

# The Transformational Line of Progress Curved to Form a Circle: A Middle Way for Technological Advancements in Journal Production

**Scott Curl**

It is hard to find a profession that hasn't been transformed over the past few decades by the rapid pace of technological change. Those who work in publishing can certainly attest to this. Someone starting a career in publications just 15 years ago has already seen things that might have been hard to fathom on their first day of work: a complete transition away from a paper-driven office to one that relies entirely on electronic communication, digital content management systems, and virtual meetings; online-based content becoming the publication of record while physical editions were reduced to an expensive, fading, niche product; the complete collapse of a print-advertising revenue model that dominated the industry for so long; major news organizations falling into bankruptcy, pushing journalism to the brink. Many publishers have struggled to keep pace with this rapid change, some churning their workforce and sinking their resources into constantly replacing systems that few work with long enough to fully understand, with others largely avoiding digital advancements until it was too late, outsourcing much of their publishing work to large conglomerates. But a middle way is possible, one that responds and adapts to change by focusing on the concepts at the core of the centuries old craft of publishing production and uniting these craftspeople with new tools

to sustainably produce content in an otherwise volatile environment.

For 10 years, I have managed the team responsible for producing the JAMA Network's family of medical journals for the American Medical Association. Working with the graphics and proofreading groups, my digital production team typesets, lays out, performs quality assurance on, and publishes more than 7,000 articles a year across 13 print and online journals. We use a sophisticated content management system that guides our multidepartment workflow and houses every article we are soon to publish as well as those that have published in the past. We also have a dedicated, in-house production systems team of programmers and developers working alongside us who maintain, modify, and upgrade our typesetting and layout systems on the fly, build databases for all the content we handle, and develop sophisticated systems of delivery to our web vendor for online publication. We have a very modern publishing production process, yet the *what* that is behind our work is centuries old; a typesetter from 150 years ago would immediately recognize what we do and would probably fit in quite nicely. And the *how* of this very modern journal production process? Well, in a way, it was launched by a decades old Super Bowl commercial.

## A Hammer Is Thrown and an Industry Changes Overnight

Forty years ago, nearly 80 million people sat down on a Sunday to watch what would prove to be a very forgettable Super Bowl with an unforgettable ad: film director Ridley Scott's memorable 1984-themed commercial for Apple Computers. Cinematic in style and scope, it featured a lone athlete in bright colors running through gray-clad masses and throwing a hammer at a droning Big Brother figure on

Scott Curl (<https://orcid.org/0009-0007-2230-5162>) is the JAMA Network Digital Production Manager.

*Opinions expressed are those of the authors and do not necessarily reflect the opinions or policies of the Council of Science Editors or the Editorial Board of Science Editor.*

<https://doi.org/10.36591/SE-4701-07>

## CONTINUED

a screen, smashing it to bits. A serious-sounding voiceover then said that something called a “Macintosh” would be introduced in 2 days’ time, and everyone would see why the year 1984 would be nothing like the dismally monotonous and controlled future of 1984, the point punctuated by a colorful logo of an apple against a black backdrop.

The game itself wasn’t very close, and before long, many would have turned their attention elsewhere, talking with friends and family, doing the dishes, and cleaning up long before it was over. Those working in publishing production likely went to their workplaces the next morning and tried to wrap up the journal issues they were laying out, typesetting, and preparing to send to press, working hard to meet their deadlines and probably not giving much thought to the “deadline” announced in the computer ad; that by Tuesday of that week, a computer with an interesting name would become available to anyone with \$2,500 to spend and would be a hallmark in an era of rapid change that would reshape, replace, benefit, and upend so much about the ways in which journals would be produced, let alone the business of publishing as a whole.

At that moment, computerization in publishing was in its relative infancy. Production at the time was not that far removed from actual hot metal type being manipulated by an operator using a keyboard to input the text that would appear on a printed page. Phototypesetting was still being used heavily for publishing production. It consisted of long columns of text that were hand-keyed by operators using Linotron typesetting machines. Then, large boards were carefully arranged by paste-up artists manually placing columns of text alongside cutouts of images and shooting photographic plates of these pages. They made corrections to printed galleys by using a razor to cut text and replace it with a piece of film, the revised text on one side and sticking wax on the other. The metaphorical hammer thrown by the athlete in the Macintosh ad was about to smash all of that.

In just over a year, the first LaserWriter printer and Aldus’s PageMaker software would be introduced as companions to the Macintosh, and the concept of desktop publishing exploded. PageMaker gave users advanced, onscreen layout tools that could combine graphical elements with text set in a seemingly endless number of fonts for their publication’s pages, which could then be printed at what was then a high resolution. PageMaker would quickly become a key tool in the publishing production process, providing a true “What You See Is What You Get” publishing platform that translated visual layouts one could see on the screen directly to the physical, printed page. Newspapers, magazines, and scholarly journals moved away from large and limited linotype machines and moved to desktop publishing systems, as the equipment that could be used to produce publications suddenly became cheaper, and

smaller, and the software became more powerful and easier to use.

The speed of this technological advancement was underscored by the fact that the first Macintosh that helped usher in this revolution would be discontinued before the end of 1985; its small black-and-white-screen and lack of advanced typesetting tools such as leading and kerning adjustments were already seen as limited. The bar had been set, then quickly raised. The way forward was already known, including more powerful computers with color screens, such as the Macintosh II, and more sophisticated software options for fonts and page layouts from companies such as Adobe and Quark. The sudden proliferation of print-centric hardware and software changed the business of publishing overnight, and the increasing rapidity with which these tools were updated, or outright replaced, set a pace that could be hard to keep up with, particularly for some smaller periodicals and scholarly journals who couldn’t afford to consistently revamp their production infrastructure in ever-shortening cycles. That screen-shattering Apple hammer was now speeding off in a straight line toward some unseen point on the horizon and seemingly away from many who had spent their professional lives in publication production.

### Looking Back to See Ahead

There was a false dilemma at play—that somehow a choice had to be made as to whether a publisher would continually sink money into a never-ending cycle of new publishing hardware and software that would quickly fall into obsolescence, each iteration operated by specialists whose skills wouldn’t necessarily translate from one mode to the next, or simply fold internal production altogether, outsource the work to another company and let them deal with it. But an organization could commit to a middle way, one where the investment is ultimately not in disposable equipment, but rather in a team of experienced people who are essentially engaged in a centuries-old craft. You just need to give them the specific digital tools tailored to help them do their work in new ways. Transformative innovation in blades and powered machinery does not leave the carpenter behind; it just gives her a better saw to cut with.

My first publishing production job was when I was in college in the ‘90s. The newspaper I worked at was large but still had old equipment. We used word processors for articles, those old Linotrons for typesetting, and arranged cutouts of article columns with cutouts of ads and placed them on paste-up boards with actual tape on the borders for each page of the newspaper, making it camera-ready before it was shot and sent to plate. I could not believe how old-fashioned it was, and I wished we were using computerized desktop publishing systems with the latest layout software. But I learned about type, and I learned about kerning to adjust the space between

CONTINUED

---

characters. I learned how to spot errors and how to fix them before publication. I learned how to effectively balance a page to style, whether photos and graphics should be placed on the edge of a page or near the center “gutter.” These were the types of things that I talked about with others on the team; not specifics of the machines we used, but the concepts and the craft of the trade. The job title each of us had was “Layout Artist,” and we liked that a lot.

Later, when I was out of school and working for the financial publisher Morningstar, we used digital production suites with the latest in layout and publishing software that was miles beyond what I could have imagined when working at the newspaper. But what I did with a mouse and keyboard and a nice monitor replicated exactly what I did with my hands at the paper: cutting content, dragging and dropping, adjusting the kerning, moving a graphic a few points higher so that it balanced the column of text next to it, etc.

### **Sustaining the *What* While Adapting the *How***

Here at the AMA, we use systems that take written editorial content and within minutes, transform it so that it simultaneously produces XML for online publication and digital page proofs. These proofs pull in images created by the graphics team that we then layout and use to generate full-article PDFs that we both publish online and also send to press for print publications. Along the way, we are supported by a production systems team of developers and programmers who adjust and update the scripts that automate the processes that allow us to do our work more efficiently, which enables us to take on more projects. Years

ago, I couldn’t have foreseen the specifics of how we would go about our work and accomplish publishing a print issue of *JAMA* each week while also publishing 10 print issues of our Specialty Journals each month, let alone publishing it all online at the same time, along with additional rapid, quality online-only content. But once again, when I talk to members of my team each day, our time is largely spent discussing layout techniques and how to best arrange a page, spotting errors in content, and fixing those errors before an issue is published. This tradition of craft is driven home to me every time I speak with a particular member of my production team who joined the A.M.A. a few years *before* that Apple commercial aired in 1984. She is still carrying on the same traditional work but has continually adapted and learned to use different tools to do it. I would like to think the “Layout Artist” version of me from the ‘90s and the typesetter from 150 years ago could fit in and thrive on my team today.

The decisions, guidance, and input of many people who have been involved with our journals over the years—from our publishers to managers to new members of the team—have brought us to this point. Collectively, we didn’t forget the *what*; we tried to improve the *how*. We didn’t see technological change as something that should send us off trying to chase down every innovative trend as it sped away or lead us to simply throw up our arms and give up on in-house production. Rather, we’ve engaged in what I see as something truly transformative: maintaining a craft’s rich tradition in new ways. Curving the progressive line gently back on itself to form a circle, one that unites new tools with those who can use them to do more of what they have always done well.