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**Does Biology need a new theory of explanation?
An investigation into the possibility of moving past the
limits of mechanistic and teleological descriptions of
organisms.**

A thesis presented in partial fulfillment of the requirements for the degree of

Master of Science

in

Ecology

at Massey University, Auckland,

New Zealand.

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2009

The problem of how to explain the fundamental nature of organisms for biology commonly falls under two causal systems, mechanistic and teleological. These systems however, fall into fundamental logical problems when put to the test. Many biologists also claim that these systems miss the essential nature of organisms. Historically one of the most important discussions of this problem occurs in Immanuel Kant's *Critique of Judgment*, and this work has been chosen as the basis for an investigation of possible ways to avoid the inherent problems that occur with mechanistic and teleological explanations in current biology. By evaluating Kant's claim, that organisms are not accurately describable by our standard causal explanations, it could be assessed in light of current discoveries whether we have the ability to develop a new causal or acausal system by which to explain organisms.

From this analysis, and in agreement with Kant's investigations of the problems of 'design-like' characteristics in organisms, both causal mechanistic and teleological explanations were found to be inapplicable for use in any comprehensive and accurate understanding of organisms and evolution. They are recommended at best to be considered as heuristics. Following this, an investigation of alternate methods of explanation apparently not prone to the problems of mechanistic and teleological causal explanations were characterised and assessed. This led to the uncovering of the system of extremal principles, a system that claims to be acausal and seems to have direct application to fundamental aspects of biology and evolution.

This acausal system of extremal principles can for example, be used to describe the class of solitons. Types of solitons (biosolitons) exist in organisms and are important aspects of processes such as morphogenesis, DNA replication, self organization in the cytoskeleton, and locomotion to name a few. They also exhibit the properties of the quantum wave-particle fermions. It is proposed that further investigation of the system of extremal principles and their influence in biology through phenomena such as biosolitons can provide the basis for the development of a new acausal system of explanation or an extra aspect for standard causal models. This, it is concluded, will allow a potential avenue for creating a new and logically more consistent explanatory system in relation to fundamental aspects of the phenomenon of evolution, organisms and the environment.

Acknowledgements

Firstly of course I'd like to thank Dave Lambert for showing me that there are really new, interesting and more productive ways to see the world and that more than anything, theories of evolution have to keep evolving and should be elegant, simple and beautiful. Thanks also for writing the best paper I have ever read 'Keywords and Concepts', a paper that really influenced the choice of this study and I feel really lucky you let me take on an investigation that I really felt was important.

Huia, thanks for the support, encouragement, love and making me laugh lots and lots. You are the nicest one.

To Antonio Lima-de-Faria, thanks for the discussions and teaching me so much about the similarity of the organic and inorganic realms, and being a really kind person, (not just because you let me use some diagrams from your books). Brian Goodwin, for all the amazing papers you've written and the feedback and encouragement about the ideas in this thesis. Stan Salthe for the leads, ideas and inspiration, Stuart Kauffman, for providing feedback and interest, Sergei Petoukhov for your assistance and great work on biosolitons. Richard Gordon of course, you deserve a medal for all your hard work. Bob Wicks, thanks for all the great lectures over the years and pointers on Kant. Wayne Waxman, thanks for the clarifications and insights. Peter Wills, I really appreciate your advice and outlooks, and Chris King for the time and assistance towards some of the aspects of math and physics and showing their beauty.

Thanks to my family, particularly my mum for putting up with being in the direct and continuous firing line for all my non-stop ideas and theories and questions on the world since I first learned to talk, and always having as many books around as I could read.

And lastly, to my dad who passed away during the production of this thesis, but took me out into nature at every possible chance as a kid, showed me to look at the bigness as well as the hidden things that most other people didn't even know you could look for and filled our section with more plants and animals than anyone I know :). I'm sure you would have found this pretty interesting. This is especially dedicated to you.

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