

## Chapter 7.2

# Toward a Living Systems Framework for Unifying Technology and Knowledge Management, Organizational, Cultural and Economic Change

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### ABSTRACT

This chapter raises difficult questions regarding the validity and motive for prolonging current forms of economic development and competition in the face of the much heralded global environmental crisis threatened by humankind's success as a species. In response, a living systems theoretical framework is introduced that provides many elements of a possible new paradigm of economic development one that closes the gap between the social and natural sciences. New forms of explanation for organization and culture are developed from the perspective of complexity science to produce a synthesis of knowledge management and new philosophical, sociological, anthropological, and,

distinctively, biological perspectives of technology, which effectively reconciles the practices of technology, knowledge and cultural change management.

### INTRODUCTION

At the start of the 21st Century a new kind of crisis is exercising the minds of politicians and economists, particularly, but not exclusively, those in post industrial economies. Politicians effectively hold the fate of the species in their hands and they are in a quandary. They need assistance. This time the impending and much heralded crisis is not a normal and familiar economic downturn of the business cycle, it is an ecological crisis and a cultural crisis too. Politicians are slowly realising

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the solution is not simply one of gaining competitive edge, nor how a nation state can sustain its position in the GDP league table, but rather how our current manner of living can be sustained in the face of global climate change, imminent ecological disasters, unprecedented growth in global population, and severe resource depletion. Many believe it cannot. Many more believe it can.

Here is the challenge in a nutshell. The billion or so people who live in advanced industrialised nations consume 32 times the resources and produce 32 times the waste as an average citizen of a developing country. If China were to suddenly catch up, global consumption would roughly double (oil by 106%, and metals by 94%). If India did so too, the world rate would be pushed up eleven fold. If all developing countries were to catch up, this would be equivalent to increasing the world population from 6.5 to 72 billion people (from Diamond, 2008). These are startling statistics, but ultimately meaningless, because such figures are utterly unobtainable. To convince developing countries otherwise is, Diamond says, 'a cruel hoax'. Paradoxically, global economic prosperity depends on decoupling consumption from the quality of life experience, and a marked reduction in consumption in the First World.

The position taken here is that to truly understand the nature of this crisis, and have any chance of coping with it, the gap that has grown between the natural and social sciences, including economics and management and organization development theory, must be closed. Thus, the intent of this chapter is to tempt, to encourage, to persuade, and to inspire its reader to adopt a systems theory of living as the basis of a new theoretical framework for managing technology, innovation, knowledge, and cultural change, which is proffered as a potential component of a new model of economic and social development and means of delivering a globally shared vision of the future of the last hominids, *homo sapiens*.

The chapter structure divided roughly into four parts. The first will explore the sources of pres-

sure which are likely to force the reformulation of current models of international economic development, including competitiveness strategy. The second part will begin with an attempt to define the seemingly intractable nature of the problem neatly captured above in the words of Jared Diamond. As part of the discussion of solutions, a perspective from the complexity sciences is introduced. A family of related 'complexity' inspired concepts is discussed briefly before recommending Maturana and Varela's theory of the biology of cognition as a suitable means of integrating social and natural sciences, at the same time emphasising the need to manage knowledge. In part three, the task of weaving together the new theoretical framework begins by first considering in detail the nature of technology. Technology, it is argued, is synonymous with knowledge. The word 'technology' refers to a shared knowledge of technique and can also be equated to a paradigm, an ecology of ideas-in-practice, or an ecology of solutions. These perspectives are then drawn together to suggest technology may also be equated to culture that is generated and sustained by sharing the knowledge of practices, strategies, or solutions, which, together, contribute to the differences and similarities that arise between social groups. Differences in culture, it is suggested, are outward signs of adaptation to localised environmental conditions. This new perspective emphasises the significance of learning in the process of developing cultural spaces and therefore the value of knowledge management as a means of managing change. This understanding of technology bridges the gap between the old and a new, natural science based, paradigmatic framework. Maturana and Varela's theory of the biology of cognition (BoC), the organism-environment system theory of psychologist Timo Järvillehto, actor-network theory and Max Boisot's knowledge perspective of the development of cultural spaces, are drawn together to provide a description of the dynamics of organizational and cultural change emphasizing the function of conversations. The chapter

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