Against the Grain

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Emerging Tech: To Be or Not to Be? — Content Technologies

Deni Auclair

John Corkery

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before I said yes. During that dinner we said not a word about journal acquisitions. Her job wasn't to sell me something — it was to establish a relationship. (That our relationship has turned into a 25 year marriage is a tactic she only used once).

There are two major conferences in the US where librarians and publishers come together as equals — **Charleston** and the annual meeting of the **Society for Scholarly Publishing**. Too many librarians still see **SSP** as a publishers conference, but the leadership has taken great pains to be inclusive of everyone interested in scholarly publishing. Certainly librarians can benefit from attending and getting involved.

Charleston is a library conference, but it's not a *librarian* conference; a distinction sadly missed by too many of the attendees. Too many librarians don't take advantage of the opportunities afforded there to spend more time with publishers outside of the sessions. There's a lot of mingling, but still not enough relationship building. There's a barrier created by that lack of trust.

Many years ago I was one of the panelists for a program that **SSP** ran every year — a meet the librarians thing. We were five librarians with an audience of forty or so who worked in publishing. The Q&A was great, but what stuck with me the most was the conversations over lunch. It was the first time I'd ever just hung out with publishers. They were passionate. They were curious. Most importantly, they cared about the same things I did, but their perspective was fascinatingly different. That lunch changed my life.

Why do we know what we think we know? How do we unlearn the platitudes that keep us from being creative? When I stopped thinking of publishers as adversaries and started openly listening, I became better at negotiating with them. I became better at disagreeing. I became better at solving problems. Better at relating.

The relationships that we build and maintain are the foundation for all of the good work that we manage to do. Our screens have become an invaluable aid, but the bedrock remains sitting together, breaking bread, sharing a drink, telling our stories, listening. 🌳

Endnotes:
1. **Meadows, Alice**. "Room for one more? (Conference, that is)" *The Scholarly Kitchen.* December 9, 2019. *https://scholarlykitchen.sspnet. org/2019/12/09/room-for-one-more-conference-that-is/*

Emerging Tech: To Be or Not to Be? — Content Technologies

Column Editors: **Deni Auclair** (Media Growth Strategies, LLC) <dauclair56@gmail.com> *www.mediagrowthstrategies.com*

and **John Corkery** (Client Engagement Director, LibLynx) <john@liblynx.com> *www.liblynx.com*

Column Editors' Note: This is the first in a series of articles about emerging trends in content technologies, with special focus on the scholarly publishing community and the companies that serve it. — DA & JC

In a series of articles, the authors will take a look at offerings up and down the supply chain and delivery spectrum to gain an understanding of new options available to accomplish old tasks, and some completely new ways of accomplishing tasks for which there hasn't previously been the right technology. It is a relatively untechnical, high-level view of emerging solutions in the library and publishing markets for everything from content creation to the now-oft-mentioned application of artificial intelligence and how libraries and publishers are using those solutions.

The overview of publishing technologies will be divided into *pre-production, production*, and *post-production* workflow groupings. These groups, of course, vary widely: The pre-production segment includes content creation, manuscript submission, peer review management, and collaboration and editing platforms; production includes digitization services, content management systems, and content enhancement for publication (whether digital or print); and post-production includes distribution, hosting, and enhancement platforms, services like identity/access, analytics and reporting, taxonomy and ontology, discovery, and more.

This topic is increasingly important as recent interviews with a number of mid-sized publishers revealed:

- All are making significant technological changes, either building new systems internally or working with vendors, or both;
- The majority are building internally because off-the-shelf solutions don't fit every need, and in some cases don't meet most needs without significant customization;
- None uses a single system to support all workflow functions, and the number of systems utilized continues to grow and become more difficult to manage;
- All are working on drafting development roadmaps but none has a clear vision as to where they want to be when system construction is complete, although many utilize agile development techniques, building as market demand changes;
- None are 100% satisfied with all vendors supporting workflow functions, primarily because their technologies are dated or limited;
- A driving factor for working with a specific vendor is not only functionality but customer service – relationships can drive many technology choices.

These findings point to a pressing issue facing most content providers today: avoiding technical debt. Because the cost of continually upgrading technology can be both operationally and financially daunting, content providers often go with relatively quick-and-easy solutions without addressing scalability or future needs. Paralleling that, technology/platform providers tend to build on existing platforms or modules in order to avoid investing significantly in R&D or a tech build offering new or more effective functionality.

Vendors utilizing more modern approaches to technology are likely to exhibit characteristics of those approaches with lower-cost, more efficient platforms, more user-facing interaction, and the oft-used term "flexibility." This is not always the case, but the objective of technology is to build a better mousetrap and many emerging vendors — and a few stalwarts — essentially have done just that. (There are older companies, for example, that started off as typesetting and data conversion companies and now call themselves technology companies.) Some are utilizing more modern infrastructure and advancing in technology while others, like some platform providers, rely more on aging stacks.

While some older technologies have been able to extend their lives by including virtualization, which basically means they took their on-premise technology and modified it so it could play in cloud environments, it does not always work well as they are typically inefficient working in the cloud — okay for some applications but not for others. What we refer to as "modern" technologies are usually cloud-based and driven by APIs (Application Program Interfaces), basically interoperability hooks enabling applications to talk and interact with each other. Older applications
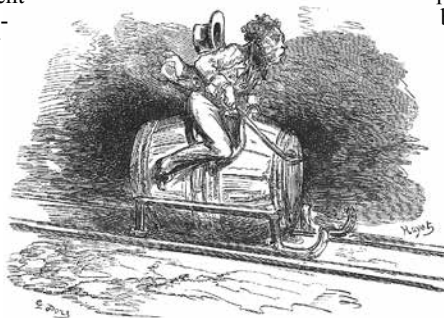
may tout APIs, but they are mainly used to push content and data — a virtual one-way street.

Modern applications are designed to be "cloud-native," meaning they function in the cloud and take advantage of the benefits the cloud has to offer, which is not the case with their "virtualized" older cousin stacks. Characteristics include the ability to incorporate other applications seamlessly and having better recovery when they fall down (called failover or resiliency). They also scale up or down well (i.e., elasticity) so payment for servers is not based on a high-water mark as with older stacks. Many newer applications also operate on multi-tenancy, meaning they can gang applications running common processes without having to pay for additional seats.

More modern technology is also designed with the ability to add functionality or to be customized — the key difference being customization happens without much time or effort and doesn't break ten other functions in the core application. This is because technologies are architected to have the characteristics users believe to be integral or basic — or maybe developers got tired of the endless lists of bug-fixes for older stacks. More modern approaches also tend to have workflow and management capabilities baked in so roles-based management and assignment of tasks are more easily enabled and are generally controlled by the client. This doesn't mean adding training wheels or an ersatz steering wheel on a car seat, it means providing the ability to configure workflow tasks and functions that matter to a business in simple-to-use and easily-understood user interfaces (UIs).

So how do these applications work? Examples include: a collaborative work platform with a content management system (CMS) in the background enabling users to interact and collaborate with service providers or third parties (e.g., authors, editors); a means for users to customize and configure a team's workspace in an admin and roles-based workflow; the ability to have real-time review of actual progress rather than a disconnected progress dashboard that must be manually updated; and the ability to author/edit in a WYSIWYG interface that provides sophisticated functionality behind the scenes such as creating XML in real-time, which can be round-tripped through the process making updates simple.

The following are examples of robust technologies applied to the publishing supply chain:

- **An approach to publishing starting in pre-production with an architectural content model built around the business of the publisher and how they wish to produce their content (e.g., submission process, peer review options, etc.)**. These technologies enable, for example, incorporating metadata and taxonomical content enrichment via

an application built for that purpose. The logic for multiple outputs to various digital products is also flexibly programmed into the application, enabling value to be built into native content and not lost through rework and enrichment activity for every digital output.

- **API-based applications that handle business-critical functions publishers have trusted to be included in platforms or services**. The old approach includes many disparate technologies, platforms, and services. This is problematic as control typically tends to reside in inflexible platforms, making the "one ring to rule them all" approach smart business. This translates to moving control closer to publishers, not further away.

- **Ground-shifting technologies like node- or graph-based data logic**. At least two products we will look at in future columns have built applications around this type of data-handling logic. It enables rich contextual meaning and relationships, deep search and discovery, and much richer keyword and context searching. The difference between newer graph/node databases and older linear databases (which are more familiar, given the ubiquitous SQL) is the acceleration of smart search in the graph/node world. It only gets faster the more it is mapped in context. This is where artificial intelligence (AI) works well.

In general, characteristics of modern content technology approaches to managing content like machine learning, AI, and natural language processing to add structure, context, and metadata make it more useful to humans and computers higher up in the content stream. Modern technology is slowly replacing the tired infrastructure of publishing that must be actively managed, all within reasonable timeframes and budgets. These types of changes enable publishers to be in the business of creating and curating content rather than being primarily technology creators and providers.

The scholarly publishing industry, like others relying on content technologies, has been slogging its way through these metamorphoses. It is now applying technologies that truly enrich content for all uses as early in the publication process as possible. The industry is moving forward, and opportunities to leap-frog many issues of our current digital age and correct some of the problems that continue to plague publishers is a real possibility.

We look forward to reviewing this landscape and welcome any comments and/or questions, as well as requests to cover a specific workflow, company, or technology. 🐾

*Deni Auclair has over thirty years of publishing experience, including consumer, magazine, and scholarly. Her career in scholarly publishing started at **John Wiley & Sons**, where she led **Wiley's** mergers and acquisitions (M&A) activities for twelve years, as well as overseeing their Information Center and constructing and writing the corporate strategic plan. In 2010, she left **Wiley** and joined **JBJS** as CFO. After leaving **JBJS**, **Deni** began her own consultancy, **Media Growth Strategies (MGS)**, leaving in 2012 to join **Outsell, Inc.** as VP and Lead Analyst for Science, Technical and Healthcare information. She left in 2016 to join **Delta Think** as CFO and Senior Analyst, where she primarily worked on designing and building the **Delta Think** Open Access Data Analytics Tool. **Deni** left **Delta Think** in early 2018 to again lead **MGS** and focus on client needs including market research, competitive analysis, M&A, financial analysis, and other projects.*

*Deni has an MBA in Finance from **NYU Stern School of Business** and lives outside of Boston with her (rather large) menagerie of cats and dogs. She enjoys gardening and has been involved in Olympic boxing for over 35 years. She is also (volunteer) treasurer of three not-for-profits — one for over 25 years.*

*John Corkery has over twenty years of publishing and technology experience. He started as an entrepreneur in digital pre-media technology during the dot-com days working with online clients of national notoriety. He later moved into publishing services, data conversion, and content systems, working with some of the world's largest publishers in the higher education, scholarly, and professional markets. For the last several years **John** has worked as a consultant helping clients develop their publishing businesses, promoting advanced technology solutions. He has participated in digital transition and selection projects involving content management systems, content automation, online hosting, and UX/UI design and discovery. He is certified in UX research and design.*

*John has served on the **SSP** New England Regional Event Group, and the National Development Committee. He was also a co-chair of the **Harvard University** Digital Publishing Collaborative planning committee.*