**Headline:** Rethinking Rank and Privilege in Human Societies

**Teaser:** By applying a concept widely used in mathematics and computer science, Carole Crumley has radically changed the way anthropologists see and study societies.

By Carole Crumley

**Author Bio:** Professor of anthropology (emerita) at the [University of North Carolina at Chapel Hill](https://www.unc.edu/), Carole Crumley is a founding scientist of the research strategy termed historical ecology. Her key concept of heterarchy is now applied to studies of societal and environmental change. She is the director of the [Integrated History and Future of People on Earth](https://ihopenet.org/) (IHOPE) initiative, a global network of researchers based at Sweden’s Uppsala University that unites the biophysical and social sciences and community voices to build a livable future.

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**[Article Body:]**

For two centuries, archaeologists, historians, and social scientists studied human societies in search of the origins of hierarchy—a layered structure where power and privilege are concentrated in the top layer. Realizing that this model failed to account for the real-life complexity of human relationships and communities, I proposed a term that would reflect the diversity and complexity of the human social organization: heterarchy, a concept that had already proved pertinent in mathematical, computational, and biophysical contexts. (I wrote the entry for “Heterarchy” in the [*International Encyclopedia of the Social Sciences*](https://digitalcommons.fairfield.edu/sociologyandanthropology-books/41/).[[1]](#footnote-0)) Heterarchy is now regularly applied to the study of human societies and in many other contexts.

**What Is Heterarchy?**

Heterarchy addresses the diversity of relationships among elements in a system and offers a way to think about change in spatial, temporal, and cognitive dimensions. A general-purpose definition that suits a variety of contexts is the relation of elements to one another when they are unranked, or when they possess the potential for being ranked in many ways, depending on systemic requirements.

The concept of heterarchy offers an arena for examining change in a system, organization, or structure.

**Heterarchy and Complex Systems Science**

Complex systems science is the study of dynamic nonlinear systems that are not in equilibrium and do not act in a predictable manner. A complex system is difficult to model because of the changing relations and dynamics among its elements. Some examples of complex systems include the human brain, global weather, and cities. Key features in complex biophysical systems correspond surprisingly well with key features of social systems.

A brain, an ecosystem, and a city all share the following elements: integration, communication, and system history and initial conditions. For example, the brain’s elements (blood vessels, nerves, and neurons) are *integrated* within the whole; its parts *communicate* with each other through electrical and chemical signals; and *initial conditions* are shaped by experiences throughout the brain’s development.

Similarly, a city’s parts (residential, commercial, and industrial districts, parks, etc.) are integrated: communication occurs in terms of transportation and telecommunications, and each city has its own history where residents and events contribute to its configuration. In human societies, we might consider the holistic nature of culture and communication as knowledge-sharing through the senses, and the initial conditions of the society being shaped by formative traditions, structures and materials, strategies, and habits of the mind.

While several areas of complex systems research have potential for the social sciences, one of the most promising is the concept of heterarchy, which treats the diversity of relationships among system elements and offers a way to think about systemic change in spatial, temporal, and cognitive dimensions.For example, a society’s changing imprint on the landscape and evolving political, social, and spiritual functions can be studied over the long term.

Definitions of heterarchy are remarkably consistent across disciplines, while the work they do is extraordinarily diverse. The earliest definition describes the mind’s ability to [hold conflicting values](https://link.springer.com/article/10.1007/BF02478457) as a “heterarchy of values determined by the topology of nervous nets.”[[2]](#footnote-1) In artificial intelligence and computer design, the organization of computer sub-routines that can call one another is [heterarchical](https://dspace.mit.edu/handle/1721.1/6087).[[3]](#footnote-2) A mathematician defines heterarchy as a program in which there is [no highest level](https://libcat.simmons.edu/Record/b1077555/TOC).[[4]](#footnote-3) A sociologist who studies corporations [defines](https://www.degruyter.com/document/doi/10.1515/9781400828302.69/html?lang=en&srsltid) heterarchy as “an emergent organizational form with distinctive network properties… and multiple organizing principles.”[[5]](#footnote-4) “A general-purpose [definition](https://www.jstor.org/stable/20170145) contrasts hierarchies, the elements of which are ranked relative to one another, with heterarchies, the elements of which are unranked or possess the potential for being ranked in a number of different ways, depending on systemic requirements.”[[6]](#footnote-5)

**Heterarchy Versus Hierarchy**

Heterarchy does not stand apart from hierarchy; rather, the two forms are in a dialectical relationship. From a mathematical standpoint, heterarchy is the more general category and subsumes hierarchy as a special case. The concept’s versatility permits its use as a physical structure, as an abstract model, or in a historical narrative. Heterarchy meets the requirements for robust social theory since the concept can relate the micro (individual) level to the macro (social) level, can relate the agency of social actors to the social structure in which they operate, and offers an explanation for discontinuous and fundamental changes in the social system as a whole.

**Networks Versus Levels**

Heterarchy is a corrective to the naturalized characterization of power relations, which conflates [hierarchy with order](https://www.taylorfrancis.com/chapters/mono/10.4324/9781315247908-13/remember-organize-heterarchy-across-disciplines-william-baden-christopher-beekman).[[7]](#footnote-6) Since archaeology’s founding as an academic discipline in the 19th century, most interpretations have assumed a linear progression from small, early, “simple” societies to those that were more populous, later in time, and “complex.” Such a definition of complex (having more administrative levels) contrasts with the definition of complexity in nonlinear systems (more richly networked). Political systems were assumed to have greater stability the more they tended toward tiered hierarchies of power. Yet powerful forces can manifest entirely outside the framework of state hierarchies and beyond their control. In nonlinear systems, this is chaos or surprise, and reflects the characteristic brittleness of very hierarchical societies rendered vulnerable by systemic barriers to information transfer and limited recognition of other dimensions of power.

**Heterarchies in History**

Archaeological, historical, and ethnographic evidence indicates that hierarchies and heterarchies of power coexist in all human societies, including states. Thus, biological diversity has a correlation in human societies: the toleration of differences in individuals and groups offers a reserve of knowledge for use in problem-solving, just as genetic and biological diversity increases ecosystemic resilience. Similarly, organizational flexibility (economic, social, and political) enables societies to adjust to changed circumstances. As in ecology, researchers must remain aware of the intensity, periodicity, and duration of relations; in human societies, this might be thought of as the range of powers an individual, a group, or an institution has, and the regularity and duration of roles. Heterarchy is a fundamental principle of social organization.

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