A NEW VISION OF THE WORLD
TRANSDISCIPLINARITY

The process of the decline of civilizations is one of enormous complexity and its roots lie deeply buried in the most profound obscurity. Of course one can find multiple *after the fact* explanations and rationalizations without ever successfully dispelling the feeling that there is an irrational element at work in the very heart of the process. From the great masses to the great decision-makers, the actors in a very well defined civilization, even if they become more or less aware of the processes of decline, appear powerless to stop the fall of their civilization.

One thing is certain: a great unbalance between the mentalities of the actors and the inner needs of the development of a particular type of society always accompanies the fall of a civilization. Although a civilization never stops proliferating new knowledge, it is as if that knowledge can never be integrated within the interior being of those who belong to this civilization. And after all, it is the human being that must be placed in the center of any civilization worthy of the name.

The unprecedented increase of knowledge in our era renders the question of how to adapt our mentality to this knowledge a legitimate challenge. The challenge is enormous because the influence of the Western style of civilization throughout the planet is so pervasive that its downfall would be the equivalent of a planetary conflagration far exceeding the destruction that we suffered in the two world wars.

Within the framework of classical thought, the only existing solutions for escape from a declining situation are a social revolution or a return to a supposedly "Golden Age".

Social revolution has already been experienced in the course of the century now coming to an end and its results have been catastrophic. *The New Man* turned out to be only a sad, empty man. No matter what cosmetic amelioration the concept of "social revolution" undergoes they will never be able to erase from our collective memory that which has actually been experienced.

The return to a Golden Age has not yet been tried, for the simple reason that the existence of a Golden Age in the first place has not been established. Even if one supposes that a Golden Age did exist in time immemorial, such a return would necessarily have to be accompanied by an *interior dogmatic revolution*, the mirror image of the social revolution. The different religious fundamentalism which cover the surface of the earth with their black mantle are an evil portent of the violence and blood which would burst forth from this caricature of authentic "interior revolution."
As always, there is a third solution. This third solution constitutes the object of the present manifesto.

Harmony between mentalities and knowledge presupposes that these known facts would be intelligible, comprehensible. But can such understanding exist in the era of the disciplinary big bang and relentless specialization?

In our time, a Pico della Mirandola is inconceivable. Today, two specialists in the same discipline must make a serious effort in order to understand their respective results. There is nothing especially troubling about this in so far as it is the collective intelligence of the community attached to this discipline which makes it progress, not simply a single brain which must necessarily know all the results of all his colleagues' brains, clearly an impossibility. Today there are hundreds of disciplines. How can a theoretical particle physicist truly dialogue with a neurophysiologist, a mathematician with a poet, a biologist with an economist, a politician with a computer programmer, beyond mouthing more or less trivial generalities? Yet, a true *decision-maker* must be able to dialogue with all of them at once. Disciplinary language is an apparently insurmountable barrier for a neophyte, and each of us is a neophyte in some area. Is a modern tower of Babel inevitable?

Perhaps a Pico della Mirandola in our time could be conceivable if he took the form of a supercomputer into which one could load all the known data which has been generated by all existing disciplines. This supercomputer would be capable of knowing everything while understanding nothing. Its user would be no better off than the supercomputer itself. The user would have immediate access to any results from any discipline, but would be incapable of understanding their meanings, still less of making connections between the results of different disciplines.

This process of "Babelization" cannot continue without putting our own existence into danger because a decision-maker becomes increasingly more incompetent regardless of his or her intention. Without

exception, each of the major challenges of our era -- for example, the challenge of formulating an ethics adapted to the contemporary world -- require more and more competencies. However, it is obvious that even a group comprised of the best specialists from all the various disciplines would only be able to develop one generalized incompetence, for the simple reason that the sum total of competencies is not competence: on the technical level, the intersection between different domains of knowledge is an empty ensemble. Now, what is a decision-maker, individual or collective, if not capable of taking into account all the givens of the problem being examined?

The indispensable need for *bridges* between the different disciplines is attested to by the emergence of pluridisciplinarity and interdisciplinarity around the middle of the 20th century.

Pluridisciplinarity concerns studying a research topic not in only one discipline but in several at the same time. For example, a painting by Giotto can be studied not only within art history but within history of religions, European history, and geometry. Or else Marxist philosophy can be studied with a view toward blending philosophy with physics, economics, psychoanalysis or literature. Blending the perspectives of several disciplines will ultimately enrich the topic in question. Moreover, our understanding of the topic in terms of its own discipline is deepened by a fertile multidisciplinary approach. Multidisciplinarity brings a *plus* to the discipline in question (the history of art or philosophy in our examples), but we must remember that this "plus" is always in the exclusive service of the home discipline. In other words,

the multidisciplinary approach overflows disciplinary boundaries while *its goal remains limited to the framework of disciplinary research*.

Interdisciplinarity has a different goal from multidisciplinarity. *It concerns the transfer of methods from one discipline to another*. One can distinguish three degrees of interdisciplinarity: a) *a degree of application*. For example, when the methods of nuclear physics are transferred to medicine it leads to the appearance of new treatments for cancer; b) *an epistemological degree*. For example, transferring methods of formal logic to the area of general law generates some interesting analyses of the epistemology of law; c) *a degree of the generation of new disciplines*. For example, when methods from mathematics were transferred to physics mathematical physics was generated, and when they were transferred to meterological phenomena or stock market processes they generated chaos theory; transferring methods from particle physics to astrophysics produced quantum cosmology; and from the transfer of computer methods to art computer art was derived. Like pluridisciplinarity, interdisciplinarity overflows the disciplines but *its goal still remains within the framework of disciplinary research*. It is through the third degree that interdisciplinarity contributes to the disciplinary big bang.

As the prefix "trans" indicates, *transdisciplinarity* concerns that which *is* at once *between* the disciplines, *across* the different disciplines, and *beyond* all discipline. Its goal is *the understanding of the present world*, of which one of the imperatives is the unity of knowledge.

Is there something between and across the disciplines and beyond all disciplines? From the point of view of classical thought there is

nothing, strictly nothing: the space in question is empty, completely empty, like the vacuum of classical physics. Even if it renounces the pyramidal vision of knowledge, classical thought considers each fragment of the pyramid that is generated by the disciplinary big bang as an entire pyramid; each discipline claims that it is sufficient unto itself. For classical thought, transdisciplinarity appears absurd because it does not appear to have an object. In contrast, within the framework of transdisciplinarity, classical thought does not appear absurd; rather, it simply appears to have a restricted sphere of applicability.

In the presence of several levels of Reality the space between disciplines and beyond disciplines is full just as the quantum vacuum is full of all potentialities: from the quantum particle to the galaxies, from the quark to the heavy elements which condition the appearance of life in the universe. The discontinuous structure of the levels of Reality determines *the discontinuous structure of transdisciplinary space*, which in turn explains why transdisciplinary research is radically distinct from disciplinary research, even while being entirely complementary. *Disciplinary research concerns, at most, one and the same level of Reality*; moreover, in most cases, it only concerns fragments of one level of Reality. On the contrary, *transdisciplinarity concerns the dynamics engendered by the action of several levels of Reality at once*. The discovery of these dynamics necessarily passes through disciplinary knowledge. While not a new discipline or a new superdiscipline, transdisciplinarity is nourished by disciplinary research; in turn, disciplinary research is clarified by transdisciplinary knowledge in a new, fertile way. In this sense, disciplinary and transdisciplinary research are not antagonistic but complementary.

The three pillars of transdisciplinarity -- levels of Reality, the logic of the included middle, and complexity -- determine *the methodology of transdisciplinary research*.

There is an interesting parallel between the three pillars of transdisciplinarity and the three postulates of modern science.

In spite of an almost infinite diversity of methods, theories and models that have traversed the history of different scientific disciplines, the three methodological postulates of modern science have remained unchanged from Galileo until our day. Only one science has entirely and integrally satisfied the three postulates: physics. The other scientific disciplines only partially satisfy the three methodological postulates of modern science. However, the absence of rigorous mathematical formalization in psychology, history of religions, and a multitude of other disciplines do not lead to the elimination of these disciplines from the field of science. At least for the moment, not even an exact science like molecular biology can claim a mathematical formalization as rigorous as that of physics. In other words, there are *degrees of disciplinarity* which can respectively take into account more or less completely the three methodological postulates of modern science.

Likewise, the process of more or less completely taking account of the three methodological pillars of transdisciplinary research generates different *degrees of transdisciplinarity* . Transdisciplinary research which corresponds to a certain degree of transdisciplinarity will be closer to multidisciplinarity (as in the case of ethics); one which corresponds to another degree will be closer to interdisciplinarity (as in

the case of epistemology); and that corresponding to yet another degree will be closer to disciplinarity.

Disciplinarity, multidisciplinarity, interdisciplinarity and transdisciplinarity are like four arrows shot from but a single bow: knowledge.

As in the case of disciplinarity, transdisciplinary research is not antagonistic but complementary to multidisciplinarity and interdisciplinarity research. Transdisciplinarity is nevertheless radically distinct from multidisciplinarity and interdisciplinarity because of its goal, the understanding of the present world, which cannot be accomplished in the framework of disciplinary research. The goal of multidisciplinarity and interdisciplinarity always remains within the framework of disciplinary research. If transdisciplinarity is often confused with interdisciplinarity and multidisciplinarity (and by the same token, we note that interdisciplinarity is often confused with multidisciplinarity) this is explained in large part by the fact that all three overflow disciplinary boundaries. This confusion is very harmful to the extent that it functions to hide the different goals of these three new approaches.

Although we recognize the radically distinct character of transdisciplinarity in relation to disciplinarity, multidisciplinarity, and interdisciplinarity, it would be extremely dangerous to absolutize this distinction, in which case transdisciplinarity would be emptied of all its contents and its efficacy in action reduced to nothing.

The complementary character of disciplinary, multidisciplinary, interdisciplinary, and transdisciplinary approaches is demonstrated in a

stunning way, for example, by the *accompaniment of the dying*. This relatively new approach to the dying is extremely important because in recognizing the role of our death in our life, we discover hitherto unsuspected dimensions of life itself. Accompanying the dying is greatly enriched by transdisciplinary research because deeper understanding of the present world must pass through deeper understanding of the meaning of our life and of our death in this world which is ours.