

Glut: Mastering Information through the Ages by Alex Wright. Washington: Joseph Henry Press, 2007. 286 pp. ISBN 978-0-309-10238-4.

Information science is a field that seeks often elusive solid principles on which to base theories. In *Glut: Mastering Information through the Ages*, Alex Wright may have uncovered one such foundational principle in his examination of two contentious, but reciprocating information structures: hierarchies and networks.

His premise is that in the process of building knowledge bases, hierarchies and networks are natural enemies and the rise of one structure is accomplished by undermining and ultimately destroying the other. Yet, once one configuration has triumphed, its success necessitates the reincarnation of the other in new form. Each is reborn, like a phoenix, from the ashes of its former self.

The author offers an epistemological history of human progress that illuminates the triumphs of hierarchies and networks. The book primarily deals with the period from antiquity to the present, but also uses examples from preliterate societies. It is one of the strongest aspects of the work that the author uses such examples to demonstrate that humankind's handling of information is not societally or culturally based, but could be inherent in our genetic code. We may be biologically wired to process information in the ways that we do.

While not part of the major hypothesis of the book, Wright contends that the relationship between hierarchies and networks extends as far back as the beginning of life on earth by drawing on the separate work of Lynn Margulis, Howard Bloom, and Richard Dawkins.

The term "stigmergy" originally referred to the use of workers' achievements to encourage future efforts, but entomologists have borrowed it to describe the way social insects organize projects. For example, termites build huge nests by individually placing grains of dirt where other termites have previously put their grains. Wright sees this as a form of recorded information and extends the idea of stigmergy to "...the process of altering external environments to introduce constraints on social behavior" (p. 266). He proposes that this phenomenon is what humans do as they record information. He also proposes that such organizing behaviors may be ruled by epigenetic rules, that is, inheritable traits.

The author cites anthropological studies to illustrate the prevalence and common facets of folk taxonomies, such as those of Australian Aborigines and Zunis. He also describes how these folk taxonomies influence the creation of the hierarchies that are commonly credited as the sole work of a brilliant individual. The point Wright makes is that the organization of information is a part of human society, not something imposed on it.

For the purposes of his argument, Wright defines hierarchy as a system of nested groups (p. 7). This would include any type of organizing structure such as biological taxonomies, classification systems, governments, corporations—anything with an imposed, top-down structure. Networks are defined as bottom-up structures that allow self-directed individual nodes to form relationships as best suits their needs (p. 7). The author argues that both of these methods for organizing information are examples of stigmergy because both the creation of inter-related information nodes and the establishment of hierarchy enable, influence, and direct the creation of subsequent knowledge.

In the second chapter, “Family Trees and the Tree of Life,” Wright proposes that the creation of cellular and subsequently multi-cellular life can be seen as having critical information components that are essentially networks and hierarchies, but the chronology of his proposals really begins with the invention of writing. To illustrate his point that the ways in which we organize information are an inherent part of human societies, he cites examples of cultures from antiquity such as the Hittites, who, “...had mastered all the basic functions of a library catalog, capturing information about authors and subjects in a digestible form and adding call numbers to help users retrieve the document they wanted” (p. 32).

Another example from early human civilizations involves the creation of mythologies. Wright demonstrates how mythologies follow the biological structure of genealogy and lead to the first attempts at explanations of cause and effect. Using historical records he shows that the earliest forms of libraries, such as those in Mesopotamia and Babylonia, did not arise out of a need for intellectual advancement, but from a given society’s need for political control.

Wright applies the relationship between hierarchies and networks to the creation of the codex. The linear format of a bound book can be seen as an imposition of a hierarchy, and, as the author points out, it supplanted the networks of oral social connections. However, Wright also shows that this invention provided random access to portions of the text that was much easier than that of written scrolls, and allowed readers to form networked relationships on their own. Thus, the advantages of networks and hierarchies can sometimes blend together in mutually supportive ways.

The complex relationship between hierarchies and networks is further illustrated with the development of Gutenberg’s printing press. Wright claims that this momentous event led to the breakdown of the hierarchies of church and feudalism by facilitating networks of information sharing, but that Gutenberg’s technology would eventually lead to the establishment of information format standardizations and new academic hierarchies.

Wright’s clearest example of networked knowledge mandating the creation of a hierarchal system is in Chapter 9, “The Moose That Roared,” which

relates the story of Carolus Linnaeus and his taxonomy of life forms. In the eighteenth century, the field of biology was rapidly expanding with the discovery and identification of a multitude of flora and fauna. However, this progress had grown to a point where the lack of a unifying naming and classification system would halt future growth. In effect this knowledge existed in a myriad of separate networks that needed to be connected to one another. While there were a number of systems competing for preeminence, Wright illustrates that, by using folk taxonomies as a foundation, Linnaeus was able to create the one that achieved universal acceptance. As he does throughout the work, Wright relates this episode with an engaging story—this one involving Thomas Jefferson bringing a stuffed North American moose to France to demonstrate the need for a separate section in the new taxonomy for species native to the New World. This appealing writing style should expand the book's audience beyond a core readership of those interested in the organization of information.

Wright utilizes his story-telling talents to enliven otherwise dry material such as the origins of the Dewey Decimal and Library of Congress classification systems. In addition to presenting his hypothesis on hierarchies and networks, the author provides a very readable history of information organization covering luminaries from Zenodotus, first head of the Library at Alexandria in the third century, B.C., to Shiyali Ramamrita Ranganathan in the twentieth century. There is an engrossing chapter on the efforts to expand the limits of human memory entitled, "The Astral Power Station." The title refers to an ingenious expansion of mnemonic techniques by Giordano Bruno, a sixteenth-century Dominican friar. Unfortunately for Bruno, his intellectual accomplishments were so revolutionary that he was executed as a heretic. Further on, "The Web That Wasn't" provides intriguing descriptions of precursors to the Internet including the Memex, Xanadu, and the File Retrieving and Editing System (FRESS).

Wright extends his hypothesis on the relationship of hierarchies and networks by citing analogies from the dichotomies of digital versus print formats, hypertext linking versus linear text, and even to oral versus literate societies. He even suggests that the Internet represents a return to an oral society because of the preponderance of informal communication in instant messaging, blogs, and email.

Some of the work's flaws appear to be due to a rush to get it printed. The text in some sections is repetitive, there are some factual errors that are cited correctly in later sections, and the appendix for the UDC is missing. These do not detract from the importance of the work, but they are distracting and are the type of errors that normally would have been caught in a final review. Presumably, these will be dealt with in a future edition.

In the final chapters the author examines the creation, nature, and influence of the Internet. Instead of drawing conclusions from this powerful new information platform he only provides constantly alternating views on whether the

Internet represents a network or a hierarchy, whether it is free-form or standardized, and whether it is beneficial or adverse to epistemology. Where the text should be strong and conclusive it becomes ambiguous with too many indecisive suppositions. It reads like a news account of a controversial issue that tries to provide “equal time” to both sides. It is almost as if the author is attempting to incorporate a network-like writing style to invite readers to absorb these disconnected points, form their own connections and arrive at their own conclusions. However, the author overlooks the opportunity to use the contentious sides of this new technology to illustrate his proposal that hierarchies and networks interact in very complex ways. The author does make this point, but only in a few concluding paragraphs.

Regardless of the book’s shortcomings, Wright has elicited an intriguing new way to view the past, present, and future of information. While the majority of human information behavior studies concentrate on the rational bases of information retrieval, Wright proposes that the ways that societies organize information and create information structures may also be innate. From the many examples Wright provides he is able to illustrate that networks and hierarchies oppose and supplant one another, but they also beget one another. Hierarchies provide the structure that provides a venue for networks, and networks provide the raw material that calls out for hierarchical organization. They are analogous to the legs of a giant—in order for one leg to advance the other must hold its place temporarily. In positing his proposal, Wright has provided the literature of information science with an important new addition.

Reviewer

Dan Haley is currently a doctoral student at the Department of Information Studies at UCLA. He has worked as a librarian for thirty years in academic, public, and special libraries.