
Science and popular media bombard us daily with tales of the completed Human Genome Project, DNA fingerprinting, gene therapy, do-it-yourself DNA kits, and other marvels of our genetic age. In this fast-paced, future-oriented context, Who Wrote the Book of Life? A History of the Genetic Code, by Lily E. Kay, offers a welcome change of pace. Kay intervenes into a matrix of meanings and metaphors that have become as invisible as they are ubiquitous to answer the question: how is it that we came to understand ourselves as information? She returns us to the period 1953-1967, conducting “a genealogy of the future” (p. xv) at the intersection of the rise of the history of life science, communication technosciences (cybernetics, information theory, computers), cryptoanalysis, and linguistics.

She offers the notion of the “technoscientific imaginary of communication and control systems” to denote the rise of “information discourse.” She defines this as part of a shift in representational practices both within science and in the broader culture and suggests the switch to informational thinking was more significant than the paradigm shift from notions of protein to DNA. Drawing upon the work of Foucault, she argues that information discourse is “a historically and culturally situated system of representations, which in the 1950s became configured together and increasingly intuitive and commonsensical, and [was] an emergent form of biopower, where material control was supplemented by the control of genetic information” (p. 19). It was neither natural nor inevitable that genetic science would become informational. The book very effectively demonstrates the conceptual and linguistic doubling within the construction of information, where the definition of genetic problematics within information discourse is justified by the subsequent confirmation of the informational aspects of genetic material. It offers a convincing and historically rich analysis of the origins and ongoing negotiations involved in the production of the genetic code.

Kay divides this process into two major periods: 1953 to 1961 (the mathematical/genetic phase moving from the determination of the structure of DNA to the “breaking” of the code) and 1961 to 1967 (the material phase tracing the breaking of the code to its completion). From a discussion of molecular science in the pre-information age, Kay analyzes, in chapter 3, the emergence of a discourse of cybernetics and information within the context of the military-industrial-academic complex of big science from the 1940s to the mid-1950s. In the chapter I found most interesting as a communications scholar interested in the history of information society, it is here that we meet Norbert Wiener and the ideas of cybernetics, Claude E. Shannon and the mathematical theory of communication, John von Neumann with work on automata studies, and Henry Quastler’s application of information to biology. Chapter 4 explores the genetic code in the 1950s, working to disrupt the primacy of Francis Crick within historical accounts, but to some extent substituting Russian physicist and science popularizer George Gamow in his stead. Chapter 5 maps the transition to information discourse at the Pasteur Institute through the work of Jacques Monod on messenger RNA and the “RNA Tie Club”—an international group of scientists working on RNA. The lead-up to, and fallout from, the breaking of the genetic code in 1961 is the focus of chapter 6, as a variety of attempts to “write” the code are explored. Finally, in chapter 7, in what was for me somewhat out of place, Kay moves to connect the reification of DNA as a verbal code to Roman Jakobson’s work in linguistics. Jakobson’s turn to biology in the late 1960s facilitates this connection, as he argued for a genetic basis for language, but the analysis in this chapter is more speculative and less sustained.

Kay is doing the work of mapping cultural shifts through tracing discursive circles of influence—not an easy task. The book has many strengths. It offers a complex accounting of European and American science, making visible the interconnected modes of interna-
tional science practice at the heart of the production of the genetic code as informational. The machinations of both the institutionalization, and institutions, of life science are compelling (and the insider information is often fascinating). Kay is seeking to tell other narratives than those with which readers might be familiar; unexpected and sometimes unknown individuals (at least within the dominant stories) are given the spotlight. In doing this, however, she sometimes focuses too much on particular scientists and not enough on the social and cultural webs in which they were embedded. In some ways this is revisionist history, in many ways it is not; historical change is still driven largely by the agency of individual scientists.

Who Wrote the Book of Life? draws upon an immense body of primary archival material. It is both historically specific and specifically historical in its research and in its most effective analysis. Kay painstakingly and successfully demonstrates the shift to information discourse as it manifests in the realm of genetic science. Where the analysis is perhaps less effective is in its demonstration of the broader cultural shift to information, as it lacks a theorization of communication and does not deal extensively enough with media, popular science, and other sites of knowledge to give those claims the same power. Communications scholars will notice that the development of the computer is largely absent, as is the rise of the field of communication studies. I confess that as a non-scientifically-trained reader, some of the arguments were too technical for me and I found myself “blipping” over them to the more social and analytic bits. The scientific material will be somewhat dry for some social-science or humanities readers, but it is necessary for the book to succeed in the field of the history of science, its primary target audience. Although the book is not written with the communications scholar in mind, there is still a lot here for scholars working on cybernetics, the concept of information, genetics, and the history of communication sciences and of information society. It urges us to remember that as Kay herself says, “[t]he genetic code is a ‘period piece,’ a manifestation of the emergence of the information age” (p. 2).

Part of the Writing Science series from Stanford University Press, Who Wrote the Book of Life? contributes to the recent return to concepts of information, cybernetics, and the Cold War era that has seen books by N. Katherine Hayles (1999) and Paul N. Edwards (1996) and a body of articles by Geof Bowker (1993), Evelyn Fox Keller (1994), Peter Galison (1994), Donna Haraway (1981-82), and Andy Pickering (1995). This mini-boom of intellectual activity includes a very good article by Kay herself (1997). Having previously read and very much enjoyed that precursor article to this book, I was looking forward to a more aggressive treatment of her key concepts, in particular the technoscientific imaginary of communication and control systems. In this respect, I do not think the analysis goes far enough; after the first chapter, the book offers abundant historical information and credible justification for its specific arguments, but I was left wanting more in the development of the theoretical concepts. These are the concepts that would enable the book to move more easily out of the history of science to be of broader interest to communications scholars.

In 1983, writing about the ways in which cybernetics has permeated information society, Kathleen Woodward suggested that the metaphors with which we choose to think about our world and ourselves have the potential to deaden rather than stimulate critique. Specifically, she argued that

by ascribing the characteristics of our inventions to ourselves, by seeing ourselves in the image of those inventions, the distance between ourselves and those technologies — a distance that is a prerequisite to critique of that technology — is eliminated. How could we argue with an invention that mirrors ourselves and will bring about such an ecstatic revolution? (1983, p. 67)
Lily E. Kay’s *Who Wrote the Book of Life? A History of the Genetic Code* offers us the sustained historical analysis necessary to understand how key aspects of that conflation of our information technologies and our informational selves came into being, demonstrating that it was and is neither necessary nor inevitable, but historically specific and constructed. It therefore gives the reader powerful tools to begin to perhaps re-establish some of that absent distance between ourselves and our technologies so necessary to intelligent critical analysis.

**References**

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