Chapter XI
Socio-Technical Structures, 4Ps and Hodges' Model

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ABSTRACT

This chapter explores the potential of a conceptual framework – Hodges' model – both as a socio-technical structure and means to explore such structures of relevance to nursing informatics theory and practice. The model can be applied universally by virtue of its structure and the content which it can encompass. In apprehending this chapter, readers will be able to draw, describe and explain the scope of Hodges' model within contemporary healthcare contexts and the wider global issues presented by the 21st Century that influence and shape nursing informatics. Critically, the reader will also gain insight into how socio-technical structures can facilitate cross fertilization of clinical and informatics theory and practice; drawing attention to information as a concept that provides a bridge between socio-technical, clinical, and informatics disciplines. This chapter will review the socio-technical literature and venture definitions of socio-technical structures related to Hodges' model and advocate the need for sociopolitical-technical structures. The chapter also proposes the 4Ps as a tool to facilitate reflection upon and the construction of socio-technical structures. The adoption and significance of the hyphenated form as per "socio-technical" will also be explained.

INTRODUCTION

Data is a plural noun (Pearsall, et al., 1998). Technology has plural - compound uses. The word *technology* is somewhat unique among the family of '-ologies'. The word is applied as a noun, adjective and used in everyday conversation and media to an extent that no other -ology can match. The word refers of course, not only to the study of the technical, but a phenomenon: a

ubiquitous, pervasive presence in our lives. The extent to which we take technology for granted, is evident in our missing this other meaning. How often do we refer to: *This biology is playing up* (which may well be the case!)? *Geology never lasts very long! Sociology just adds to the noise.* Maths and English [all languages] are similar in not only referring to the study of a subject area, but being applied in day-to-day life – essential forms of literacy. Depending on definitions *technology* is of course an adjunct to literacy and expression, from the caves of Lascaux to virtual reality communities. It is only 'now' that *technology* is considered as the latest – the third *ology* - to become ubiquitous.

Technology presents challenges by virtue of its ability to liberate or constrain (Cooley, 1987; Nevárez, 2008). While this can confuse and disorientate us, technology also offers opportunities for discovery and integration. Viewed through the compound eye of Hodges' model (see below), socio-technology can liberate by creating fractures of the model's axes allowing leakage, seepage of meaning. We can look upon the seepage as soap that assists conceptual hygiene, as we make sense of technology across several knowledge domains. This affords us the opportunity to break the constraints of time, distance, culture (with translation) and intra-interdisciplinary theory and practice. If however, technology is poorly managed and implemented it can again in terms of Hodges' model constrain the movement of information and meaning to just one or two knowledge domains? When allied with (clinical) language and professional practice, technology facilitates categorisation which can depersonalise and alienate human actors. Alternately, positive effects are witnessed in the social networking phenomenon with its tags and labels.

From a socio-technical perspective technologies ability to fracture is not catastrophic, but is a circumstance that carries an ecological impact. It helps us to conjoin what are usually disparate disciplines of theory, practice and policy and also highlights the need for a philosophy of technology (Scharff and Dusek, 2002) and elaborated (integrated) definitions of informatics. Elsewhere (Jones, 2008), the author discusses how Michel Serres (1995), the French philosopher, employs the ancient god *Hermes* as a trope to explain technology and communication. Hermes is well suited to this task being the philosopher of plural spaces. Hodges' model constitutes a plural - pantological space (Jones, 2008). Perhaps this plurality explains the extended significance of technology in our (clinical) language and practice. Historically, our culture is built upon layers of technology: fire, the wheel, agricultural tools, weapons through to the rapid lifecycle rate experienced today in the *technopolis* (Nevárez, 2008).

This chapter begins with a brief introduction to Hodges' model, followed by definitions of socio-technical structure. Then several key sources in the socio-technical literature are introduced leading to the formulation of socio-technical structures within Hodges' model. These are explicated by introducing the *4Ps* (e.g., process) followed by closing discussion. If a paper is afforded one gross assumption, then at this point let me suggest that nurses and the majority of other health and social care practitioners are either suspicious of ICT due to previous experiences at work, or they are pragmatic in their expectations. Pragmatic in that they recognise the inevitability that in the 21st century informatics will figure in their working lives, just as it does in their personal lives. Therefore, this paper also addresses how (nursing) informatics can be informed by a model of nursing and how health can contribute to informatics. This connection utilises Hodges' model and the concept of *information*.

Hodges' Model: A Cognitive Periplus for Life-Long Learning[1]

Developed in the UK during the early 1980s, Hodges' Health Career Model (hereafter referred to as h2cm) is a conceptual framework that is