

Foreword to *The Discipline of Organizing*, edited by Robert J. Glushko, MIT Press, 2013.

This wonderful book arrives at the right time. It is more than a textbook—it defines and creates the field for which it is a text. Befitting a book that lays out a discipline of organization that spans print and digital media, this volume is carefully organized, with a focus on future print and digital editions.

*The Discipline of Organizing* has a broad scope. Even more valuable is its depth, the result of years of examining and thinking through related concepts—often overlapping but not identical—from the fields of library science, information science, business, and computer science. The rare combination of breadth and depth empowers readers by providing a new perspective and framework for organizing subsequent experiences. The organization is comprehensive and systematic, but it is not simple. A lot of concepts must be assimilated. Yet thanks to the authors' thoroughness, you can proceed confident that investing the time to master novel concepts will pay off, that a coherent structure is being assembled, without inconsistencies or confusions. Into this framework you can fit your own examples, alongside the many provided by the authors. You can identify extensions and form new associations, building on a strong foundation.

The authors ask us to step back and adopt a general, multidisciplinary perspective. This is unusual for a textbook. For good reason, the world is marked by increasing specialization, the division of labor on which complex civilization depends. First we master a discipline; then we are encouraged to be multidisciplinary, interdisciplinary, and transdisciplinary—to balance our specialized pursuits. But scholars thrive within single disciplines, and even in fields created as multidisciplinary efforts, such as the neurosciences or cognitive science, most researchers soon become highly specialized. So why should a student of information undertake to master this broad perspective?

By growing from insignificance to centrality in the century-old field of information management in a few decades, digital technology has forced a disciplinary merger. Library science, information science, computer science or informatics, and information systems have developed different terminologies and sets of abstractions. Rather than asking each camp to learn the others' languages, the authors ask each of us to engage with a new terminology and set of abstractions.

The analogy of the artificial language Esperanto may come to mind, but we are in a better position. Esperanto is only useful if you are in a community of Esperantists. The abstractions in this book will be useful if others share them, but any reader will benefit by understanding the correspondences across the approaches to information organization that we encounter today. Unlike Esperanto, which is just another language, the concepts in this book reveal linkages and dependencies that we would not otherwise appreciate. The book provides a deep foundation for understanding changes that affect our lives and will do so more in the years ahead, a foundation that you will carry even if much of the time you converse in the language of one or another professional tribe.

Why do I say the timing is perfect, that this effort is worthwhile today? Haven't people gotten by without it until now? The answer has two parts. One, which is important even if you have heard it before, is that this is a time of extraordinary change in our uses of information. The other is that people have not always 'gotten by' very well; years have been wasted and careers damaged by not

understanding the principles in this book. The likelihood of such wreckage is growing, as the waves of change are larger and come at us faster. On the positive side, the waves offer tremendous opportunity for accomplishment. The coming era of monster waves may be risky if we surf with a narrow focus, but thrilling for those whose view extends up and down the shoreline. I believe that if you read this book, you will see this point and be glad you read it. Let me know.

We are used to hearing about Moore's law and related legislation, but familiarity lowers our guard. Human beings do not reason well about exponential growth, our experience is linear, not exponential. What we overlook is that exponential growth can proceed for a long time under the radar—one grain of rice, two grains, four grains, etc., not adding up to much, but when it reaches the point of having an impact, the impact comes so fast that we are unprepared for it. Decades passed before accessible digital technology could support high-quality photography, but when the time came, film photography disappeared so quickly that most major companies went bankrupt. Digital audio and video were a long time coming, then panicked and shuttered major industries. The expanding capacity and diminishing cost of information storage alter the balances described in this book. Bandwidth, increasing more slowly, is also reaching disruptive levels. This book provides the best tools available for understanding the disruptions of today and tomorrow in information management.

This perspective is invaluable now. It would have been useful earlier, but it was not considered imperative for the disciplines of library science, information science, informatics, and information systems. Historically they prospered despite interacting less than one might have expected. Library and information science, rooted in the humanities, focused technology efforts primarily on administrators and specialized users. Delivering services to the public was secondary. In contrast, academic computer science and human-computer interaction focused on widespread applications.

This book consciously connects fields that have focused on aspects of information organization and management such as archiving, records management, and curation, to information retrieval and related aspects of informatics. It explores how related issues play out in different contexts. The authors are admirably positive. They do not drag us through the myriad disasters that resulted when library and information science did not understand the potential contributions of digital technology and the equally unfortunate disasters that resulted when technologists ignored a century of work on information organization.

However, I will sound a cautionary note about what might go wrong if you do not understand the principles laid out in this book. First, for computer scientists and engineers: Major system-building efforts foundered due to a lack of insight into the principles of information organization. I will describe an early one, whose protagonists, good or bad, right or wrong, are all equal now.

Although not a computer scientist or computer engineer, Vannevar Bush had as much influence on the field as anyone through his work on shaping government support for research after the Second World War and through his 1945 *Atlantic* essay 'As We May Think.' Discussed in Chapter 2, this essay describes a hypothetical machine called the Memex that would enable information retrieval through a complex 'associative memory' that supports links much like those found in the World Wide Web today. Although

Bush's design was based on microfilm and optical scanning rather than silicon, his vision has inspired countless researchers to this day.

Less well known are Bush's classified efforts from the 1930s through early 1950s to build machines for the military and information agencies with Memex capabilities. Meticulously detailed by historian Colin Burke in the book *Information and secrecy: Vannevar Bush, Ultra, and the other Memex*, these projects consumed massive funding, occupied many brilliant MIT scientists for years, and produced nothing useful. A working machine was finally produced, but Bush never consulted with library science scholars who understood information organization from decades of work and made naïve assumptions about how information could be organized for retrieval—the extraordinarily expensive machine was not usable in the real world.

Computer scientists interested in information should adopt a broad perspective, and this book is a place to begin. Several fields of computer science garner attention today, such as machine learning, data mining, information visualization, and design. Those centered on information, which is most directly affected by Moore's law, are likely to have the greatest impact.

The library and information science side of the bridge also has seen disarray. Pride in a century of disciplinary development led to inertia. Once exponential silicon-based change could not be avoided, there was not enough time to react. Major library schools closed. Today there are schools of information and a range of 'library and information science' schools, some more forward-looking than others. Curriculum change has been relatively ad hoc, shaped by local personnel and context. Consider Information to be a large new volcanic cone pushing up in the midst of other peaks. No consistent approach has emerged to navigate the range. This book provides bridges where before there were slippery trails.

What can you do by virtue of reading and studying this book? Most importantly, perhaps, you can avoid confusion—when reading something or talking with someone from a different discipline, when asked a question in a job interview or by a colleague with a different background. Knowing that differences in terminology and abstractions are possible, you can ask questions and home quickly in on understanding. I have written elsewhere that through my career, such confusions frequently arose when I interacted with people in diverse disciplines, such as management information systems, software engineering, human factors, and so on. Because there was no book like this to clarify, it took me years to comprehend the source of many communication problems.

Beyond that, this book provides a foundation and framework for organizing and thinking about your experiences. This is a textbook, pointing to areas for research, providing ways of looking at new developments, and revealing to the perceptive reader yet unexplored territory in the spaces between disciplines. This is a book to read and put on the bookshelf – or in a folder in your digital reader – to reread in a few years' time.

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