

University's Transformations: Episteme, Mission and Ethos in the Contemporary World.

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Abstract

The Cartesian principle was put forward by the philosopher as a strategy for research in greater depth. However, it turned out to be a way of understanding reality as if it were actually divided into disciplines. This segmented view of scientific knowledge clashes with the needs of today's world, where communication is fast and allows for a quick exchange of information between producers of knowledge, making collaborative work easier, even at a distance. A significant increase in the production of scientific knowledge leads to a demand of new paradigms to understand reality. Transdisciplinarity does not invalidate disciplines, rather, by surpassing their boundaries, it aims at bringing about new approaches to produce more encompassing and integrating knowledge. This research was carried out at three higher education institutions in the State of São Paulo, in the South-East of Brazil. The method used was hypothetical-deductive: from the identification of a gap in scientific knowledge – the possibilities of transdisciplinary research at universities and other higher education institutions – we conducted a theoretical study about transdisciplinary research to some higher education institutions

Each society has its own system of truth, general policy, that is, the kinds of discourse it encompasses and holds as true... the bylaws of those responsible for saying what stands true.

Michel Foucault

Introduction

In the early stages of systematized knowledge production, both in Antiquity and in the Middle Ages, the universal principles which would control nature, the universe and human life were searched in Philosophy. With the birth of experimental sciences in the Modern Ages, and above all, in the 18th century, with the advent of industrial capitalism, man begins to divide to study and know.

This principle stemming from Cartesians was put forward by Philosophy as a strategy to enable research in greater depth. However, it ended up being a way to understand reality as if it were actually divided into disciplines.

For Silva¹ “Enlightenment philosophers believed people could live under the control of Reason, society could thus organize itself and progress. It would be up to schools to prepare them, educating them, in the sense of reasoning, adherence to formalism, to the *jusnatural*, contract world. When approaching the issue of body control as an instrument of mind control in capitalism, and including schools as part of those control spaces, Foucault (apud Silva, n/d: 3) demolished the belief in the messianic value of Education and schooling by showing schools fundamentally collaborated with the normalization process, thus becoming a place of taming rather than learning.”

With the birth of new knowledge, the role attributed to man and human sciences in the 19th century changes. Foucault emphasizes that each age corresponds to “a general configuration of common knowledge to the specific one, which determines what may be thought, how it may be thought, under which criteria, according to which order.” (Guazzelli, 1994, p.2).

The segmented view of scientific knowledge clashes with the needs of today’s world, where communication is fast-paced and allows for a quick exchange of information among knowledge producers, making collaborative work easier, even at a distance.

On the other hand, one realizes that the complexities of the problems of the modern world can not be studied and understood within the limited parameters of a strict division into disciplines. The very meaningful increase in the volume of scientific knowledge, fostered by the acceleration of information sharing, leads to the demand of new paradigms to understand reality.

Man starts investigating transdisciplinarity and complex thinking to explain complex phenomena. Transdisciplinarity does not nullify disciplines, but rather by overcoming their limits aims at enabling new approaches capable of producing a wider and more integrating knowledge.

However, it is difficult to break down the barriers of disciplines because each field of knowledge represents a field of power, some with more prestige than others. It is, therefore, difficult to change this segmented and not very collaborative pattern of production of knowledge which characterizes the Brazilian university. Even public institutions which evaluate research and graduate programs, whose evaluators were formed in positivism², find it difficult to understand the transdisciplinary approach. Sometimes they have not even reached the previous stage, interdisciplinarity. Notwithstanding, innovation exists in the new courses being created. New universities (like the Eastern campus of the University of Sao Paulo and the Federal University of Sao Paulo) are introducing a new teaching structure based on the study of problems and fields of knowledge, rather than disciplines. At private institutions, short-term, sequential and technological courses are based on interdisciplinary proposals.

¹ In http://www.cedes.org.br/Centros/Filosofia/foucault_e_iluminismo_e_o_modernidade.htm (n/d, p.2)

This study aims at showing the possibility of interdisciplinary and transdisciplinary research in the Brazilian university, facing the social changes in the beginning of this millennium and the university's demanded transformations, *episteme*, mission and *ethos* in the contemporary world. Through Foucault's concepts, it also aims at pointing at troublesome issues of the foundations and philosophical-scientific object of interdisciplinarity and transdisciplinarity.

This research was conducted in three higher Education institutions in the State of Sao Paulo, in the Southeast of Brazil. Two of them are confessional universities and the third one is a private college of Arts.

Method

The method used was hypothetical-deductive: from the identification of a gap in scientific knowledge – the possibilities of transdisciplinary research at universities and other higher Education institutions – we conducted a theoretical study about transdisciplinary research and put forward proposals and research projects to some higher Education institutions. In two of them it was possible to carry out the experiment here described: in the Master's in Education program at the Catholic University of Santos (State of Sao Paulo) and in the specialized program at the Sao Paulo College of Arts.

From these data of successful experiences as well as of those in which interdisciplinary courses or research could not be implemented, we formulated hypotheses about the barriers hindering growth and innovation of research practice in larger higher Education institutions. We also conducted the experience proposed in the graduate programs of the institutions that allowed it.

As research method, we used the case study. The technique of participating direct observation was carried out for the data referring to the institutions where we work.

The action in the Sao Paulo College of Arts implies transdisciplinary work as it involves two levels of reality: scientific knowledge and artistic knowledge.

The theoretical foundation was based on three approaches: Edgar Morin's ideas on Education, knowledge and complex thinking, the study of languages, especially the artistic and symbolic thinking ones, through Semiology and Linguistics, and learning theories. To approach the relationship between knowledge and power, we resorted to Michel Foucault.

Epistemological Grounds for the Ruptures in Knowledge Production

When developing the concept of epistemological grounds, Michel Foucault in *Words and Things* considers them the key element to understand the ruptures in each period and the birth of new knowledge. He also aims at showing that "our way of thinking, established in the 19th century and identified as modern, is one among the many possible ones" (Guazzelli 1994, p. 1).

He privileges three knowledge fields where the profound changes of the 19th century gave place to the birth of new Sciences with new objects: life, work and language. Natural History, Analysis of Richness and Grammar, characteristic of Classical Ages (17th and 18th centuries) give place to Biology, Political Economy and Linguistics (Philology). “It was in this context that Human Sciences were born and that the human figure appeared in the space of representation.”(Guazzelli, 1994, p.1)

The historical and scientific grounds of knowledge fields are the metamorphosis of the structure of knowledge division from the Classical Ages to the Modern ones. It is a fact including a production mode, a knowledge policy, a moral posture and a new Human Sciences epistemology. It is a structure determining the history of the birth of new knowledge, whose social role is to respond to paradigmatic issues of a given period.

There is still another issue Foucault did not respond to through the kind of investigation he proposed: “Why do changes in the general field of knowledge take place? Why is a given time controlled by an *episteme* which, at another moment, gives place to another one?” In search of the answer to these questions, he changed the path of his investigations from an archeology of knowledge to a genealogy of knowledge. This happened because “the causes of changes in the epistemological grounds would lie outside the analyzed positivism”; they lie in the epistemological grounds of power, that is, in the interrelationship between discourse and non-discourse. (Guazzelli, 1994, p.4)

In Classical Greek, *episteme* is used both as the meaning of science, knowledge, and of ability, art. Strictly speaking, both meanings can not be considered different, but rather “two sides of the same coin”, a dialogue between theory and practice, which makes up the most current scientific research.

For Guazzelli (1994, p.4), Foucault in *Words and Things* considers the concept of epistemological grounds essential, allowing for “understanding ruptures, the birth of new knowledge.” For him each period is characterized by a “general configuration of knowledge,” and this configuration “determines what may be thought, how it may be thought, under which criteria, following which order.” For example, only in the 19th century were the roles of man and Human Sciences valued.

Fundamental codes of a culture – those controlling its language, perceptive schemes, exchanges, techniques the hierarchy of its practices – establish right away, for each man, the empiric orders with which he will have to deal and in which he will find himself. (Foucault, 2002, p.404)

Through Foucault’s concepts, we aim at answering the questions that worry researchers in relation to which foundations or which philosophical-scientific object we call interdisciplinarity and transdisciplinarity. In this context, we are searching clues to place interdisciplinarity and transdisciplinarity in safe epistemological grounds; besides, these grounds must give them scientific rules, and although we may not yet speak of a general “theory”, they might be validated as a scientific proposal to give it bylaws in Educational Sciences

The University *Ethos* in the Beginning of the 21st Century

It is understood that the ethos of the university in the beginning of the 21st century is configured as center of knowledge production and divulging so that research is the very teaching. As knowledge producer, the university is a center of power. At this point it is worth discussing what kind of scientific discourse it aims at elaborating: the fragmentary, specialized and disciplinary knowledge characterizing industrial capitalism, or rather, the integrating discourse characterizing knowledge society. This latter option, which we defend, passes by interdisciplinarity, affecting, in some cases, transdisciplinarity.

We reaffirm the paradigm of the emerging university lies in interdisciplinary research, developed, above all, in graduate programs supporting undergraduate studies; thus, it is worth explaining the concepts of paradigm and interdisciplinarity.

We investigate the concept of paradigm in several authors from Antiquity to present times to clarify the state of the art.

For Plato, a paradigm is not only a model, a pattern to be copied, or a sample of reality; it is, rather, much more than this, an “exemplary, that is, perfect model considered good to be followed and imitated.” (Perez, n/d, p. 20)

For Briones (apud Hurtado y Toro, 1997), a research paradigm includes the study object of a science, as well as its problems, the nature of its methods and the way of explaining and understanding the results of the conducted research.

Capra (1996)³ states that a scientific paradigm, according to Kuhn, forms a set of “targets, endings, values, techniques, etc a scientific community bears in common and which are applied by this community.”

Contreras (1996), also commenting on Kuhn’s ideas, affirms that “a paradigm is a system of beliefs, principles, values and premises that determine the scientific community of reality.”

For Damiany (1997), a paradigm is a system of ideas guiding and organizing scientific research. This would occur within each discipline.

At this point we reach a relevant issue: a disciplinary view of science is a paradigm in itself, from which we must break away if we want to enter knowledge society, which is complex and, therefore, demands knowledge integration. We will face the barriers since González (1997) emphasizes that a paradigm is a conceptual landmark including “beliefs and values the members of the group strongly adhere to not always implicitly and consciously.”

It is worthwhile understanding that there are “new” interdisciplinary, transdisciplinary, multidisciplinary, pluridisciplinary structures present in the debate on

³ Apud González, F, 1998. Source: González, F (1998). CIDIPMAR. Evolución de la episteme en el paradigma .

scientific construction; it is understood that from these relationships we may join the search of new paradigms. For this purpose we must comprehend the different aspects inherent to the new concepts and proceed to a scientific epistemological study enabling the scientific construction in Educational sciences.

For this purpose we investigated some aspects to distinguish paradigms presented by Moreno and Morales (1993), so as to contribute to the conceptualization of new scientific investigation proposals in the field of Educational sciences.

Aspects to Distinguish Paradigms

Aspects

1. Level of consensus and acceptance in the community.
2. Duration, update and contemporaneity of their foundations.
3. Structural and systematic relationship among their different elements.
4. Precision in relation to scope and limits of the reality they aim at reaching.
5. Methodological bylaws.
6. Criteria of legitimacy of statements inside them.
7. Linguistic code they subscribe to.
8. Organizational criteria of the work of the members of the community.
9. Methods of production of duties they privilege.
10. Prescriptions related to action modes of the members of the community.⁴

To conceive the paradigm of interdisciplinary and transdisciplinary research in the new university, we must think of Foucault's issue of discourse production including linguistic code. Discourse producing knowledge is both a signal and power generator. Interdisciplinary and transdisciplinary discourse proposes a new power distribution inside the university and within science in general. A more flexible and less hierarchical power, open to information exchange because it does not recognize some disciplines as more "scientific" than others. Transdisciplinarity steps further in validating knowledge generated by art and religion.

For Guazzelli (1994, p.1), our practices and perceptions "are determined by codes building up a first level of coherence, of order." Our reality is filtered by our culture (languages, forms of perception, moral), from which we interpret reality.⁵

Among the object, which is represented, reality and the latter's representation through the sign (according to Pierce) or through the signifier (according to Saussure), there is always a concept, a mental image, that is, a mental construction about perceived reality. (Malanga, 2006, p.4)

Although objective and disinterested, knowledge of reality has been the objective of scholars for many centuries, and the illusion of achieving it was targeted by the first generations of scientists, a better comprehension of how reality is perceived

⁴ Apud González, F, 1998. Source: González, F (1998). CIDIPMAR. Evolución de la episteme en el paradigma cuantitativo Perez Emili, Perez Alexander. <http://www.monografias.com/trabajos11/emili/emili.shtml#>. Accessed 05/20/06

shows up to what extent our own beliefs, not always rational, interfere with this process, including with language. It is, indeed, through language that we elaborate thinking and discourse, that we transmit and build knowledge.

Certainty of Uncertainty: Interdisciplinary and Transdisciplinary

Whereas transdisciplinarity is an approach toward integration of specialists in several fields without discipline barriers, interdisciplinarity holds as one of its possibilities the creation of a new field of knowledge through the combination of other disciplines. It is not a question of addition, but rather the appearance of a new thinking.

Interdisciplinarity has a different ambition from pluridisciplinarity. It has to do with transferring methods from a discipline to another. There are three degrees of interdisciplinarity: a) **a degree of application**. For example, Nuclear Physics methods transferred to Medical Science lead to the appearance of new treatment for cancer; b) **a degree of epistemology**. For example, the transfer of methods of Formal Logic to the field of Law generates interesting analyses in Legal Epistemology; c) **a degree of creation of new disciplines**. For example, the transfer of Math methods to the field of Physics created Mathematical Physics, Physics of Particles and Astrophysics, Quantum Cosmology, Math of Meteorological Phenomena and of Stock Market, the theory of Chaos, Computer Science in Arts, Artistic Computer Science. With pluridisciplinarity, interdisciplinarity surpasses disciplines, but it continues aiming discipline research. (CIRET Project, 1997, p.4)

Interdisciplinarity creates new knowledge which is more than the mere addition of knowledge from fields involved. A new field of knowledge arises from this integration and may become a discipline, in a dialectic process, in which it passes from synthesis to a new thesis.

Transdisciplinarity is located at the same time among, through and beyond disciplines. The target of transdisciplinary activity is to understand the current world, one of whose imperatives is unity of knowledge.

The university as central focus in the transdisciplinary project has been an aspect present since the first guidelines established by the CIRET-UNESCO project. In the Lucarno meeting in 1997, a group of scholars already proposed as a “short-term” objective to “make the university evolve toward its today-forgotten mission of universal study, in a world characterized by a complexity never-ending growing. “Another aspect emphasized among the CIRET-UNESCO project ones is its experimental character” (CIRET-UNESCO, 1997, p.1.)

It is worth reflecting as well upon whether the conception of the university as both knowledge producer and integrating center of the several levels of knowledge should be restricted to universities themselves, according to the parameters established by Brazilian legislation; or rather encompass all higher Education institutions.⁶ This

⁶ In Brazil higher Education institutions are categorized as University Institutions (Specialized Universities, Universities and

second option is considered correct by the authors of this study. Although Isolated Colleges should not be required to produce systematic and abundant scientific knowledge, as universities must do, teaching can not be separated from research; otherwise, the former may become obsolete even before the student graduates (Lucchesi & Malanga, 2005, p.3).

Bearing this in mind, we decided to develop transdisciplinary research experiments in the classroom. Those experiences are briefly described below.

We conceive transdisciplinarity as something beyond disciplines; however, it is above all a new research method implying the totality of knowledge generated in the context of its application and enabling innovation. To innovate with strictness and foundation, that is the epistemic presupposition for building up transdisciplinary knowledge. Plurality and universality of knowledge is the presupposition that must guide the university. The university must be understood as the whole higher Education system. Epistemological change production and divulging of knowledge have been going through no longer permits segmenting the spaces of research, teaching and extension into fragmented fields. Research conducted by the authors of this study provided students involved in it with undergoing transdisciplinary integration as the deepest knowledge generator, that is, of subjectivity and intersubjectivity change of those who learn and those who teach, in permanent exchange.

Morin studies complexity – a term he took from Cybernetics – and defines as a kind of thinking which does not separate, but rather unifies; he searches for the necessary and interdependent relationships of all human life's aspects. It is a thinking integrating the different ways of thinking; it considers all received influences, whether internal or external.

We learn to separate, isolate to specify and specialize, rather than to unify knowledge. Therefore, the set of knowledge is a difficult equation to solve. Thus, the human being, by nature and learning, reduces more and more, needing to make an effort to comprehend complexity and fight simplification. Complexity arose to question fragmentation and crumbling of knowledge. It proposes an emancipating education because it favors reflecting upon every day life, questioning and social change.

Morin's intellectual project implies unifying all separated, contextualized knowledge and locating all partial truth in the set it belongs to. "*Complexus* means what was woven together." (Morin, 2002b, p.38) By instigating the contemporary mind with complexity intelligence, complex thinking, Morin contributes to lowering the risk of going from mistake to mistake in barbaric territory, marked by denying the other's reason. For him man exerts his citizenship by acting upon and participating on decision-making, by placing himself.

Interdisciplinarity in the Brazilian University

The organization applying entrance exams⁷ to the University of Sao Paulo and other great prestigious universities in the State of Sao Paulo has announced that from next year on a larger number of interdisciplinary questions will be included in its exams.

It is not only a question of formal tactic for exams, but also of guidelines aiming at influencing future university students' profile. Consequently, it will also influence their background as these universities are the most disputed in the country. The tendency is for high schools to follow those guidelines, adapting to selection demand. This may configure a real change in Brazilian Education as a whole.

Foundations for this demand are characterized as a need for students to develop reasoning capacity and overcome discipline barriers, as well as to be able to think knowledge as a whole, and in which content received throughout elementary school and high school fits and makes sense. If successful, this proposal tends to offer a solution to one of the most serious learning problems: the lack of knowledge about what certain knowledge servers for.

The general proposal of this study is to register and analyze interdisciplinary research in some higher Education institutions so as to show there is still a long way to follow between the proposal and practice. If it has been possible for some professors and research groups to conduct interdisciplinary research, the latter is still not common practice, even in public organizations responsible for evaluating graduate programs in the country. Not even CAPES⁸ does have a committee or interdisciplinary field for the approval of Master's and Doctoral programs, for the latter are obliged to belong to a specific field of knowledge. Therefore, there is a contradiction between interdisciplinary discourse and practice in knowledge production in the university.

Interdisciplinarity, Resistance and Power

Every change generates a certain fear since rupture seems to imply a change, not only in structure, but also a change in paradigm. As Paul Ricoeur states: "the impulse driving spirit youth forward, toward openness, clashes against the rocket of immutability and irrevocation." (Ricoeur, apud Morin, 2001, p.373)

Disciplines are fields of power, territories. A history of lack of continuity, of ruptures, of differences. Analyzing Classical Age we may understand how distant the general knowledge configuration was from ours; nevertheless, we may equally comprehend how historical, limited and transitory our epistemological grounds are. Foucault warns us: "Along the line of historical success, shortcuts suddenly occur modifying the path: there is a cut, a rupture interrupting events' continuity, pointing at a new direction" (Foucault, 1971, p.15).

Capra (1982, p.73) affirms that all progress brings its opposite along, return. Edgar Morin approaches the issues of complex thinking and ethics in Science, which enlightens the complexity of thinking about the University. Complexity does not mean complication, but rather the difficulty of thinking because the latter is a fight with and against logic, with and against words, with and against concepts.

Today, the problem of complexity has become a social and political demand. Man can not accept mutilating thinking, mistaken not because there is insufficient information, but rather because it is not capable of ordering information and knowledge. (Morin, 1996, p.14)

It is necessary to operate a new articulation of knowledge and an effort of fundamental reflection.

Interdisciplinarity has been investigated as a possible path for academic and scientific knowledge production. It must not be thought of as addition or juxtaposition of specialists' knowledge, who isolated in their fields give limited and segmented views of the whole. The fundamental question of the production of interdisciplinary and transdisciplinary knowledge is that each one brings its contribution to the whole, both integrating and integrated, which will be something new, and never an addition or juxtaposition.

As Morin (2001, p.84) indicates: "current education requires the incorporation of new elements to be worked upon, such as citizenship, ecology, peace, justice, social responsibility; in sum, an array of knowledge to be implemented in the so-called epistemological or transdisciplinary title."

Political Borders and Knowledge Frontiers: Bologna's Declaration

The European Community proposes to dissolve, overcome political borders and, as a consequence, educational frontiers, as established in the principles proposed in the Bologna's Declaration.

The Constitution defines the University as beholder of the European humanistic tradition, taking the untrans-ferrable mission of proceeding on the path of universal knowledge, surpassing political and geographical borders, affirming the crucial need for different cultures to meet and influence one another. In conclusion, the University must be granted the necessary autonomy to fulfill its most noble functions, teaching and scientific investigation, inseparable in concept and university practice.⁹

If we do not manage to overcome the barriers of ideas, knowledge production, we will hardly overcome political borders. Bologna's Declaration adopted by the Ministry of Education in June 1999 "inevitably leads to the establishment of a framework of reforms, which will allow for coherence to be given to higher Education in Europe, making it more competitive and principally more attractive."

However, the rigid division in disciplines so as to integrate the credit system does not seem to allow experiences of search for knowledge totality, as supposed in our proposal of interdisciplinarity and transdisciplinarity.

In essence, it is the aim to ensure in a balanced way the development of mobility in all levels, to establish a policy of recognition of degrees and certificates, based on a simple and transparent "European qualifying structure" with three cycles explained in a common language of competences and quality guarantee. These guidelines result in concrete measurements, as follows: The curriculum restructuring based on the ECTS system permits an enormous flexibility of teaching, thus centered in the learners' perspective. (idem)

⁹ http://www.unel.net/subarea/citasia/documentos_ficheros/Proceso_Bolonia.pdf. Accessed on

Although the integration through ECTS is a reality, it supposes only the use of technological resources instead of an epistemological rupture necessary to the integration of knowledge production in the complex and global world.

The ECTS system appeared in 1989 as a pilot-project of the ERASMUS program aiming at facilitating the whole academic recognition of studies conducted by students in mobility in other European Community countries. The SOCRATES program, which replaced ERASMUS in 1995, includes the generalization of ECTS among its objectives. SOCRATES II, started in 2000, reinforces this emphasis on ECTS, now proposed not only as a system of transfer of credits to facilitate mobility. (idem)

Despite the adoption of the Cartesian model of specialties, Europe seems to be finding a way of integrating its political field through Education. "It is noteworthy that in March 2002 the European Council established the objective that by 2010 Europe should have developed an effort to devote 3% of its GNP to scientific research instead of the current 1.9%, mainly through valuing the role of the private sector, so as to compensate for the tendency toward lack of investment in the public sector."

In this context, it is very important to make it clear that university teaching is fundamentally based on scientific investigation; therefore, the tendency toward the appearance of "universities devoted to teaching," many times encouraged by financing issues, should be contradicted. The education of future certificate beholders must always maintain within the curricula methods related to the practice of scientific investigation; it is not reasonable to attempt at profiting from the existence of three teaching cycles to mask the objectives of lack of public investment. (idem)

From the quote above we may infer that Europeans focus on our logic regarding knowledge production, even if still within the logic of disciplines. We reaffirm our proposal that the essence of the university, of higher Education, is the production of knowledge. The *ethos* of the university lies, therefore, on research, being the other activities its consequences. For developing countries, in terms of politics, only an integrating view of Iberian America (that is, former colonies of Portugal and Spain) may further lead to a real integration of Education. We must think in an integrating way; if we are not able to see the whole in its complexity and relationships, from an interdisciplinary and even transdisciplinary perspective, if we continue stuck to our own territory of knowledge and power, we will be incapable of facing the challenges of the future world we approach, and in which Education and knowledge have such a great and relevant role, as never seen before.

Experiencing with Interdisciplinary Research in Brazilian University

In the same way we believe in the university as a lively research field, where life expresses itself in the students' questioning, we also consider Education does not limit itself to transmitting knowledge, but rather to preparing spirits for the whole life.

Thus, it was possible to trigger processes of change in structure and pedagogical practice in the Math course in a confessional university (and later on, spread them to the whole Science program), breaking up with immobility and dissociation between practice/ research and teaching.

The springboard of change was research conducted during the Theory of Education and Pedagogical Practice: currents and tendencies course, taught in 2001, in the Master's program on Education in the same university.

The study subjects broke the discipline barrier, the Cartesian fragmentary paradigm and its consequences in each one's pedagogical practice. Those were overcome by new values explained and accepted in group work, classroom exchange, in "hidden" curriculum (Apple, 1982), which got stronger than the explicit one. Educators understood the proposal toward an Education for the "relationship era" (Moraes, 1997, p.209), which bears serious implications to the economic, political, technological and social systems, as well as to the very evolution of Science when understanding the intimate relationship between tools and theories.

Therefore, several barriers were overcome: teaching and research, undergraduate and graduate programs were integrated. This is the path for the university being configured in the 21st century.

In the São Paulo College of Arts, an interdisciplinary structure was implemented in the specialized courses at graduate level. By involving two different ways of knowledge production, Science and Art, they characterize transdisciplinary work.

The first resistance to be faced came from students who criticized the idea of having classes with students from "other courses" and "other groups." This problem has been solved with the sentence used in the school year inauguration lecture: "Our courses are interdisciplinary." This initial explanation has not led to dropouts, but rather to more students' looking for the course.

As courses (and their graduation research lines) were being implemented, professors were chosen bearing in mind the criterion of interdisciplinary formation and experiences, as much as possible. This has resulted in a more harmonic and productive environment, focusing on the human being, in all his richness and complexity.

Conclusion

Formal, systematic knowledge always seeks reality. This is as much as it results from reflection (reflection upon action, new action, another reflection), dialectically suffered by the field of reality. However, one must be careful for this hiatus not to transform into anachronism.

Complexity, globalization, speed of information transmission and intensification of knowledge production characterizing our times have been demanding a university which produces integrating and agile knowledge. Students and the society demand a university following historical rhythm. It must meet those demands.

Changes always imply resistance, especially when generating changes in power. The 21st century University will have to deal with the issue of complexity, and this will only be possible through transdisciplinarity.

The paradigm is posed. It is up to us to adapt it to the reality of each institution, city, region or country. The world will not wait for our answers; reality is dynamic, and the historical process is permanent.

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