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Review of Making Your Tools Work for You: Building and Maintaining an Integrated Technical Ecosystem for Digital Archives and Libraries

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Review of *Making Your Tools Work for You: Building and Maintaining an Integrated Technical Ecosystem for Digital Archives and Libraries*

By Max Eckard. Chicago: Society of American Archivists, 2020. 337 pp. Softcover. $55.00. ISBN: 978-1-945246-44-9

Max Eckard's book *Making Your Tools Work for You: Building and Maintaining an Integrated Technical Ecosystem for Digital Archives and Libraries* has the goal of fostering greater movement of data between siloed systems through integration, the "functional coupling between software applications to act as a coordinated whole" (4). The author starts with a fact that most of us either begrudgingly or excitedly acknowledge: if integrated systems are going to be, it's up to us. Eckard lays out—with encouragement—the mindset and tools that archival and library professionals will need to adopt in order to "teach" their systems to talk to each other, to work more seamlessly.

The author is well-suited to the task of instructing archivists and librarians how to integrate their systems. His full-time position is lead archivist for Digital Initiatives at the University of Michigan's Bentley Historical Library, and in his spare time, he has worked on and chaired the ArchivesSpace Technical Advisory Committee (2015-2019) and served as an instructor for the Society of American Archivists' excellent education course "Tool Integration: From Pre-SIP to DIP."

The book progresses easily and logically from chapter to chapter. Eckard starts with a vision of systems integration: what it is and what it does. When systems are integrated, actions that may once have required humans are replaced by automated functionalities. Integrations make data transfers and updates easier. They dramatically reduce human error, they eliminate repetitive, time-consuming tasks, and much more. Eckard pragmatically describes several types and tiers of integration possibilities. The next few chapters walk through the processes of choosing, learning, and utilizing the tools that facilitate systems integration. These tools include metadata standards, application programming interfaces (APIs), interoperability protocols, command line interfaces, plug-in architectures, and image APIs. The next chapters detail specific use cases and planning strategies, and then the author provides two practical examples of the Open Refine program and the Python programming language, both of which may facilitate integration at a system-agnostic level. The author concludes by sketching the big picture of how systems integration fits into the archival and library landscape (spoiler alert: they are an essential part of the future of digital archival and library work).

These technological tools are explained succinctly, straightforwardly, and with the pleasant pedagogy of someone who knows his audience well. Eckard grasps that his readers will come to this book possessing varying levels of interest in (and fear of) computer scripting. He is aware of professional archivists and librarians' common systems, workflows, and obstacles. Eckard strikes a confident, conversational tone, assuring those with a limited understanding of computers that the process of integrating systems starts simply, with brief automations. His excitement for the learning curve is palpable as he describes the iterative assimilation of programming techniques that in turn lends itself to iterative degrees of integration complexity: from batch data transfers to automatic updates to a vision of seamless acquisitions, access, and preservation actions in synchronization. The author continually reassures readers that each of these tools are just that: tools to be picked up, practiced with, and then put to work one-by-one.

Eckard clearly explains his selected tools' worth and working processes, sometimes leading with an example of a tool's deployment "in the wild" (142) and summarizing the contextual history of the tool's development. Always, he explains why a certain tool may be needed and how it functions at the most basic level. The book also clearly illustrates the mindset of computation thinking. Half of the battle of integrating systems, Eckard explains, is adopting a kind of professional humility: training our minds to adopt certain mental habits or avoid certain attitudinal pitfalls on our journey to greater technological facility. Habits to embrace include iterative thinking, a maintenance mindset, and the agile project management framework. All-too-common pitfalls to recognize and banish from within us include analysis paralysis, "extinct by instinct" (44), and imposter syndrome. The discussions on these subtopics are timely, empathetic, and will be essential to everyone doing systems work. The acquisition of a second set of professional skills in an already complicated work environment can feel daunting. But no archive or library will be forever shielded from the task of knitting systems and repositories together, so on we must press, and Eckard gently guides readers through the first steps.

Eckard leaves questions at the end of every chapter to promote reflection on how the chapter's contents might apply to specific work—or problems faced—at each reader's institution. Learning the basic premises of APIs, command line interfaces, etc., will enable archivists and librarians at institutions large and small to turn laborious, repetitive tasks into seamless, automated keystrokes. The most common datatype that archival and library systems need to pass back and forth is metadata, and so Eckard spends significant time discussing the cleaning and standardizing of metadata throughout the book. He lays out why standardized metadata is so essential (it ensures that disparate systems can read and recognize similar data), and then explains what standards to use, how clean-up saves time in the long run, and he concludes with a tutorial on the OpenRefine program that facilitates batch clean-up and metadata reconciliation.

One of the ancillary benefits of this book is the technical vocabulary it imparts (which goes far beyond the lengthy glossary at the end of the book). Archivists and

librarians will find that skills such as "speaking API," for example, will make project planning with library information technology units easier. Each chapter prepares readers to work from more a more informed technical perspective. The book thus facilitates better communication with archives- and library-adjacent colleagues such as digital asset managers, vendors, contract developers, administrative bodies, etc. The need for this type of technical vocabulary is everywhere visible: as questions posted on professional listservs ("What scripts are everyone using to do x?"), working groups' documentation projects, and professional bodies like Code4Lib and Library Carpentry, which are aimed at helping archivists and librarians understand and administer an increasingly complex array of data and supporting systems.

Occasionally, despite the stated goal to keep the book from leaning too heavily into one technology, the author does just that. All of the case studies involve ArchivesSpace, the archival finding aid repository system from LYRASIS. The chapter dedicated to the Python programming language makes sense on one level—it is a minimalist, easy-to-use language—but perhaps this chapter could have addressed more institutions' needs by acknowledging other common languages and programming functions (the ArchivesSpace staff interface, for instance, is written in the Ruby-on-Rails programming language). Eckard identifies the SWORD protocol (Simple Web service Offering Repository Deposit) as "the most common data interoperability protocol in use in the library and archives domains" (52) but never mentions OAI-PMH (the Open Archives Initiative Protocol for Metadata Harvesting) protocol, another very common, very useful, mechanism for integrating repositories through the harvest of metadata from one system by another system via a version of an API.

It's tough to know where to start with integration technologies, but the tools Eckard chose to elaborate upon in this book—command-line interface, APIs, plug-in architecture, and metadata standards—are excellent starting points. Understanding and harnessing these tools will go a long way towards improving many common workflows. I can attest to their utility and the great benefits that just a little education can render one's unit, having worked to develop custom scripts and a plugin involving API calls at my institution to create faster metadata for digital objects at my institution. "Computer programming has probably been the skill that has changed the way I do my day-to-day work more than any other skill" (281), Eckard writes. I second that perspective and I plan to recommend this book to anyone who is tired of their system(s) being a "black box" to them. Our profession *must* learn to work more with a "shovel than with tweezers"[1] when it comes to digital archives and library data. The siloed nature of archival systems is unfortunately still the norm today, and presumably will be for some time, resulting in digital backlogs and technical debts that our future selves (or the next generation of professionals) will need to spend precious time addressing. Having the mindset offered by Eckard—making systems

1. Trevor Owens, *The Theory and Craft of Digital Preservation* (Baltimore: Johns Hopkins University Press, 2018), 8-9.

talk to each other automatically with the tools Eckard recommends and others—will allow us to bridge the gap between the archival endeavor and the digital environment in which our communities now do most of their communicating.

I appreciate the way Eckard takes multiple approaches to engage readers in discussion: there is something for every type of learner, every level of interest, here. He enthusiastically reminds readers that learning new technologies is itself an iterative process, and that's okay. Just as we as a profession are constantly filling in gaps of the historical record with our collections, we can constantly fill in our skill sets and make our systems work better through integration.

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