The role of computational ontologies and failure-based systems in the social

EMANUELE BOTTAZZI , ROBERTA FERRARIO
Laboratory for Applied Ontology
Institute for Cognitive Sciences and Technologies
National Research Council
(ISTC-CNR)
via alla Cascata 56C
38123 Povo (Trento)
Italy

bottazzi; ferrario@loa-cnr.it

Abstract If, on the one hand, there is a long tradition in the humanities and, especially, in the social sciences that focuses its analysis on the interplay of humans and artifacts, on the other hand the awareness of the importance of such an interaction is surprisingly not as clear for many of those in charge of building technological artifacts.

Take, for instance, the case of e-government, where technology is so pervasive that, more than an instrument to exercise governance, it becomes nearly a policy, a governmentality in itself. Nonetheless, most projects have been mainly focussed on increasing the technical performance of computer-based artifacts, mainly disregarding their impact on the surrounding social and institutional environment.

Surely this issue has already been raised since long in the literature (see for instance studies on socio-technical systems), but the claim here is that, in order to overcome this situation, it is not sufficient to concentrate on generic principles; computer scientists and engineers need formal, good, comprehensive *models* to be embedded in their systems.

This is the exactly the purpose of computational ontologies in the social: building formal models that will then be run by computer-based artifacts, in which both these artifacts and the surrounding social environment are represented. The modeling will then be based on logical languages, as to reach a good level of rigor and at the same time being translatable both in machine-readable and human-understandable languages.

An accurate model based on these assumptions becomes the key to *open* the system to itself, making it *transparent* and accessible to its own actors, and not just to its designers or controllers.

In particular, the novelty of the perspective we would like to propose is that it shapes the whole ontological analysis through the notion of failure. In a nutshell, the idea is to reflect on structural contradictions and limitations of the socio-technical system and to take into consideration that the world does change in unpredictable ways during its lifetime.

Such a reversed perspective on socio-technical systems is a way out from the naive idea of design as the production of perfect worlds and at the same time an opportunity to get flexible strategies to cope with systems' failures.