

On the informal semantics of knowledge representation languages and the case of Logic Programming

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Abstract. The informal semantics of a formal language aims to express the knowledge conveyed by formulas and theories of the language about the application domain, in a precise and systematic way. Viewing a (declarative) formal language as a tool to encode computational problems, the question of its informal semantics may not even be a scientific question. In this talk, we will view a formal KR language as a formal scientific model of certain types of knowledge. The question of its informal semantics then becomes the corner stone of such a scientific model, as it relates the formal entities (the formulas) to the informal objects that they intend to represent (the knowledge). The hope with this approach is to base discussions on this topic on more solid scientific ground. The lecture starts with a discussion on the feasibility of viewing a formal language as a formal scientific model of knowledge, and experimental methods to verify proposed informal semantics. These methods are applied to clarify the informal semantics of Logic Programming. Two main ideas for informal semantics of LP were proposed: logic programs as definitions, and the (auto)epistemic/default interpretation. We then analyze when these informal semantics apply, when they agree and disagree, what is the meaning of negation and the rule operator and which informal semantics applies in the context of concrete examples.