

## Reductionism, Systems Thinking & Entrepreneurship Research

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### Principal Topic

Entrepreneurship is often described as a process. This paper argues that, especially in the turbulent start-up phase, entrepreneurship is more like a tightly inter-related system. Previous research into the nature of entrepreneurial start-ups [Campbell & Gillin 2004], typified the successful entrepreneurs' approach as non-linear and relational. The relational attribute emphasises creating interaction among the elements of new ventures, showing strong correlation with systems theory. Equally, the non-linear attribute accentuates the dynamic human complexity involved in starting a new venture. Some use the term 'unknowable' [e.g. Stacey 1992] to describe the non-linearity that faces nascent entrepreneurs.

Reductionism as introduced into scientific research by Descartes in the 1600s, seeks to explain the working of complex phenomena by examining the individual parts in detail. This is a logical, piecemeal approach to exploring complexity and can be applied with great success to machines of all kinds, from pendulum clocks to supersonic aircraft. This type of reasoning and explanation helped forge the success of many centuries of scientific progress, until the rather puzzling discovery of the dual nature of light. Quantum physics then emerged with the surprising explanation that light could be either a particle, or a wave, or both. No longer was it sufficient to understand just the elements themselves - the context of those elements now also influenced the behaviour of these inanimate objects, and hence too the explanation of how they functioned.

The term equifinality describes a system that is stimulated in a number of different ways, but always produces the same result. Multifinality occurs however when a range of different results are obtained each time a single stimulus is repeated. These are key concepts of general systems theory [Boulding 1956] which claims that [Hansen 1995]: - Wholes cannot be taken apart - Every apparent whole can be understood only in the context of the larger whole containing it - A whole is more than the sum of its parts

Entrepreneurship is fundamentally people-centric. Without the creative involvement of the entrepreneur, new ventures would never be created, let alone skilfully guided to success. The human dynamics that accompany new venture creation are in fact a hallmark of the phenomenon we call entrepreneurship.

The field of entrepreneurship research is also clearly multi-disciplinary. How we research a phenomenon should also tend to follow the nature of the phenomenon.

### Methodology/Key Propositions

If we accept that our knowledge of entrepreneurship needs refining - and our present models certainly still appear a long way off Bygrave's [1989:10] test of outcome prediction using our models - then examining entrepreneurship research based on underlying systems theory on the one hand, and a foundation of reductionism on the other, holds the promise of an improved understanding of research into the complex nature of entrepreneurship [Mitton '89].

The proceedings of the AGSE ERE now cover 3 years of contributions. These papers will be used as examples of entrepreneurship research and categorised according to evidence of either systems thinking or reductionism in their general research ontology. This will allow for inferences to be drawn concerning the type of contributions that each ontology makes to entrepreneurship. Typically these contributions will have an impact on entrepreneurship models, the resulting theory, or ultimately practice.

### Results and Implications

Gartner [2001] contains the illustrative tale of the six blind young men who go out to explore an elephant that has just arrived in town. Each comes back with an accurate enough description, but they can find no apparent coherence among the descriptions. However, if we use the overarching perspective afforded by sight, it is easy

to see the holistic connections among their diverse descriptions, and arrive at a clear overall description of an elephant.

Similarly, by comparing the explanations arrived at by reductionist and systems thinking approaches to examples of new venture creation, the relative contribution of each ontology becomes clearer. The paper argues that, like the six blind young men, our conceptualisation of entrepreneurship will only proceed by transcending the individual views of disparate paradigms and models, using an over-arching holism in our investigations of entrepreneurship.

The implications for entrepreneurship research are both fundamental and strategic, affecting not only the prevailing scientific conceptualisations within entrepreneurship research, but notions of the nature of entrepreneurship itself that drive the directions of future research endeavours.

In this way we advance the quest for more reliable models of entrepreneurship, resulting in better theory, and leading to better practice.

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