Diagnosing and Redesigning a Health(y) Organisation: An Action Research Study

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ABSTRACT

The problem of linking and coordinating different subunits of an organisation is a central part of management. One prerequisite is to design the communication within the organisation in an effective way. Based on an action research study carried out at a site of a logistics service company, this paper sketches how organisations can be analysed and redesigned by using cybernetic thinking, and shows how organisational problems have been identified and solved for this company. By applying the concept of variety as a measure for complexity, the usefulness of the concept for the analysis of organisations and information systems is explored. We combine the Viable System Model with a conceptual modelling approach from Information Systems Research and show how the analysis and design of information and communication channels has successfully been carried out. Building on Language Critique, we propose theoretical implications of this approach.

Keywords: action research; business engineering; cybernetics; information processing; IS models; organizational complexity; organizational design; organizational effectiveness; organizational structure; socio-technical systems; variety

INTRODUCTION

One of the main problems for an organisation in achieving viability is the complexity and uncertainty exhibited by itself and its environment (Jackson, 1989, p. 413). How should an organisation structure itself in order to cope with complexity? Since complexity is a multi-faceted term which has many possible meanings (Flood & Carson, 1993, p. 23), it is difficult to exactly determine and regulate organisational
complexity. Our starting point for dealing with complexity lies in the analysis and design of the information and communication channels (IC channels), as the quality of an organisational structure is determined by its information processing capabilities (DeCanio & Watkins, 1998, pp. 289-291). According to Contingency Theory, subunits of an organisation must choose from a set of structural alternatives and organisational arrangements to most effectively deal with their information processing requirements (Tushman & Nadler, 1978). This implies that organisational design should first consider the tasks, composition and structure of subunits, and then consider mechanisms for linking those units together. Thus, organisations can be conceptualised as actors connected by IC channels using a range of communication tools (e.g., face-to-face relationships, meetings, e-mail, facsimile, telephone, information systems, etc.) (Levitt et al., 1999). Attempts to model organisations need to study the information and communication structure (IC structure) of an organisation, defined by tasks, actors and IC channels between actors. In this paper, we focus on the following research question: how can we measure the quality of an organisational structure with regard to IC channels?

The remainder of the paper is structured as follows. First, we argue that the measurement of complexity is a key prerequisite for increasing the quality of IC channels. Second, we apply an action research study to explore possible theoretical implications of our research question. Using action research, we learn that the combination of the Viable System Model and conceptual modelling works well because the Viable System Model allows us to identify “what” we have to describe, analyse and design, and conceptual modelling helps us to formulate this description. We use our results to identify possible theories for explaining our findings, and we propose that the varieties which characterise a system always are dependent on the linguistic descriptions of the observer. Referencing Language Critique we show that the design of transducers is of paramount importance to balance varieties and draw conclusions for further research.

THE MEASUREMENT OF COMPLEXITY

The Concept of Variety

In order to measure the complexity of coordination and communication tasks, we refer to the cybernetic concept of variety (Ashby, 1964, p. 124). Variety denotes the total number of distinct possible states of a system, or of distinct elements of a system. If different observers of the system distinguish the states or elements differently, then they will come to different measures of the variety of the system; as such, variety is not an intrinsic property of the system, but rather depends on how the observer defines the system (Ashby, 1964, p. 125). For a concrete case, this abstract concept must be transformed into an applicable measure to be useful (Rivett, 1977, p. 37). But most approaches do not explicitly state how they operationalise variety, but rather do so implicitly (e.g., Espejo, 1989; Leonard, 1989).

Generally, we can either use perception-based measures (e.g., surveys (de Raadt, 1987)) or activity-based measures (e.g., frequency measures or content analysis of records (Fransoo & Wiers, 2006)). For the measurement at instance level, the
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