

INFORMATION SYSTEMS RESEARCH IN SCANDINAVIA AND AUSTRALASIA: PHILOSOPHICAL APPROACHES AND THEORY BUILDING

Contributors:

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Introduction

The papers by members of this group examine the philosophical approaches underpinning information systems research in Australia and Scandinavia and approaches to theory and theory building. The aim is to highlight some commonalities and differences between the work done in these two different geographic areas. The topics addressed are very broad and our paper will not aim to present a comprehensive review of all the work done in these regions. Rather, we will present some individual insights arising from the work of the separate authors and then reflect on what these separate experiences suggest in total.

Initially each author has prepared a brief position paper on an area that is of personal interest. We expect at this early stage that there will be some overlap in material and some differences in opinion among our authors. In the course of the workshop and subsequently we will work on common terminology and the identification of common themes.

An initial thought is that the two regions of interest are to some extent “outsiders” in comparison with more prominent and powerful research communities in Europe and North America. Our two regions of interest are Australasia, including Australia and New Zealand, and Scandinavia, including Denmark, Sweden, Norway, Finland and Iceland. Both these regions are geographically remote, with relatively small populations and low population density. Both regions are in areas of the world with extreme climatic conditions and where the countries have a traditional base in rural communities where considerable hardiness has been required of settlers¹. In both regions socialist political leanings have been evident. There are of course also differences. Australia has people with origins in many countries and is a relatively new country. Scandinavia has an older history and a more homogeneous population. In sum, however, we might expect a more eclectic approach to research and theory building in these regions and less identification with dominant paradigms in other regions in the world. We might expect that our researchers can, in both Scandinavia and Australia, stand apart to some extent from what is happening elsewhere and “think differently”, taking lessons from a number of traditions and being willing to find a new path and pioneer new directions.

¹ A feeling for this tradition is evidenced by the popularity in Scandinavia of Mikael Niemi’s (2004) novel “Popular Music”, about youth in the 1960s in a village near the Arctic Circle in Sweden (close to Finland). This novel has themes which are immediately recognizable and familiar to someone who grew up in a regional area in northern Australia in a similar era.

Theme 1: Information Systems Foundations (Gregor)

Researchers in both Australasia and Scandinavia have been willing to address some of the fundamental issues underlying information systems research in ways that are quite different from those adopted elsewhere. Some work that indicates this originality is noted here, although as a historical account the paper does not claim to be complete. What we can see even from this relatively brief review is an attention to issues that go beyond the debates which are carried on elsewhere, notably those concerning epistemological issues that are commonly framed around distinctions between interpretive and positivist approaches to research methods. Instead, we see attention to foundational issues for our discipline, to ontological issues and the structural nature of theory, to different types of theory, and to theory relating to the design and construction of technological artifacts.

First, in Australasia, the seminal work done by Ron Weber has become increasingly recognized and influential. His collaborative work with Yair Wand led to the Bunge-Wand-Weber (BWW) theory of representation, which no doubt will be discussed in the ontology section of this workshop. Weber gives an account of this theory and its development in his monograph *Ontological Foundations of Information Systems* (Weber 1997). In the introduction he describes how he struggled to get acceptance of his ideas early on in information systems outlets and had to publish an early view in an accounting-IS journal (Weber 1987). Ron's work continues to be characterized by a concern for strong theory, theory that is characteristic to IS, a recognition that the phenomena of interest to us are systems and of the significance of general systems theory. It is interesting that Ron's chief original collaborator in this work was the Canadian-based researcher Yair Wand, also outside the US and Europe.

Work in this vein in Australia has continued to be highlighted at the workshops on Information Systems Foundations in Australia. The late Kit Dampney organized the first workshop at Macquarie University in 1999. The second and third workshops were held in Canberra at the Australian National University in 2002 and 2004 (Gregor and Hart, 2002; Hart and Gregor, 2005). Papers at these workshops have addressed theoretical bases, the links between information systems and practice and some unusual reference theories.

Papers at these workshops have led to further publications elsewhere on foundational issues. My colleagues Mike Metcalfe and Jim Underwood may mention their contributions in their separate sections. I have revised an early paper on the nature of theory in information systems (Gregor 2002a) to give a fuller account in Gregor (forthcoming). This latter paper examines the structural nature of theory in information systems in detail. A taxonomy is proposed that classifies information systems theories with respect to the manner in which four central goals are addressed: analysis, explanation, prediction and prescription. Five interrelated types of theory are distinguished: (i) theory for analysing; (ii) theory for explaining, (iii) theory for predicting; (iv) theory for explaining and predicting; and (v) theory for design and action. It is suggested that the type of theory under development can influence the choice of an epistemological approach. Support is given for the legitimacy and value of each theory

type. The building of integrated bodies of theory that encompass all theory types is advocated.

Work on the nature of design theory in particular has been followed up in Gregor (2002b) and Gregor and Jones (2004, 2005). This theory for “design and action” is distinguished by Gregor (forthcoming) as a prescriptive type that says “how to do something”, as opposed to other types of theory where the primary purposes are analysis, explanation or prediction. Associated research has been referred to elsewhere as *software engineering* research (Morrison and George, 1995), as a *constructive* type of research (Iivari, 1991; Iivari, Hirschheim and Klein, 1998), as a *systems development* approach (Burstein and Gregor, 1999; Lau, 1997; Nunamaker and Chen, 1990; Nunamaker, Chen and Purdin (1990-91) and as *design science* (Simon, 1996; March and Smith, 1995; Hevner et al., 2004). An argument made in the papers by Gregor (2004, 2005) is that we have an incomplete understanding of how design theory in information systems should be formulated and that this is a significant problem, as design theory is of particular importance in a discipline that is concerned with the construction of mutable artifacts where complexity arises from the interaction of humans with information technology.

Turning to Scandinavia we find similar concerns with fundamental question relating to theory and artifact construction from an early date, again outside the more dominant discourse in the US and Europe, which have tended to focus on differences between positivist and interpretivist approaches to research.

In Finland, Yuhani Iivari (1983) distinguished three levels of theorizing for IS: (i) a conceptual level, at which the objects of enquiry are defined; (ii) a descriptive level, at which the explanatory conjectures and hypotheses are generated and tested; and (iii) a prescriptive level, at which methods for constructing systems are put forward, with recommendations for their practical use. Iivari’s views are congruent with what is proposed in Gregor (forthcoming), although presented with less detail and the distinctions among the levels are less fine-grained. It is interesting to find this congruence between work in Scandinavia and Australia as there has been very little elsewhere on the structural nature of information systems theory since the discipline’s inception. Noting these common interests has led to some joint work (see Gregor and Iivari, to appear).

Scandinavian researchers also paid attention to a “constructive” approach to research early on, long before the “design science” approach was popularized by March and Smith (1995) and Hevner et al. (2004). Iivari (1983) distinguished theorizing at a prescriptive level early on, using the term ‘systemeering’, a word coined for ‘systems work’ to match the Swedish word ‘programmering’ for programming. Iivari (1991) described this activity as “constructive” research in subsequent work. Further development of these ideas can be found in Iivari, Hirschheim and Klein (1998), Jarvinen (2001) and Kasanen et al. (1993). Evidence of a comparatively eclectic approach to research methods can also be found in the research methods textbook of Järvinen (2004).

In Australia there has also been some attention to the problems of building information systems and describing this work so that it is recognized as a valid form of research. For

example, Dubravka Cecez-Kecmanovic gave a keynote speech at an ACIS conference in 1994 on the problems of engineering-type research. Frada Burstein and Shirley Gregor presented a paper at the 1999 ACIS conference on the treatment of systems development research as action research.

To sum up, it appears there has been a noted tendency amongst at least some researchers in both Scandinavia and Australia to look at research in IS from different angles, not constrained by the prevailing paradigms in the US and Europe.

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