



Chapter IX

Information Systems as Wicked Problems

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The idea of the 'wicked problem' (Churchman, 1967), which advocates a pragmatic oscillation between problem and solution, rather than an attempt to reduce the problem to a series of steps to be followed sequentially, has been particularly helpful to us in conceptualising the relationships between people, organisations and information technology (IT).

This conceptualisation was tested in the RAMESES project (Risk Assessment Model: Evaluation Strategy for Existing Systems), using grounded theory (Strauss and Corbin, 1997) as the basis for the methodology. The overall objective of RAMESES is 'to provide a strategic model for the risk assessment of legacy software systems within SMEs (small-to-medium enterprises) considering business process change.' Thus the relationship between the organisation, the way its staff carried out its processes, and their legacy IT systems was at the centre of our concerns.

This chapter describes how the broad conceptualisation of the problem led to a detailed method to address it and the results available to date.

THE PROBLEM OF ORGANISATIONS

Wicked Problems

Four key characteristics (Budgen, 1993) of wicked problems can be identified as particularly relevant to information systems (IS):

- **There is no definitive formulation of a wicked problem.** A wicked problem cannot be reduced to a series of steps that need to be followed in order to reach a solution, since any series of steps so designed will address only part of the problem. By following a series of steps, one may not even arrive at a partial solution, the process may actually make the problem worse.

- **Wicked problems have no stopping rule.** Wicked problems are dynamic. One may derive a solution, which appears to solve the problem at one point in time, but that solution will in itself affect the problem. People will react to the solution that they are given and the problem will evolve in new and unexpected ways. Often, the scenario, which is nominally designated as the solution, is only acknowledged as such because time and/or money have run out on the problem.
- **Solutions to wicked problems are not true or false, but good or bad.** Because the way to tackle the problem is not reducible to a series of steps, the solution will never be a neat fit. The notion of a *good* or *bad* solution is subjective, and can only be evaluated in the light of what one wished to achieve, not in any absolute sense.
- **Every wicked problem can be considered to be a symptom of another problem.** Because of the interconnectedness of things, investigation into a wicked problem might reveal deeper underlying causes, or simply other factors at the same level, which are embedded in different issues. What is a 'good solution' to the problem must be judged entirely on the basis of what was expected and achieved, not on the basis of completeness or finality.

'Solving' Wicked Problems

Seeing problems as 'wicked' calls into question the relevance of the waterfall model of software design (Conklin & Weil, 1998; Budgen, 1993). The fact that the waterfall model implies a simple progression from one stage to the next in the process of designing software is unrealistic in the case of wicked problems: it is highly unlikely that a wicked problem could be grasped or understood from the start in order to allow a simple progression to the design of a solution. Concessions to the complexity of real life and to what Budgen (1993) calls 'the wickedness of problems' are the multiple feedback loops that move back up the waterfall. They introduce the notion of going back and reformulating the problem.

In the traditional waterfall model, this manner of oscillating between analysis and design might be considered at best pragmatic, and at worst disorganised, whereas the opposite is true of wicked problems, for which any method that insisted analysis be complete before work may start on the design of a solution would be doomed. In the words of Conklin & Weil (1998): "You don't understand the problem until you have developed a solution."

Why Organisations are Wicked

Organisations are 'wicked' in a number of different ways. Positivist science tends to look at an area of study, identify variables, isolate them and study each in isolation, and then model the way in which these act together. In this way, hypotheses are accumulated and are articulated as a theory. In the study of organisations, it is possible to identify the variables that bear upon a particular situation, and often to have some feel for their relative importance, but to isolate them is not meaningful. To decontextualise a process or an operator in order to study them is to take away their meaning or *raison d'être*. Positivist scientists feel that an experiment should be 'controlled,' i.e., all extraneous factors should be

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