What Happens before Requirements Engineering?

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Welcome to the Children’s Services Planning Group! Here our task is to find a way of integrating all the various specialist agencies—social services, education, health and so on— that provide support for children with problems or special needs, so that children and their families see us operating as a team, working together with the best interest of the child at heart, instead of the old way of doing things in which each agency operated within the narrow confines of its own professionalism.

The trouble is, we don’t really know how to do this. We have many years experience of not talking to each other or sharing budgets, and with all the best will in the world, changing this does not come easily. We think that an information system might help us to overcome our communication difficulties, but we don’t know what sort of system we want or how we will be able to make sense of it so that it will help us in our task of supporting an integrated service delivery that crosses organisational and professional boundaries.

There are two related problems for the researcher here. The first is developing an adequate theory of communicative action which provides a sociological account of the role of information, communication and action in the creation of shared meaning, and permits an analysis of sociological data obtained from the field; and the second is the design of a research process which can assist in the co-construction of the requirements for an information and communication system to support the planning and delivery of an integrated service. Such a research process must necessarily be interdisciplinary, involving the professional skills of sociologists, requirements engineers and computer system designers.

Understanding how to do interdisciplinary research is hard, because the various practitioners cannot relate to each other using a simple service contract model. Indeed, there are many interesting similarities between understanding how to plan integrated multidisciplinary service delivery to children and understanding how to plan an integrated multidisciplinary research project, and this has led us to consider our own project as yet another example of the general problem we are trying to address. We ourselves are the subject of one of our own sociological investigations; this is what we mean by reflexivity.

There are thus two distinct levels which we are studying using ethnographic methods, which can be characterised as “How will they talk to and work with each other?” and “How will we talk to and work with them?” But of course this us/them distinction has to be negotiated into a relationship of trust and agreed assumption of appropriate roles in relation to each other. The research design has to facilitate this negotiation and allow for the fact that the way it is negotiated will influence the results of the research.

In order to understand the relationship with the children’s services planning group, both as existing and as envisaged, some sort of modeling is required. What sort of models work, how they work, how they are constructed, and how ownership of them is agreed and transferred, are research issues which the research design must address. What we are looking for is the way...
high-level concepts relevant to a strategic planning process get refined into more detailed concepts reified as actions in accordance with the plan, and what conceptualisation processes are required in the observer in order to give an account of the conceptualisation process observed. Our models must therefore be able to represent situations as observed or as desired, and the processes of systematisation.

Here is an example of one kind of model we have been using for the representation of situations:

And here is an interpretation of the model: the child is considered not only in the context of its family but also in relation to other carers, the law and its school environment, each of which has its own set of responsibilities. The delivery of service provision includes responsibilities for identification of need based on presentations and observations, for planning resources, for monitoring delivery against a care plan as well as for protecting and counseling; assessing the quality of service delivered involves an interaction between the child in its various environments and all the responsibilities of service provision.

Issues raised by the model include; what is the role of ambiguity in the model? How important is it that the model conform to a set of syntax rules? How, and by whom, is the model constructed? Is the model to be interpreted hermeneutically, or semiotically, or both?

At this stage in our research, we are not in a position to give definitive answers to these questions. We can, however, define the process by which such answers may be obtained. Such a process operates in a space of two dimensions: one dimension is defined by various viewpoints that we take to be relevant, such views encompassing not only the stakeholders in children’s planning but the whole design constituency; and the second dimension is defined by the process of systematisation, by which the rhetorics and concepts expressed in each viewpoint get formalized and inscribed in an information system. Capturing the details of this process, and finding the conditions of its possibility, is a major research goal of the project.

This is where we need a new theory of communicative action, which describes how a new social context is required to support a new set of emergent relationships; this is turn requires co-constructing a new structure of meaning and understanding of what the position of an information system might be in that structure. We will need to pay sociological attention to the roles and responsibilities because it is those that provide the components of the structural framework in which the boundaries of the information system will be drawn. We recognize that communication is both the agent and the subject of change, but the theoretical framework which permits reasoning and analysis of this sort of change is currently lacking and is under investigation.

In summary, there are three major problems that we are beginning to solve. The first is ontological heterogeneity: different services will have different constructions of ‘the child’ and it is only just becoming clear how it can be determined whether the various constructions are compatible. The second is ethical conflict: different professions have differing ethical codes and it is clear that, in some circumstances at least, these codes are incompatible. The third is epistemological uncertainty: we are only beginning to find out what the structure of the problem space might be, let alone knowing how to design what might constitute a solution. Indeed, even thinking of the situation in terms of a problem/solution dichotomy is at best unhelpful and may well be deconstructive. None of these is a new problem of course, but their combination is such as to make the design of the research plan itself a research task.

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Our web site is at //www.ncl.ac.uk/mgt/research/amase.php