Sustainable development vs epistemology

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ΒΙΩΣΙΜΗ ΑΝΑΠΤΥΞΗ vs ΕΠΙΣΤΗΜΟΛΟΓΙΑ

Η βιωσιμότητα κι η βιώσιμη ανάπτυξη αποτελούν εδώ και αρκετά χρόνια τις κεντρικές έννοιες μέσα στη σφαίρα των παρεμβάσεων στον φυσικό και τον κτισμένο χώρο. Οι έννοιες αυτές εκδηλώνουν την πρόθεση προστασίας διαφόρων τύπων περιβάλλοντος από την υποβάθμιση ή ακόμη και την κατάρρευση. Σκοπός της παρούσας ανακοίνωσης είναι να εξετάσει την επιστημονική τους επάρκεια και κατ' ακολουθία την επάρκεια τους ως οδηγών για τη χάραξη πολιτικής.

Μια σύντομη αναδρομή στην ιστορία της έννοιας της βιωσιμότητας είναι ιδιαίτερα διαφωτιστική. Ορόσημο στα θέματα του περιβάλλοντος αποτελεί ασφαλώς η ίδρυση του «Κλαμπ της Ρώμης». Το πρώτο προϊόν του, *The Limits to Growth* (1972), έβαλε τα θεμέλια όλου του περιβαλλοντισμού. Το κύριο συμπέρασμα του νέο-μαλθουσιανού συστημικού μοντέλου που αναλύεται στο βιβλίο αυτό είναι ότι –με βάση τις τότε τάσεις– θα εμφανισθεί κατάρρευση της ανθρωπότητας το έτος 2070. Για να αντιμετωπισθεί η κατάρρευση, προτείνονται μια σειρά από σκοπούς: η εξασφάλιση της οικολογικής και της οικονομικής ισορροπίας, μιας ισορροπίας που να είναι βιώσιμη μέχρι το απώτερο μέλλον, η μηδενική ανάπτυξη ως τρόπος για την επίτευξη αυτής της ισορροπίας, η δημιουργία δημοκρατικών κοινωνιών ισότητας και δικαίου, ως αναπόσπαστο στοιχείο της ισορροπίας, και η ριζική μεταβολή των πολιτισμικών αξιών.

Ακολούθησαν ένα πιο επιτηδευμένο μοντέλο, μαρξιστικές και άλλες κριτικές, ευρεία διάδοση των νέων περιβαλλοντικών ιδεών, ιδιαίτερη ευαισθητοποίηση κυβερνήσεων και διεθνών φορέων, καθώς και περαιτέρω εμπλουτισμός των περιβαλλοντικών εννοιών. Μέσα από αυτή τη δυναμική, διαμορφώθηκαν δύο κύριες τάσεις του περιβαλλοντισμού: η «πουριστική» του σκληρού περιβαλλοντισμού, που μένει πιστή στην αρχή της μηδενικής ανάπτυξης στο όνομα της προστασίας της φύσης, και η «πολιτική» τάση του ήπιου περιβαλλοντισμού, που έφθασε με τη διακήρυξη του Ρίο να δεχθεί διαφορετική στάση απέναντι στη «βιώσιμη ανάπτυξη» ανάλογα με τις ιδιαιτερότητες κάθε χώρας.

Με τον σκληρό περιβαλλοντισμό, ο όρος «ανάπτυξη» εξοστρακίζεται και μοναδικό επίκεντρο αποτελεί το περιβάλλον. Μια τέτοια φυσική φιλοσοφία επιτρέπει την επιστημονική μελέτη της βιωσιμότητας, στο μέτρο που η τελευταία ορίζεται με καθαρά τεχνικούς οικολογικούς όρους. Ο ασφαλώς ρεαλιστικότερος, όμως, ήπιος περιβαλλοντισμός επικεντρώνεται σε μια σχετική και ενδυνάμει αντιφατική ιδέα, τη βιώσιμη ανάπτυξη, με αποτέλεσμα να έχει θεμέλια που δεν μπορούν να ορισθούν επιστημονικά και να συνδέεται με αποτελέσματα τα οποία δεν μπορούν να αξιολογηθούν αντικειμενικά. Τελικά, και για τις δυο τάσεις, η σύνδεσή τους με το κοινωνικο-πολιτικό επίπεδο, δημιουργεί ένα πρόβλημα που είναι ριζικό και ανάγεται σε επιστημολογικό επίπεδο.

Δεν υπάρχει, σήμερα τουλάχιστον, η υπερ-επιστήμη που να ενοποιεί φυσικές και κοινωνικές επιστήμες. Αυ-

τό το θέμα είναι δεδομένο για τους γεωγράφους, οι οποίοι γνωρίζουν καλά ότι δεν υπήρξε δυνατή η σύνθεση της φυσικής γεωγραφίας και της ανθρωπογεωγραφίας. Ο περιβαλλοντισμός υποπίπτει στο ριζικό επιστημολογικό σφάλμα της σύγχυσης ανάμεσα στην οικολογική οπτική πάνω στην κοινωνία, στα πλαίσια της οποίας η κοινωνία προσεγγίζεται ως *οικολογικό μέρος* της λειτουργίας της φύσης, και στην οπτική των κοινωνικών επιστημών πάνω στην κοινωνία, για την οποία μόνον η κοινωνία αντιμετωπίζεται ως *κοινωνικό* φαινόμενο και ως έχοντας δράση *πάνω* στη φύση, δυο οπτικές επιστημολογικά ασύμπτωτες. Αποτέλεσμα αυτής της σύγχυσης είναι η εμπειρική και απαίδευτη μεταφορά εννοιών από την οικολογία στην κοινωνία, η αναγωγή του κοινωνικού στο βιολογικό –παλαιά και ξεπερασμένη άποψη της αγγλοσαξωνικής, π.χ. κοινωνικής ανθρωπολογίας– ο παραμερισμός των πραγματικών κοινωνικών και πολιτικών διαδικασιών κι ο αφελής κοινωνιολογικός βολουνταρισμός. Αναμφίβολα, τα περιβαλλοντικά προβλήματα είναι υπαρκτά, αλλά η περιβαλλοντική φιλοσοφία αντιμετώπισής τους είναι χρησιμότερη ως μέσο συνειδητοποίησης, παρά ως εργαλείο αποτελεσματικών πολιτικών.

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The 70s: the Club of Rome

It is, I believe, of great importance to record the problems created by, as well as the possible solutions to, the gradual degradation of the natural or man-made environment, or its sudden and probably more radical de-structuring or collapse, whether due to natural causes, such as earthquakes and floods, or man-made causes like war. Such de-structuring requires interventions of reconstruction, i.e., re-structuring, on an urban or regional scale. Environmental issues, therefore, can be approached in relation to two poles: a negative pole and a positive one. I will focus on the positive pole, which is of immediate interest to the levels of both policy planning and spatial implementation, since it is proposed as the antidote to the negative.

In the last two or even three decades, this antidote in its more general form has been referred to in Greek as 'sustainable development' or, with a messianic touch, 'everlasting development'. I will attempt to argue that this notion, along with its various extensions, this vital intellectual tool used to cope with every environmental de-structuring, can itself become the object of theoretical, more specifically epistemological and sociological, deconstruction. In an attempt to clarify the theoretical problems that accompany this notion, we need a retrospective review of its origins and evolution, and of the views that either derive from it or are related to it. This is a review of widely known issues, which, however, appear in a different light when seen through this critical viewpoint.

A landmark in the development of contemporary views on environmental issues is undoubtedly the founding of the "Club of Rome", whose first report, *The limits to growth* (1972), laid the foundations for today's *environmentalism*. In April 1968, 30 people from 10 countries met at the instigation of an Italian economist and industrial executive to discuss the future of mankind. The outcome of this meeting was the Club of Rome. The Club decided to commission a particularly ambitious study, the "Project on the Predicament of Mankind". As Phase One of the Project, in 1970, Professor Jay

Forrester of MIT presented a global systemic model of the trajectory of mankind, which in its final form, under the direction of professor Dennis Meadows, together with the conclusions derived from it, was published as *The limits to growth*. The model examines the five factors that according to its creators determine and ultimately limit growth: industrialisation (especially accelerated industrial development), population (especially rapid increase in the earth's population), agricultural production (particularly widespread malnutrition), natural resources (particularly exhaustion of resources), and environmental pollution.

The report points out that, *if* these factors continued to evolve at the then current rate, the model predicted the following results: hyper-exponential growth of the earth's population, an even more rapid growth of industrial production, a devastating lack of agricultural land before the year 2000 –considering that in 1970 one-third of the earth population was already undernourished– exhaustion of non-renewable resources and extreme cost increases around the year 2070, and, finally, a probably exponential increase in pollution. The general results deriving from this neo-Malthusian model are that, if the course of humanity is not radically altered, our planet will reach the limits of its potential (quantitative) growth sometime by the year 2070. Reaching these limits will probably trigger a sudden and uncontrollable collapse of population and industrial production.

The report concludes that technology alone is not sufficient to prevent this collapse and that, instead of struggling against the limits, we must learn to live with them. This leads to an ethics and a philosophy: it is preferable to make our choices before it is too late, instead of waiting for growth to collapse through factors which we have not chosen, something which will lead to results much worse than if we make these choices now. The essence of these choices is the replacement of the current fundamental value of growth with others, such as a higher quality of life, a more pleasant environment and more recreational time. From philosophy and ideology the report proceeds to politics: the faster the nations of the world confront this new situation, the more chances they have to succeed in the face of the upcoming disaster. This new situation coincides with a scientifically couched axiological goal: the uncontrollable collapse must be avoided by ensuring an ecological and economic equilibrium and stability, which can be sustainable into the distant future. The main characteristic of this situation of a *global equilibrium*, namely this "steady state" of social economic and ecological equilibrium, is that both population and capital remain stable and the forces that influence them are firmly controlled. The slower the rates of growth, the better the state of equilibrium is preserved. The levels of stabilisation, as well as the rates of growth, must be determined by (universal) social values, which in turn are determined by the corresponding new technological choices. Hence, according to this model, technology becomes the determining factor in shaping society.

This state of global equilibrium is related to a social philosophy: it can be achieved in such a way that each person's basic material needs are fulfilled and each person has equal chances of realising his/her human potential. According to the model, the state of ecological equilibrium and no growth is combined with a society of equality and justice. Provided that population and capital

are controlled, the most desirable human activities can blossom, such as education, art, religion, research, sport and social relationships. Thus, the philosophy of no growth promises a paradise, imposed by external factors, but arrived at by a brotherly and united society –after a period of radical change from growth to global equilibrium.

The conclusions derived from this ambitious ecological model –which lays the foundations for environmentalism and condenses its entire philosophy– caused strong and very different reactions. On the one hand, it acquired a movement of devout advocates, which became stronger after the oil crisis of 1973. On the other, it was the object of a strong current of criticism, from Marxist as well as non-Marxist scientists, who advanced a series of counter-arguments (see, for example, Cole *et al*. 1973). Three of the major counter-arguments were that a single united humanity is a socially, economically and politically non-existent notion and the model should have taken into account the different worlds humanity consists of; that the reserves of raw materials are not a known quantity, but vary according to the investment interests of capital; finally, that the model is a philosophy of the developed countries, which leaves the other countries outside development. A new model was then by the Club of Rome, incorporating some aspects of these critiques (in particular the first one), which led to new conclusions.

The title of the next report is *Mankind at the turning point* (1974) and the text is signed by Mihajlo Mesarovic and Eduard Pestel. Humanity is now subdivided into ten zones, and the model takes into account the ability of growth to adjust, so that looming disasters can be avoided or minimised. This model includes five sub-systems: the personal, which is related to human psychology and biology; the collective, which concerns social processes and institutional actions; the demographic-economic, which includes relevant statistical data; the technological, which covers a range of issues from agriculture to satellite communication; and the environmental, the latter including geophysical and ecological processes. The model's quantitative data are combined with the possibility of making subjective choices, which depend on to logical relations. This qualitative aspect of the model leads to the formulation of scenarios and, therefore, the model is not focused on forecasting, but on the presentation of possible alternative forms for the future.

This model is more complex and its subsystems constitute two sub-models. The first, the 'causal' model, consists of causal relations and includes components similar to those of the original model: demographic-economic, technological and environmental. The second is the 'decision-making' model and includes logical relations which are of two components, a personal and a collective one. Together, these two components cover a common area of the political and ideological system (they do not, however, concern the *structure* of the political system). This is internally stratified in layers of values and simulates the process of decision-making. This process is also developed in layers, starting from more general aims and moving on to policy decisions, then to the preparation of strategies for the realisation of this policy and, finally, to specific measures of implementation. The output of the decision-making submodel, in the context of which future alternative scenarios are built, is the input for the causal submodel, which makes possible a quantitative formulation of the consequences of alternative policies.

The writers of the second model point out that the question "growth or no growth" is vague, because the location, the meaning and the subject of the growth are not specified. They choose to analyse two meanings of growth. The first one, which is also the current one, is the undifferentiated growth which results from the quantitative multiplication of the same elements. The second one is organic growth, which corresponds to the structure of the present world system. In such a system, the growth of one part is connected to the states of the other parts and the undesirable growth of one part threatens the whole, while the organic growth of the whole protects the parts. According to the writers, the transition from the first to the second kind of growth will create a new kind of humanity. For them, history has taught us that humanity would not make this radical step, but the current and future crises may force us towards that direction.

While the 'one world' model, Meadows's single system, reaches its limits and then collapses, in the second model the different regions of the earth face different limits at different times; although the collapse will be regional, it will deeply affect the system as a whole. However, despite the difference between these conclusions and those of the first model, the discourse of doom is a common element of both models, because what is deduced from the common characteristics of all the scenarios of the second model, is actually still collapse, though with a more distant time horizon than that of the first model (the year 2140).

According to the writers, preventing collapse presupposes global solutions and actions, or else each region in turn will suffer collapse. Delays are both expensive and lethal, and this is the reason why we need a survival strategy. This strategy must be global in a double sense: because it requires both a new universal economical order and world co-operation rather than conflict, and intervention on all levels of the world system. A narrow nationalism is futile, and the focus on personality and social classes, typical of past history, will be abandoned in favour of the protection of natural resources and the survival of the human species. The alternative solution is conflict, hatred and disaster. For the management of the organic system, the writers believe that a new value system is needed, which will approach nature in a spirit of harmonious cooperation and not conquest. Humankind must develop a sense of identification with future generations, and a new way of living which will be adjusted to the forthcoming shortage of natural resources; this second point requires a new production technology, based on the minimum use of resources and ensuring the longevity of products.

The 80s

In the following decade, the issue of environmental strategy became a central concern of both governments and institutions, initially mainly because of the oil crisis in 1973. In 1980, the International Union for the Conservation of Nature and Natural Resources (I.U.C.N.), the United Nations Environment Programme (U.N.E.P.) and the World Wildlife Fund (W.W.F.) published in cooperation the book *World conservation strategy: living resource conservation for sustainable development*, supporting the central argument that humanity is part of nature and has no future unless nature and its natural resources are preserved. In this text, the ecodestruction and zero growth of the first eco-

logical model are turned into 'eco-conservation' and, more importantly, 'eco-growth'.

According to this text, the conservation of nature must be accompanied by growth, which will aim at overcoming the poverty of many inhabitants of the earth. However, the fertility and productivity of the earth must be preserved, so as not to endanger the future of humanity. All of the above can be achieved through a 'sustainable development' that condenses three main ecological aims: preservation of major ecological processes and vital ecosystems, conservation of genetic diversity and sustainable use of natural species and ecosystems.

Within the bounds of the same general philosophy we may also situate the book entitled *Our common future* (1987) published by the World Commission on Environment and Development. Some of the main principles it formulates are the following:

1. The need to encourage economic growth, especially in the developing countries, and the upgrading of natural resources with the initiative of the industrialised countries.
2. Growth must be of a new kind, incorporating sustainable development, social equality, and justice and security as major social goals, and the quality of growth must be characterised by better income distribution, improvement in health and in the defence against natural disaster and technological hazards, and preservation of cultural heritage.
3. Sustainable development requires conservation of environmental resources and genetic diversity, effective use of energy, water and raw materials, as well as improvement of production efficiency and incentives for the transition to non-polluting products.
4. The formulation of policies for the poor, concerning issues of education, health and income.
5. The reorientation of technology, so that it becomes friendlier to environmental factors.
6. The reorientation towards coping with the sources of environmental destruction, rather than their symptoms.
7. Basic improvements in market accessibility, transfer of technology and international financing, to help developing countries become independent.
8. The formulation of international rules in such areas as trade and investments, aiming at the observation, research, evaluation and development of the environment, as well as at the management of natural resources.

Already by 1989, many governments had accepted the principles of this report and many projects had tried to incorporate them. The committee responsible for the composition of the text (headed by the Norwegian prime minister Gro Harlem Brundtland) defined sustainable development in a very general manner as corresponding to the needs of the present, but also allowing for the needs of future generations, and stressed that it is not possible to find a simple model for sustainable development, because economic and social systems and environmental conditions differ greatly between different countries. The report concludes that each nation should approach sustainable development according to its own policies.

The 90s

Caring for the Earth

In 1991, a new text was published by the three agencies which published *World con-*

servation strategy. We will discuss in more detail this text, which is entitled *Caring for the earth: a strategy for sustainable living*, because it is both rather recent and condenses the latest trends in environmentalism, which were incorporated by the Proclamation of Rio in June 1992. The text is divided into three parts: principles for sustainable living, implementation of the principles in economy, urban planning and the management of the natural environment, and the relevant actions to be taken. Here, the definition of the term 'sustainable' is more precise and multi-dimensional:

A *sustainable activity* is one which in practice can continue indefinitely. A sustainable *natural resource* has the same quality.

Sustainable use is use which lies within the limits of the ability of a natural resource to renew itself.

Sustainable development is development which improves the quality of human life, while simultaneously remaining within the limits of the carrying capacity of a society's ecosystems. The carrying capacity of any eco-system is defined as the maximum influence it may accept without being altered.

A *sustainable economy* is one which derives from sustainable development and preserves its natural resources, while it can continue to grow through a better adjustment to the environment and an improvement of technical knowledge.

A *sustainable society* is one which: adopts the principle of the unity of life on the planet and provides for other people and other forms of life, present or future; goes beyond the plain pursuit of economic growth and seeks other goals which are universally acceptable, such as long and healthy life, education, a decent standard of living, political freedom and securing human rights, all of which lead to the fulfilment of human potentials; protects the structure, function and diversity of the natural systems of the earth; minimises the exhaustion of raw materials; remains within the limits of the carrying capacity of the ecosystems of the earth and the biosphere, without threatening to downgrade them; has adjusted its values and behaviours to sustainable development; calls on local societies to take action towards a sustainable community; connects economic policy to environmental carrying capacity, placing community at the centre of attention; and participates in the world community.

The term *sustainable growth* is considered to be contradictory, because no natural element can grow limitlessly.

At the core of the latest form of environmentalism, as it emerges from this text, lies the notion of a sustainable development which combines economic development with the improvement of human living conditions and the preservation of the diversity and productivity of nature. Sustainable development implies a harmonious coexistence with other communities and with nature, that is, a life in accord with the injunctions and the finite limits of nature.

Sustainable development is founded on three major principles. The first is the need for survival, at a satisfactory level, of both present-day societies and their descendents. The second is the dependence of human societies on the resources of the planet, which have been dangerously downgraded, to such a degree that the survival of civilization is threatened. The third principle is that humanity must not destroy the natural system; this can be achieved by living according to the imperatives of sustainable development and by equitably distributing the goods

of development.

In the text, the goal of sustainability requires a new ethics, which derives from a broad systemic base. Each human being belongs to a great community of life, which includes all living creatures and connects human communities, present to future generations and humanity to nature. There should be equal rights (of freedom, assembly and participation in government) among people and, on a national level, no nation has the right to deprive another of its means of survival. Human development must not threaten nature and the survival of other species, and each life form demands respect, regardless of its value to humans and their needs. Each generation ought to pass on to the next a world that is at least as productive and diverse as the one it inherited. In this way, the development of a society or generation must not limit the chances other societies or generations may have. The protected regions of this world are created to preserve exclusive samples of our natural and cultural heritage, to preserve the support systems of life and biological diversity, as well as for human enjoyment. The protection of the rights of individuals and of nature is a universal responsibility and goes beyond any cultural, ideological and geographical boundary. According to environmentalism, this is the only correct ethics, and, in order to establish it, it calls for the support of all religions, since it believes that they all accept the same moral principles of caring for your fellow humans and for creation.

In attempting to deal realistically with the goal of sustainable development, the text gives to this concept *a different contents for the developed and the non-developed countries*. It claims that the developed countries have achieved in general a high degree of development and their main concern should be the extension of this high quality of life to all their citizens, but at the same time they must decrease their consumption of energy and resources, reduce pollution, and help the non-developed countries. However, it is acknowledged that they are up against the difficult task of having to balance the necessary changes with the preservation of the level of employment and industrial activity; it is also acknowledged that it is not realistic to expect that they will welcome a drop in the standard of living.

On the contrary, the non-developed countries will continue for a long time to consider economic growth a high priority, while simultaneously they must spend more (and they will be able to do it thanks to economic growth) on the protection of the environment.

According to the text, the implementation of sustainable development policy requires international cooperation on an unprecedented scale, as well as the realization by the developed countries that they must not consider themselves self-sufficient and that they belong to a global system. The realization of sustainable development is entrusted to the initiative of local communities. The term ‘community’ refers to a local administrative unit such as a municipality, to a cultural or ethnic group, to an urban area such as a neighbourhood, or to a rural area such as a valley. Assumption of the responsibility for sustainable development by the communities will require reforms in many countries on issues of property and the rights of local inhabitants. Between global and local politics, states must prepare national strategies for sustainable development. These development strategies must replace the national development plans. If the latter

cannot be achieved, then development strategies and preservation strategies must be aligned.

The Proclamation of Rio

The Proclamation of the United Nations Convention in Rio is structured according to a series of thematic axes defined as follows:

1. *The relation between development and environment*, which is also the major axis. From the very beginning, the Proclamation announces the intention to protect both the environment as a whole *and* the development systems. An open international economic system, the result of the cooperation of nations, must lead all countries to economic growth *and* sustainable development (principles 12 and 24). Development and the protection of the environment, along with peace, are inseparable (principle 25). Not only does the Proclamation distance itself from hardcore environmentalism by placing emphasis on growth, but it also goes one step beyond the already compromising viewpoint of *Caring for the earth*, which supported the idea of a development *within* the limits posed by the environment, by instead positing that sustainable development can be achieved in the form of the protection of the environment as an *organic part* of the development process (principle 4). The satisfaction of developmental and environmental needs is couched *within* the context of the right to development (principle 3).
   The Proclamation makes special reference to the developing countries and acknowledges that the environmental standards of certain countries (i.e., the developed ones) may be economically and socially undesirable for the developing countries. According to the Proclamation, the standards, *strategy* and *priorities* of environmental management should reflect each country's *specific* environmental and developmental situation (principle 11). Priority must be given to the special needs of developing countries –including those that are environmentally most vulnerable (principle 6).
2. *The philosophy of sustainable development*. From the general context of the coexistence of environmental protection and development, the Proclamation derives the following set of values: the centrality of humanity for sustainable development (principle 1), the obliteration of poverty (principle 5), world peace (principle 25), democracy in the form of the participation of all administrative levels and all social groups (principles 10, 20, 21 and 22), and the protection of the identity and culture of minority groups and local societies in general (principle 22).
3. *The necessity of world cooperation*. This need is also mentioned in the introduction to the Proclamation. The cooperation of all countries is called for in order to obliterate poverty –and this is considered as an essential prerequisite for sustainable development (principle 5)– to preserve, protect and restore the ecosystems of the earth, for which the developed countries must take special responsibility (principle 7), to achieve an open international economic system (principle 12) and to develop international legislation which will promote sustainable development (principle 27).
   Apart from the universal cooperation of states on environmental issues, in the context of interstate relations, the exchange of scientific knowledge and the transfer

and diffusion of technology help to support endogenous sustainable development (principle 9). On the other hand, states must accept as far as possible that it is their responsibility to see that activities or substances under their control do not negatively affect the environment or health outside their jurisdiction by means of relocation or transfer (principles 2 and 14). States must cooperate for the development of international legislation for environmental indemnities (principle 13). Finally, states which are struck by a natural disaster or some other extraordinary cause, which can have sudden disastrous effects on their environment, must immediately notify the other states (principle 18). If the activities of certain states could have serious environmental effects on other states, the former must notify in time and cooperate with the latter (principle 19).

4. *The development of international legislation for the environment.* Central to this legislation is the United Nations Charter, according to which all environmental disputes between states are to be solved peacefully (principle 26). International legislation must be developed for sustainable development, as a result of the cooperation between states (principle 27). Environmental measures on an international scale must be based upon the widest *possible* international acceptance (principle 12). Moreover, each country must formulate environmental legislation (principle 11).
5. *The environmental policy of the states*. According to the United Nations Charter and the principles of international legislation, states have the sovereign right to exploit their national resources, by following their *own* environmental *and* development policies (principle 2). National states must obliterate non-sustainable forms of production and consumption and promote correct demographic policies (principle 8); strengthen their own abilities to achieve sustainable development by improving their scientific knowledge and by developing technologies, including innovative technologies (principle 9); adopt a preventive policy for the environment *according to their abilities* (principle 15); internalise environmental cost, based on the principle that the one who pollutes pays for it (principle 16); commit themselves to evaluate the effects on the environment of proposed activities that could seriously harm it (principle 17); and promote public awareness of environmental problems and citizens' participation, by diffusing environmental information (principle 10).
6. *The undertaking of responsibility for sustainable development*. The whole spirit of the Proclamation and of its point of reference, which is the United Nations Charter, indicate that the global level is perceived as the primary level of this responsibility. The second level of responsibility belongs to the national states, which are called to align with the Charter and to cooperate closely with each other. The Proclamation also seeks to extend the responsibility to a series of lower levels, all the way down to local communities. The key to the realization of sustainable development is the citizens' participation in decision-making, while great importance is given to the uninhibited circulation of environmental information (principles 10 and 22). Apart from these legislative levels, the declaration also mentions three

social groups: women (principle 20), youth (principle 21) and minorities (principle 22).

Agenda 21, a voluminous text that focuses on sustainable development and consists of 40 chapters, followed the Proclamation of Rio. This text covers a wide range of issues that refer to the environment and its relation to development, along with social and political issues that are related to the environment. The major issues it covers are the following: sustainable development; environmental systems, the biotic environment and their protection; natural resources, agriculture and the protection of forests; pollutants and waste; human health; sustainable development of settlements; the battle against poverty; the activation of social groups and local communities (with particular emphasis placed on women, young people and local inhabitants); social democracy and participation in decisionmaking on environmental and developmental issues; and the promotion of science, technology and education in connection to environmental matters. The chapters follow generally the same logic in their organization. Each programme mentioned begins with a rationale, continues with the more specific objectives that should be pursued, then discusses the specific actions that need to be taken and concludes with the means of implementation, which also include the annual budget of the programme (for the period 1993-2000).

A special feature of Agenda 21, as well as of the Proclamation itself, is a balanced and politically sensitive environmental viewpoint that places particular emphasis on growth and the specificities of non-developed countries, always in connection to the protection and upgrading of the natural environment. The major ideas of the Agenda are stressed even in the first pages of the text, where the positions of mild environmentalism are promoted: the need for a balanced and integrated approach to development and the continually deteriorating environment; the need for acceleration of development within a supportive international context; the need for special attention to and economic aid for the developing countries; and the admission that the general recommendations for the environment must be *differently* applied according to each country's different conditions, abilities and priorities.

The Agenda stresses the need for policies which will combine environmental and demographic considerations in the context of a holistic perspective on development, and one of the main aims of this complex perspective is the obliteration of poverty –which, the Agenda points out, has increased as a function of the economic distance between countries. The demographic factor is dealt with carefully, indeed with rather too much political sensitivity, in opposition to the authoritarian and absolute views of hardcore environmentalism. Despite the prediction that the earth's population will rise to eight billion by the year 2020, the Agenda simply mentions the need for policies to cope with the consequences of population increase, without any reference to specific forms of intervention, though there is a vague reference to estimates of population growth in relation to population needs and sustainable development, and an equally vague reference to measures aiming at a demographic "transition". A clearer formulation refers to the support of programmes that promote "changes" in demographic trends and encourage factors of sustain-

ability, changes which imply a population decrease but do not actually mention it by name. However, even this insinuation is refuted further on, when the promotion of health programmes is called for in order to decrease the death rate, which will allow men and women to fulfil their ambitions concerning the size of their family, in a context of free choice, dignity and personal values.

We perceive through these formulations the political balancing act of the texts of Rio. The texts understand that any attempt to impose a policy of population control would come up against strong social, political, cultural, and even religious reactions and this is the reason why the demographic course of each country is left in principle uncontrolled (the reality criterion), but, in order to maintain a bridge with hard-core environmentalism (the purity and political alliance criteria), the above additions are made. Due to their vagueness, the latter only play a symbolic role and in reality do not reverse the demographic "liberalism" of the Agenda.

The authors of the Agenda maintain the same distance from hard-core environmentalism also in respect to environmental issues. While these problems are mentioned, the approach to them does not share the perspective of catastrophe. Thus, the authors observe that today the environment is changing more rapidly than at any other time and that in the next century we *could* have major environmental changes. Moreover, the human consumption of energy, water and non-renewable resources has increased and a shortage *could* arise in many parts of the world, even if environmental conditions remained unchanged. The Agenda also distances itself from hard-core environmentalism in its specific and systematic emphasis on the differentiation between developed and developing countries, arguing that sustainable development in the developing countries must be accompanied by economic assistance.

According to the Agenda, two crucial factors in the attainment of sustainable development are science and technology. The promotion of scientific research and forecasting in environmental matters is considered to be of vital importance. Based on these, it is possible to improve long-term forecasts, useful for both environmental and development policy; in this way, a better knowledge of the environmental impacts of various development choices is possible. Scientific knowledge must become the possession of all countries, the developing ones included. A particularly interesting point is that native and local knowledge is considered as part of the production and application of scientific knowledge for sustainable development. The position recommended is that methods should be developed which will bridge standard science with the native knowledge of the different cultures of the planet. Similar emphasis on native experience is also found in respect to building materials, where the Agenda speaks of the creation or support of local industries, based as far as possible on local natural resources.

In addition to this aspect of the application of science to forecasting and planning, the Agenda also refers to the other aspect of its application, which is technology. The developed countries, who are the greatest energy consumers, must plan and manage energy in such a way that they promote renewable and alternative energy resources. Settlements must obtain effective energy technologies and alternative and renewable energy sources, which, it is antici-

pated, will be supplied by technology.

Finally, sustainable development is in Agenda 21 intimately linked to a specific political regime. On the one hand, sustainable development requires general progress towards democratic governments. Democracy is directly related to wide public participation, both personal and collective, in decision-making on environmental issues. Sustainable development demands new forms of participation. On the other hand, sustainable development leads to a need for world collaboration. The authors of the Agenda consider the very existence of such collaboration an indication of a universal consensus and political commitment. The core of this global collaboration will continue to be the United Nations.

Epistemological and sociological critique of environmentalism

The texts that have been analysed record, with a considerable degree of accuracy, the entire field of environmentalism as this has evolved up to the present time. Its general philosophical, epistemological, moral and political foundation has remained fairly stable ever since its first formulation in the context of the Club of Rome. From my point of view, this foundation is unsubstantial and has serious epistemological and sociological weaknesses. In what follows, I will attempt to illustrate the most important ones.

To begin with, on the epistemological level of the social sciences there is a radical dichotomy between the social and the natural sciences. In the context of positivism, the theoretical approaches and methodologies of the natural sciences were considered to be the model for science in general, which every other science ought to follow. In reality, due to the fact that the subject matters of the natural sciences and, for example, the social sciences are so completely different, their corresponding theories and methodologies are structured on a completely different basis. Attempts to establish both on a unified basis, such as the neo-positivist 'unified science', or Engels's 'dialectics of nature', remained unfulfilled (concerning Engels, cf. Redclift 1987: 224-225). A witness to such a failure is geography itself, in the form of "new geography". As is well known, this positivist version of geography, which was based upon mathematics and model building, tried without success to bring natural and social phenomena under the same, indeed universal, mathematical laws and in this way unify natural and human geography.

Such a failed synthesis derives from an epistemological incompatibility. In fact, every science, in order to define and constitute itself as a distinct scientific field, needs to adopt a specific point of view. In the field of linguistics and semiotics, the necessity for such a point of view is expressed through the 'law of relevancy' (*loi de la pertinence*). Each point of view, as a consequence of the law of relevancy, defines a specific epistemological object. The point of view we adopt relative to the object is not prescribed by it, but by the scientific community, the object placing certain constraints. Literally, the point of view founds a scientific field. This quality is particularly evident in the case of linguistics. The founder of structural linguistics, Ferdinand de Saussure, states that, contrary to other sciences, which deal with objects that are given in advance and can be approached through various points of view, in linguistics "it is the point of view that *creates* [my emphasis] the object" [Saussure 1971 (1916): 23-25].