The effective use of information systems (IS) is an essential factor in the successful operation of organisations, but for many this is all too readily translated into the efficient use of information technology. Such an approach is, in our view, only partial, and fails to recognise the influence that human factors have on IS development and management.

The purpose of this book is therefore to present for discussion those issues which practitioners and researchers have found to be critical to understanding and progress within the domain of information systems. This seems to have led quite naturally to the study of IS from three perspectives: technology, organisations, and people. Chapter 1 reflects this position, aiming to set the scene for this book by categorising IS as technical, social, socio-technical, or critical. This chapter seeks to introduce the human-centered focus of the text by casting light on the commonly encountered ‘human-centered’ versus ‘technology’ debate in information systems. Information systems are discussed as complex, adaptive, human activity systems, enabled by information technology (IT), giving rise to a view that a purely technical approach to such systems, focusing on fixed and definable objectives is insufficient. Instead, an approach is required which sees the whole system through the views of the human participants.

In Chapter 2, Andrew Wenn describes some aspects of the development of VICNET, an open system in use in the state of Victoria, Australia. Andrew sees the system as difficult to characterise, being dynamic both in geographical and ontological scope, size and usage. The chapter describes VICNET, an Internet information provider established in 1994 as a joint venture between the State Library of Victoria and Royal Melbourne Institute of Technology, as an open system: it is being used by a large number of people and public libraries, yet simultaneously it is evolving and being shaped by the technology, the users and the environment of which it is part. VICNET, argues Andrew, may be characterised both in terms of the social and technical worlds embedded within it, and the part it plays in a much larger sociotechnical system—the Internet. By studying the transformations around the VICNET development, it is argued that we can reach an enriched understanding of how open systems come into being and evolve.

In Chapter 3, Gordon Hunter’s review of the IS domain reveals people, process, and technology as the key components of an IS, of which the first component, people, is seen to have the greatest relative impact. The chapter outlines a research project which has focused on this people component, aiming to develop an understanding of the specific skills and personal characteristics which systems analysts contribute to IS development and maintenance. What do ‘excellent’ systems analysts do that is different from other systems analysts? The answer may contribute to a better understanding of the functions performed by systems
analysts and to the overall effectiveness of the IS development and maintenance function.

In Chapter 4, Bill Hutchinson’s ‘bottom-up management and system design,’ puts forward the proposition that IS development techniques almost always use top-down approaches to develop software and business systems. Humans, Bill argues, need to simplify the external world by using cognitive models to build a boundary around a problem: a boundary which, while helping us to cope with the complexity of the problem at hand, nevertheless produces dilemmas, as it leads to misconceptions about the real behavior of systems, and the people in them. The chapter offers a preliminary methodology to approach system design using ‘bottom-up’ thinking, a view which is not promoted as the opposite of top down thinking, but as a supplement to it.

Jonathan Lazar and Anthony Norcio’s chapter on end-user error presents definitions of error, as well as a taxonomy of user error in order to unravel the causes of error, and different approaches for assisting the end user. The chapter discusses two general approaches for assisting the end user in responding to errors: system design and training design, the aim being to describe the current situation of end-user error and suggest ways to improve the end-user experience.

Ruth Small and Marilyn Arnone focus on a domain ever growing in relevance: the Internet. Their evaluation of the effectiveness of Web sites looks at the business problem of attracting, interesting and motivating Web ‘surfers’. They argue that, whilst guidance on the structure and content of Web interfaces is available, these typically concentrate on content, with few having a theoretical foundation, offering diagnostic methods for assessing and interpreting results, or providing detailed feedback for improvement. Furthermore, few, if any, emphasize the motivational aspects of Web sites, i.e. those features that stimulate curiosity, and engage the user’s interest, while providing relevant content and an easy-to-use interface. These features help to motivate customers to visit, explore, and return to a Web site. The chapter specifies essential criteria that can be used by both web designers as guidelines for creating ‘motivating’ Web sites, and by businesses interested in evaluating their existing Web sites.

In Chapter 7, Simon Bell, begins from a position where he sees information technology (IT) projects as more prone to failure than other technology-based interventions. The IS practitioner, he argues, given the responsibility to manage the change process by analysis and design and other mediating strategies, can end up as the victim of technology failure, organisational inability to make up its mind, and half-developed applications. This chapter uses reflective discourse to develop the theme of the vulnerability and power of the action research IS practitioner. Using current case study material drawn from working in transitional economies the chapter indicates lessons learned in the value of the action research approach to analysis and design and the real benefits and powers which can arise from vulnerability, such as autonomy and viability.

Elayne Coakes and Dianne Willis, in their chapter on collaborative working, use the example of a collaborative venture between three members of the Sociotechnical group of the British Computer Society, resulting in a book which gathered together a series of modern sociotechnical experiences. The wide geographical distribution
of the editors and contributors dictated a need for enabling technology to support the process. Major options considered for the project were the telephone, fax or electronic mail, the international perspective finally determining email as the best option. The chapter describes the problems encountered and lessons learnt.

Gill Mallalieu’s discussion of information systems as ‘Wicked Problems’ is very much in line with the theme of the book, as a means of conceptualising the relationships between people, organisations and information technology. The chapter outlines a major IS project undertaken in the United Kingdom (RAMESES: Risk Assessment Model: Evaluation Strategy for Existing Systems), using a grounded theory approach. The overall objective of RAMESES was ‘to provide a strategic model for the risk assessment of legacy software systems within 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 the project’s 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.

In Chapter 10, Vance Wilson and Joline Morrison describe the development and initial testing of an instrument to measure the perceived effectiveness of computer-mediated communication systems based on task type (PE measure). They argue that, although research findings repeatedly suggest that the fit between task and computer-mediated communication technology is important, researchers have not yet been able to comprehensively describe or measure the dimensions of appropriate fit. The PE measure extends prior research in several ways. First, it operationalizes the four major dimensions of McGrath’s task circumplex, a model frequently used as a conceptual framework for studying group support systems and computer-mediated communication systems: thus, it will be straightforward to integrate findings from studies that use the PE measure into the existing literature. Second, all four task types are incorporated into the PE measure, where prior research has focused primarily on generation tasks and, to a lesser extent, choice tasks. This comprehensive view of the overall task construct should benefit the process of theory-building as well as prediction in practical applications. Finally, the PE measure has been tested successfully within heterogeneous task domains, suggesting that the instrument has validity and is relatively robust.

Liz Davidson, in Chapter 11, looks at metaphor, using it to enrich understanding of data warehousing. Metaphors have long pervaded the discourse around information technology design, helping developers to conceptualize technological features and functions, to design human-computer interfaces, and to articulate application requirements. Data warehousing is one such metaphor, drawn from practices for materials management in manufacturing and distribution operations, which has been used to conceptualize organizational processes for gathering, storing, and distributing firm-wide data for business analysis and to define the applications of technologies such as multi-dimensional and relational databases and on-line analytic processing software in these processes. However, this metaphor has implications for the meaning and utility of data used by business analysts and for end users’ relationships with IS staff, that have not been fully explicated and
debated; as more companies commit to a data warehousing strategy, it becomes increasingly important to balance the technological design perspective with a human-centered perspective. Liz therefore aims in this chapter to explore data warehousing from the human centered perspective, first by examining the data warehousing metaphor and its implications for organizing IT support of business analysis activities. Then, the consequences of relying on the data warehousing metaphor as a conceptual model for designing the social aspects of business analysis processes are considered in a review of findings from a field study of a data warehousing project. Finally, the chapter considers the limitations of the data warehousing metaphor and explores alternative metaphors to highlight the human dimensions of this IT innovation.

Lorraine Warren’s chapter pursues the idea of Critical Thinking in Information Systems. Lorraine begins from the position that the permeation of IT into wider social environments has meant that the range of people now closely involved with IT on a regular basis has expanded far beyond the white-coated experts in the early DP departments, with terms such as ‘the information society’ in common parlance. The discipline of information systems (IS), she argues, is now evolving to meet the challenge of analysis and design in these complex and dynamic social contexts, moving on from its early emphasis on highly structured formal methods of analysis and design, to a far softer, human-centered focus. Focusing first on examples of IS failure, it is suggested that problems are rarely caused by the technology itself, but instead by the lack of attention paid to the people who have to use the technology and by broader organizational factors. All of this has led those working in IS to draw on the disciplines of psychology, linguistics, sociology and anthropology for theoretical sophistication to guide and inform the human-centered design agenda. The trawl for useful strands of theory has been wide: the first part of this chapter begins by presenting an overview of how this is changing research and practice in IS; the second discusses an information systems design project where one particular strand of social theory, critical systems thinking, was applied.

Finally, in Chapter 13, Jose Rodrigo Córdoba, Diego Ricardo Torres, and Gerald Midgley review some theoretical constructs on the IS planning problem, which they bring to life through a study at a Colombian University. They argue that the majority of methodologies fail to consider the diversity of users’ social contexts, and that IS planning should involve the participation, right from the start, of a variety of stakeholders, each of whom inhabit multiple domains of action. Each domain of action involves people playing a different ‘language game’, which brings forth specific concerns about other people as human beings. For example, a person may play one language game when interacting with her family, and then switch to another at work. The two language games will imply different expectations and duties of both the self and others. Indeed, within the work context alone, people may be able to identify several domains of action, and several different language games (or rationalities) that they draw upon. Even many of the IS planning methodologies based on user involvement define involvement in terms of a single, pre-set purpose to be pursued by the participant group, usually set by senior management. However, the experience of many people is that they have to juggle multiple (sometimes conflicting) purposes and rationalities in the course of
managing their lives.

It is therefore contended that stakeholders (including IS ‘experts’) should not be
confined to a single role within IS planning, or be expected to conform to a single
rationality. Rather, the spectrum of their (sometimes contradictory) lives should be
swept in. Within an extended IS planning process, founded upon genuine stake-
holder involvement (that is, sweeping in a range of stakeholders and their multiple
concerns, with only minimal constraints from an organisational agenda), a variety
of questions about what is meaningful in different domains of actions can arise.
These questions can be dealt with by considering the different values and bound-
aries that are assumed in different domains of action, and debate can be fostered
between stakeholders on the implications of choosing any one boundary, or set of
boundaries, for IS planning. They argue that working like this will ensure that IS
planning deals with the effects of change on as many as possible of the domains of
action that people participate in, and that IS implementation will be improved,
because the factors that cause user resistance will be accounted for from the start.

In conclusion, it is, of course, impossible in a book of this length to represent the
diversity of views and approaches to information systems from a human perspec-
tive. We just hope that the variety represented by this volume goes some way to
explaining the domain, and if nothing more, whets your appetite for further study.

Steve Clarke and Brian Lehaney
Editors

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