ABSTRACT

The widespread adoption of the internet means that, for many people, the computer is now a major means of communication with other people far and wide. As a result many forms of human organisation have an increasingly virtual character; the people who co-operate in the organisational endeavour are not necessarily in face-to-face contact. These developments can be classed as new forms of socio-technical systems in which emergent and virtual social systems are dependent upon and mediated by the internet and all the technical applications it has spawned. [Article copies are available for purchase from InfoSci-on-Demand.com]

Keywords: Human-computer Interaction; Open Systems; Socio-technical Systems; Task Interdependencies; Virtual Communities; Work Organisations

INTRODUCTION

The widespread adoption of the internet means that, for many people, the computer is now a major means of communication with other people far and wide. As a result many forms of human organisation have an increasingly virtual character; the people who co-operate in the organisational endeavour are not necessarily in face-to-face contact. These developments can be classed as new forms of socio-technical systems in which emergent and virtual social systems are dependent upon and mediated by the internet and all the technical applications it has spawned. It is important now to be examining the socio-technical nature of these virtual communities and the implications of the forms of interaction that mediate human communication in these communities.

There is a danger that, in the excitement to study new phenomena, all that has been learned about the operation and design of socio-technical systems in the past 50 years might be overlooked. The aim of this paper is to examine some of the major concepts in socio-technical systems theory to emerge before the internet and to evaluate their relevance to the new forms of virtual organisation that are now appearing. This
The first studies of work organisations as socio-technical systems in the 1950s were focused on collective operational tasks that deliver the daily products and services of an organisation. The basic proposition was that the collective work of an organisation is a product of the co-ordinated action of human resources making use of technical artefacts. In the initial studies the technical resources were a very long way from the ICT resources of today. After the second world-war, the human resources in the social system making use of technical resources designed to support the tasks in question. In an effective socio-technical system the technical and social systems are co-optimised in order that an integrated approach can be taken to the performance of the collective task.

- **Open systems.** The work organisation is an open system in transaction with its environment and it has to adjust its behaviour as environmental conditions change. Accordingly the social and technical sub-systems have to enable the socio-technical system to be flexible in the short term and to evolve in the long term.

- **The unfinished system, reflection and redesign.** As an open system that needs to be able to cope with new demands, the operational system that does the work is always unfinished in the sense that it has to renew itself to optimise the way it tackles emergent requirements. As a consequence there have to be resources available that can reflect on the appropriateness of the current operational system and undertake any redesign that may be necessary.

The relevance of these conceptual foundations to the emerging phenomena of virtual organisation is explored in the sections below.
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