Chapter 1
Morphogenesis

ABSTRACT

This chapter analyzes evolution to the end of furnishing a general theory of economic change. The analysis is applicable to both organisms and organizations. The general theory presented here is based on four analytical constructs: symmetry, scale, complexity, and collapse. Complexity is modeled as a force, similar to gravitation. Evolution is understood as a condition exhibiting an increase in morphological complexity. In the final analysis, economic change is linked to the structure of the political state. Pathologies of economic change, including morphostasis (in other words reaching a stage where growth and development are anemic due to the system's form and structure becoming static), necessitate a rethinking of political organization. Polycentricity and the principle of subsidiarity, with a praxis inspired by sovereign cities, are imperative for the continuous evolution of societies, and hence economies. In this future, nation-states become subsidiary. Sovereign cities replace nation-states on the 'international' stage.

INTRODUCTION[1]

I rank our growing preference for automated sameness over a personal touch as one of the greatest ills of our age. (Gould, 2009)

The proposition in this chapter is that an evolutionary understanding of economics produces specific normative signals as to the structure of the political state. More precisely, the evolution of economies requires a political

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structure around cities that interact freely with each other (on a global scale). This proposition flows from an analogy between organisms and organizations, and an understanding of the evolutionary process through the theory of complexity.

I follow in the footsteps of Adam Smith, Alfred Marshall, W. Brian Arthur and other prominent economists in modeling economic change through biological metaphors (Callejas, 2007). In particular, constructs from evolutionary biology provide policy signals apt for the complexity inherent in economic processes and economic change, especially when the latter is embedded in their wider social context. While other economists have frowned upon the use of metaphors, notably Joseph Schumpeter, metaphors are in line with the breakdown of the reductionist paradigm and the rise of complexity in its place (Hodgson, 1999, pp. 60 and 67). Given the general theory of morphogenesis presented in this chapter, which represents evolution as a process leading to greater complexity, it would be apposite to rely on metaphors if only to help explain the workings of this model.[2]

There are more similarities than differences between social organizations and organisms to justify considering the former as analogous to a biological organism (Waldrop, 1992, p. 179). Both organizations and organisms are behavior systems (Boulding, 1981, p. 169). Both biological and human systems self-organize towards higher complexity (Saviotti & Pyka, 2008; Carroll, 2001). This complexity is reflected in the richness of self-organizing interactions between independent (and hence heterogeneous) agents. These behavior systems are not only complex and self-organizing but also adaptive: they try to turn events around them into their advantage. This process of adaptation is the trademark of evolution. However, like every analogy, ours has its limitations (Knudsen, 2002, p. 446; Hayek, 1990, p. 291). In particular, human systems, unlike biological ones, are capable of mutating at negligible time spans (Gould, 2007). Human evolution shifts to attributes that are easier and faster to adapt. Humans evolve along a pathway that maximizes the options of behavior for the least cost to adapt (see below).[3] Options are related to rules. Rules could be defined as the *enforced* prescriptions concerning what actions are required, prohibited, or permitted (Commons, 1924; Ostrom, 1980).[4] Options, on the other hand, are *enforceable* rather than *enforced* prescriptions (Ross, 1976).[5] Note that this objective of maximizing options is analogous to biological evolution in that it induces larger variety (I elaborate on this point later). Take for example the local varieties of beak designs that Darwin recorded in finches on the Galapagos Islands. Human behavior attempts to provide similar variety in designs that are suited to their