
Introduction

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Biographical notes: Professor Ron Sanchez has degrees in Humanities and Science, Architecture, Engineering and Technology Strategy (PhD) from MIT, as well as an MBA (with Honours). He has taught at the University of Illinois (Urbana-Champaign), the University of Western Australia, Ecole Supérieure des Sciences Economiques et Commerciales (ESSEC) (France), International Institute for Management Development (IMD) (Switzerland) and Lund University (Sweden), as well as in numerous graduate and executive programmes around the world. His research interests include modularity in product, process and knowledge architectures, knowledge management, competence-based management and options theory. He has published numerous papers in leading management, marketing, economics and design journals and several management books. His book *Modularity: Strategy, Organization, and Knowledge Management* (Oxford University Press) is forthcoming in late 2008.

Varying degrees of modularity in product designs have been used in a number of industries for nearly a hundred years. However, only in the last decade or so has research (including new research published in this special issue) begun to clarify the full potential for modularity to be a fundamental enabler of product strategies (Asan *et al.*, 2008), organisation strategies (Pfaffmann *et al.*, 2008) and knowledge management strategies (Galvin and Rice, 2008). As a result, the various impacts of modular design on firm strategies are now being reported with increasing frequency in both technology-oriented and general management journals, as well as in this special issue.

While more is being learned about the impacts of modularity on specific aspects of firm strategies, some researchers have begun to propose more general models that suggest the broad influences that modularity may have on technology development and innovation (Cebon *et al.*, 2008; Chesbrough and Prencipe, 2008), product market evolution (Sanchez, 2008) and industry structures (Funk, 2008).

Taken together, these two streams of research are making important progress in clarifying the exact nature of the interactions between the modularity-enabled strategies addressed in firm-level research and the broad forces and influences of modularity that are invoked in more fundamental general models of market and industry dynamics. The

papers in this special issue provide important insights into the nature of the interactions between the firm-level modular strategies and the evolution of the product markets and industries in which modularity is used strategically.

The strategies that motivate the product creation decisions of firms in an industry collectively determine the specific kinds of competitive and cooperative interactions that will take place between the competitors in product markets and between the various participants in the vertical structure of the industry hosting the product market and its technologies. The strategic issues that managers weigh and the decisions they make in managing product creation and technology development processes, therefore, provide a useful – perhaps even essential – framework for elaborating the relationships between the firm strategies enabled by modularity and the broad influences of modularity on product markets and industries.

The papers in this special issue all contribute to our understanding of the ways in which firm decisions about the use of modularity in product and process architectures collectively shape the evolution of product markets, the dynamics of technology innovation, the structure of a product market's supporting industry, the dynamic nature of interfirm relationships in an industry, the knowledge structures that emerge in an industry and other fundamental impacts of modularity on industry environments.