

Chapter 14

Boundaries of Socio– Technical Systems and IT for Knowledge Development in Military Environments

Gil-Ad Ariely

California State University, USA, & The Interdisciplinary Center, Israel

ABSTRACT

This article explores the boundaries of socio-technical IT systems for knowledge development, using military environments in a case study approach. The need to examine the effects of socio-technical convergence of human systems and computer systems is emerging in many fields. The article examines both the risks and the potential in military critical-environments for early adoption of socio-technical systems. The author addresses risks for creative knowledge creation by too-early adoption of information technology and the effects on socio-technical systems and sense-making. Such risks are more easily highlighted in a critical, stressful environment (stressful for man, machine, and their co-operation) with high-stakes. However, examined military environments are proposed as point of reference leading to further research in other sectors. The author argues for a socio-technical analysis before, during, and after adoption of new systems, especially those relating to knowledge development, reviewing boundaries created. Finally, the author discusses the future promise of socio-technical convergence of man-machine for knowledge development.

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INTRODUCTION

Computers are incredibly fast, accurate and stupid. Human beings are incredibly slow, inaccurate and brilliant. Together they are powerful beyond imagination. -Albert Einstein

This article explores the boundaries of socio-technical systems (in particular, those related to information technology) for knowledge development, in various Military environments including the different echelons of command. It does so by using a case study approach to knowledge development in military environments, although the focus is a conceptual, high level, analysis of the emerging trends and model rather than the specifics of the case study environments.

The need to examine the effects of socio technical convergence of human systems and computer systems is emerging in many fields. Yet, the critical environment of the military provides a unique opportunity to explore both risks and potential. Since militaries have many socio-technical systems defined, and are in many cases ‘early adaptors’ of technology, it may act both as point of reference and lantern for further research. The risks for creative knowledge creation by too-early adoption of information technology and the effects on socio-technical systems are easier to highlight in a critical, stressful environment (stressful for man, machine, and their co-operation) with high-stakes.

The paper argues for socio-technical analysis before, during, and after adoption of new systems, especially those relating to knowledge development and reviewing the dimension of boundaries created.

There is risk of irrelevancy in attempting to write on contemporary technological issues, even more so on societal trends of implementing technology. It is a dynamic, ever-changing reality—a constant social construction of emerging behaviours. Any given example or empiric grounding

may be rendered obsolete by the time a paper is read, and thus the reader is urged to relate to the conceptual directions portrayed, and to position this reflection of social construction within its context, as a ‘work in progress’. Not the paper itself, but rather societal progress of socio-technical systems’ convergence with human behaviour.

Boundaries of Socio-Technical Systems

Socio technical research originated from researchers, notably at the Tavistock Institute in London, studying the resistance of the work force to innovation and especially to the introduction of technological systems for work automation. They suggested that a fit between the two sub-systems is needed to overcome workers’ difficulties and to achieve the expected benefits from management. In recent years, much of the focus in socio-technical systems research is given to IT (information technology) systems. Indeed in the case of this paper the focus is on Information Technology, and when reference to socio-technical systems is made, it is mainly to the IT sub-systems with the human and societal system.

Since IT acts as infrastructure for information, and for humans’ processes of transforming data and information into knowledge, it is directly connected and intertwined with the ways knowledge is created, managed and shared. Insights emerging from the discipline of Knowledge Management (KM), by now mature and empirically grounded through decades of research and practice, are seminal to identify the leverage (and boundaries) that IT systems create. This is especially true in regard with the idiosyncrasies of tacit knowledge and innovation as ‘the base’ for group knowledge.

Strategic intuition (Duggan, 2005) is a classic example, whereas the “Coup D’Oeil” (using Clauzwitz’s term for an immediate grasp of the terrain and its impacts for military implementation

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