ON THE OBJECTIVITY OF SCIENTIFIC KNOWLEDGE. MODELS AND THEORETICAL REPRESENTATIONS OF STRUCTURE AND PROGRESS IN SCIENCE. TH. KUHN'S LEGACY.

Founded by Kant's theoretical program, the modern epistemology (later conceived also as the modern theory of science or a branch of metascience) has undergone several stages of transformation and metamorphosis. At first tributary to the great philosophical systems, within which it elaborated its analysis with respect to science, the relation with the latter was for epistemology an explanatory and a justificatory one for the field of science by recourse to a solid philosophical language and logic. Initially dependent on the philosophical systems where they were developed autonomously with respect to science, subsequently some epistemological perspectives pushed autonomy to a targeted "independence" from their very philosophical roots.

Most of these perspectives, doctrinally and methodologically gathered under the heading of the "standard view", were best represented by logical empiricism. Reaching its maturity with Carnap, initially it was based on a certain concept of scientific rationality and a certain standpoint on the nature of scientific knowledge, generally founded in first-order logical reconstructions. The main reproach to the standard model was the failure of elaborating, in the frame of its own program, a foundational theory in science to explain the crisis of the theory of science in the 1920's (L. Laudan) and also the *dynamics* within its theoretical and methodological frame (Th. Kuhn). A major role in overcoming the standard view was played by the increasing removal of this epistemological model from the context of real science and by its possibilities to provide a picture that addresses the meta-theoretical state of the new scientific realities.

The late answer of the standard view (R. Carnap, C.G. Hempel, etc.) required from sciences a normative calibration of scientific theories according to the apparatus and the methods of rational reconstruction and logical analysis different from the first-order one, also maintaining the ideal of a general method for science, independent of context. Despite the late retreats of logical empiricism, for viable answers had to be closer to the "empirical" and the actual practice of science, "the standard view" was unsatisfactory, so it became intermediary between the systematically elaborated epistemologies (within the philosophical systems) and some epistemological answers that would better respond to the crisis that occurred in the foundations of sciences.

This conceptual, methodological, and foundational vacuum with respect to the remarkable results from sciences has left room for the development of the historicist alternatives and the so-called "new philosophy of science". What all these alternatives have in common is the inclination towards the theories of the actual sciences and towards the practice of fundamental science. One of the ideas that emerged at the end of the last century was that more efficient methodologies, reconceptualizations and new "canons of evaluation" of scientific rationality (Th. Kuhn) arose not from classical philosophical systems nor according to some radical ideas of naturalizing epistemology (W.v.O. Quine), but from sciences as such, due to the efforts of scientists themselves often forced to develop their own methodological and conceptual framework in order to explain and understand the new discoveries (A. Einstein, W. Heisenberg, K. Gödel, etc.)

As a meta-theoretical program, the "new philosophy of science" (Th. S. Kuhn, P.K. Feyerabend, St. Toulmin, etc.) was considered one of the most "fruitful". The main distinguishing feature of these epistemological analyses is the historical component, necessary in investigating the *dynamics* of epistemological models or conceptions in close connection with the *dynamics* of

science. In order to understand and explain the reality of the new science and also its new historiography, this philosophy of science leads to a reduced autonomy with respect to science and its practice. Therefore, an immediate outcome is a reconsideration of the grounds of its historical evolution. The sources of the great ideas and of the epistemological doctrines are no longer sought in philosophical syntheses, but in the mutations that took place within the scientific construction, reflected at a first *meta*-theoretical level in the methodological ideas that appeared at a certain time in science, in scientists' views on the structure and the method of science.

From an epistemological standpoint, guided by Kuhn's perspective on the structure and the dynamics of scientific revolutions, what stage are we in now? Are we still in the stage of "extraordinary science", or of "normal science"? But in this last case, which is the "official" theory? Could it be the "String Theory"? Brian Greene says yes, Sir Roger Penrose says no (a different theory is expected to provide a more appropriate explanation for the new realities of contemporary science).

Other problems and questions within (the theorizing of) science shape the corresponding epistemological ones: what is the nature and structure of the quantum object? respectively *what* do we try to know at last – what does our gnoseological concept of "reality" actually contain?; "the measure problem" (the role of the "intervention" of the methodological instrument in the referential system) also reveals issues such as the "Quantum Entanglement" and/or "Quantum non-locality" problem, the "Wave function's collapse" problem, shaping the epistemological ones such as subject-object problem within (scientific) knowledge – where subject ends and where object begins (the problem of object being conditioned by subject), the problem of the category of causality (the reciprocal simultaneity and the temporal direction of causality), etc.

We invite you to participate with talks related to the above topics but not strictly dependent on them. Beyond these, any attempt to answer some more general questions will be considered, such as: can one still work in the field of epistemology and philosophy of science without knowing and without being close to the instruments and the "laboratory" of sciences? How does the philosophical-epistemological standpoint still weigh in relation to the scientific-epistemological one in the elaboration of contemporary epistemologies? Are the limits of scientific knowledge the same as the limits given by the tools that became necessary to the researcher? What is now the relation between the *dynamics* of the epistemological conceptions and the evolution of science? What role can epistemological bias play in relation to the explanatory models required by the scientific theories developed today?

Presentations of relatively recently completed projects or arguments in favour of ideas that you are working on are also welcome.