A Knowledge Framework

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1 Introduction

Relevant for complex systems, because fully reflexive : way of seeing the systems and the production of knowledge is itself rooted in complexity

https://arxiv.org/pdf/1704.01407.pdf : framework in AI (not knowledge framework)

Cadres existants (exemples dans d'autres disciplines) : [1] : sociologie de l'innovation ; [2] : entre ingnierie et design ; [3] : valuation des grammaires dans les systmes d'information ; [4] : Cadre de multi-modlisation pour le test d'hypothses.

[5]

2 Case Studies

2.1 Genesis of the Evolutive Urban Theory

The first case study relates the construction of the *Evolutive Urban Theory*, a geographical theory to study territorial systems

2.2 Engineering the Metropolitan

After the glance on domains of knowledge extracted in the previous case study, we propose to take the corresponding point of view on a rather different example more related to technology and engineering

[6] automatisation de la 1 [7] portes palires

[8] innovation stations

[9] conflits sociaux ratp

[10] ingnierie des tunnels

[11] multi-agent systems and autonomous intelligent transportation systems

3 Knowledge Framework

From the previous analyses, we can formulate know inductively the knowledge framework. As mentioned, it takes the idea of interacting domains of knowledge from the framework introduced by [12], but extends these domains and takes a novel epistemological position, focusing on co-evolutive dynamics of agents and knowledge.

Constraints To be particularly fitted for the study and management of complexity

Epistemological Fundations Our epistemological positioning relies on a cognitive approach to science, given by Giere in [13]

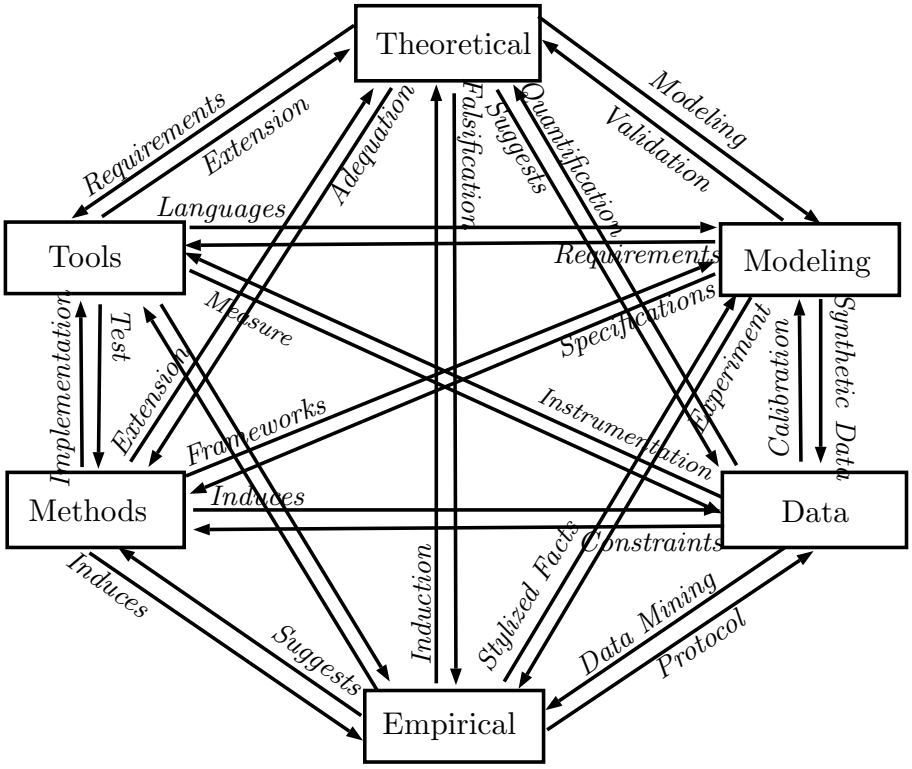

Fig. 1. Projection of a perspective into a full network of knowledge domains

4 Discussion

4.1 Application Range

We insist that our framework does not pretend to introduce a general epistemology of scientific knowledge as Kant has tried to introduce with the Critique of Pure Reason, but far from that is rather targeted towards reflexivity in the understanding of complex systems. The level of generality is at a very different level, but the aim to practical implication in the handling of complexity contributes to a certain genericity in applications. It is furthermore particularly suited to study Complex Systems, since more reductionist approaches can handle more compartmented production of knowledge, whereas integration of disciplines and scales and therefore domains of knowledge has been emphasized as crucial

4.2 Towards a formalisation

Our knowledge framework stays at an epistemological level, and its application must

5 Conclusion

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