



CEST

Centro de Estudos Sociedade e Tecnologia



Universidade de São Paulo

Bulletin - Volume 3, Number 3, April/2018

Reflections regarding knowledge production, multidisciplinary, interdisciplinary and transdisciplinarity

Sonia Maria Viggiani Coutinho

The contemporary world shows up increasingly intricate relationships of various orders and levels: local to global; the social and the environmental; and economic and cultural. Therefore, production of knowledge and governance of different conformations is required. Science has been demonstrating for some years that the paradigm of specialties dominant until now is no longer sufficient to encompass the complexity of man's relationships with nature. There is an inability of more traditional scientific theories to provide plausible solutions to the difficulties encountered by scientists in dealing with problems related to increasingly complex phenomena that require paradigm change, production of new knowledge, dialogue, and integration of knowledge and collaboration of different specialties.

The Brazilian Academy of Sciences - ABC, in conjunction with the Regional Office for Latin America and the Caribbean of the International Council for Science - ICSU / ROLAC and the International Social Science Council - ISSC, held in 2014 the "*Society and Nature - International Workshop on Challenges of Sustainability*" with the objective of facilitating and expanding the necessary communication between scientists of natural and social sciences regarding issues such as climate change, energy, environmental risks, urban mobility, poverty, and social inequalities, hoping to identify processes and methodologies that could facilitate projects in these fields and encourage the creation of multidisciplinary research groups. This meeting demonstrates the importance, and visibility interdisciplinary has achieved.

The new global reality demands multiple visions, diverse knowledge and permanent exchange between people. The scientific method of

analysis has decomposed the world into so many fragments, creating o many spheres of knowledge that we need each other for the simplest subjects.

The origin of interdisciplinarity is, for some, an old concept, already present in Plato, Aristotle, Kant, Hegel, among others, described as interdisciplinary and encyclopedic thinkers. For others, the concept of inter-disciplinarity emerged in the latter half of the twentieth century, with education reform, the emergence of applied research fields, and movements across disciplinary boundaries.

Interdisciplinarity has a different goal than Multidisciplinarity, since it involves the transfer of methods from one discipline to another and there is a broadening of disciplinary limits, which may even generate new disciplines. Meanwhile,

multidisciplinarity refers to studying a particular topic of research from the perspective of different disciplines, at the same time, which will incorporate perspectives of the diverse disciplines, adding more elements to the particular disciplinary universe. However, this additional element will always be used in the service of a discipline.

The expansion of interdisciplinary thinking would have been due to attempts to retake the idea of unity and synthesis, but this expansion had limitations. It can be said that in some cases the organizational structure of universities, in its insisting politics of individual disciplines, stand in

The new global reality demands multiple visions, diverse knowledge and permanent exchange between people.



the way of the ability to make connections between disciplines.

Going further, transdisciplinarity takes place between, through and beyond the disciplines, with the aim of understanding the present world, and for that, one of its imperatives would be the unity of knowledge. It is presented for the first time in 1970 by Erich Jantsch, Jean Piaget, and André Lichnerowics, during the International Workshop "*Interdisciplinarity -Teaching and Research Problems in Universities*" organized by the Organization for Economic Cooperation and Development (OECD) in collaboration with Ministry French Education and the University of Nice.

The researcher must be aware of the need to create non-compartmentalized forms of knowledge and seek integration and participation in groups, centers and research networks that are gradually being created inside and outside educational institutions.

Responsible for the evaluation of postgraduate courses in Brazil, the Coordination of Improvement of Higher Level Personnel - CAPES classifies the areas of knowledge from a practical function to facilitate the aggregation of data, especially on research projects and human resources.

The Multidisciplinary Area was created by Ordinance No. 9, dated January 23, 2008, and includes the following areas: Interdisciplinary, Sciences and Mathematics Education, Materials and Biotechnology. In addition, it created within the Interdisciplinary area the following Subareas: Environment and Agrarian Sciences; Engineering / Technology / Management; Health and Biological Sciences; and Humanities. The justification given by Capes for this creation points to an organization of the areas to facilitate the evaluation of the areas, those responsible for the evaluation processes and the incentives.

According to the evaluation document of the Interdisciplinary Commission of CAPES-CAInter (2008), the creation of the interdisciplinary area at CAPES in 2008 arises from the need to deal with new issues of increasing levels of complexity. This results from a new view of scientific knowledge, which no longer finds support disciplines only and therefore requires dialogue between disciplines of different areas, generating other forms of knowledge production, especially in the areas which concern themselves with phenomena that occur between disciplinary boundaries – as with environmental issues – as a way of bringing great theoretical and methodological challenges.

The various fields of knowledge are closely linked to communication, and as such lead to different forms of communication such as the ability to work and communicate within multiple fields simultaneously and the ability to become part of intellectual networks, scientific, professional and artistic.

Faced with the important role of conflict stemming from the interaction between networks of intellectuals for the production of science, it is easy to understand the criticisms of Kuhn's Normal Science, founded on the absence of dissent and standard, which generates knowledge fragmentation and isolation of the scientific community.

It must be considered that knowledge communication nowadays no longer stems only from universities, but instead, flows freely from many sources, withdrawing from the universities the privileged position of hegemony and pushing universities to perfect the way knowledge is produced and how it must be directed and transmitted to society.

It is necessary for Academia to follow the direction pointed out by Edgard Morin, when he affirmed that the role of academy, as producer and disseminator of scientific knowledge before an increasingly complex society, is enlarged and detached, being contrary to a peripheral social position, also becoming an inter-retroactive process in which science is placed at the center of society, transforming it and being transformed by it.



Sonia Maria Viggiani Coutinho is a lawyer, has a master's degree in public health, Doctor of science, and a postdoctoral degree from USP, and researcher at CEST-USP

Academic Coordinator: Edison Spina

This article is a result of the author's ascertainment and analysis, without compulsorily reflecting CEST's opinion.