



Epistemic dynamics and philosophy of science

Organized by José Francisco Quesada Moreno (GILLIUS, University of Seville, Spain)

Introduction

The idea of knowledge is one of the most complex and pervasive notions to be defined. Broadly speaking, knowledge can be linked with concepts like beliefs, desires and intentions. Besides, knowledge and language, although traditionally studied in separated and isolated fields, should be integrated in a global perspective. Additionally, knowledge and language play a crucial role in science; together with reasoning these concepts are essential in scientific practices.

Most approaches to the study of Formal Models in general and of Philosophy of Science in particular, have emphasized (and usually, presupposed) a rigid, fixed and static idea of knowledge. Despite the formal advantages of such approach for the development of representation schemes and reasoning devices, many recent studies have accentuated the importance of the epistemic actions that change this knowledge.

An important task of Philosophy of Science is the study and understanding of the diverse reasoning processes used in science: How do we build our theory about the behavior of a particular subject? How do we change our theory in the light of incomplete information? How do we change our theory in order to match surprising/contradicting observations? All these questions emphasize the dynamic nature of the scientific method.

The dynamic epistemic nature of the different reasoning processes used in science should be emphasized, and this might shed some light on the connections between them. Reasoning processes relevant to philosophy of science, as deduction, default reasoning and abduction, have been studied separately, but they can be put under the same umbrella when they are understood as epistemic actions that affect the knowledge and beliefs of a cognitive agent.

Natural Language Engineering, as a multidisciplinary field where Linguistics, Logic, Computer Sciences and even Psychology meet with the goal of understanding and generating human languages, should take into account and benefit from this new approach. So we should explore possible insight lines of application of the dynamic epistemic approach to the fields of Language Technologies and Knowledge Management.

Our main goal is to present the idea of Epistemic Dynamics as the strategic foundation for the study of the knowledge, and its derivation in three main areas: Logic, Language and Information.

According to that, the symposium will be structured in four main sections, starting with a brief introductory overview. Using the troublesome relations between the academic fields of Logic and Philosophy of Science as a historical background we will address the new trends on Logical Models and its connections and relationships with Science, Language and Knowledge. In the first section we will present the Epistemic Dynamic approach to Logic as a reference background. Given the aforementioned dynamic nature of the knowledge, one of the most relevant task is to analyze the properties and models that will allow the representation and reasoning over such dynamic schemes.

The other three sections will cover the application of this approach to three main fields, namely,

- A dynamic epistemic approach to three forms of reasoning commonly used in scientific practices;
- The theory of language; and
- Language technologies and knowledge management.

Program

Ángel Nepomuceno-Fernández/Fernando Soler-Toscano. Logic and Philosophy of Science: Dynamic Epistemic Logic.

Fernando R. Velázquez-Quesada. A Dynamic Epistemic Approach to Deductive, Default and Abductive Reasoning.

Francisco José Salguero-Lamillar. Knowledge and Language.

José Francisco Quesada Moreno. DEL in Language Technologies and Knowledge Management.

Affiliation: G.I.L.L.I.U.S. -Research Group of Logic, Language and Information, University of Seville, Spain