Chapter 8
Comparative Analysis of Ontology Charts and other Modelling Techniques

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Abstract

Ontology charting (OC) is an organisational semiotics (OS) technique for the representation of the requirements of organisational information systems, based on semiotic theories, incorporating technical and social aspects. The application of semiotics to the design of information systems (IS) competes with other methods. This chapter presents a comparative analysis of the modelling techniques used by some of these methods, applied to a case study, discussing each model's characteristics and expressive power. A framework to guide this comparison is also introduced.

8.1 Introduction

Modelling plays a major role in information systems development (ISD). As any language, modelling languages determine the way we perceive, plan, and act in the ISD world. In ISD, as in many other engineering areas, models are often expressed by diagrammatic languages or diagrams presenting some basic elements and their relationships. These elements are usually associated with the key concepts of the underlying theories and methodologies. Moreover models can be considered *simplifications of the reality,* therefore it results that by analysing model elements we are also analysing the related theories, their relevant concepts and their interpretation of the reality. In this sense, by studying and comparing models it is possible to understand the

P.-J. Charrel and D. Galarreta (Eds.),
Project Management and Risk Management in Complex Projects, 145–163.

philosophical foundations and the particular perspectives used by each methodology and adopted by each theory. In this chapter different kind of diagrams and models will be analysed and compared revealing approaches, focus, and missing concepts of their supporting theories.

A first kind of diagram and the centre of our analysis are ontology charts (OC) used by Stamper's theory of organisational semiotics (Stamper 1973; 1996; 2000). OCs permit to model organisations and can be used for driving the analysis and design of information systems by offering a stable and precise view of organisational requirements. Stamper's OS theory provides as well a set of methods for requirements analysis: the methods for eliciting, analysing, and specifying users' requirements methods (MEASUR). These methods include: problem articulation methods (PAM), semantic analysis method (SAM), and norm analysis method (NAM) – that enable us to capture issues from a vague, complex problem, to assist the problem-owner in eliciting and to specify the general patterns of behaviour of the agents in the business system (Liu 2000). Particularly SAM, departing from the terms used in the problem statement, establishes a sequential set of steps that will have as a deliverable one or more OCs containing the requirements model or ontological schema.

The other kinds of diagrams analysed are dynamic essential modelling of organizations models as a particular application of the Language Action Perspective theory (see Winograd and Flores 1986 and Reijswoud and Dietz 1999); role-activity diagrams applied by the Riva method (Ould 2005), DIPLAN used in the Theory of Organized Activity (Holt 1997), and UML activity diagrams (Booch *et al*. 1998) for business process modelling. These diagrams or modelling techniques and associated methods or theories share as a common basis their suitability to model business and organization processes, as well as their human, social, and organizational nature, without concerning necessarily the supporting information technology (IT).

All the target diagrams and models and the related theories are summarized and presented in section 2. For the analysis, and to provide some insight and basis for the comparison, a simple case study of a grocery shop is introduced and modelled using the different modelling techniques in section 3. In section 4, a framework to guide this comparison was developed and introduced together with the corresponding analysis of each technique. Some conclusions are drawn in section 5.