KNOWLEDGE AND HUMAN VALUES

by Ubiratan D'Ambrosio

Introduction.

In this paper I will discuss, in a transdisciplinarian perspective, values and the state of the World.

I briefly recall my views on the evolution of human knowledge and behavior, from the disciplinarian to the transdisciplinarian approach.

Historically, disciplines were created as a method to reach knowledge. Soon, this approach was recognized as insufficient. Intents to put together disciplines to face a complex question or problem were common in the 17th century. The idea was that the more disciplines one knows, higher are the chances to better understand. The juxtaposition of results is called multidisciplinarity, which was soon incorporated in school systems. Curricula, even nowadays, are essentially multidisciplinarian.

Next step, interdisciplinarity, not only juxtaposes results, but combines methods, which implies the identification of new objects of inquiry. This was typical in the scientific production of the 19th century.

Interdisciplinarity gave rise to new areas of knowledge, such as, for example, electromagnetism, thermodynamics, neuro-physiology, physico-chemistry, quantum mechanics. These areas, typically interdisciplinarian, later defined their specific objects of study and their methods. Indeed, they became new disciplines.

With the invention of new and more sophisticated instruments of observation and analysis, which became intense in the 20th century, the interdisciplinarian approach, as well as the intercultural, became insufficient. The quest for total knowledge and for a planetary culture asks for a transdisciplinarian and transcultural approach.

In order to elaborate knowledge, it is essential the perception that man has of himself as:

- an individual reality, conscious of his sensorial, intuitive, emotional, rational dimensions;
- a social reality, recognizing the essentially of the other;
- a planetary reality, learning of his dependence on the natural and cultural heritage and conscious of his responsibilities in their preservation;
- a cosmic reality, assuming the drive to transcend space and time and his own existence, looking for explanations and historicity and designs for the future.

The transdisciplinarian approach relies on mastering, in different levels of proficiency, but, necessarily, in an integrated way, several disciplinarian areas, ranging from cognitive sciences to epistemology, history, politics, and several other theoretical reflections of disciplinarian and interdisciplinarian nature.

Transdisciplinarity results on the recognition that the knowledge system of Modernity, which are based on Newtonian determinism, on classical logics and on formal systems, are not sufficient to explain nature. Newtonian determinism claims the possibility of universal laws, which establish a relation of cause and effect to explain facts and phenomena. Classical logics relies on the *tertium non datur*, which is, essentially, responsible for truth criteria. And a formal system, which has mathematics as a prototype, claim the possibility of affirming the validity of any proposition about objects in it. This is, essentially, claiming the certainty explanations offered by Science. It carries, in it, the arrogance on unquestionable knowledge. But complex phenomena, some previously not recognized, indeed unnoticed before, can not be explained by Modern Science, this revealing its insufficiency to deal with the reality.

In 1900, Newtonian determinism was challenged by Max Planck (1858-1947), with the introduction of Quantum Mechanics, and, independently, by Sigmund Freud (1856-1939), with the publication of the Interpretation of Dreams, and the proposal of Psychoanalysis. Quantum Mechanics says, basically, that a physical state requires for its description, variables selected from possible observations and Psychoanalysis reflects on the relation between instinct and consciousness. Both suggest perceptions of different levels of reality and new visions of the material and psychic universe. In 1905, Luitzen Egbertus Jan Brouwer (1881-1966) claimed that the *tertium non datur* is not part of human intuition and proposed intuitionism, and in 1931, Kurt Gödel (1906-1978) gives a proposition in arithmetic which can not be demonstrated to be true or false.

I see transdisciplinarity as a research program focusing

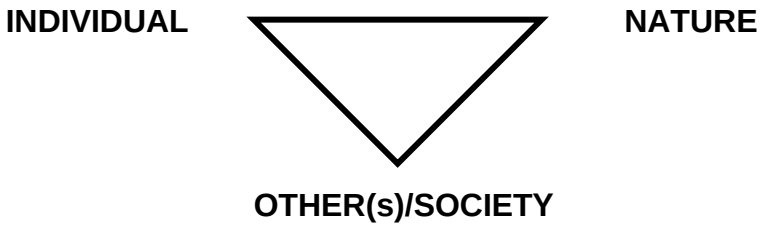
1. the generation and production of knowledge,
2. its intellectual and social organization,
3. its diffusion,

all treated in an integrated form.

But to further discuss transdisciplinarity is not the focus of this paper.[1] The objective of this paper is to discuss, within the framework of transdisciplinarity, values and the state of the World.

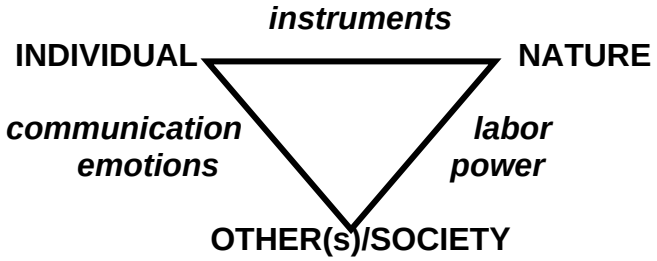
Life.

I begin by remarking that elementary forms of life date back to about $4x10^9$. Life is characterized by the capability of continuity of the species through self-reproduction. Individuals of more complex forms of life rely on another individual for this continuity, and on nature as a whole for providing the necessary resources from its survival. We appeal to a metaphor, drawing a basic triangle:



As in a mathematical triangle, the six elements, vertices and sides, are indissoluble. This metaphor offers a purely biological, specifically physiological and ecological, model of the species.[2]

In the human species, these relations are intermediated by instruments, communication and emotions, labor and power, which were, and are, essential for the development of civilizations.



We might say that the species *homo* are characterized by these intermediations, which, in every other species, is resumed to physiological and ecological relations, responsible for the survival of the individual and of the species. The intermediations characteristics of the *homo* species, play a fundamental role in the emergence of another pulsion, transcendence, which, in symbiotic relation with the pulsion of survival, are responsible for the development of individual and social behavior and of knowledge.

My reflections on human values and ethics in a planetary society, in which it is possible the satisfaction, with dignity, of the pulsions of survival and transcendence for every individual, relies on this metaphor.[3] I believe it is possible to have a society from which arrogance, inequity and bigotry is removed.

For this, we need a dramatic change in the foundation of our civilization. The universally accepted social norms and values, as well as systems of wealth creation and of work, which are based on win/lose and scarcity/abundance aims, are unsustainable. We need an ethics, focusing on the shift from competition to cooperation, from human separation to human interconnectedness, from human dependence to human interdependence, from fear to love, from individualism to altruism. This is to be a most significant change in all of human history and the beginning of a journey in the direction of a planetary civilization.

The critical issues are, thus, to pass

- from competition to cooperation,
- from human separation to human interconnectedness,
- from human dependence to human interdependence,
- from fear to love,
- from individualism to altruism.

It is naïve to treat *per se* each of these critical issues. They are all interrelated and spring out of knowledge systems, that is, of modes and styles of coping with, understanding, explaining the natural socio-cultural and imaginary ambiance. Thus, each individual generates and intellectually, individually, organize ways, modes and styles of coping with, of understanding, of explaining the natural, socio-cultural and imaginary ambiance. This individual or personal knowledge determines individual behavior. For reasons as yet unexplained, the *homo* species gives absolute priority to one vertex of the triangle, the individual. History confirms this.[4] The individual dependence on the other and on nature, for the physiological needs of procreation and of nourishment, subordinates the necessary encounters of the individual with the other and with nature to the will of the individual.

These explanations generate the sense of a privileged status, identified by Friedrich Nietsche in the history of mankind, as the “will to power”. Power is understood by Nietsche in a broad sense, not only brute force and domination, but impulse activation and ego satisfaction in fulfilling fundamental processes in life, such as sexual conquest, acquisition of wealth, the realization of a piece of art, the endeavor of a scientist to know the truth, the expectation of gratitude from charity, the seeking of followers by charismatic leaders. In other words, to seek distinction. In this broad sense, for Nietsche

> “Life is not the adaptation of inner circumstances to outer ones, but will to power which, working from within, incorporates and subdues more and more of that which is ‘outside’”[5]

Through the encounter with the other and the development of communication, and later of language, individuals share with others these ways, modes and styles of coping with, of understanding, of explaining the common natural and socio-cultural ambiance.[6]

Preferences develop. Shared systems of knowledge result in compatible behavior and are socially organized. They become the system of knowledge of a family, a group, a community, a society and the accepted behavior by the family, the group, the community, the society. Values are the set of accepted behavior, supported by the shared knowledge of the group. The culture of the group is defined by their communication system, by the compatible behavior and the shared knowledge of its members, and, consequently, by their accepted values. In many cases, preferences conflict with values. Again, we have to face the dilemma of individualism *vs* altruism.

Life and action are in a relation of synonymy.[7] The characteristics of each individual action, *i.e.*, behavior, although shared by a group, differ from individual to individual. Thus emerges, in the action of an individual, early initiative, precedence, preponderance, hierarchy and, finally, a power structure within a culture. The power structure assumes the responsibility of keeping the cohesion of the group, which warrants the survival of the group as such. In every culture, a sort of divine is in charge of warranting the survival of the group. In these virtual power structures, deviants are brought back with the resource of punishment. To punish in order to reintegrate the individual to agreed values, behavior and knowledge of society has been, probably, the major altruistic behavior of mankind. Every real power structure follows the same model, and altruistic punishment is a common feature of every culture.[8]

Culture is transmitted both in space and time through encounters, communication and information. To develop human values we need to understand the dynamics of this transmission. Culture, the same as life, is not static, it is in permanent evolution, through inter and intra-cultural encounters. Hence, culture is transformed and, as a consequence, values change.[9]

In human history, there is an evolution of encounters, from walking to space travel, and of communication, from talking to internet, hence of information, from the immediate to the remote, from the real to the virtual. This evolution sets the scenario for reflections on the dynamics of cultural transmission in the past, in the present and in the possibilities for the future. Human values are a result of this dynamics.

The threat of extinction.

I am candid in my message -- **ethics is what we need** -- and didactic in my style -- **every individual, the simple or the sophisticated intellectual, carries the responsibility and the means to direct her/his energy to socially constructive ends**.

While this paper carries a message of hope for the future of mankind, we must point to the threats posed by modern civilization to nature, in particular to mankind.

It is a fact that in the very short span of his presence in the planet, man is marveled to find himself as the focus of a process, but, at the same time, is threatened by extinction. Environmental decay, greed and violence are but a few indicators of the road to extinction.

The economic structure, supporting current style of life, is clearly unsustainable. Indicators of this are the inequity of living conditions, which manifests in increasing poverty in every country, and among nations. The subordination of consumption to goals of production, through the creation of artificial needs, causes unmanageable waste and the fragility of the economy. Short sighted policies of the most powerful nations, such as the reaction to the adoption of environmental protection, such as the Kyoto protocol, and to peace moves, such as an anti-ballistic missile treaty, are indicators of irresponsibility in dealing with the state of the world and with the legacy of this generation.

Public services, inclusive education, health, transportation and energy, are increasingly in the hands of corporations. The increasing violence in the protests movements such as *Greenpeace*, *MST/Movimento dos Sem-Terra*, ATTAC/*Association pour la taxation des transactions financières pour l'aide aux citoyens*,[10] and the actions of several non-governmental organizations, defy established governments. Both the actions and the reactions by the power structure generate violence, such as those seen in Seattle, Montréal and Genoa, which plague the relations in families, schools, communities, states and nations. Violence, instead of dialogue, has been the option. And mounting violence is a no-end perspective. These are signs of the emergence of parallel governance in most countries.

The only possibility of escaping extinction of civilization is to achieve **peace** in its broadest meaning:

- **inner peace**
- **social peace**
- **environmental peace**
- **military peace**

What is peace? Putting it in the simplest terms, peace is the capability of dealing with conflicts [which are unavoidable as a result of individual differences] without the resource to confrontation and aggression, of arrogance and of bigotry.

The only road to peace is through dialogue, based on a global understanding of the phenomenon life, which implies the recognition of differences. The dialogue is inter-cultural and equally intra-cultural. Dialogue is, basically, the attempt of an individual to understand the other, which results in recognizing that the other does not have the same basic understanding as the individual has, in other terms, the other does not have the same knowledge the individual has. This focus on the qualitative aspect of same.

Thus, the concept of knowledge is a crucial issue in defining human behavior.

From survival to transcendence.

In the final quarter of the 19th century, Edwin A. Abbot wrote a beautiful fable, in which all creatures are planar. The *Square,* which is the narrator in Abbott's fable, was allowed to raise from the plane and to venture into the third dimension.[11] We might say that Abbot anticipates, in some sense, the basic implication of Kurt Gödel's results of 1931. Very much like the *Square*, men probe into higher dimensional spaces for explaining, understanding, predicting, creating. The immediate answer is the search of an *omni-*, the omniscient, the omnipresent, the omnipotent, whose habitat transcends reality. Thus the hope to overcome the limitations intrinsic to life, hence to the planar reality. Religion emerges as the identification of such *omni-* and the set of explanations for the identified being.This occurs in various possibilities: near, away, concrete, abstract, single, multiple.

In the metaphorically planar reality, hominids appeared about 6 million years ago, maybe with the emergence of the *Orrorin tugenensis*, whose fossil was found in Kenya's Tugen Hills. Every once-a-while, fossils are unearthed, which provide new elements for the controversial theories of human evolution.[12] From the better known *Australopithecus* through the *homo sapiens* and, finally, to our own species, *homo sapiens sapiens*, the triangle of survival continues to be the essence of the phenomenon life. But, as we will see below, another triangle is superimposed into it.[13]

The species *homo* are highly differentiated. Human beings act according to intelligent strategies, and the link between knowledge and behavior overcomes instinct. It is called consciousness and subordinates instinct. Instinctive behavior is, sometimes, called insane and treated as such.[14] The extent of our integration in the basic triangle of survival, is the measure of our consciousness.

In the human species, action manifests, basically, in two ways:

- actions which lead to survival and satisfaction of needs, common to all living beings, which are performed in the instant;
- actions which satisfy man's needs for explanations, for understanding, for prediction, for creating, which lead to transcend the instant and to search the past and probe into the future.

The species *homo* seem to be the only that developed a sense of past and of future, transcending the present. The associated drives of survival, common to all living beings, and of transcendence, unique to the human species, characterize human life.

The geometrical metaphor is appropriate in the identification of the phenomenon life with the triangle. To break this triangle into each of its vertices or sides means the termination of life in the planet. This justifies calling it the triangle of survival, and calling reality the universe in which we place this triangle, which in our metaphoric image is the entire plane. Every instant is an specific arrangement of the triangle.

With the emergence of the species *homo*, tools, instruments, equipment, techniques came into playing a role in the relations between individual, other/society and nature. The relations of this new species with natural reality do not escape the model given in the triangle of survival.

Human knowledge and behavior: culture and values.

Knowledge, which is inherent to the animal kingdom, gains another dimension in the new species. Indeed, the word knowledge is used mainly in the sense of human knowledge.

Knowledge in the human species is recognized in the acquisition of abilities, capabilities, ways of doing, of explaining, of understanding, of coping with everyday needs of survival and of transcendence, and takes the form of distinct ways of communicating, invention of different instruments, acceptance of distinct ways of organizing themselves and of dividing labor.

Knowledge is the result of action generated by an individual, whom we call INDIVIDUAL A, who processes information from reality, which encompasses everything and is permanently changing. Schematically, we have a cycle:

> **.... REALITY** informs the **INDIVIDUAL A** who processes the information and defines strategies of **ACTION** which inserts new **FACTS** [**ARTIFACTS** and **MINDFACTS**] into **REALITY** which, thus enriched, informs **INDIVIDUAL A** again, who processes the new information and defines other strategies **.....**

Some of the insertions deface nature. More than the mere agglomerate of natural facts, nature now exhibits new man-made facts, artifacts and mindfacts, all produced by the human species. Reality is thus modified, enlarged. But it remains a “planar” reality, in the metaphorical sense of Abbott.

The artifacts produced by an individual inform other individuals through the senses –- which, as yet, man minimally understands and controls. Mindfacts inform only the individual producer, through memory. Only when mindfacts become an artifact, they can be collectivized through sophisticated system of codes, such as language in the broad sense, and symbols. The interplay of codes and symbols manifest as fiction, dreams and other plays of the imaginary, all identified with creativity. To understand this

interplay is the major concern of psychoanalysis. The senses allow a limited recognition of what is materialized. Vibrations, light, sound, waves or particles, produce sensations beyond the capabilities of perception by the developed senses of humans. High frequencies are not sensed by humans, although they are sensed by other animals. What is not materialized remain in the realm of the supernatural.[15]

The cycle

...REALITY --> INDIVIDUAL --> ACTION/FACTS --> REALITY --> ...

goes on for INDIVIDUAL A. But a similar cycle is also going on for INDIVIDUAL B, which, obviously, receives different information from the same reality. Indeed, not only his senses are different, but also he can not capture mindfacts, except those generated by himself. Consequently, the action taken by INDIVIDUAL A and INDIVIDUAL B are different, in general conflicting. Hence, knowledge generated by INDIVIDUAL A is different from knowledge generated by INDIVIDUAL B. Equally, behavior of INDIVIDUAL A is different from behavior of INDIVIDUAL B. In general, they are conflicting.

In mutual exposure, the action of INDIVIDUAL A takes into account the action of INDIVIDUAL B. Knowledge and behavior, of each individual, are thus modified.

Humans developed a form of communication as an action which aims at influencing and modifying the action of the other. Consequently, communication mutually enriches the information received by each individual, and influences actions of both. Thus, it is possible to share knowledge and to render behavior compatible. Culture is the ensemble of shared knowledge and compatible behavior of a group.

Groups of individuals living in a society, subjected to specific natural conditions, share the same responses to this specificity. The satisfaction of the drives of survival and transcendence calls for shared knowledge and compatible behavior, and these manifest in communication, instruments and techniques, power and labor structure, myths and symbols, religion and systems of explanations. Rephrasing, this ensemble is the manifestation of the culture of the group.

Survival and transcendence, which are individual drives, become, after mutual exposure, subordinated to common interest and common objectives. Thus, shared knowledge and compatible behavior are subordinated to parameters. Values are the parameters which subordinate shared knowledge and compatible behavior of a group. These parameters are, consequently, integrated into culture. Values keep a society operational.

Each individual of the species *homo sapiens sapiens* is provided with an internal characteristic which submits the struggle for individual survival and for the continuity of the species, characteristics of all living species, to himself and to his will. Will generates

the essential need to explain and to understand, to transcend one's own existence, to draw from their ancestors and to project into the generations to come. Man acquires a sense of past and of future, the sense of time.

Thus man develops a new characteristic behavior, unique to this species, which is the capability of decision upon his behavior. This is an essential principle, which in different traditions is called spirit, soul, anima, karma, and several other denominations. These forms of behavior are incorporated in the pool of common knowledge which keeps a group of individuals, a community, a society together and operational.

A limited perception of life in its integrality, due to the lack of intellectual and material instruments of analysis, was responsible for mankind seeing itself the center of the universe, the apex of the creation process, the favorite of gods. This is clear in the various religious traditions.

This leads to an ingrained feeling of privilege in human nature. We struggle for winning, we offer gifts -- or pray -- for being favored by superiors, we dream with the possibility of being the best. In essence, this is will to power. Much of the despicable behavior of mankind result from the struggle of the individual to fulfill the will to power. This struggle manifests in demand and frustration with one's own successes, and attitudes towards others and nature, such as arrogance, violence, bigotry and greed, which, collectivized, lead to organized confrontation, such as war.

To overcome this struggle is to attain a state of peace, in its many dimensions: inner, social, environmental, military. Peace, conceived in its many dimensions, results from overcoming the ingrained feeling of privilege common to human beings.

Culture thus manifests itself in different, obviously interrelated, forms and domains. Cultural forms, such as language, mathematical practices, artistic manifestations, religious feelings, family structure, dressing and behavior patterns, are thus diversified. They are of course associated with the history of the groups of individuals, communities and societies where they were developed.

Cultural diversities are present and are impossible to avoid. A larger community is partitioned into several distinct cultural variants, each owing to its own history and responding differently to the same stimulus. Intra-cultural relations are enriching and, at the same time, challenging. Humanity at large is partitioned into different cultures, revealing sometimes conflicting forms. Intercultural relations are also enriching and also challenging. Intercultural, and sometimes even intra-cultural, conflicts are impossible to avoid. To live with these cultural conflicts is the main theme of cultural dynamics. And to reach the capability of living with cultural conflicts is the ultimate goal of civilization.

I resume the reflection above about encounters of various kinds. I mention encounters among individuals [the fabric of society], encounters with strangers [fundamental for

understanding inner feelings and emotions], encounters of generations [the essence of education], encounters with the imaginary [generating fiction].

Now, in the era of technoscience, we are intrigued by encounters in space and encounters of genetically modified species. The ambiance has always been a major factor for the outcome of the encounters. This is reflected in the idea of neutral ground, frequent in history, in particular in political history. Much of the religious developments are attached to places. How will this be when the ambiance is, itself, an integrated component of the encounter, such as space station? Which are the traditions backing the behavior of a couple of *in vitro* fertilized human beings?

The essence of humanity.

We are thus lead to discuss the meaning of being human or the essence of the human being. The play between the noun and verb, being and being, synthesizes this discussion. The essence of humanity is attained when the two, noun and verb, attain a symbiotic relation.[16] This can only happen in a dimension superior to the flat two dimensional “planar” reality.

History shows us the close relations among the intermediaries instruments/techniques, codes/communication and production/labor. The superposition of the triangles of survival and of transcendence is the metaphoric symbol of the human species. It is the substantive aspect of *homo sapiens sapiens.* The metaphor of the figure resulting from the superposition of the two triangles, of survival and of transcendence, stands for the essence of being human and for the recognition, by the human species, of the essential needs of survival and transcendence. But it carries, with it, the essence of power.

A further step towards total wisdom, would be to reach another dimension. The human species gives a step which differentiates it from all other species which live in the “planar” dimension. To transcend is the effort to go beyond reality and this is a move to another dimension. Both past and future go beyond reality and belong to another dimension. We can not reach this dimension, but are driven to it. To penetrate this new dimension is man's attainment of spirituality, it is reaching the karma, it is the step beyond the materiality of two-dimensional reality. The drive towards this is the essence of will. Thus man attains his plenitude, reaches humanity, takes possession of his self, only in this enhanced reality. This is our concept of how human beings acquire the full status of being human.

Is this immersed in a higher dimensional reality? This goes beyond the capabilities of our perception as a species. We can reach the enhanced reality. Our goal, as individuals and as a species, is to attain the full dimensionality of being humans. We probe into the unknown, into the higher dimensions, which is the domain of omniscience, omnipotence and omnipresence.

Reflecting upon the behavior of living species, we see a form of wisdom in nature, inaccessible to our current understanding. Attempts to explain this wisdom are seen in basically two different ways:

- in the search of laws which determines a rigorous and predictable behavior, mathematically precise -- in the terminology of the prevailing paradigm – and anchored in experimentation;
- in making sense of the complexity which defies the basic assumptions of cause and effect, drawing on experiences.

The first hypothesis lead to the success of the concept of progress, intrinsic to Western civilization. Representatives of this approach are René Descartes, Isaac Newton and all those associated with the reductionist approach, characteristic of modern science –- understood as the system of explanations based on the Newtonian paradigm. It leads to a deeper look into phenomena by narrowing the field of interest and by treating them under increasingly limited specific methodological precepts. But this does not resolve the search for global explanations, thus paving the way to the multidisciplinarian and to the interdisciplinarian approaches. Both are nothing more than recurrent incursions into the unknown with the same or similar methodological instruments, shifting the focus to other categories of questions.

Challenges to the system of explanations offered by modern science soon started to mount, made possible by the sophisticated material and intellectual instruments, paradoxically developed thanks to the same modern science. We might say modern science created the instruments to be challenged. Most remarkable is quantum mechanics.

We can not be successful in our search for explanations, if we remain in the level of classical methods of science and focus our views on functions and their domains and counter domains. In other terms, if we restrict our analysis to cause and effect. We need to go a step further, looking into the categories of analysis themselves and understanding the relations between the objects and their dependence within the various categories.

The second hypothesis calls for an analysis of the dynamics of the full process. Representatives of this thinking are Jan Amos Komensky (1592-1670), Johann Wolfgang von Goethe (1749-1832), Max Planck (1858-1947), Luitzen Brouwer (1881-1966), Kurt Gödel (1906-1978), and is now referred to as transdisciplinarity, complexity, or, more generally, emergent paradigms. This approach allows for understanding the basic triangles of survival and transcendence. And to realize that the individual alone is fiction. No one can be just a vertex, referring to the triangle metaphor.

Referring to arguments raised in the beginning of this paper, the first hypothesis implies an ideologically loaded objectivity, based on experimentation. Of the second hypothesis, the result is an objectivity mixed with interpretive subjectivity.

An individual is realized only as one element of the integrity of the triangle. This voids the possibility of privilege, consequently the will to power, as discussed above.

It is clear that privileges are associated with values. Indeed, values justify privileges. Thus, in encounters of groups sharing different systems of values, it is not possible to abolish conflicting privileges supported by respective values. These conflicts easily give rise to confrontation.

To subordinate values to the higher ethics of diversity is the possibility of overcoming confrontation, violence, aggression, bigotry and the despicable behavior we face in the entire world. This subordination may be the road for peace.

Repeating what was said before, the only possibility of escaping extinction of civilization is to achieve peace in its broadest meaning [inner peace, social peace, environmental peace and military peace].

Peace is the result of the capability of dealing with unavoidable conflicts due to individual differences [individuals are all different], without resorting to confrontation and aggression and avoiding arrogance and bigotry.

Notes.

[1] For a discussion of transdisciplinarity see Basarab Nicolescu: *Transdisciplinarité Manifeste*, Editions du Rocher, Paris, 1996; and Ubiratan D'Ambrosio: *Transdisciplinaridade*, Editora Palas Athena, São Paulo, 1997.
[2] In this metaphor, there is an implicit critique to the disciplinary model which prevails in the universities.
[3] This was discussed in my conference From Survival to Sublimation in the Western Tradition. *Transdisciplinarity/Transdisciplinarité: Actas do 1° Colóquio Mundial sobre a Transdisciplinaridade, Arrábida, Portugal, 2-6 November 1994*, ed.José Carlos B. Tiago de Oliveira, Hugin Editores Ltda, Lisboa, 1999; pp.9-16.
[4] From the two extremes of the Biblical religions, were Adam is explicitly told this, to the animist religions, in which the symbolic lectures are less explicit, this message is present.
[5] Friedrich Nietsche: *The Will to Power*, ed. W. Kaufmann, New York, 1968; p.361.

[6] The common imaginary ambient emerges later, as a result of a very complicated process. C.Jung tried to explain this process.
[7] Inaction being alive, such as meditation and yoga, is a common search in every culture, mainly pointing to religious search.
[8] Research to understand the neural basis of altruistic punishment is a growing field. See Science vol 305, 27 August 2004, p.254. This has been superbly treated in science-fiction in Anthony Burgess's classics *A Clockwork Orange.*
[9] See my paper on "Inter and intra-cultural dynamics and the quest for human values", Plenary talk in the Congress of the International Sociological Association "Universal values and the Future of Society", São Paulo, 17-19 September 2001.
[10] *Tout sur ATTAC*, Éditions mille et une nuits/Librairie Arthème Fayard, Paris, 2000.
[11] Edwin A. Abbott: *Flatland. A Romance of Many Dimensions* (orig.edn.1884), reprinted with an Introduction by A.K.Dewdney, New American Library Inc., New York, 1984.
[12] See Michael Barter and Ann Gibbons: Another Emissary From The Dawn of Humanity, *Science* vol. 293, 13 July 2001; pp.187-189.
[13] An interesting overview of the evolution of the species is given in the book by Colin Tudge: *The Time Before History. 5 Million Years of Human Impact,* Simon & Schuster, New York, 1996.
[14] Insane is someone that does not accept limitations, but equally someone who entirely conforms to reality. This is very well illustrated by the movie *Instinct*, dir.Jon Turteltaub, 1999, based in the fable by Daniel Quinn: *Ishmael. A Romance of the Human Condition*, Bantam Doubleday Books, New York, 1992.
[15] A number of cases of mental, distant and postmortem communication are reported. Either facts or fakery, they are an integrating part of the imaginary of man. They are explained as extra-sensorial capabilities of certain individuals. Similar to what up to about 100 years ago was accepted as an explanation for schizoid behavior.
[16] This interplay appears in many religions. It is quite explicit in the phrase "And the Word was made flesh, and dwelt among us" [John 1:1,King James Version]. Through baptism, the man incorporates *logos*, thus becoming favored by Jehovah.