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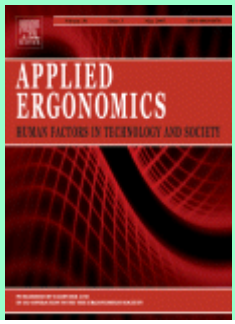


**Lisl Klein.** ***What do we actually mean by 'sociotechnical'? On values, boundaries and the problems of language.*** **Pages 137-142.**

The term 'sociotechnical' was first coined in the context of industrial democracy. In comparing two projects on shipping in Esso to help define the concept, the essential categories were found to be where systems boundaries were set, and what factors were considered to be relevant 'human' characteristics. This is often discussed in terms of values.

During the nineteen-sixties and seventies sociotechnical theory related to the shop-floor work system, and contingency theory to the organisation as a whole, the two levels being distinct. With the coming of information technology, this distinction became blurred; the term 'socio-structural' is proposed to describe the whole system.

IT sometimes is the operating technology, it sometimes supports the operating technology, or it may sometimes be mistaken for the operating technology. This is discussed with reference to recent air accidents.

- **Keywords:** Sociotechnical theory; Contingency theory; Human relations movement; Shipping research; Personal development; Operating technology; Air accidents

**David Wastell, Sue White.** ***Making sense of complex electronic records: Socio-technical design in social care.*** **Pages 143-149.**

Dealing with complex electronic documentation is an integral part of much contemporary professional work. In this paper, we address the design of electronic records for social care professionals in the UK. Recent reforms in UK child welfare have followed a top-down, managerial approach emphasizing conformance to standard processes. The vicissitudes of a major national IT project, the Integrated Children's System, show the limitations of this approach, in particular the detrimental effect it has had on professional autonomy. Following in the foot-steps of Ken Eason, we argue that socio-technical design, by focussing on innovative applications of technology to support users (rather than the interests of the bureaucracy) offers a more promising alternative. A user-centred design exercise is presented to illustrate this approach in action. A novel interface was developed for handling the heterogeneous bundle of documents which make up the social care record, helping social workers make better sense of case-files. The prototype draws on the metaphor of the dining-room table as a way of overcoming the limitations of the computer display. We conclude that socio-technical thinking engenders a shift in mind-set, opening up a radically different design space compared to current design orthodoxy.

- **Keywords:** Sociotechnical thinking; Child welfare; Non-routine work; Electronic documentation; Social networking

**Patrick Waterson. *Health information technology and sociotechnical systems: A progress report on recent developments within the UK National Health Service (NHS).* Pages 150-161.**

This paper summarises some of the research that Ken Eason and colleagues at Loughborough University have carried out in the last few years on the introduction of Health Information Technologies (HIT) within the UK National Health Service (NHS). In particular, the paper focuses on three examples which illustrate aspects of the introduction of HIT within the NHS and the role played by the UK National Programme for Information Technology (NPfIT). The studies focus on stages of planning and preparation, implementation and use, adaptation and evolution of HIT (e.g., electronic patient records, virtual wards) within primary, secondary and community care settings. Our findings point to a number of common themes which characterise the use of these systems. These include tensions between national and local strategies for implementing HIT and poor fit between healthcare work systems and the design of HIT. The findings are discussed in the light of other large-scale, national attempts to introduce similar technologies, as well as drawing out a set of wider lessons learnt from the NPfIT programme based on Ken Eason's earlier work and other research on the implementation of large-scale HIT.

- **Keywords:** Sociotechnical thinking; Child welfare; Non-routine work; Electronic documentation; Social networking

**Martin Maguire. *Socio-technical systems and interaction design – 21st century relevance.* Pages 162-170.**

This paper focuses on the relationship between the socio-technical system and the user–technology interface. It looks at specific aspects of the organisational context such as multiple user roles, job change, work processes and workflows, technical infrastructure, and the challenges they present for the interaction designer. The implications of trends such as more mobile and flexible working, the use of social media, and the growth of the virtual organisation, are also considered. The paper also reviews rapidly evolving technologies such as pervasive systems and artificial intelligence, and the skills that workers will need to engage with them.

- **Keywords:** Socio-technical systems; Interaction design; User experience design

**Matthew C. Davis, Rose Challenger, Dharshana N.W. Jayewardene, Chris W. Clegg. *Advancing socio-technical systems thinking: A call for bravery.* Pages 171-180.**

Socio-technical systems thinking has predominantly been applied to the domains of new technology and work design over the past 60 years. Whilst it has made an impact, we argue that we need to be braver, encouraging the approach to evolve and extend its reach. In particular, we need to: extend our conceptualization of what constitutes a system; apply our thinking to a much wider range of complex problems and global challenges; and engage in more predictive work. To illustrate our agenda in novel domains, we provide examples of socio-technical perspectives on the management of crowd events and environmental sustainability. We also outline a research and development agenda to take the area forward.

- **Keywords:** Systems; Crowds; Sustainability; Prediction

**Neil F. Doherty. *The role of socio-technical principles in leveraging meaningful benefits from IT investments.* Pages 181-187.**

In recent years there has been a great deal of academic and practitioner interest in the role of 'benefits realisation management' [BRM] approaches, as a means of proactively leveraging value from IT investments. This growing body of work owes a very considerable, but as yet unacknowledged, debt to the work of Ken Eason, and other early socio-technical theorists. Consequently, the aim of this paper is to demonstrate, using the literature, how many of the principles, practices and techniques of BRM have evolved either directly or indirectly from socio-technical approaches to systems design. In so doing, this article makes a further important contribution to the literature by explicitly identifying the underlying principles and key practices of benefits realisation management.

- **Keywords:** Ken Eason; Information systems; Socio-technical design; Change management; Benefits realisation management

**Niels Bjørn-Andersen, Benoit Raymond. *The impact of IT over five decades – Towards the Ambient Organization.* Pages 188-197.**

This contribution to the Ken D. Eason special issue is an illustration of the value of socio-technical analysis applied at an organizational level. We provide a brief historical overview of socio-technical IS research and review studies investigating the impact of IT on organizational structures in the last five decades, identifying a dominating (new) research theme in each decade. A key overall impact of IT in all decades has been a dramatic decrease in transaction costs making it increasingly easier for organizations to source from external providers. A five level taxonomy of sourcing arrangement is developed together with a framework of organizational activities, and a number of significant cases are offered of how organizations are sourcing practically all types of business processes, including innovation. We argue that future IT will further accelerate the movement towards more sourcing, eventually leading to a new type of organization that we call the Ambient organization.

- **Keywords:** Information technology; Organizational design; Ambient Organization

**Theoni Koukoulaki. *The impact of lean production on musculoskeletal and psychosocial risks: An examination of sociotechnical trends over 20 years.* Pages 198-212.**

This paper provides an extensive review of studies carried out in lean production environments in the last 20 years. It aims to identify the effects of lean production (negative or positive) on occupational health and related risk factors. Thirty-six studies of lean effects were accepted from the literature search and sorted by sector and type of outcome. Lean production was found to have a negative effect on health and risk factors; the most negative outcomes being found in the earliest studies in the automotive industry. However, examples of mixed and positive effects were also found in the literature. The strongest correlations of lean production with stress were found for characteristics found in Just-In-Time production that related to reduced cycle time and reduction of resources. Increased musculoskeletal risk symptoms were related to increases of work pace and lack of recovery time also found in Just-In-Time systems. An interaction model is developed to propose a pathway from lean production characteristics to musculoskeletal and psychosocial risk factors and also positive outcomes. An examination is also made of the changing focus of studies investigating the consequences of lean production over a 20-year period. Theories about the effects of lean production have evolved from a conceptualization that it is an inherently harmful management system, to a view that it can have mixed effects depending on the management style of the organization and the specific way it is implemented.

- **Keywords:** Systems; Crowds; Sustainability; Prediction