



*Extended Abstract*

## **General Systems Theory and Media Ecology: Parallel Disciplines that Co-Inform**

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### **Extended Abstract**

General systems theory (allgemeine systemtheorie) was pursued by a number of thinkers but its origins seems to date back to 1928 and the biological work of Ludwig von Bertalanffy's PhD thesis. There are many definitions of a general system but in essence a general system is one that is composed of interacting and interrelated components such that an understanding of it must entail considering the general system as a whole and not as a collection of individual components. The behaviour of the individual components of a general system can only be understood in the context of the whole system and not in isolation and hence general system theory is opposed to reductionism whether of a Cartesian or Newtonian origin. As is often the case by taking a systemic approach there are often unintended consequences that an analysis of individual components would yield. General systems theory therefore includes complexity theory, emergent dynamics, cybernetics, control theory, dynamic systems theory, biological ecology, and media ecology. The focus of this essay is to consider the parallels of the different forms of general systems theory with media ecology and consider how they inform each other.

The general systems approach is an ecological approach since an ecosystem is a general system by definition. From a media ecology perspective as first suggested by Marshall McLuhan (1964), the medium is the message. A general system is a medium. Its message is the non-linear interactions of the components of the system. McLuhan wrote, "A new medium is never an addition to an old one, nor does it leave the old one in peace. It never ceases to oppress the older media until it finds new shapes and positions for them (McLuhan 1964, 174)." The same applies to a general system; each element of a general system or ecosystem impacts all the other components of the system. The message of the general system is the dynamics and cross impacts of its components and not the

behavior of the individual members of the system. The general system is the unit of analysis. So we might say that the medium is the general system is the message.

General systems theory and cybernetics are intimately related and in a certain sense inform and cross-pollinate each other to such a degree that some regard them as slightly different formulations of the same interdisciplinary practice. One may also include in this mix *emergent dynamics* or *complexity theory* as these approaches also consider a system as more than its components with the added feature that they explicitly entail the notion that the supervenient system (i.e. the general system) possesses properties that none of its components possess. In other words, the system as a whole has unintended consequences which an analysis of its components cannot reveal. Emergent dynamics and complexity theory grew out of the general systems approach when computing techniques allowed scientists to deal with non-linear equations and, hence, as a result were able to model general systems in which the interactions among the components of a system were non-linear.

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