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The Progression of Digital Publishing: Innovation and the E-volution of E-books

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The Progression of Digital Publishing: Innovation and the E-volution of E-books

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Abstract: E-books are beginning to emerge from their incunabula stage. While some may think of an e-book as just an electronic image of a paper product, others have used the electronic format to broaden the spectrum of publishing in the digital age. This paper examines three innovative examples that demonstrate the potential and challenges of electronic publications. The first is an online resource providing information on the U.S. health care system, descriptions of policy proposals, and an interactive microsimulation model that estimates the effects of commonly proposed policy changes. The second example is a digital novel utilizing text, sound, images, and gaming in storytelling. The third is a survey of efforts to create digital textbooks with online study resources. Each case study provides insight into the possible future of the e-book.

Keywords: E-books, Information Society, Electronic Texts, Innovation, Digital Tools, Collaboration, Future of E-books

Out of Incunabula

E-BOOKS ARE EMERGING from their incunabula state, although this transition is far from complete. The term *incubula* (meaning infancy, from the Latin for "cradle" or "swaddling clothes") refers to the earliest books printed with movable type, during the 50-year transitional phase from the 1454 Gutenberg Bible to 1501. These books were initially considered inferior to illuminated manuscripts (Trithemius, 1492, p. 35). They were even considered dangerous, as printed books threatened the livelihood of monks, represented loss of control to elites, and led inexorably to the democratization of books and reading. Today, the e-book is emerging from a similar transition.

In an earlier article, I discussed the theme of e-books and innovation (Warren, 2009). The past 12 months have been marked by significant media attention on e-books, numerous e-reader devices have entered the market, and e-book sales have grown. This article discusses these trends and examines new case studies of innovative e-books in order to glimpse further into the future of the book.

Today, many players are jostling for market share. While the Amazon Kindle has captured much of the hype and publicity, e-book devices from Sony, iRex Technologies, Barnes & Noble, and Plastic Logic have garnered media attention and customers. As of December 2009, Amazon has released three devices or iterations since the first Kindle was released in 2007; Sony has released seven since 2005, with three different devices in 2009 alone; and both have released various software upgrades. A dozen or more new devices from various manufacturers have been announced for 2010, including some with color screens. The iPhone has seen the popularity of e-book apps soar, including apps associated with the Kindle, Stanza, and Barnes & Noble and individual book apps appearing as some of the most popular

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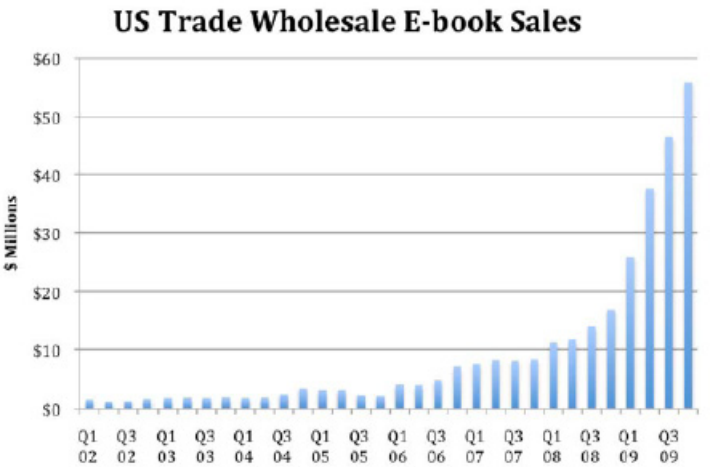
apps on the Apple store (Teicher, 2009; Rich and Stone, 2009). Major e-book wholesalers, including ebrary, EBL/ebooks.com, Ingram Digital, NetLibrary, and Overdrive, have been carving into the nascent market for years, especially among libraries, while other major e-book sources include Google Books, Project Gutenberg (with volunteers keying in out-of-copyright works since 1971), Scribd, and Smashwords. E-books, now produced by nonfiction and fiction trade publishers, academic and scholarly publishers, e-book-only publishers, and an impressive number of self-published authors, are starting to arrive.

But while awareness of e-book readers has risen significantly in the past 12 months, widespread adoption still lags. Forrester Research, for example, reported that in a survey of approximately 4,500 online consumers, the percentage of consumers who had never heard of an electronic book device dropped from 37 percent in Quarter 2 of 2008 to 17 percent in the same quarter of 2009, and the proportion who had seen but never used an electronic book device rose from 21 to 36 percent. But the proportion of consumers who owned such a device was only 1.5 percent, compared with 0.6 percent a year before (Epps, 2009). The Gartner Group, in its 2009 "Hype Cycle of Emerging Technologies," perched e-book readers at the hype cycle's "Peak of Inflated Expectations"; the cycle's next phase, the "Trough of Disillusionment," has buried many a hyped technology (Gartner Group, 2009).

E-book sales have expanded dramatically yet still represent a small portion of most publishers' revenues. The International Digital Publishing Forum (IDPF) reports that wholesale e-book sales increased by an impressive 210 percent from 2008 to 2009, while warning that the nearly $166 million total for 2009 represents only trade eBook sales via wholesale channels; the statistics do not include retail, library, educational, or professional electronic sales; and, perhaps more importantly, represent only data submitted from approximately 12 to 15 major trade publishers (International Digital Publishing Forum, 2010). Still, most publishers report that only 1 or 2 percent of total revenue from book sales comes from e-books (Book Industry Study Group, Inc., 2009, p. 50), though some outliers, such as O'Reilly Media, earn a higher percentage of earnings from electronic texts.



(Source: International Digital Publishing Forum, 2010. Used with permission.)

E-books still struggle for mainstream adoption and acceptance. As I mentioned in my previous article, e-books are often perceived as a solution to something that isn't a problem—books work fine as a technology. Certainly, the myriad of e-book devices, proprietary formats, and access routes to e-books and e-content create confusion among potential consumers. Most publishers insist on Digital Rights Management—which is generally disliked by users (JISC Collections, 2009). Consumers know that they will not generally be able to lend an e-book as easily as lending a new hardcover, and they don't understand why, if they originally purchase an Amazon Kindle and later replace it with a Sony Reader, they shouldn't be able to access their previously purchased e-books. Fundamentally, most e-books today are merely a "picture of a book"—a book that has been digitized but adds little value besides portability, improved search, and access (Warren, 2009).

Despite the often personal, evocative relationship many of us have with printed books, electronic texts can provide benefits not possible with a printed volume. Online access, searchability, and portability are noted advantages (JISC Collections, 2009). Faber, a character in Ray Bradbury's *Fahrenheit 451*, remarked,

> It's not books you need, it's some of the things that once were in books. . . . Books were only one type of receptacle where we stored a lot of things we were afraid we might forget. There is nothing magical in them at all. The magic is only in what books say, how they stitched the patches of the universe together into one garment for us. (Bradbury, 1954, pp. 82–83)

What do today's more innovative e-books and digital publishing initiatives tell us about the future of the book?

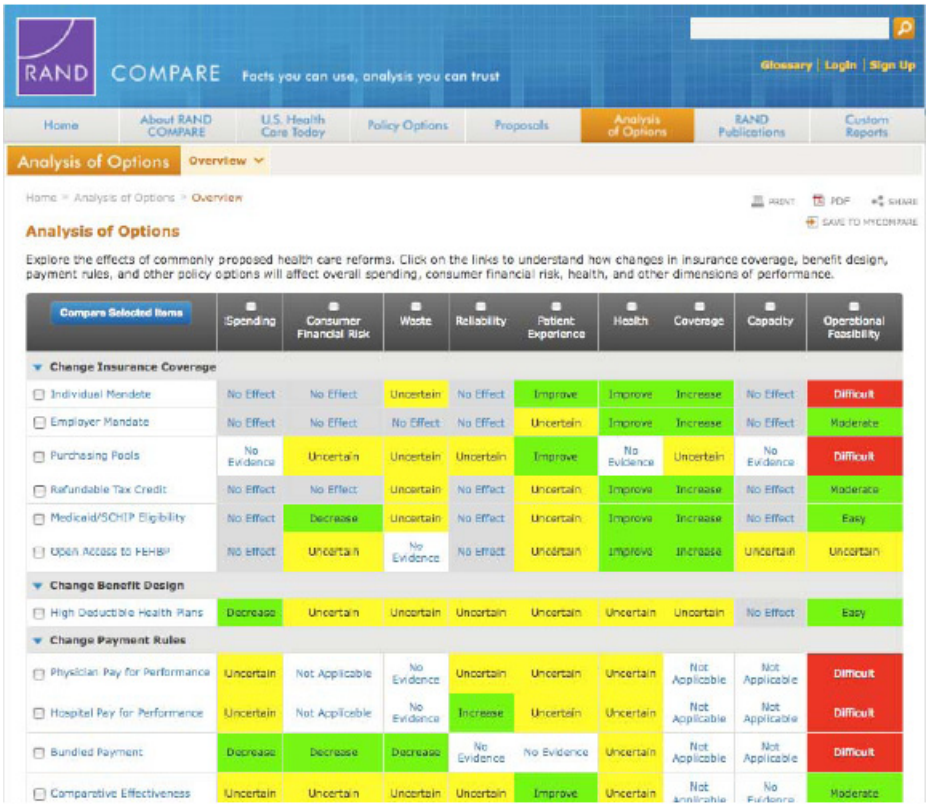
Ceci n ' est pas un livre

Viewing René Magritte's famous painting of a pipe, with the text below indicating "*Ceci n'est pas une pipe*" ("This is not a pipe"), at first the viewer thinks, "Of course it is a pipe!" But on reflection, it is certainly not a pipe, but rather a representation of a pipe. Michel Foucault takes it further: "This is not a pipe . . . but rather a text that simulates a pipe; a drawing of a pipe that simulates a drawing of a pipe; a pipe (drawn other than as a drawing) that is the simulacrum of a pipe. . . ." (Foucault, 1982, p. 49). E-books raise similar philosophical issues. At what point is an electronic text not a book, even as it represents in some sense the knowledge one would expect from a book? In the rest of this paper, I examine three case studies that explore this question.

This first case study examines a research project, the findings of which, five or ten years ago, would have been published as a traditional monograph or report. Instead, the RAND Corporation launched the COMPARE (*Comp*rehensive *A*ssessment of *R*eform *E*fforts) website (http://www.randcompare.org) in January 2009. The COMPARE website is a unique online resource providing objective, peer-reviewed information and statistics on the U.S. health care system and descriptions of policy proposals, with a microsimulation model to estimate the effects of policy changes on cost, coverage, health, and consumer financial risk (RAND COMPARE, 2009). COMPARE deconstructs the scholarly monograph, offering users the ability to create their own "narrative" but based on objective factual research.

Although health care spending in the United States exceeds $2 trillion annually, more than 45 million Americans were uninsured in 2007, and Americans on average receive only

about 55 percent of recommended care. The COMPARE website's "dashboard" assesses health reform policy options across nine dimensions: spending, consumer financial risk, waste, reliability, patient experience, health, coverage, capacity, and operational feasibility. Clicking on a particular dimension brings up a brief description of that dimension, linked to a full report with statistics and other information. The COMPARE website also features a description of federal and state policy initiatives, listing various policy proposals, the status of these proposals, and specific descriptions. Proposals by nongovernmental organizations or coalitions are also included on the site.



(Source: RAND COMPARE, 2009. Used with permission)

Perhaps the most unique feature of the site is the COMPARE microsimulation model, which utilizes computer software to estimate how individuals, families, firms, insurers, and the federal and state governments will respond to health system changes.

The COMPARE website's unique framework offers some significant advantages over a traditional monograph. It offers RAND an opportunity to publish microsimulation model findings quickly and be able to inform the health care reform debate while it's happening. Users can easily drill down through information depending on their level of interest—the site presents chunks of knowledge backed by lengthier material. Visitors can customize reports, share and bookmark pages, and save content in their MyCOMPARE library. Website

content can be updated continually as new data become available or new policy options are introduced.

COMPARE's framework, however, also presents challenges. The website can be updated, indeed—but it also *must* be continually updated to stay current and relevant as new research is reviewed and new policy options are considered by federal and state policymakers. These continual updates can present a challenge in terms of peer review and archiving. While peer review for a document or article fits into an easily understood model in research and higher education, peer review for a continually changing website may be less familiar. In this case, the peer review process used for the analysis—the COMPARE dashboard—is the same strict quality assurance process that RAND employs for a traditional monograph. The microsimulation model followed its own quality assurance process; a detailed document on the website describes data sources used and assumptions employed in the analysis and the model. The supporting documents and website undergo multiple rounds of editing, while the website requires proofreading apart from the original text to prevent character errors from being introduced in the transformation from Microsoft Word to HTML. This type of online product also requires a large amount of oversight for version control.

The goal of COMPARE was not to generate sales; instead it was aimed at reaching key decisionmakers and improving the quality of the policy debate with objective, fact-driven, high-quality research and analysis. COMPARE has been able to reach its primary audience of policy experts, legislative analysts, congressional staff, and health writers. Results have been briefed within Congress and the Executive Branch and been the subject of public forums, while the analytic features of COMPARE were briefed to the Congressional Budget Office and congressional committee staff members to help in their evaluation of health reform proposals (Thomson, 2010).

Hyperactive • The Digi-Novel

Inanimate Alice (www.inanimatealice.com) provides another, though quite different, example of a digital narrative that would not exist in the same way in printed form. Written and directed by writer Kate Pullinger and digital artist Chris Joseph, and produced by Ian Harper, this "digital novel" combines text, audio, video, special effects, and gaming to explore a form of storytelling in which the reader is converted into an active participant. As readers progress through each episode—four are available, a fifth is expected soon, and a total of ten episodes are planned—their participation level increases. Alice, the character, learns to make games on a fictitious device, which the reader learns to play; gaming, in essence, provides and underscores Alice's emotional journey. The player/device, as well as the player/reader, are part of the story (Pullinger, 2009).

(Source: Kate Pullinger and Chris Joseph, *Inanimate Alice*. Used with permission.)

According to Kate Pullinger, *Inanimate Alice* was conceived and created in digital form from the outset, arising both from her desire to explore new digital tools and her sense that the digital form seemed the best way to tell the story. The use of music, images, and sound and video effects seems to fit organically into the story instead of feeling tacked on. The form also provides a great opportunity for collaboration—between the writer and digital artist, and subsequently with the audience. It has had an unexpectedly wide appeal, among elementary and secondary school students, educators, and university students. A range of electronic curriculum and reader-created stories ensued almost naturally, without a strong push from the authors or producer, but certainly not with their opposition. Dedicated sites have sprung up from educators and schools in Australia, Great Britain, and the United States, and many students have created their own episode 5 to continue the series (Laccetti, 2007; Pullinger, 2009; Harper, 2009).

Inanimate Alice also offers challenges, foremost of which is that the income stream from the project has presented (and presents) a conundrum. The digital novel sprung up to tell a story, not to fit a business model, and though it has been embraced by many fans, this hasn't translated into revenue. Pullinger and Joseph have subsequently collaborated on two other series that utilize a similar storytelling framework, while telling quite different stories: Flightpaths (http://www.flightpaths.net/) and Lifelines (www.katepullinger.com/rising-stars/demo.html). Flightpaths is funded by four nonprofit groups, including the Institute for the Future of the Book, and Lifelines is funded by a UK educational publisher and intended for curricular use in the UK school system.

Creating these stories presents a challenge in deciding how much text the multimedia can support and how the various elements work together, notes Pullinger. Another challenge is the need to gradually bring the reader up to speed because of inexperience with form. The games within the story get more complicated as Inanimate Alice progresses; it is impractical to expect the reader to dive headlong into complicated gaming scenarios. Nevertheless, the

key challenge is to find a new way of storytelling that fits into the commercial market (Pullinger, 2009; Harper, 2009).

Digital storytelling provides many new opportunities for both the artist and audience. While there is little consensus on a definition of digital storytelling or new media writing, the use of a computer or electronic device, such as the iPhone, is the unique component of both writing and reading digital stories. Multimedia—including text, audio, video, and interactivity/gaming—can be blended in ways impossible in printed books. Hypertext, which I discussed in my previous article, provides opportunities for alternative construction, concept, and characterization, for fiction and nonfiction, which are perfectly suited to the online or e-book form. Another type of emerging digital storytelling, combining microcontent and social media to create distributed conversations, has been called Web 2.0 storytelling (Alexander and Levine, 2008). Interactive stories may employ reader's use of avatar to become a character that navigates through and interacts with the story (Pressman, 2008). Books may become multimedia events, though many of the attempts so far, such as the Vook or the Amanda Project, seem largely marketing-driven (Penenberg, 2009; Nichols, 2009).

The Rise of the Digital Textbook

A variety of forces are converging to dramatically increase use of digital textbooks and online learning. There is a growing movement by students, parents, and professors protesting the high price of traditional textbooks in higher education and denouncing the weight of textbooks in K–12 (Allen, 2008, p. 4). The retirement of baby-boom teachers and the full emergence of digital natives—younger teachers who have always grown up around computers and integrate them more seamlessly into their lives—are also fueling the increase of digital content in the classroom (Acker, 2009). A recent "Kindle in Every Backpack" policy paper recommends public funding for student e-book devices, but even without public funding, the use of digital textbooks and other content is likely to rise (Freedman, 2009). In the higher education market, total digital revenue is estimated at less than $100 million; e-book sales contribute approximately 5 percent to that figure. Digital revenue in K–12 has been lower, due to focus on core reading and mathematics standards, standardized testing, and budget crises (Book Industry Study Group, Inc., 2009).

A recent U.S. Department of Education meta-analysis found that, on average, students in online learning conditions performed better than those receiving face-to-face instruction alone. Nevertheless, the study pointed out that online learning combined with face-to-face instruction delivered the best outcomes. The researchers examined 1,132 studies of online learning and found only 51 that met the criterion of comparing online and face-to-face approaches. The researchers also cautioned that most of the studies were in higher education or professional training, with very few in K–12 (U.S. Department of Education, 2009).

Flat World Knowledge, a start-up company backed by over $10 million in venture capital, provides an interesting example of how digital textbooks are making their way into classrooms. The company offers free, online, peer-reviewed textbooks on its website (www.flatworldknowledge.com). The business model is to provide content for textbook adoption that is as good as or better than the textbook a professor currently uses, offer content for free, and encourage the purchase of add-on and convenience products in multiple formats, explained Eric Frank, Flat World's co-founder and chief marketing officer. While the online version of a textbook is free, students can buy a PDF download of the book or specific

chapters, purchase a black-and-white print-on-demand (POD) version for about $30, or purchase a color POD version for about $60. The PDF download also includes print-your-own capability (Frank, 2009).

Flat World's textbooks are published under a Creative Commons (open-source) license, and the company provides tools to modify and remix texts, encouraging new derivatives and adaptation. Professors are encouraged to create custom books, editing or adding to content at the sentence level, delivering unique books as online, downloadable, and POD versions to students (Snyder, 2009).

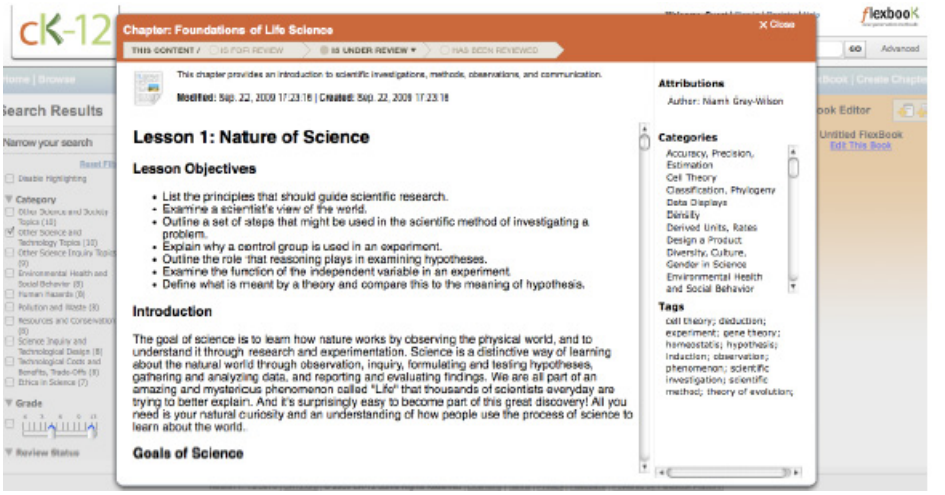
(Source, Flat World Knowledge, www.flatworldknlowedge.com. Used with permission.)

So far, Flat World's model of publishing commercial open-source college textbooks appears to be working. Frank reports that adoption has increased from approximately 1,000 students in 30 schools in spring 2009 to approximately 40,000 students at 470 schools in fall 2009. Every chapter of every book includes digital study guides, such as flashcards, practice quizzes, and audio guides. Approximately 65 percent of students make some kind of purchase, averaging about $30. Authors enjoy the incentives, which include faster time to publication, a greater ease of creating and updating texts, and a 20 percent royalty on any sale. Frank also points out that royalties are more consistent over time; there isn't a steep drop in sales and royalties as when a traditional textbook hits the used book market (Frank, 2009).

Going forward, Flat World Knowledge plans to integrate more assessment into the texts. Performance data will help professors better teach their courses, while aggregated, anonymous performance data will help authors develop better texts, with increased understanding of which modules or concepts need refined explanation or additional material. Self-assessment is one of the key factors that can be automated in digital texts and help students, professors, and authors (Young, 2009).

In the K–12 market, the CK-12 Foundation hopes to make digital textbooks affordable for districts and schools, and more adaptable for teachers and classrooms, by providing access to free texts aligned to state standards with developmentally correct content. CK-12 offers tools to create, distribute, and customize high-quality educational content in an open-content, web-based, collaborative model termed the "FlexBook." Educators can create customized

digital text from existing texts, chapters, and web pages under a Creative Commons Attribution-Share Alike license. Seven Flexbooks have been submitted by CK-12 to the California Learning Resource Network for state textbook adoption in math and science, and they met the state's academic content standards by an average of 95 percent: Four met 100 percent of the standards, and none scored below 82 percent (Khosla, 2009; California Learning Resource Network, 2009).



(Source, CK-12 Foundation, www.ck-12.org. Used with permission.)

The foundation hopes to encourage collaborative learning via a community in which authors, teachers, and students create, access, share, rate, recommend, and publish these free texts. The texts are currently provided through a combination of author donations, licensing partnerships, incentives for community-based authorship, and university collaborations. Yet to be seen, however, is whether this model is sustainable.

The nonprofit group Project Tomorrow surveyed 281,000 students from K–12 in all 50 U.S. states on education and technology. Students in grades 6–12 offered their ideas about desired features and functionality of digital textbooks, as a sort of Ultimate Digital Textbook (Project Tomorrow, 2009), with key functionalities that include:

- Ability for teachers and students to personalize digital texts with highlights and notes (63%)
- Self-assessment (62%) or self-paced tutorials (46%) as part of the text
- Links to real-time data, such as from NASA and Google Earth (52%)
- Ability to tap into an online tutor whenever necessary (53%)
- Links to PowerPoint presentations of lectures supporting content (55%)
- Explore concepts through games (57%) or animations and simulations (55%)
- Access to videos (51%), videoconferences (30%), and podcasts from subject experts (34%)
- Ability for students to create their own podcasts or videos to support learning (48%).

Most of these capabilities are possible today, and are becoming more accessible. *The 2010 Horizon Report*, published by the New Media Consortium and the Educause Learning Initi-

ative, identified both mobile computing and open content as technologies that will have considerable impact on teaching and learning within the next 12 months (L. Johnson et al., 2010). Electronic books and simple augmented reality are likely to impact teaching, learning, and creative expression over the second adoption horizon (2–3 years out), while gesture-based computing and visual data analysis are expected to have an impact over the far term (4–5 years out).

But challenges for digital textbooks remain significant. Open-access business models, while attractive from a common-goods standpoint, are still largely unproven for long-term sustainability. "Free" texts depend on the success of "bundling," POD sales, enhanced products or services, and/or foundation, grant, or endowment support (Jaschik, "The World Is Open," 2009). A significant, but frequently overlooked, factor is the difficulty in changing the mindsets of educators who claim to not have the time to contribute—it may be not only insufficient technological capability (i.e., digital native teacher) but a very real work overload that keeps teachers from customizing and contributing (Khosla, 2009). Keeping content contextualized to local and regional requirements as well as global curriculum standards is another significant challenge.

Thus far, early student reviews of the Kindle DX in education settings have not been not positive (Canon, 2009; Nusca and Bergen, 2009). Notably, the current Kindle lacks most of the capabilities described above in the digital textbook shopping list. But hybrid learning—combining online learning and digital texts with traditional, face-to-face methods—shows considerable promise (Kolowich, 2009). Some experts predict that within five years, the majority of students will be using digital textbooks, possibly accelerated by a proposal announced by President Barack Obama to invest in creating free online community college courses (Lewin, 2009).

Andrew Savikas, Vice President, Digital Initiatives, O'Reilly Media, sums it up nicely:

> Thinking of the problem as "how do we get a textbook onto an iPhone" is framing it wrong. The challenge is how to make the best use of a medium that already shares three of our five senses—sight, speech, and hearing—along with geolocation, color video, and a nearly always on Web connection, to accomplish the "job" of educating a student. (Savikas, 2009).

Interactive, participatory learning spaces using assessments, gaming and simulations, online tutors, and virtual reality environments are expensive to produce and maintain, but may ultimately cost less on a variable cost basis than printed equivalents. Researcher David Annand concluded that e-books cost less to produce than printed texts, particularly for courses with large enrollment, but usability issues led users to prefer printed texts (Annand, 2008). There is evidence that digital formats are more forgiving, with fewer up-front costs and lower manufacturing and distributing costs, as well as some evidence for the reverse, even within the same reports (e.g., Paxhia and Trippe, 2009, pp. 4, 23; Maron, Smith, and Loy, 2009). In the future, digital exam copies will become predominant, increasing speed of access, reducing manufacturing and shipping costs, reducing sales of exam copies to the used book market, and enriching the review process by improving the linking of texts to ancillary materials. Whether to create digital learning products from today's print products or create entirely new models is still unclear; at least for now, most publishers create both print and electronic versions of texts. "Digital first" strategies, capitalizing on lower production and

distribution costs, fluency in metadata, and the ability to repurpose digital content and spread costs over a range of projects (as in the case of Flat World Knowledge or CK-12), will allow authors, publishers, and producers to create content for niches and market segments that would not have been feasible with traditional publishing.

The Future E-Book

Let's take a sneak peek at the (possible) future e-book by imagining a future scholarly book about new research on the Americas before Columbus. You'll read it on a device that combines facets of the cell phone, iPod, Kindle, Flip camera, and laptop, with a color touch screen and multimedia capabilities; I'll call it a "Podkinfliptop." Place the cursor next to an unfamiliar term and it brings up its definition. Click on a place-name and it deploys Google Earth. Maps of migrations or empires, instead of being static images, dynamically depict their spread and flow over time and place. Instead of a single picture depicting a particular Mayan city or artifact, a gallery of photos is embedded in the e-text. As you visit the Palenque ruins in Chiapas, Mexico, you'll be able to take a photo and instantly upload it to the book's gallery of images for all to see. Augmented reality, embedded in the text, shows an Incan tomb in 3-D when you hold it up to your device's web camera (Rosen, 2009; General Electric, 2009).

The future e-book fosters continuous learning by including links to further scholarship or modules about topics of particular interest to the reader. Extensive social web features promote distributed, ongoing comments, conversations, and collaborations between authors, scholars, and other readers (Alexander and Levine, 2008). A Creative Commons license encourages modules to be remixed and repurposed, while open video allows easier editing and remixing of video, audio, and text (Talbot, 2009). Deep web semantic search unlocks additional in-depth, professional content, returning results customized to the reader's interest that are not cluttered by irrelevant content (Renear and Palmer, 2009; Wright, 2009). These capabilities are possible now, in one way or another, but have yet to be fully harnessed.

The Gilbane Group, an analysis and consulting firm focused on content technologies, surveyed publishers across the industry, in trade, scholarly, higher education, and K-12, such as McGraw-Hill, Cengage, Nature Publishing Group, and Random House, and cautions that technical and organizational forces must be aligned for successful digital publishing. Technical efforts should be aligned with defined business goals. Management and staff must make a commitment to growth in digital products, but with realistic expectations and a strong focus on metrics. Fortunately, digital products often lend themselves to easier measurement and experimentation. Leadership must have a vision for digital product development and the commitment to see it through, making an investment in content management technology, often including web content management and digital asset management as a hub for internal and external distribution. The firm must undertake systemic and large-scale digitization efforts, often including encoding content in XML (Paxhia and Trippe, 2009).

In our e-book of the future, care must also be taken to sustain the resource itself. Electronic resources are fragile: URLs may become broken or entire websites disappear; hardware, operating systems, and applications change; even the departure of key personnel can imperil a digital resource. All sites, even relatively static ones, need active stewardship (Cohen and Rosenzweig, 2005). While the Internet Archive, the Library of Congress, and the Smithsonian, among others, are working to preserve websites and other digital resources, publishers

must be proactive toward the storage of digital files as well as the ability to understand and read those files in the distant future.

Developing a plan for sustainability is critical. A recent report by Ithaka, a nonprofit group focused on the academic community, identified similar success characteristics for sustainability of digital resources, including a dedicated and entrepreneurial leadership willing to test new ideas; identification of a clear value proposition based on an understanding of users' needs; minimizing direct costs through outsourcing, partnerships, and other creative means; development of diverse revenue sources and creative business models, including subscriptions, licensing to publishers and users, custom services, corporate sponsorships, author fees, endowments, and grants; and clear accountability and metrics for success (Maron, Smith, and Loy, 2009).

New sources of revenue are key. University presses, for example, may not be able to thrive through book sales alone. Michael Jensen, director of strategic web communications for the National Academies, envisions a future in which academic presses earn 50 percent of their revenue through value-added features not part of the basic digital book, 25 percent from POD services, and 25 percent via institutional support (Jaschik, "Change or Die," 2009). In today's institutional climate, that is a demanding challenge, yet so is survival under the current publishing model.

In this evolution, the role of the publisher has changed. Publishing in the future will be less about finding "hits" and managing authors, and more about managing digital assets and metadata for increased customization and findability. Umair Haque writes about the rise of micromedia—media that can be consumed in unbundled microchunks—in the post-blockbuster age. He describes a snowball effect, wherein "the more a high-quality microchunk is consumed, the more value is added by consumers, and the more that microchunk is consumed" (Haque, 2005). The sources of value in creating and successfully exploiting micromedia, in a Media 2.0 age, include revelation (discovering and publishing valuable niche content), aggregation (centralizing, storing, and distributing huge amounts of microcontent), and plasticity (adding value by modularizing, standardizing, or extending content). Haque argues for a new set of competencies that includes economies of speed, creating production economies of scale and scope, networking connected producers/consumers, and creating quality products for a niche (Haque, 2005).

Skillset, which supports skills and training for UK creative media industries, reported that digitization has exposed critical skill gaps in publishing. The skills needed for today's publishing professionals include the ability to sell disaggregated content across new formats to nontraditional markets, advertisers, and content providers; being able to respond to the rapid pace of change by tracking and understanding markets; providing access and control to digital products through better understanding of intellectual property rights; and managing the organization to adapt to new technical platforms and digital products (Skillset, 2009).

Cheaper e-book devices, new multifunction tablet devices, cheaper content, and a greater selection of e-books will lead to a greater percentage of e-book sales relative to print. The year 2010 may prove the "tipping point" for e-books and e-book devices. Amazon reported that the Kindle was the most gifted item in the company's history and that, for the first time ever, customers purchased more e-books than physical books on Christmas Day. Forrester Research forecast sales of 3 million e-readers in the United States during 2009, and predicted sales to reach 10 million units in 2010 (Gonsalves, 2009). Apple recently announced that its long-rumored tablet device, the iPad, will ship in April 2010 and include an e-book reader

called iBooks and an online bookstore called iBookStore. Analysts' early sales forecasts for the iPad in its first year of release are from 4 to 10 million units (Hughes, 2010).

It's not hard to imagine that within a few years e-books could account for 20 percent or more of book sales. As our e-book of the future evolves, for the time being we are most likely to see a hybrid model, not quite the unique digital experience of *Inanimate Alice* or RAND COMPARE, but digital books enhanced with extra content, with helpful internal and external links, navigation that allows possibilities based on each reader's particular needs or level of interest, and video and audio that enhance readers' experience of the text.

Coda: Digital Genesis

The future includes an ever-more-vibrant past. One of the fascinating aspects of digitization is the increasing ability to access images, texts, video, and audio of the world's treasures from any computer or device.

As I mentioned in my previous article, the Codex Sinaiticus—the oldest substantial book to survive antiquity, handwritten more than 1,600 years ago, represents the digital, interactive, 4th-century Bible. The Codex is now fully available online and the international collaboration that coordinated the project recently held a conference of scholars and parties to the digitization. The text contains the Christian Bible in Greek, including the oldest complete copy of the New Testament. Still in the planning stages are print facsimile, exhibition, and a popular book (Codex Sinaiticus Project, 2009).

Digitization of classic works is accelerating. Google Books and Sony have partnered to provide a half-million public domain books online for free. The Thesaurus Linguae Graecae offers a digital repository of over 12,000 works of Greek literature, including both subscription-based and open access to texts from ancient to modern (Maron, Smith, and Loy, 2009). Many university presses, including Cambridge University Press and the University of Michigan Press, are collaborating with their institution's library to make important historical works accessible as POD and e-books (Eisen, 2009; Cambridge Library Collection, 2009). Numerous other institutions, such as the Library of Congress and British Library, have digitized ancient book collections, providing high-quality images and in some cases transcriptions. Thus far, only a few of these resources are comprehensively linked, especially across genres, hence showing some of the promise, at least, of deep semantic search in providing more discoverability to these treasures.

It's remarkable how much the acts of research, writing, and reading have been vastly transformed in just the past 20 years, by Google, Wikipedia, the Internet Archive, and other information resources. Data on our past and present proliferate exponentially. Although our ability to sift through this explosion of bits may lag behind, new tools are constantly emerging to help us find the kernels of knowledge in our particular niche, and to connect us to others around the world seeking, postulating, or proselytizing about the same information.

The e-book of the future forms part of a global conversation, as Steven Johnson writes:

> Think of it as a permanent, global book club. As you read, you will know that at any given moment, a conversation is available about the paragraph or even sentence you are reading. Nobody will read alone anymore. Reading books will go from being a fundamentally private activity—a direct exchange between author and reader—to a

> community event, with every isolated paragraph the launching pad for a conversation with strangers around the world. . . . (S. Johnson, 2009)

It's reasonable to wonder how many authors will have the time for or interest in this type of extended conversation, before, during, or after the act of creation. It is not hard to imagine a future, however, in which the isolated author, huddled away over a masterpiece, is increasingly the exception to the rule. While the world may always come to recognize the brilliance of a Joyce, Salinger, or Pynchon, and while word-of-mouth phenomena like Stieg Larsson will doubtlessly continue to emerge seemingly from out of nowhere, authors savvy enough to have a multimodal "platform" will be those most likely to rise out of the bog of our ever-growing information superabundance. Publishers and other companies able to encourage and develop these authors, effective in exploiting technologies while nurturing stronger connections with their audience, will be the ones to survive. And the e-books that grab and hold our attention will be those that embrace interconnection, multimedia, interactivity, and customization, bringing us into a new space beyond the printed word.

The future of the e-book is clearly just beginning.

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