"The application of Complexity Science to Business – Guest Editorial" *Management Decision*, Vol 44, No 7 (2006) pp837-838

Editorial - "The application of Complexity Science to Business"

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My interest in Complexity Science, in particular Chaos Theory started in the early 1990's. After working in industry for a number of years and then "accidentally" falling into academia I decided it would be interesting to undertake Doctorial Research in my spare time. As with most Doctorial Students I only really understood what I had let myself in for once commencing my studies. My area of study was the relatively new area of supply chain management and in particular the generation of Uncertainty by the methods used to manage inventory. At the time I was working at the University of Warwick and a chance conversation got me thinking about the possibility that the systems and equations I was looking at were generating deterministic chaos. Within Warwick there were a number of thought leaders in this area Professor Ian Stewart the Mathematician and author of "Does God Play Dice" (Stewart, 1989), Professor George Rowlands the physicist and developer of chaos analysis tools (Sprott and Rowlands, 1995)and Professor Jackie McGlade the biologist who had applied chaos theory to eco system development. Through meetings and discussions in this multi disciplinary environment methodologies were developed and I was able to demonstrate that supply chains do actually behave chaotically under certain conditions. With this type of research the critical issue to demonstrate relevance to practicing managers and those in business and this was done creating new guidelines for supply chain design. My work in this area was completed in 1998 (Wilding, 1998a; Wilding, 1998b) but I still follow with interest how Complexity Science is applied into business and the new insights it provides.

With this background the opportunity to act as editor for a special issue in this area captured my interest. The application of complexity science to business has always been a difficult area because the concepts are complex and sometimes demonstrating relevance to a practicing manager is hard. The call for papers for this special issue required the following criteria to be met, That papers should:

1) Focus on the application of Complexity science and its sub-areas to business
2) Demonstrate the significant impact that complexity science can have on everyday managerial practice.
3) Demonstrate practical application to business
4) Provide a showcase for excellent examples of applied research and practical cases.

The papers selected for this issue cover a variety of perspectives. Our first paper by Pina E Cunha and Vieira da Cunha presents a model of strategy from a complexity perspective. The model integrates research from a variety of areas of complexity science and uses them as a "lens" to understand the strategic process of organisations in highly dynamic environments.
This is followed by Smith and Graetz presenting a discussion of how complexity theory can be used as a guide to creating organisations. Traditional views on organising are focused on the reduction of uncertainty and the potential for chaos, but

this approach can curtail innovation. By creating organisations operating on the "edge of chaos" (but not full chaos) innovation can be enhanced.
Cruz, Pedrozo & Estivalete's paper also uses complexity science as a "lens". In their paper they look at the evolution of strategy of organisations in pursuit of sustainable development using the contributions of Edgar Morin as a foundation. This provides an interesting insight for managers who choose to apply such approaches.
Paraskevas presents an interesting approach of using Complexity science as a lens to view the development of Crisis and crisis management within organisations. This work, through the use of a case study shows that complexity science can provide an alternative more informed view of a "crisis" environment.
Blecker and Abdelkafi use Suh's complexity theory to address a problem experienced by many organisations, the management of complexity and variety within a business. This work provides insights into strategies for the management of complexity and variety within highly responsive environments.
A novel approach to using complexity science is then presented by Sharif and Irani. Specifically "a fussy-morphological approach" to modelling managerial decision making. This technical paper demonstrates the "rich" understanding that can be gained of an environment by applying complex systems thinking to such problems.
Finally Gregory elegantly establishes how complexity theory can be used to view the development of our economy and society. Arguing that events such as the industrial revolution can be seen as a bifurcation points and our age where " mass media holds us in a state of collective paralysis" is providing a foundation for a second bifurcation launching "The Values Revolution".

The above papers provide an interesting cross section of the types of research being undertaken in the area of Complexity Science.

Finally I would like to thank the 40 reviewers from industry and academia who supported this special issue and all the authors of submitted papers both those who were successful in being included in this special edition but also those who are re-working their papers for possible inclusion in future publications.

The application of Complexity Science to business is an area great potential for research. The key is to take these ideas and make them relevant to practitioners, I hope the articles in this special edition will provoke discussion and further work in this area.

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