

Ethics: essence for sustainability

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Abstract

This paper aims to demonstrate ethics as being an essential element in order to achieve sustainability. This will be taken throughout the crisis of the development model rhetoric upon which western society is established and with the foundation of information systems as interference factors to environmental consciousness. © 2000 Elsevier Science Ltd. All rights reserved.

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1. Introduction

We only have to observe what is happening with the world to notice that the western model of economic growth, founded on efficiency and on unlimited growth, has failed and that it does not provide most of society with even the basic conditions for living.

Since the Stockholm Conference (1972), the proof of this failure can be seen in the rise of social and ecological degradation, which now affects two thirds of humanity. This failure can also be seen in that most countries live in persistent misery, and this, in turn, worsens the situation and causes irreversible environmental losses as well as economic–socio–cultural and ecological damage.

We know that the limits of this model are not connected to the availability of technical and natural resources but are bound to the earth's capacity to absorb the residues resulting from our systems of production and consumption.

At the same time, this western model of economic growth, is in conflict with environmental saturation because the “capitalist economies depend on consumers spending more and more each year to help the economy grow. The continuing reliance on obsolescence for pro-

moting sales means that economic growth and the viability of many companies are, in essence, dependent on waste” [1].

Also it is known that globalisation¹, far from conferring well-being and social justice, does not deal with social discussion about such matters because it encourages the concentration of income and widens social inequality and makes the natural environment unsustainable. Globalisation, or *Mondelisation* as the French call it, has as one of its main characteristics a preference for the laws of liberal economics whose rules are dictated exclusively by the market and by competition.

According to Romeiro [3], we need to realise that the real identity of individuals is defined by the quality of social relations to whom they are connected. Their relationships are more complex than “the price they are willing to pay” to have many material goods, according to conventional economic theory, and there are also relationships of trust and solidarity towards the poor, the future and other living beings. In turn, these relationships

¹ According to Muzio [2:3], “(...) the present dominant global conception aims to fortify the establishment of a single unifying code of human behaviour and opens the way for the realisation of the ultimate dream of global economies of scale. As a result of this process, the “economic model” achieves perfection, that is not only to describe the world but effectively to rule it. And this is the very essence of the modern paradigm of development and progress of which globalisation represents the supreme stage of perfection.”

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are conditioned by stimulants from the socio-cultural and institutional environment.

Therefore, we need to recognise that there are absolute limits to the expansion of the economic subsystem and the continuity of this way of behaving in the economic, socio-cultural and ecological spheres. In order for a model based on values, seeking solidarity, fraternity and social equity, to be established our society should seek new ideological references, that would recreate a sustainable structure different from the western economic model. This is because the values of the western model are incompatible with the sustainability of the environment.

In order for a society to question adopted values, its individuals should be active agents, conscious of themselves and of others. Firstly, these individuals should be endowed with a sense of their own purpose; then they should have a sense of responsibility for their actions and the consequences that these actions provoke. Finally, they should be free to be able to think for themselves and create their own rules of conduct.

However, they will only have the above mentioned qualities, if they have the basic instrument to make the recognition of these values feasible: education. It is education that plays the role of shaping and forming our conscience. Above all the information systems, social institutions and economic values must correspond to the environmental values in its ethical dimension.

2. Sustainability

In spite of having different meanings, the words sustainable and sustained, are frequently used indiscriminately. Actually, when we refer to independent economic growth (i.e. self-sustained), we are referring to an indefinite form of growth, a growth that does not recognise limits, which is not differentiated by quality, therefore it ends up being the opposite of that proposed by sustainable development.

To sustain means: to prolong the productive use of our natural resources over time, while at the same time retaining the integrity of their bases, thereby enabling their continuity.

Sustainability is the constant process of obtaining the same or better living conditions, for a group of people and their successors in a given ecosystem. Therefore it is a continuous process. The condition of not harming future generations, contained in the sustainability definition (intergeneration equity), determines that sustainability will only be true, if left as an inheritance for the next generation. In this sense, the notion of time is incorporated in the discussions. The intrageneration equity, incorporated in the discussion of sustainable development, is a necessary condition for easing the world's path in the direction of intergeneration equity.

Included in the definition of sustainability, is also the idea of physical limitations to the productive use of natural resources. There is a narrow relationship between these limits that threaten humankind and sustainability that becomes associated with the menaces caused by humankind itself. This ongoing threat exceeds the support capacity of the planet, resultant from the material pattern of life: consumption added to the lack of environmental awareness. Noorgard [4] is emphatic when he states that we are all threatened by the failure of our global life support systems.

However the definition of sustainability should recognise the distinction of three areas: social, economic and ecological. These socio-economic-ecological areas are interrelated and interdependent. Together they have created a vast framework of relationships that create and destroy, which we call the environmental sphere. Firstly, they should be deepened by different disciplines, methods and differentiated laws. Secondly, they should integrate the three points of view; which constitute the major challenge to the policy formulators of sustainable development.

To increase our understanding of this approach, we need to consider as elements of sustainability, what the economists refer to as natural capital; capital built by humankind; human capital or social and institutional capital, including not only labour but also including people, skills, well-being, health, motivation, as well as their institutions, organisations, structures, rules, standards and cultures.

Analysing the sustainability of human capital demands attention, responsibility and great care when including economic activities and all activities of general sustenance of human life. In other words, the aspects of the quality of human life that are related to material factors as much as non-material, which will depend on economic goals as much as non-economic.

In the same way, institutional sustainability is equally critical; it should redefine the role of the social institutions in the search and advance of the sustainability in the process of development. As well as redefining its flow of services, its own maintenance in a sustainable way: agile, free of illegal activities and corruption.

In what is referred to as natural capital, another qualification is necessary concerning its functions. It can no longer be treated just as a supplier of goods for production, but also as a direct provider of environmental services, as well as being as a receiver of the residues which are created by consumption and production.

In this way, our definition of development strategies must include three main aims, which should be followed continuously and simultaneously: social equity, ecological prudence and economic efficiency.

The first step, to reach a continuous process of sustainable development is to be found in knowing about the characteristics of unsustainability, the causes of the

problems which humanity is presently facing. From this, all the parts of society must be stimulated to participate, so that it will be possible to know several perceptions of these problems. At the same time different proposals and aspirations could be considered on the way to these solutions.

Unsustainability is strictly linked to the social organisations and their own activities, which are motivated by values adopted by them. They, in turn, are conditioned by the social institutions present in these same societies. Among these, the information systems, which we will talk about later, perform a role of fundamental importance [5].

It is certain that scientific knowledge is indispensable, as much as to improve the identification of present problems as to continue with the search for their technical and economical solutions. However, scientific knowledge is not enough., it must be connected, according to Proops [6], “to wisdom and ethics to formulate goals, social desire to achieve them and a mature judgement to recognise them.”

The same author makes some other recommendations to advance us towards sustainability:

- we must have a clear vision of the state of the world towards which we want to advance;
- long term creative policies (more than a century) are indispensable;
- it is necessary to recognise the differences of the economic and social structures, the relationships between them and nature;
- the formulation of these policies should not be divorced from social participation, because consensus is a pre-requisite fundamental;
- consensus must be obtained in an evolutionary manner, worked through education and persuasion, but not through coercion; for this to happen it is essential that leadership is exercised through political power and civil administration;
- goals and policies must be laid down, they should accept that economic restructuring is certainly the right path to be followed, given the present state of the world, also including the restructuring of standards of consumption; that is, according to Proops [6], “a question of faith in the good sense of humanity and in the effectiveness of education.”
- we should identify consistent policies and tools (taxes, subsidies, norms, permits) in a form coherent with the goals;
- economic, social, natural, quantitative and qualitative indices should be developed which should be able to monitor efficiently the performance of these policies;
- finally, these policies should be periodically revised, from the sustainability point of view. this will only be possible if there is recognition that decisions are long term, passive and invalid. Because of our level

of ignorance, there is a need for new techniques in production, and changes in relationships and institutions.

The sustainability of life on Earth demands, however, a new way of thinking, very different from the individualistic way that governs the dealings between buyers and sellers in the market, or the rationality behind the competition between producers, who always found their point of balance, the optimum (Pareto), independently having excluded and eliminated consumers and sellers from the market. This dynamic was dependent on moral values that sanctioned this type of behaviour and looked mainly for the accumulation of material wealth.

We should know that it is the integration of the environmental sphere, in the process of taking decisions from the most diverse sections, that has allowed advances in the sense of re-conditioning the behaviour of a part of society, driven by other values, previously not considered, such as love, peace, solidarity and fraternity. They are values which together form a new indispensable ethic giving a sense of challenge which is associated with the present changes.

The new ethic is a condition for reaching sustainable development. This is the only way our civilisation and the intelligent life of the Planet will be saved. This reality can determine that environmental sustainability is characterised as the “organising principle of a new world order” [7].

3. Ethics

Understanding ethics is fundamental to understanding the crisis that afflicts society today. This is because from the ecocentric² point of view, the ethics of our society has become anti-ethics, once moral premises are established in the anthropocentrism and utilitarianism which make up their configuration.

Morals have to do with conformation and obedience demanded by a certain pre-established order. A set of social behaviour is consecrated by tradition, it is imposed on the individuals of the group and it is transmitted through generations. This moral conscience refers to values and, therefore, to human relationships, existing as part of each individual’s inter-subjective life.

Those values are intrinsically linked to the culture of each society, because the culture defines the positive values and the negative values to be followed. According to Chauí [9], culture is a result of the interpretation that human beings have of themselves and of all their

² According to Millot–Guinn [8], “the ecocentric philosophy adopts the idea that people have the responsibility to respect all natural elements, and to minimise the impacts of their activities in the ecosystem and the biosphere.”

relationships, including that of nature. Throughout time humankind has been bringing about a new sense of nature, idolising, intervening, provoking changes, depleting, degrading, mitigating, recovering, resulting from the needs and priorities that are based on the values given by society.

In spite of the constant vocabulary confusion between ethics and morals, the significance of the ethics goes beyond the significance of morals. The ethical vocabulary expresses a study and appreciation of those judgements which refer to human conduct and can be qualified from the “good” or “evil” point of view, they relate to a specific society and they are absolute [10].

According to some thinkers, ethics propose to elaborate life principles capable of directing humankind towards a correct moral action and to reflect on the moral systems devised by people. “Ethics has a practical concern and it is guided by the wish to unite action and knowledge. As a practical philosophy, it seeks to apply this knowledge on doing what should be done, and shows the dialectic interaction between inner reflection and exterior action” [9].

Several social and cultural groups established ethical values as patterns of conduct confirming the integrity of their members and the conservation of the social group. The ethical dimension is constituted by a group of values and the obligations that form the content of the moral conduct. From there, it manifests its importance in relation to the reconstruction of the moral values in our society. This is because human action is disconnected from rationality, according to ecocentric values and the natural environment was not thought of as something worth preserving, but as something to dominate.

Unfortunately, it is all too common that the cultural origin of ethical values, its sense and moral³ conscience passes unnoticed. This occurs because ethical values, as much as sense and moral conscience are the ways of arriving at our thoughts and judgements. We were brought up with this base and sculpted with these tools. These ethical values, sense and moral conscience guide our conduct and behaviour, independent to our greater or lesser degree of conscience.

So that moral standards are consecrated by tradition and maintained through time, they have been considered neutral elements, becoming naturalised in a historic-cultural dynamic society, and ironically moralised as fixed and static.

What is happening, as a consequence of this process of naturalisation and absorption of the moral patterns, is the dissimulation of ethics as static. Ethics is dynamic, because its creation is historic-cultural; and because of this it seeks to adapt itself to the history that humankind

evolves for the time. “Ethics is implied in a non balanced order that always looks for new forms of adaptation. It pursues synchrony with the dynamism of things and the open attitude and attention to changes that found ethics in distinction to morals” [11].

Ethics assists the historical, economical, cultural and political conditions of moral actions. Although ethics is universal to the society that has instituted it, it changes over time and history, responding to new social demands. However, once the order becomes rigid, through its temporal immobility, the tendency is that it is transformed into retrograde moralism. This is the main difference between morals and ethics, the immobility of the first and the dynamism of the last.

Apart from moralism being static and rigid, it does not evolve and does not adapt itself to new situations, since it is founded on dogmas. It also has a tendency to be absolutist and intolerant. “A naturalisation of our moral existence hides, therefore, the most important aspect of ethics is the fact that it is a historical-cultural creation” [9]. So, moralism inhibits behavioural changes and can obstruct the development of a new model founded on ethics.

Ethics is a normative knowledge of human acts, because it establishes morally obligatory norms in respect of the natural environment, that is to say, to life. Its norms perceive the imposition of limits and controls to the permanent risk of harmful attitudes and dangerous conduct.

These attitudes and dangerous conduct are provoked by a person or by a social group, and it is assumed that this person or this group had previous knowledge of the objective, the effects of its acts and, possibly of the circumstances involved. However, the fact of previous knowledge existing in relation to its attitudes and conducts, does not mean that the individual or group had a moral conscience.

It is worth pointing out, that what one society defines as ethical conduct, another society with a very different culture, could interpret quite differently. An extreme example could be the acceptance by some societies of the mutilation of women to avoid sexual pleasure or the amputation of hands in the case of robbery. Because these have already been sanctioned by the traditions of these societies, there is, therefore, an acceptance and normalisation by that society of these moral values.

To have ethical conduct, inevitably, it is necessary that the action comes from an agent conscious of itself and of others. The unconscious agent is naturally passive, however, often because he does not know, or does not have information and does not signify the quality of the action because he has not sensitised with the referred subject. This is the case of the ignorant, those lacking “education”, starving etc. While the conscious agent is capable of identifying right from wrong, good from evil, responsibility and commitment to values, he is also able

³ A moral conscience is the element of establishing a capacity for deliberation among several possible alternatives [9].

to differentiate consciously between alternative proposals, and to follow the one which involves him more.

Here we could divide the conscious agents into two groups: the first would be the group of passive agents and the second would be the active agents' group. Although the agents of both groups are provided with the capacity for exercising their own conscience, responsibility, will and freedom, the passive agents do not exercise them consciously, they allow themselves to be governed by circumstances and influenced by impulses.

The active agents, who are autonomous, already evaluate their own abilities; they investigate, they question and they criticise the meaning of values. They are responsible for their own actions, positive or negative, and acknowledge themselves as the authors. The active agents have consideration for others, for other things and they reject violence. These are the agents who can cause changes in values or moral intentions. They initiate action because they are able to internalise their own feelings and actions. Liberated, they make changes to the ethical dimension through their moral questioning.

Active agents, morally-active individuals, are needed to create paradigms with which to confront the cultural and political establishment. In order for us to become part of the active agents' group we should begin by questioning the utilitarian and anthropocentric order which affects us, so that we are forced to an awakening of endogenous⁴ values, because one day then, true altruistic feeling will appear.

4. Anthropocentrism

Humankind's perception that we occupy the most privileged place in the universe is, probably, one of the older collective archetypes of human culture. The supreme being considers itself owner of the universe and that nature is its servant. Out of his understanding of the universe humankind has given himself a preeminent position [12:3].

Humankind shows itself as a superior form of life, it behaves in a superior way and it considers it has all the rights over those forms considered inferior (these forms, sometimes, are human beings occupying unprivileged conditions in society). This supreme being is not aware that all the other forms of creation also have rights; it would be ethical to recognise that all beings have the right to a present and a future. But humankind presupposes that everything is there to serve it. And it was, based exclusively on this anthropocentric concept, that the relationship between human life and its insertion in the material world was founded until then.

“Humankind is the only being capable of consciously defining its place in nature” [12:5]. It was given intelligence and, therefore, was capable of thinking for itself. From this premise, humankind should already have become aware of the size of the universe and its own powerlessness to control nature. According to Boff [13], “in creation, only humankind is constituted to be ethical, because it is made responsible, only it has the answer to the proposal that comes from creation. The human being lives ethically only when it renounces being above others to being together with others. He is not only a being of desires, but also a being of solidarity and communion”.

Modern humankind, contrary to Boff, lives in a world in which the market system is its mentor. This system is one of survival not of fraternity, where “me and you” operates in the same sphere, the market, whether it is as buyer or as seller. The sphere in which it operates is one of “me or you”, it is exclusive, and it is not willing to include everybody.

Current ethics have values which are not compatible with humankind and nature, not even with other members of the human race. The values which humans have to adopt in order to be successful do not help the natural environment. This is because of the way in which the economic system has to operate. Until quite recently it did not allow for the ecological question, just exploiting nature as a provider of material goods and fuels for production and consumption. Today we are beginning to learn that while nature supplies us services and is our trash can for the leftovers of production and consumption, it is at last seen as essential for our quality of life.

Nevertheless, humankind treats nature as if it were a simple mechanical system, which can reproduce itself. It is forgotten that their relationship is a changing and modifying one. This imbalance in our natural system is a result of an imperious relationship, because a system which emphasises the interaction between humankind and nature is really a system of an imbalanced exchange of materials and fuels of low entropy, for products and residues of high entropy [14].

Furthermore, the relationship of “me or you” is accepted by everybody as a way of human evolution, accepted since Charles Darwin⁵, established his theory about the evolution of the species — the law of the survival of the fittest — the unquestioning logic of natural selection.

According to Ho [15:49], this “theory that inspires a heroic triumphalism in the ruling classes, and at the same time, inculcates in the lower classes, a fatalistic acceptance of the existing social order. If you are a rich capitalist who succeeded in making a lot of money, then it is because you are among the favoured ones in the struggle

⁴ What comes from inside.

⁵ “The Origin of Species by Mean of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life,” 1859.

for life". Here, the anthropocentric base embodies precisely the market system with moral individualism.

Endowed with conscience, humankind should be the main witness to the dignity of life and of its value. Hypocrisy happens when it is understood that the ethical value of life is dependent on the idea of a universe created by the omnipotence of humankind.

Nowadays humankind has shown an unlimited desire for possessions, that is to say, apparently there is no end to the material things that humankind wishes for and wants. Because of this, the physical–environmental space has become an unlimited domain of exploration and exploitation, of construction and destruction.

5. Conscientiousness

It is true that all human activity, economical and socio–cultural alike, takes place in a biophysical context and acts on and interferes in ecological sustainability. Therefore, it is important that individuals are aware of themselves and others. That is to say, they evaluate the effects of their actions in relation to those whom they live with, to society as a whole and to the natural environment. Because each and every kind of relationship between humankind and the environment (biotic, anthropological and physical) will determine the intensity and the quality of environmental problems.

Every action is guided by moral principles. However in modernity morals were established as individualistic concepts, where each individual acts as legislator and judge. Moral individualism has led to a multiplication of choices, to consumerism, to obsessive growth, to a diminution of human life, to human interference in the lowest level of nature and to unlimited material progress. Humankind has deluded itself. It has become the protagonist in the disharmony between the social, economic and ecological spheres. This disharmony is another one factor of the unsustainability of the system, which results in iniquity, in social and ecological degradation, and in an exhaustion of natural resources, etc.

Individualist behaviour has resulted in a lack of interpersonal involvement, of people's promises to others, of collective responsibility, and finally of all together. Everything that is in agreement with the moral base of the market system is opposed to an ethic of public responsibility, disrespecting other human beings, destroying the natural environment and only assisting private interests.

What can be done? This type of question, which is still personal, initiates the process of changing from recklessness to conscious responsibility. When this process starts, the active agent demonstrates that in spite of the difficulties in perceiving that the moral individualist (expressed by the consumer society and the apologises for reductionism of life), can be detected and then

ignored, when there is the information, the sensitivity and the conscious will to act.

6. Consumption standards

It is presently known that the dynamics and values which move communities are those mainly governed by market relationships. According to Lebow⁶ (quoted in Beder [17:161]), "our enormously productive economy (...) demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek spiritual satisfaction, our ego satisfaction, in consumption. We need things consumed, burned up, worn out, replaced, and discarded at an ever increasing rate".

Consumerism is purely material and its influence, while important in shaping the conscience of people, whose lives are "imprisoned" in seeking products which make them different, makes it impossible or limits every search which goes beyond this objective. Paul Ekins, a British economist, defines a consumerist society as one where "the possession and use of an increasing number and variety of goods and services is the principal cultural aspiration and the surest perceived route to happiness, social status and national success". (in Beder [17:193])

In seeking happiness, people are manipulated by the consumer game, which is mainly conditioned by systems of information, applauding those values which have shaped moral individualism, strengthened by the use and abuse of human weaknesses such as egoism, pride, vanity and power. According to Chauí [9:337], "from the ethical point of view, we are people and we should not be treated as objects. Ethical values are offered, therefore, as an expression and a guarantee of our state as subjects, morally forbidden to be turned into objects which can be used and manipulated by others."

Meanwhile, the promise of happiness through material satisfaction has not proved true. Easterlin, concluded after analysing Gallup and National Opinion Research Centre (USA–apud Romeiro, 1999) that the growth in income and wealth has not been accompanied by an increase in people's personal happiness, as they had expected. Despite this, people still continue in their eternal search for material happiness.

Unfortunately, this confirms that despite a set of values being preserved socially, their use is put on a second level in human activities, and controlled by the dominant economic system. "Economic values often dictate which human activities should take place in most of the societies" [9].

Here we have an inversion of functions, because instead of humankind being the manipulator of capital,

⁶ Victor Lebow: Retailing Analyst. Quoted in Durning [16:21–22].

they behave as if they were its tool. Humankind has the ability to decide to insert productive values in the environmental factors, because humankind constitutes the consumer market. Humankind has its own life and has the ability to be transformed.

It is on this rhetoric that conflict occurs. If the consumer market is made up of people who consume, there are these people who determine the insertion of productive values into the environmental sphere. And if the use of resources depends on the strength of demand, why is it that humankind becomes so impotent when it needs to impose limits on its own desires? Why is it so difficult to reconsider moral values when our own quality of life depends on the recreation of these values?

Because the information systems sell the dream of fulfilment. These information systems are everywhere, outside and inside our homes, in each area of communication, influencing and transforming people's values. "Advertising exploits individual insecurities, creates false needs and offers counterfeit solutions. It fosters dissatisfaction that leads to consumption: Consumers are taught personal incompetence and dependence on mass-market producers. They are taught that being a citizen means no more than being a consumer" [17:162].

7. Information systems

Based on anthropological principles, not all individual values are influenced by the natural environment. Consequently, even though the anthropocentric and individualistic values of economic liberalism, will be the values which dominate modern society, people have values other than these. "Love, beauty, truth are not the result of a conditioning or limitation of other masters; it is something completely natural that flows like clear water coming from a well" [18:21]. They exist because they are values which could be realised and make possible the harmonious reintegration of humankind into the natural environment.

In spite of morals having become individualistic, ethics is still shown as confined to the private sphere. There are groups of principles or norms that shape modern institutions so that they work. These groups of norms are based on the adopted values by society and they triggered through the information systems. According to Sheng [5], "theoretically, the information systems should reflect the values of society; but these values can also be influenced by information. History, culture, habits, beliefs and the environmental crisis are expressed through information. Although social institutions influence decisions and human activities, they are unable to change people's fundamental values".

Consumer ideology becomes very dangerous when, through advertising, the information systems are able to transmit the ideology of things, replacing the need to be

by the need to *have*, as already shown by Sachs [19]. If the dominant ideology promotes individualism, reductionism and consumerism then this will be the dominant ideological base introduced into society through the information systems.

In this way information systems end up becoming accomplices and give an impression of a society no longer sustained by inadequate and unrepresentative moral values, in turn, through them improper values are transmitted to the social institutions — influencing and distorting them. Kozol exemplifies this by taking the case of the commercialisation of education in US schools, "When business enters education, therefore, it sells something more important than the brand names of its products. It sells a way of looking at the world and at oneself. It sells predictability instead of critical capacities..."

There is also the destruction of the pre-liberal economics' values through information systems. This is a result of a deliberate plan of its own moral values. Human understanding of nature and human references are caught in a process of erosion: where the ethic of responsibility is forgotten and where its ideology leads the world through the anthropocentric reference. In this way, the process becomes more domineering, altering the balance of human values, influencing information and inhibiting the ability for self-analysis.

Through these information systems, the flows of individualism, of reductionism and of consumerism transmit words, which are arranged so that they are deadly regarding the ability to process. Because they destroy the ability to create, they smother the alternatives and possibilities of re-evaluating these values. According to Alan Durning [16], "Stripped to its essentials, contemporary advertising has three salient characteristics. It preys on the weaknesses of its host. It creates as insatiable hunger. And it leads to debilitating over-consumption. In the biological world, things of that nature are called parasites."

Just as victims and not accomplices, these information systems should be formed by ethics. They should assure commitment, involvement, complicity, education, understanding, conscientiousness and responsibility and stimulate fraternal and sympathetic relationships. These information systems should deal with access to information and take into account the group that brings together different social segments, so that in this way, there will be a transformation of values.

The values of economic liberalism constituted the reference group, which organises humankind's knowledge of the world, and the Planet reflects the consequences of humankind's actions according to this set of values. It is known that, despite the terms being unquestioned, we are not always led by reference to these values. At the time of transformation we should know which values we want to keep, which to re-define as being interlinked.

Because of the inability of social institutions, in their present form, to change the fundamental values of people and therefore change behaviour, it is urgent that the institutions are transformed. Nevertheless Sachs [20] remembered, that the depth of institutional changes demanded has been badly measured, and the objective conditions which allow this challenge to be carried out haven't been discussed clearly. Because of this, it will be necessary to have a better understanding of the reciprocal interactions between the various cultures, institutions and organisations as this process of change is more and more qualified by the environmental question [3].

Significant changes have already been observed in the structure of institutions. The Third Sector, which tries to organise part in return for voluntary work, seeks to have a growing influence on various parts of the decision making process. These are active people who stand for a heightened sense of conscience against the inefficient system so that there can be justice and equality, in addition to maintaining cultural and ecological diversity.

We still have to deal with the changes regarding education. Given its great importance to broaden and deepen our awareness of the environment and the demands in relation to altering set values, educational changes should be intensified. Every day there is more evidence of small scale ecological phenomena giving way to global scale phenomena. The consequences of this and more detailed methodologies has resulted in the recognition that nature is a complex system made up of a large number of interconnected elements.

Once more, it is the analysis of an environmental object, which has led to this change for a systemic vision. This type of a new scientific methodology appears to integrate the different fields of knowledge, and has approached the area of interdisciplinary studies.

"The approach on interdisciplinary studies brings with it its own philosophy of teaching, and breaks up the model of super-specialisation. The educational environment is not adequate to the limits specified by the disciplines and curricula considered in an isolated way or to the organisation of knowledge into compartmentalised departments" [21:29]. While education is predominantly connected to the institutions which, in their turn, are allied to the political and economic power, it will continue to be alienating. Education, is then characterised as an amount of information that do not free humankind from the values and experiences of an industrial civilisation.

The principle which has the distinction of relationships has to be seen as a wish, for this reason there is a great need to revise those values seeking humility so that humankind can feel at one with the universe.

Humankind should seek to change values, to move the anthropocentric sense to the ecocentric sense. This means that each one of us must assume the role of mod-

ifying agent and place ourselves as an integral element in a sustainable socio-economic-ecological system. This system should adopt the values which seek the balance of the terrestrial system, the "*me and you*" and respect for human life, that is because, life should be justified by itself.

Above all moral individualism and anthropocentrism need to co-exist to create an ecocentric order, once it is no longer compatible with a sustainable environment. The task involves a battle against all the challenges of consumerism and of anthropocentrism. It involves giving priority to values which have almost been forgotten such as love, fraternity and solidarity and to direct them towards a sustainable natural environment.

In this way there will be established an ethical environment, an ethic which seeks to integrate the social, economic and ecological spheres. That is to say a new ethic in search of sustainability.

References

- [1] Mazur LA. Marketing madness. E Magazine 1996;7:36–41.
- [2] Muzio G. Globalisation as the stage of perfection of the modern paradigm. A possible strategy to survive the coherence of the process. São Paulo, April de 1997.
- [3] Romeiro AR. Sustainable development and institutional changes. CNPq/IE - Unicamp, 1999.
- [4] Norgaard RB. Development betrayed: The end of progress and a co-evolutionary revisioning of the future. New York: Routledge, 1994.
- [5] Sheng F. Values in changing and constructing a sustainable society. In: Cavalcante C, editor. São Paulo, 1997.
- [6] Proops J. Realising a sustainable world and the role of the political system in the construction of a sustainable economy. In: Cavalcante C, editor. São Paulo, 1997.
- [7] Cavalcanti RN. Mining and sustainable development, case of the vale do Rio Doce Company. PhD thesis. São Paulo: USP, Dept. of Mining Engineering, 1996.
- [8] Milliot-Guinn S. Ethical and logical dimensions of the eco-management action. Annales des Mines, January, 1998.
- [9] Chauí M. Invitation to philosophy, unit 8, chapter 4: the practical world. Editora Ática, 1995.
- [10] Holanda AB. The Aurélio new dictionary of Portuguese. 2nd ed, 1986.
- [11] Boff L. Ecology, universalisation, spirituality. Editora Ática, 1996.
- [12] Vaz SJL. The human being in the Universe and the dignity of life., 1994.
- [13] Boff L. Ecology, cry of earth, cry of the poor. Editora Ática, 1996.
- [14] Georgesu-Roegen N. The entropy law and the economic process. In: Daly H, editor. Economics, ecology, ethics. Essays towards a steady-state economy, 1980.
- [15] Ho M-W. Genetic engineering dreams or nightmares? New Delhi: RFSTE, Third World Network, 1997.
- [16] Durning A. Can't live without it. World Watch 1993;6(3):10–8.
- [17] Beder S. Global spin, the corporate assault on environmentalism. Foxhole, Dartington (UK): Green Books Ltd, 1997.
- [18] Weil P. The new ethics. Rio de Janeiro: Editora Rosa dos Tempos, 1998.
- [19] Sachs I. Transition strategies for the 21st Century. Sao Paulo: Nobel/FUNDAP, 1993.

- [20] Sachs I. Ecodevelopment: growing without destruction. São Paulo: Editora Vértice, 1986.
- [21] Maimon D. Understanding the economy of environmental

phenomenons Interdisciplinary: (Re)invention of knowledge. UFFa, NUMA, 1993.