1585.
McConnell, K. (1983) 'Existence and bequest value', in R. D. Rowe and L. G. Chestnut (eds.) *Managing Air Quality and Scenic Resources at National Parks and Wilderness Areas*, Boulder, Col.: Westview Press.
Munasinghe, M. (1993) 'Environmental issues and economic decisions in developing countries', *World Development* 21 (11): 1729-1748.
Norgaard, R. (1985) 'Environmental economics: an evolutionary critique and a plea for pluralism', *Journal of Environmental Economics and Management* 12: 382-394.
O' Neill, J. (1993) *Ecology, Policy and Politics: Human Well-Being and The Natural World*, London: Routledge.
Pearce, D., Markandya, A. and E, Barbier (1989) *Blueprint for a Green Economy* , London: Earthscan.
Pearce, D., Barbier, E., Markandya, A., Barrett, S., R. K. Turner, and T. Swanson (1991) *Blueprint 2: Greening the World Economy*, London: Earthscan.
Pearce, D., Barbier, E., and A. Markandya (1990) *Sustainable Development: Economics and Environment in the Third World*, Adelshort, UK: Edward Elgar.
Pearce, D. W. and J. J. Warford (1993) *World Without End: Economics, Environment, and Sustainable Development*, New York: Oxford University Press, Publ. for the World Bank.
Perrings, C. (1987) *Economy and Environment*, New York: Cambridge University Press.
Pezzey, J. (1992) *Sustainable Development Concepts: An Economic Analysis*, World Bank Environment Paper Number 2, Washington, D.C.: The World Bank.
Pigou (1952) *The Economics of Welfare*, 4th ed., London: Macmillan.
Porter, T. (1995) *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton, NJ: Princeton University Press.
Ramsey, F. (1931) 'Truth and objectivity', in *The Foundations of Mathematics*, London: Routledge and Kegan.
Schwartz, M. and M. Thompson (1990) *Divided We Stand: Redefining Politics, Technology and Social Choice*, New York: Harvester Wheatsheaf.

Shrader-Frechette, K. S. (1991) *Risk and Rationality*, Berkeley: University of California Press.
Smart, J. J. C. (1973), 'An outline of a system of utilitarian ethics', in Smart and Williams, *Utilitarianism: For and Against*, Cambridge: Cambridge University Press.
Solow, Robert (1991) 'Sustainability: An Economist's Perspective', The eighteenth J. Seward Johnson Lecture. Wood Hole, MA: Woods Hole Oceanographic Institution, June 14.
Solow, R. (1992) 'An almost practical step toward sustainability', Invited Lecture on the Occasion for the Fortieth Anniversary of Resources of the Future. Washington D.C., October 8.
Stokey, E. and R. Zeckhauser (1978) *A Primer for Policy Analysis*, New York: Norton.
Turner, R. K. (1988a) *Sustainable Environmental Management: Principles and Practice*, London: Belhaven Press.
Turner, R. K. (1988b) 'Sustainability, resource conservation and pollution control: an overview', in Turner (1988a).
Turner, R. K. (1993) 'Sustainability: principles and practice' in Turner (ed.)*Sustainable Environmental Economics and Management: Principles and Practice*, London: Belhaven Press.
Victor, P. (1991) 'Indicators of sustainable development: some lessons from capital theory', *Ecological Economics*, 4: 191-213.
Weisbrod, B. (1964) 'Collective consumption services of individual consumption goods', *Quarterly Journal of Economics* 78: 471-477.
Wilson, E. O. (1984) *Biophilia*, Cambridge, Mass.: Harvard University Press.
World Bank (1992) *World Development Report 1992*. New York: Oxford University Press.
World Commission on Environment and Development (1987) *Our Common Future*. New York: Oxford University Press.
Worster, D. (1994) *Nature's Economy*, 2nd edition, Cambridge: Cambridge University Press.
Ziman, J. M. (1968) *Public Knowledge: An Essay Concerning the Social Dimension of Science*, Camridge: Cambridge University Press.

3

Population: Malady or Symptom?

Franck Amalric and Tariq Banuri

The International Conference on Population and Development (ICPD), held in Cairo in September 1994, has without doubt struck a new era in the discourse over population. Whereas the two precedent conferences (Bucharest, 1974 and Mexico, 1984) had witnessed a confrontation between the South and the North, a consensus seems to have emerged on the road to Cairo.

In Bucharest, the North was pushing for the implementation of population control policies in the South, an attempt which was violently resisted by Southern countries who shifted the debate to larger development issues. Thus, the final act of the conference included the statement that 'the basis for an effective solution of population problems is, above all, socio-economic transformations'.[1] Ten years later in Mexico City, the protagonists had changed sides. The United States, under the lobbying of anti-abortion groups, had dropped its leading role in promoting population control policies. Conversely, many southern countries had started

[1] In Keyfitz (1991).

to stress the need for population policies, and were asking the North for financial support in this effort.[2]

By contrast, the first draft of the ICPD *plan of action*, as well as the proceedings of the preparatory committees, suggested that Cairo would witness the first international consensus around the view that population growth is a main impediment to sustainable development. If this consensus appears first as one between governments over the goal of stabilizing world population, the different documents also show an unprecedented comprehensive stance on gender issues, women's sexual and reproductive health and reproductive rights, thereby presumably extending the consensus to various active non-governmental groups.

Be that as it may, this consensus may still appear quite surprising given the extreme controversy and emotion that had characterized debates over the population issue in the recent past. Within academe, this debate is far from being settled : causes of population growth, the links between population growth and economic development on the one hand, and environmental degradation on the other hand, are still very controversial topics. It seems therefore useful to analyze the basis of what we shall call the ICPD consensus, which is the purpose of this paper.

The analysis relies on the literature on the causes and consequences of population growth at the local, national, and international levels. By relating it with the literature on the causes of environment degradation and on development, we suggest that it can be divided in two broad divisions. The first, a branch of modernization theory, asserts that population growth is a problem at all levels of aggregation. At the local level, the problem is defined in terms of the health of the mother and the children, of the capacity of the parents to provide basic needs to their children, and of externalities. At the national level, in terms of the links between population growth and (economic) development, with particular focus on the consequences for capital formation, employment, and the capacity of the government to provide social services. At the international level, in terms of the links between population growth and global environmental hazards. For this line of thought there thus appears to be harmony between all the actors' interests, ranging from parents in remote villages, to policy makers in the South and environmentalists everywhere.

The second perspective, by contrast, emphasizes the existence of a conflict rather than that of a consensus. This view, well supported by recent demographic theory, denies that there exists a population "problem" at the local level, and rather underlines the existing conflict between national priorities and local goals. Furthermore, there is no way to assess adequately

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[2] Typical of this reversal is the official stand of the People's Republic of China: 'Population is not a problem under socialism', declared the head of the Chinese delegation in Bucharest. 'We continue to lay special stress on population control...late marriage and one child per couple', said Prime Minister Zhao Ziyang in 1983. Cited in Keyfitz (1991), p. 7.

the consequences of population growth at the national level. Although population growth might be a problem for governmental priorities such as development or modernization, the state is unable to implement efficient policies in that domain. As with other forms of mis-development, this conflict reflects a failure of governance and the absence of a political community at the national level. Without the construction of such a community through a change in power relationships, participation, de-centralization and democratization, there is no way of addressing the population issue politically. And this holds true, of course, at the international level. In other words, there is today no middle path between continued population growth and coercion.

The ICPD consensus appears grounded in the first perspective. This is best illustrated by one of the central objectives stated in the draft of the ICPD *action plan* : 'to reduce disparities in national and regional population growth and achieve stabilization of the world population as soon as possible, fully respecting individual rights, aspirations and responsibilities, in order to create conditions for developmental sustainability at the community, national and global level' (PCICPD 1994 : 50). This statement suggests that there is no conflict between the goal of stabilizing world population and respecting people's reproductive rights; that there is no conflict between strategies of development at the local level and those at the national or international levels.

A radically different approach would be to acknowledge the existence of a conflict between different groups, between different agendas, and to agree on the need to manage this conflict. By concealing the potential conflict, and focusing on those aspects of the issue on which people can potentially agree, the ICPD consensus and the larger body of literature on which it is grounded run two great risks. First, they might undermine our capacity to address adequately the fundamental issues such as the environmental crisis. Second, they tend to marginalise further those who are at the heart of the matter, namely the poor of Southern countries who have (voluntarily) many children, which is quite paradoxical since the success of the exercise rests on the fulfillment of the hoped for harmony between the different actors' interests. That is, on the belief that people in the South will use more contraceptives, will desire less children once they have greater access to schools and to health care. Surely they should have had a greater say in the design of these objectives.

1. The Local Level

By local level we mean the level at which face to face interactions take place, like the family and village communities in southern countries. It is at this level that the immediate causes and consequences of population growth are to be found. This creates a tension between

theories of fertility and of the consequences of population growth: if population growth is a problem at the local level, why does it not influence the level of fertility?

1.1 The emerging discourse

Contemporary demographic theory is based on a central assumption: that of rationality. If a couple has many children, it is because they are desired. The demand for children is therefore considered the main determinant of fertility (Bulatao and Lee 1983), and lesser importance is attached to the "unmet" needs for contraception. In any case, studies which tried to assess the extent of these unmet needs revealed that they are quite small [3].

In these conditions, how can we speak about a population problem at the local level ? One answer is that the couple is not homogenous in its desire to have children. Indeed women in traditional societies do not always control their own fertility. Their incapacity to control sexual relationships within marriage, pressure from their husband and from the extended family, social and religious traditions often result in their giving more birth than they would desire. Furthermore, high fertility rates are a problem because they have very negative effects on the health of the mother (Dasgupta 1992). High rates of maternal mortality are a direct consequence of early marriage and child bearing, unspaced pregnancies and multiple pregnancies which, beyond four children, raises significantly the risks of hemorrhage during labor (UNFPA 1991).[4] According to demographic and health survey, 49 to 91 % of women in a position of bearing children want to postpone the next birth or stop having children, which could save the life of 200 000 or 250 000 women each year (UNFPA 1991).

The solution advocated is education, notably of girls. An educated woman, it is argued, is more likely to take control over her own body, has a higher status within the household, and will be more health conscious. Data indeed reveal a negative correlation between fertility rates and women's level of education[5] . Investing in women is thus the major objective to pursue, for its own sake, but also indirectly to reduce fertility rates (WB 1992; Summers 1992).

But the argument is flawed. The problem pointed to here is bad health, limited education, and patriarchy. Population growth is only a consequence of these different factors,

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[3]For Westoff (1988), all needs are met. In opposition, Bongaarts (1991) estimates the unmet needs in 15 soutern countries to about 15 percent. In another study, unwanted births would account for 22 percent of total births in southern countries. See also Mamdani's classical study in rural India, Mamdani (1974).

[4]Maternal mortality rates is 420 on average in developing countries, as against 26 in industrialised ones (UNDP 1992).

[5]On women's status and fertility change in Pakistan, see Sathar et al. (1988). On the autonomy of women and the impact on demographic behaviour in India, see Dyson and Moore (1983), as well as the more theoretical piece by Sen(1989).

not the problem itself. To put it differently, that high fertility rates is a problem does not necessarily imply that population growth is one. Feminists who welcome this recognition of gender issues are also quite wary about the conflation of different issues. They even find quite curious this apparent consensus between women's movements on the one hand, and male dominated governments and medical establishments on the other hand (Harcourt 1994).

The population growth "problem" at the local level has also often been defined in terms of externalities as illustrated by the following excerpt from the 1984 World Development Report :

> In a small village in Asia or Africa a father of two sons and a daughter dreams of having two or three more children. He believes that enough land might be available for each of his sons... Other families, particularly those with few children, seem barely able to use the land they have; at the right price, he could buy patches of it from them.
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> This is not just one man's plan. It is shared by almost every man in the village. Some may succeed; the majority will not, simply because the amount of land in the village is limited... The pursuit of private gain can make most people worse off. One term for this phenomenon is the isolation paradox. Individuals in isolation act to the detriment of each other... If parents had their way, many of them would wish to limit the fertility of others; if children had their way, many of them would wish to limit their own parents' fertility (WB 1984: 55).

As Ng (1986) remarked, the preceding logic is valid only if it is assumed that peasants do not make expectations about how the other families are going to behave. In fact, the same framework could be transposed to analyzing the behavior of small firms in a competitive market. But in that case, it is commonly assumed that firms reach an equilibrium. On what ground do we then assume that peasants fail?

To add to the framework the existence of commons *à la* Harden (1968) does not solve the paradox. Repetto and Holmes (1983) have rightly pointed out that Harden mistook common-property (*res communis*) for open-access resources (*res nullius*). As opposed to open-access resources, common resources are regulated by strict rules, and the free-rider problem is solved by social pressure and locally-based monitoring. Thus if the problem of population growth at the local level takes the form of externalities, more ultimate causes must be sought under the form of a degradation of the conditions for collective decision making within a community. Economic theory appears here quite paradoxical. On the one hand, the literature on traditional rural societies explains particular institutional settings such as share-cropping or interlinked markets (for example of goods and credit) as collective responses to cases of market failures (Bardhan 1984). On the other hand, it defines the problem of population growth as a case of market failure, and thus as a failure of such collective responses. It leaves therefore out the crux of the matter : why and how collective responses do take place.

Another drawback of the externality argument is that it does not take into account the impact of external factors.[6] It neither takes into consideration how a greater access to external resources might transform people's livelihood at the local level. In a village of Pakistan, for instance, a villager explained that he wanted many sons because he could then educate one, send another to the army, a third one to find a job in Karachi...(in Amalric and Banuri 1992). A large number of children becomes here a strategy of integration within the larger economic sphere; it enhances the family's chances to get out of the poverty trap. In short, it becomes a strategy of development.

1.2 A structuralist perspective

The demographic foundations of the precedent discourse remains attached to the classical demographic transition theory. Development or modernization is to bring about a reduction of fertility rates.

The micro-foundations of this theory have always been quite dubious.[7] In a first stage, mortality rates were supposed to decline due to improvements in health, notably with the introduction of modern medicine. Population growth would stem mechanically from the ensuing gap between mortality and fertility rates. Finally, with development and an improvement in the conditions of life, fertility rates would decline, thereby closing the transition. What made the theory so appealing was that it is broadly supported by evidence, both from cross-country and time-series data (Dasgupta 1992). But the series of causation -- the mechanism of transition at the local level -- was rather vague. The theory neither provided a theory of fertility as such -- it was rather a description of a wide historical process -- nor a framework from which prescriptions for population policies could be drawn.[8]

Since the 1970s, the theory has been increasingly criticized. It was argued that it lacked logical consistency (Caldwell 1976). New studies on the European experience questioned its central tenets (see Greenhalgh 1990), and its relevance with respect to developing societies was doubted (Teitlebaum 1987). Moreover, if the first stage (reduction in mortality rates) indeed occurred throughout the world, it was not followed by a decline of the birth rates: in

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[6] In a synthesis of case studies on the linkages between population, environment and development carried out in rural areas of Costa Rica, Pakistan and Uganda, Ghimire (1993) stressed the crucial and ambivalent role played by such external factors as market forces and governmental policies.

[7] The theory was initially set to explain and/or describe the process by which European societies had moved from high to low mortality and fertility rates, and was later applied to non-European countries. Seminal works are Notenstein (1945, 1953), Davis (1955).

[8] On the lack of a theory of fertility, see notably McNicoll (1980), Miro' and Potter (1981), and the declaration made by the Population Council's International Awards Program (1981).

spite of several decades of development, urbanization or modernization, fertility rates did not come down as expected in many parts of the South.

In response to these critiques, some authors have tried to precise what aspect of development led the demographic transition, like income (Becker 1960), the structure of the family (Caldwell 1982), and now women's level of education.

A different response gaining ground among demographers has been to look at development as process rather than as content. This structuralist theory of fertility investigates the links between the institutional framework (notably in rural areas) and demographic behavior (McNicoll 1975, 1978, 1980; Cain 1981). Particular attention is again given to family structures, to women's status, to the organization of work within the village, to access to resources, but in a more structural perspective. The goal is to understand how these different institutions evolve in an interactive manner (the process), rather then isolating one of them from the rest of society (the content). The family system, whether it is joint or nuclear, has a direct bearing on social responsiveness in terms of population growth to the prevalent economic conditions. For instance, unlike in Europe, the timing of marriage in most of contemporary Asia is not responsive to variations in economic conditions because it does not entail the formation of an independent household which would require some capital (Cain and McNicoll 1988). Similarly, under a joint-family system, economic well-being of old age parents is closely related to that of their children, thereby creating incentives for having many children in the absence of other insurance opportunities (Cain 1981). In a very stimulating essay, Sen (1989) shows how the status of women within the household in different parts of India is in direct relation with the way the household interacts with the external world. In this framework, education is no panacea: the status of women is determined more by social factors than by objective ones such as the level of education.

In this framework, questions of social cohesion and of community decision making come at the forefront. The breakdown of collective forms of management of resources following the integration of local communities within a larger political and economic realm accounts in a large measure for environmental degradation in rural areas of Southern countries.[9] By the same token, it also explains the persistence of high fertility rates. Indeed, the rupture of the balance between local population and local resources not only opens the door to free exploitation of the resources, thereby entailing environmental degradation, but also permits unrestrained population growth (Cain and McNicoll 1988). The lack of feed-back effect of environmental degradation on fertility behavior that cannot be explained in an analysis starting with an independent theory of fertility becomes here ingrained in the common explanation of both

[9]See Amalric and Banuri (1992); McNicoll (1989); Ghimire (1992a; 1992b); Apffel Marglin and Banuri(1993); Joekes (1992).

environmental degradation and population growth. By making population growth a response, rather than an independent cause, the terms of the problematic are reversed. At the local level, population growth is not a problem: it is a solution. A solution to the problems and challenges raised by the integration of the local sphere within the national one.

2. *The national level*

2.1 The governmental discourse

A review of development plans in southern countries gives a good insight of the form under which population growth is given attention by policy-makers. Stamper (1977), reviewing sixty of such plans drawn in the early seventies, found that 60 percent of them (representing 80 percent of the population considered) gave some attention to some type of problem linked to population growth. From the most oft-cited to the less cited one, these problems are: growth of the working age and schooling age populations; economic growth reduced; pressure on social services; high dependency ratio; pressure on health services; pressure on housing; pressure on individual or family welfare; pressure on food or agricultural systems; high population density.

The dilemma that face governments of fast-growing populations pertains to the trade-off between social services and development schemes. On the one hand, there is a race between economic development and population growth, measured by the level of unemployment and more generally by the level of capital available per worker. On the other hand, there is the need to provide social services, both as a goal of development in itself, and as a way to curtail further population growth. In this framework, little attention is given to the long-run effects of population growth, namely the question of density. The real issue is that of development; and population becomes one only inasmuch as it interferes with it. Content is given priority over the process.

Economic theory is not very conclusive about the issue. Lewis (1955) and Myrdal (1968) stressed the handicap constituted by too fast growing a population to promote social welfare and general economic development. In this perspective, the classical economic argument was made by Coale and Hoover (1958): lower birth rates would reduce child dependency thereby enhancing savings available for productive investment. In the middle-run, the growth of the labor force would be reduced, making it possible to achieve a faster growth in capital per worker from any given investment. But there is in fact very little empirical evidence to support this view, in any case no statistical evidence that population growth would hinder economic development as measured by GNP per capita (Srinivassan 1988; Levene and Relt 1992).

On the other hand, population growth may well have a positive effect on economic development, by providing a ready labor force for industrialization and raising expectations of future demand (Kuznets 1979), enhancing creativity (Simon 1981), or creating the conditions for technological changes (Boserup 1965).[10]

Be that as it may, there is no homogenous perception of the issue among the governments of southern countries. Appraisal that rates are too high followed by political intervention is reported in China, South Asia, Central America, part of Africa (representing about 55 percent of the population), and in the island states of the Carribbeans (excluding Cuba) and of Micronesia-Polynesia. By contrast, no direct intervention is reported in most of South America, Western Asia and the rest of Africa. Finally, in most of South-Eastern Asia, rates are seen as satisfactory but intervention to lower them is still reported (UN 1989). In all, it is about 61 percent of world population that lives in a country in which the government tries to lower population growth rates. Interestingly, and according to the United Nations medium-variant prospects, the population growth rate in these countries between 1990 and 2025 will only be slightly higher than that in the other ones, 65 percent against 54 per cent (from UN 1990). This means that out of the 3 billion population increase that will possibly occur during the three coming decades, 1 billion will take place in areas were population growth is not considered as a problem. And 2 billion will take place in countries were there is the political will to curb population growth.

2.2 *Population growth and governance*

In the preceding section the ideology of the state, modernization, provided the benchmark with respect to which the consequences of population growth were assessed. But this ideology does not necessarily represent the public interest. How can we assess the impact of population growth when it does not? The problem is the following: people do live interdependently within the country, assuming that emigration is small. Yet, the institution which represents these interdependencies and gives meaning to the concept of a population, that is the state, is inadequate to assess the impact of population growth. In certain cases, it sees it as a problem but has no legitimacy to address it effectively. Furthermore, if population growth is a problem at the national level, why is it that no constraints has been felt, that no checks has arisen to influence people's behavior?

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[10]This should not suggest that the debate is a major one among economists, or even among development economists. It is true that the issue has been raised. But it would also be fair to recognize that it has been a marginal one in the general debate on development that has taken place since World War II. Keyfitz (1991) also notes that the report of the Special Session of the United Nations on Revitalizing Economic Growth in the Developing Countries (1990) contains 38 paragraphs, of which two mention population at all, and neither suggests that rapid growth could be a problem.

Part of the answer is that the interdependencies that create the problem are concealed. They could be, for instance, embedded in the market. In such cases, economists usually speak of externalities, which is precisely the term used by Demeny (1986): 'a population problem exists when my preference for children diminishes your access to steak (...) We have a population problem, in other words, when externalities are attached to demographic behavior' (p. 481).[11]

In our view, it is rather through the political institutions that the interdependency is created and at the same time concealed. This shows a failure of the political process since politics is usually supposed to reveal and treat directly conflicts of interests rather than concealing them as the "invisible hand" does. The crux of the matter resides in the incompatibility between what people expect from the state (such as social services), and the fact that population growth undermines the capacity of the state to provide these goods. It is not so much that my preference for children diminishes your access to steak; but rather that my preference for children diminishes the capacity of the state of which we are both a member to provide schools for our children. But this interdependency between my behavior and your welfare is concealed, because we both feel alienated from the only institution which could reveal it, the state. More generally, if high fertility rates are in part solutions to the process of integration of the local into the national sphere, there is no recognition of the reality of this new sphere.

Interestingly, it is mainly among demographers that a similar point has been raised.[12] Although it is better known as the "political economy of fertility", what is really at issue is governance and its link with fertility, rather than the more narrow meaning political economy now takes in the economic field. As Johansson puts it, 'in general, (...), the political economy perspective on fertility axiomatically assumes that "policy" should be defined very broadly, so that it can be perceived as an effective force under a wide variety of circumstances, and not just when it involves the conscious attempts of the "ruling classes" or "governing elites" to compel ordinary people (using the institutional power of the state) to make reproductive decisions they do not consciously want to make' (1991: 379). Aside cultural and economic

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[11] Miro' and Potter (1980) note that 'fertility is the one demographic variable for which it is often argued that policy-induced change has the potential to make everyone better off (1980: 426). This has been the main incentive to developnew theories of fertility, of which the political economy perspective is one branch. On the development of demography between the desire to explain and the desire to intervene, see Hodgson (1983).

[12] A leading figure is McNicoll (1980), who stressed the importance of institutional factors on fertility. The "political economy of fertility" is however an older field of inquiry (see Greenhalgh 1990). Particularly interesting is the following view expressed by the English mathematician-economist W. F. LLoyd in 1833:'The simple fact of a country being overly populous...is not, of itslef, sufficient evidence that the fault lie in the people themselves, or a proof of the absence of a prudential disposition. The fault may rest, not with them as individuals, but with the constitution of the society, of which they form part' (cited in Demeny 1986) which is echoed by Laesteghe (1980): 'mechanisms of social control of fertility and of population growth in general to 'some degree reflect basic institutional arrangements that pertain to the functioning of society as a whole.'(527)

determinisms, the political economy perspective thus tries to define a space for policy making, in the broad sense of the term (Johansson 1991: 377). The example of China, and the apparent success of the state to curb significantly fertility rates, proves at least the relevance of the political economy perspective, although one can justly question the methods employed in that particular instance. But China is not the only case in point. A number of other Asian countries - Republic of Korea, Thailand, Singapore, Sri Lanka - have also gone through a rapid decrease of fertility rates. By contrast, in other countries such as India, Bangladesh or Pakistan, fertility rates have remained quite high in spite of long traditions of family planning policies.[13]

This is not the sole domain in which South Asian countries have apparently failed in comparison with its Eastern counterparts or China, be it in terms of social achievements (literacy, infant mortality rates, etc.), implementation of agricultural reforms, or schemes aimed at preserving the environment. All these relative failures have to do with the failure of the state to gather popular support and participation. The reasons are multiple and intricate: the experience of colonialism; over-centralization of the state hindering the emergence of democratic participation; the violent intervention of the state in local communities, depriving people of their traditional rights over local resources (as notably documented in the case of forests); lack of commitment of public officials for public welfare and open corruption. All this has led to the alienation of the population for public matters, what has described elsewhere as the "de-responsibilisation" of local populations (Amalric and Banuri 1992), or as the "learned helplessness of developing societies" (Zaman and Zaman 1991). As we found in our study in Pakistan, if at the local level, neither population growth nor environmental degradation are considered as issues, it is not because of a lack of education about national priorities, but because of a conflict between national and local goals.[14]

This takes us back to the issue of collective decision making at the local level referred to in the preceding section: by intervening aggressively in local communities, the state (and the market) have undermined collective decision making. On the other side of the fence, they have alienated people from public affairs, that is from the very process of collective action.

The failure of governance is then the incompatibility between a form of collective organization (the modern state), its ideology (modernization), the problem it then identifies

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[13]In 1960 and 1990, the fertility rates in these countries were respectively: 5.8 and 2.4 in China; 5.6 and 1.7 in Korea; 6.3 and 2.4 in Thailand; 5.4 and 1.8 in Singapore; 5.4 and 2.8 in Sri Lanka; 5.9 and 4.2 in India; 6.9 and 6.2 in Pakistan; 6.6 and 5.3 in Bangladesh (UNDP 1992).

[14]This is echoed by a remark made during a seminar on population policy in South Asia: 'the key actors in the process are bureacrats and technicians. There is little interest and virtually no participation on the part of the public or the local institutions. Policy is created in a vaccuum of public apathy, over-laid with internal bureaucratuc competition, and meddling by foreign experts. There are no public demands for family-planning services and no public awareness of the difficulties' (National Academy of Science 1974: 20).

(population growth), and its capacity to address such a problem. To put it differently, the conditions in which the population issue is set led to a deadlock: is it a problem (for the State)? Yes. Is there a solution to it? No. It is only by changing these conditions -- through a questioning of the organization of the state and of its ideology -- that the gap between what is identified as a problem and the possibility to address it politically can be bridged. But at this point, we cannot prejudge of where will lead a change in these conditions. It could lead to a reduction in fertility rates as well as to a better accommodation to population growth.

3. *The global level*

Population growth is undeniably one of the main historical features of this century, and one which will run well into the next one. At the turn of the century, world population is estimated to have been about 1.5 billion. It reached 2 billions around 1930, 2.5 billions in 1950, 4.8 billions in 1985, and prospects for the year 2025 are between 7.6 and 9.4 billions, with a medium variant at 8.5 billions (UN 1990). But these figures must be considered in the perspective of other astounding world scale transformations that have characterized this century. Economic growth, technological innovation, the "shrinking" of the world due to the emergence of modern means of transportation and of communication, are other phenomena of historical dimension. It is within this larger historical context that the implications of population growth at the global level have to be assessed.

Two ways to analyze these consequences must be distinguished. The first one stems from the regional disparities of the process : since 1960, 90 percent of world population growth took place in Southern countries. Indeed a recurrent question in Northern countries is to what extent population growth occurring in Southern countries will have an impact on their welfare. The connections often pointed to are international migration and increased international tensions. After the breakdown of the Soviet Empire, the hegemony of the Western World would now be jeopardized by the growing population in Southern countries, whose inhabitants Ruffin (1989) called the 'new barbarians'. The fear is real: it is the fear of the rich seeing the poor around him becoming more numerous and therefore more threatening. As Lorimer bluntly put it: 'trends which threaten the national aspirations of more than half the world's population present a problem to all nations. Frustration breeds envy, suspicion and violence. The security of the lucky nations with large national resources, accumulated wealth and advanced techniques may be critically affected by the progress or reverses experienced in less fortunate nations during the next few decades' (1963: 145).

The other way to assess the consequences of population growth at the global level, more ambitious, has been to try to define a global project, around the idea that we all share, after all, the same Earth. This project is global sustainability. To define it in a negative way, it can

be summarized as the avoidance of global catastrophes, be it a thermonuclear war, widespread famine, general climatic cataclysms brought about by the over-emission of greenhouse gases, pandemics (AIDS), etc. For some, population growth is a direct impediment to this project. Consider, for instance, the following declaration of the Club of Earth, whose members all belong to both the US National Academy of Sciences and the American Academy of Arts and Sciences:

> Arresting population growth should be second in importance only to avoiding nuclear war on humanity's agenda. Overpopulation and rapid population growth are intimately connected with most aspects of the current human predicament, including rapid depletion of nonrenewable resources, deterioration of the environment (including rapid climate change), and increasing international tensions[15].

The matter has been given greater emphasis in the past years in relation with global environmental issues– climatic change, loss of bio-diversity, depletion of the ozone layer. De-forestation should be added as one of them, not because it is indeed one, but because, being closely correlated with the issue of bio-diversity, it is treated as such by many scholars.

What is the impact of population growth on these "global commons" ? An apparently elegant way to measure it is through the identity I=PxTxC, where "I" denotes the impact on the environment, "P" the population factor, "T" a technological or management factor and "C" the level of consumption per capita. Since first introduced by Ehrlich and Holdren (1971), this equation has gained relatively wide support (Ehrlich and Ehrlich 1990, UNFPA 1991, Harrison 1992), and was applied empirically to measure the contribution of population growth to global warming (Bongaarts 1992, Myers 1991), de-forestation (Harrison 1992, Myers 1990). These studies invariably conclude to the very significant impact of population growth.

These applications are not very convincing for a number of different reasons[16]. The identity can even be very mis-leading for it implicitly assumes that the consumption and technological factors are homogenous across the entire population considered. Myers (1991) notably suggests that population growth is responsible for about two thirds of the increase in the emission of carbon dioxide between 1950 and 1985, because during the period, the emissions of carbon dioxide grew by 3.1 percent a year, and population by 1.9 percent per year. Simply disaggregating the data between South and North leads to quite different results. First, population growth appears to have contributed only 41 % of the increase in the emission. But more interesting is that out of these 41 %, 23 % corresponds to population growth in the North. That is, population growth is the South - which accounts for 90 % of population growth over the period - would only account for 17 % of the increase in the emissions of CO2 during the

[15] The declaration was released in 1988, and is cited in Ehrlich and Ehrlich (1990: 18).

[16] The following discussion of the Ehrlich-Holdren identity is a summary of Amalric (1994).

period. And this is also an over-estimate because it does take into account the problem of heterogeneity within the South itself.

Another important failure of usual applications of the equation is that they are commonly blind to the Northern historical responsibility in creating the environmental crisis. Assessing the impact of population growth on, say, the emissions of CO2 since 1960, will not reveal that emissions of Northern countries in 1960 were already too high. The point is that the identity cannot be used to designate responsibilities and derive policy recommendations unless it was applied on a much greater time scale, say since 1800. Some authors (unknowingly?) discard this criticism by arguing that nothing can really be done about the "ultimate" causes of environmental degradation - like inegalitarian economic relationships, high and wasteful consumption in Northern countries, addiction to economic growth -, and thus that greater attention should be geared at controlling "proximate" or exacerbating causes such as population growth.[17]

4. Two Discourses

Our analysis of the literature on population at the local, national, and global levels suggests that it can be divided in two main divisions or discourses. The first one, which we could call the "development discourse" and which is mainly a refinement of modernization theory, is constituted of the governmental discourses at the national and global levels, and of that part of the academic work treating population growth as an exogenous factor. At the local level, it corresponds to a theory of fertility extending the classical demographic transition theory and defines population growth as a problem with respect to its impact on the health of women and in terms of externalities.

The second discourse, which we can call the "political discourse" and connects with the discourse of those who challenge traditional models of development, views the organization of society, with its cultural, historical and natural endowments, as the appropriate structure of analysis. It does not treat population growth as an exogenous factor, but sees it directly linked with the institutional structure of society. At the local and national levels, it identifies impediments to collective decision making as the main cause of environmental degradation, mis-development, and population growth. The two discourses are schematically summarized in table 1.

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[17] The argument is best developed in Shaw (1989). Implicit references to the argument are made by Bongaarts (1992), and Ehrlich *et al.* (1993), this latter being worth citing because quite revealing: 'It is impossible to avoid the conclusion that the prudent course for humanity, facing the population-food-environment trap, must above all be to reduce humane fertility and halt population growth as soon as humanely possible (24-5) (...) In theory, much could be done to reduce the maldistribution of food, although doing so is certain to be very difficult in practice'(26). That reducing humane fertility might also be very difficult in practice, notably if nothing is done about the maldistribution of food, apparently did not strike the authors.

Table 1

	Development discourse	Political discourse
Local level	- "poverty trap" - externalities - lack of access to contraceptives - low status of women	- population growth response rather than problem
National level	- negative impact on economic growth - overstress of social services - density and food security	- population growth reflects a failure of governance - alienation of the public from public issues : *de-responsibilisation*, helplessness
Global level	- global environmental crisis - international security	- global crisis first and foremost due to the North - failure of international governance - neo-colonialism
Strategies advocated	- "better" development - provision of contraceptives - education of women	- emphasis on participation - de-centralization - democratization - changes in economic relationships

Both discourses are logically coherent. At the global level, the development discourse identifies population growth as one important cause of the environmental crisis, although certainly not as the only one. But even if it goes as far as acknowledging that the North bears the historical responsibility of this crisis - as did the North in Rio - it nevertheless points out that stabilizing world population might be the more realistic way to move towards sustainability, before, supposedly, addressing the more fundamental issues. This view would clearly be unbearable if there was no consensus between North and South, between governments and the people, on reducing fertility rates. Thus what enables the authors embracing this discourse to argue explicitly that people who have large families should change their behavior because the ones who created the problem in the first place cannot do so are the very assumptions that underlie the discourse: that population growth is a fairly independent phenomenon, linked to the introduction of modern medicine in traditional communities; that low fertility rates are a characteristic of development, and therefore something desirable in itself; that people in the South will desire less children if they are provided safe modern contraceptives, better health services and education.

5. Conclusion : The ICPD consensus

Both discourses certainly emphasize different aspects of a much more complex reality. Each piece of the different discourses has therefore something to contribute in enlightening this reality. The question, however, is which discourse to choose as a basis for drawing policy recommendations. The emerging view on the route to Cairo points in one direction : consensus is achieved on the basis of the development discourse. US representative Timothy Wirth's address to the Second Preparatory Committee is particularly revealing, the more so as it sets the tone of the draft document of the conference. Wirth's calls for a consensus 'around the goal of stabilizing world population growth' first by invoking women's health and status, and second by invoking the impact of population growth on the environment. The apparent contradiction between the two main principles of the draft document - to stabilize world population and to respect people's rights - is never acknowledged. The only way to reconcile these principles without confronting them is by assuming that there is no fundamental conflict between the North and the South, between governments and populations in the South. Success of the action plan rests on the belief that more contraceptives, more health services and more schools will be sufficient to bring down fertility rates. What if they do not? What guarantees are there that people's rights will not eventually be sacrificed to the goal of population control?

Starting by recognizing that there is a conflict between people's strategies of livelihood at the local level and national priorities, between the North and the South with respect to the global environmental crisis, does not mean that nothing should be done to try to curb present fertility rates. It does not deny the importance of contraceptives, of education and of health services. What it denies is the possibility to address the population issue outside of a more global approach which would integrate other issues, notably economic and political ones. There is ample evidence that the conflicts mentioned above are part of the population issue. Remaining blind to them will only further exacerbate the problem, and might eventually lead to greater coercive measures against those who are silent : the poor and powerless. Because it stresses the need for integration rather than running the risk of exclusion, the "political discourse" is superior to the "development discourse" as a basis for policy-making. It is also more demanding, but it is a mistake to think that the road toward sustainability will be in anyway easy.

References

Amalric, Franck (1995) 'Population growth and the environmental crisis: beyond the "obvious"', in Bhaskar and Glyn (eds.) *The North, the South, and the Environment*, London, Earthscan.

Amalric, Franck and Tariq Banuri (1992) *Population, Environment and De-Responsibilisation*, Working Paper WP/POP/1992/1, Islamabad: SDPI.

Banuri, Tariq and Frederique Apffel Marglin (eds.) (1993) *Who Will Save the Forest?*, London: Zed Books.

Bardhan. P. (1984) *Land, Labour and Rural Poverty*, New York: Columbia University Press.

Becker, G. (1960) 'An Economic Analysis of Fertility', in Becker (ed.) *Demographic and Economic Change in Developed Countries*. Princeton: Princeton University Press.

Bongaarts, John (1990) 'The Measurement of Wanted Fertility', *Population and Development Review* 16 (3).

Bongaarts, John (1991) 'The KAP-gap and the Unmet Need for Contraception', *Population and Development Review* 17 (2): 293-314.

Bongaarts, John (1992) *Population Growth and Global Warming*. New York: The Population Council

Boserup E. (1965) *The Conditions of Agricultural Growth*. London: George Allen and Unwin Ltd.

Bulatao, Rodolfo A., and Lee, Ronald D. (eds.) (1983) *Determinants of Fertility in Developing Countries* (2 vol.). New York: Academic Press.

Cain, Mead (1981) 'Risk and Insurance: Perspectives on fertility and agrarian change in India and Bangladesh', *Population and Development Review* 7(3): 435-474.

Cain, Mead and Geoffrey McNicoll (1988) 'Population growth and agrarian outcomes', in Lee, Arthur, Kelley, Rodgers and Srinivassan (eds.) *Population, Food and Rural Development*.

Caldwell, John C. (1976) 'Towards a Restatement of Demographic Transition Theory', *Population and Development Review*, 2.

Caldwell, John C. (1982) *Theory of Fertility Decline*, New York: Academy Press.

Coale, A. and E. Hoover (1958) *Population Growth and Economic Developent in Low-Income Countries*. Princeton, N.J.: Princeton University Press.

Dasgupta, Partha (1992) *Poverty, Resources, and Fertility: The Household as a Reproductive Partnership*. London: London School of Economics, The Development Economics Research Programme, DEP No 37.

Davis, Kingsley (1955) 'Institutional Patterns Favoring High Fertility in Underdeveloped Areas', *Eugenics Quaterly*, 2 (1).

Demeny, Paul (1986) 'Population and the invisible hand', *Demography* 23.

Dyson, Tim and Mick Moore (1983) 'On kinship structure, female autonomy, and demographic behavior in India', *Population and Development Review*, 9(1): 35-60.

Ehrlich, P. and Anne Ehrlich (1990) *The Population Explosion*, New York: Touchstone.

Ehrlich, P., Ehrlich, A. and Gretchen Daily (1993) 'Food security, population, and environment', *Population and Development Review*, 19(1): 1-32.

Ehrlich P. and Holdren J. (1971) 'Impact of population growth', *Science* 171: 1212-1217.

Ghimire, K. (1992a) 'Coping with Deforestation: An Analysis of Local Level Responses', paper presented at the Conference on the Social Dimensions of Environment and Sustainable Development, Malta, 22-25 April.

Ghimire, K. (1992b) 'Parks and People: livelihood issues in National parks management in Thailand and Madagascar', Discussion Paper 29, Geneva: UNRISD.

Ghimire, K. (1993) *Linkages Between Population, Environment and Development*, UNRISD, Geneva.

Greenhalgh, Susan (1990) 'Toward a Political Economy of Fertility: Anthropological Contributions', *Population and Development Review* 16 (1): 85-106.

Harcourt, Wendy (1994) 'Dangerous liaisons: population and development dialogue', *Development* , 1994 (1): 10-13.

Hardin, Garrett (1968) 'The tragedy of the commons', *Science* 162 (3859): 1243-1248.
Harrison, Paul (1992) *The Third Revolution: Environment, Population and a Sustainable World*. London: I. B. Tauris and New York: St Martin's Press
Hauser, Philip (ed.) (1963) *The Population Dilemma*, Englewood Cliffs, N.J.: a Spectrum Book.
Hodgson, Dennis (1983) 'Demography as social science and political science', *Population and Development Review* 9 (1): 1-34.
Jockes, Susan (1989) *Population Growth, Sustainable Development and the Role of Women*, Washington, D.C.: The World Bank, Women in Development Division (mimeographed)
Johansson, Ryan (1991) '"Implicit" policy and fertility during development', *Population and Development Review* 17 (3).
Keyfitz, Nathan (1991) 'Population and Development within the ecosphere: one view of the literature', *Population Index* 57 (1).
Kuznets, Simon (1979) *Growth, Population and Income Distribution: Selected Essays*. New York: Norton and Co.
Laesthege, R. (1980) 'On the social control of human reproduction', *Population and Development Review*, 6.
Levine, Ross and David Relt (1992) 'A sensitivity analysis of cross-country growth regressions', *American Economic Review*, 82 (4).
Lewis, A. (1955) *The Theory of Economic Growth*. London: Allen and Unwin.
Lorimer, Frank (1963) 'Issues of population policy' in Hauser (1963).
Malthus, T. (1976 [1792]) *An Essay on the Principle of Population*, New York: W. W. Norton.
Mamdani, M. (1974) *The Myth of Population Control*, New York: Monthly Review Press.
McNicoll, Geoffrey (1975) 'Community-Level Population Policy: An Exploration', *Population and Development Review*, 1 (1): 1-21.
McNicoll, Geoffrey (1978) 'Population and development: outlines for a structuralist approach', in G. Hawthron (ed.) *Population and Development*. London: Frank Cass.
McNicoll, Geoffrey (1980) 'Institutional Determinants of Fertility Change', *Population and Development Review* 6 (3): 441-462.
McNicoll, Geoffrey (1989) 'Social organization and ecological stability under demographic stress', in McNicoll and Cain (1989).
McNicoll, Geoffrey and Cain, Mead (1989) (eds.) *Rural Development and Population: Institutions and Policy*. New York: The Population Council; Oxford University Press.
Miro', Carmen and Joseph Potter (1980) 'The Potential Impact of Population Research', *Population and Development Review* 6(3): 321-336.
Myers, Norman (1990) 'The World's Forests and Human Populations: the Environmental Interconnections', *Population and Development Review* 16 (special supplement).
Myers, Norman (1991) *Population, Resources and the Environment: The Critical Challenges*, New York: United Nations Population Fund.
Myrdal, G. (1968) *Asian Drama: An Inquiry into the Poverty of Nations*, 2. Vols. New York: Twentieth Century Fund.
National Academy of Science (1974) *In Search of Population Policy: Views from the Developing World*. Washington: The National Academy of Science.
Ng, Yew-Kwang (1986) 'On the welfare economics of population control', *Population and Development Review* 12 (2):247-266.
Notenstein, F. W. (1945) 'Population: The Long View', in Theodore Schultz (ed.), *Food for the World*. Chicago: Chicago University Press.
Notenstein, F. W. (1953) 'Economic Problems of Population Change', *8th International Conference of Agricultural Economics*. London: London University Press.
Olson, Mancur (1965) *The Logic of Collective Action*. Cambridge: Harvard University Press.
Population Council's International Research Awards Program (1981) 'Research on the determinants of fertility: a note on priorities', *Population and Development Review* 7 (2).
Preparatory Commitee for the International Conference on Population and Development (1994) *Draft Final Document of the Conference*, New York, United Nations, January.

Repetto, Robert and Thomas Holmes (1983) 'The role of population in resource depletion in developing countries', *Population and Development Review* 9(4): 609-632.
Ruffin, Jean-Christophe (1989) *L'Empire et les Nouveaux Barbares*. Paris: Pluriel.
Sathar, Zeba et al. (1988) 'Women's status and fertility change in Pakistan', *Population and Development Review* 14 (3): 415-432.
Sen, Amartya (1989) 'Cooperation, Inequality, and the Family', in McNicoll and Cain (1989).
Shaw, R. Paul (1989) 'Rapid Population Growth and Environmental Degradation: Ultimate versus Proximate Factors', *Environmental Conservation*, 16(3): 199-208
Simon, J. (1981) *The Ultimate Resource*, Oxford: Martin Robertson
Srinivassan (1988) 'Population growth and food: an assessment of issues, models and projections' in Lee, Ronald, Brian Arthur, Allen Kelley, Gerry Rodgers and T.N. Srinivasan (eds.) *Population, Food, and Rural Development*, Oxford, Clarendon Press.
Stamper, Maxwell (1977) *Population and Planning in Developing Countries: a Review of Sixty Development Plans for the 1970s*. New York: The Population Council.
Summers, Larry (1992) 'Investing in all people', Paper presented at the Eigth Annual General Meeting, Pakistan Society of Development Economics, Islamabad: Pide.
Teitlebaum, Michael S. (1987) 'Relevance of Demographic Transition Theory for Developing Countries' in Menard and Moen (eds.) *Perspectives on Population: An Introduction to Concepts and Issues*, New York: Oxford University Press.
United Nations (1990) *Results of the Sixth Population Inquiry Among Governments*. New York: United Nations.
United Nations (1991) *World Population Prospects 1990*, New York, Oxford University Press.
UNDP (1992) *Human Development Report 1992*, New York: Oxford University Press.
UNFPA (1991) *Population, Resources, and the Environment*, New York: UNFPA.
Westoff, Charles F. (1988) 'Is the KAP-gap Real?', *Population and Development Review* 14 (2): 225-332.
Wirth, Timothy (1993) 'United States Representative Address to the Second Preparatory Comittee for the International Conference on Population and Development'. New York: United Nations.
The World Bank (1984) *World Development Report 1984*, New York: Oxford University Press.
The World Bank (1992) *World Development Report 1992*, New York: Oxford University Press.
Zaman, Arshad, and Riffat Moazam Zaman (1991) 'Psychology and Development: A Conceptual Itinary'. Paper submitted for the 8th International Conference of the Pakistan Psychological Association. Islamabad: NIPS.