

Speech given by Jason Epstein at the 2009 O'Reilly Tools Of Change for Publishing Conference

I don't have to tell anyone here that we are at the end of the Gutenberg era; at the threshold not only of a new way of publishing books but of a cultural revolution orders of magnitude greater than Gutenberg's, assuming we survive our financial calamity, our 20,000 nuclear weapons, and our melting ice cap, all of them by the way unintended consequences of the western civilization that Gutenberg's technology made possible.

Five centuries ago Gutenberg's dream was to print a uniform prayer book on his new press to be distributed to all the churches of Europe and in this way unify the catholic faith which was fractured by schisms, especially in Germany where Gutenberg made his living selling trinkets at religious fairs. Instead, to what would have been Gutenberg's dismay had he lived to see it, the printing press spawned our modern world with all its wonders and woes -- the Protestant Reformation, the Enlightenment and for better and worse, our skeptical, secular, experimental civilization. Whoever believes that books are simply another form of entertainment has missed the point.

Retrograde Islam banned Gutenberg's technology as satanic, confining its followers within a single book. Xenophobic, despotic China averted the threat of cultural diversity by rejecting a phonetic alphabet, the sine qua non of movable type, developed in 15th Century Korea and attributed to their Emperor. The Catholic Church, no less fearful of change, might have banned the press too had Gutenberg not been a well connected catholic layman who hoped his new machine would impose Catholic orthodoxy throughout Europe.

Instead the distracted church left the door to modernism ajar. Within forty years presses were operating from one end of Europe to the other -- a dozen in Venice alone -- and secularism -- the age of Montaigne, Erasmus, Copernicus, Spinoza, Gibbon and Voltaire was here to stay with consequences which neither Gutenberg nor his wisest contemporaries could have begun to imagine -- Shakespeare, Newton, the Revolution in France, the Constitution of the United States, but also Hiroshima, the degradation of the environment, Viagra commercials, subprime mortgages and credit default swaps

We are in a similar situation today. Like blind men in a room with an elephant, we cannot begin to imagine the eventual consequences as digitization and the Internet ignite a worldwide Cultural Revolution orders of magnitude greater than Gutenberg's inadvertent implementation of western civilization.

At the very least these technologies will challenge traditional media. I will come to their impact on the book publishing business in a moment, but before I do I would like to dwell a bit on the subject of books themselves, whose content and form are deeply embedded functions of our human nature of which our motley culture is itself a reflection. Human nature is the constant element in our polymorphous history. It links today's readers to the ageless Homeric epics, the Book of Job, the psalms of David, the poems of Su Tung Po and the plays of Shakespeare; as

well as the novels of Dickens, Tolstoy, Melville and our late companions William Faulkner, Norman Mailer and John Updike. We are storytelling animals. Not only do we find likenesses of ourselves in these profoundly true stories -- Republican politicians sulk in their tents as disaster looms; our Mr. Madoff is Dickens's Mr. Merdle in *Little Dorrit*; Karl Rove is Faulkner's Flem Snopes -- but it is also in our nature to preserve the most truthful stories and discard the rest.

Human nature is a marvelous filter, a superb judge of quality if not always at first, then infallibly in the long run. What is unreadable will not be read and what is false does not survive. We read Homer and Virgil but not the myriad others who have told the story of Troy. The converse is also true. Great works that had been scorned at first -- the poems of John Keats, Moby Dick- are eventually cherished while Pearl Buck the best-selling Nobel laureate of my childhood and an unwitting racist -- is probably unknown to most of today's readers. God sees the truth but waits Tolstoy wrote. Churchill, more speculatively, said the same about Americans who will always do the right thing after they have exhausted all the alternatives. The mills of the gods grind slowly but they grind fine, and not just for books not worth saving but for ideologies and empires too, including Tolstoy's and Churchill's, to say nothing of technologies. Where are the supersonic transports of yesteryear? Where are last year's hedge funds and their fail safe programming?

This critical faculty will not fail us as we navigate the vast, unmapped sea of undifferentiated content, untested opinion and remixed genres on the endlessly expanding world-wide web. Without our critical compass, our collective filter, to sift meaning and truth from the surrounding noise there would be no civilization, no scientific method, no digital technology and of course no book publishing industry, no libraries and no schools and we would not be here this afternoon: for there would be no New York City.

For most of our time on earth our great stories were sung as memorized verse until some five thousand years ago our Phoenician ancestors invented an alphabet that encoded phonemes as symbols. Astonishingly we found long hidden within our human nature the ability to decode these scribbles at a glance, a skill that we take for granted along with speech itself until we try to decode the scribbles of our Sanskrit or Asian neighbors and marvel at the skill of China's pre-programmed three year olds as they effortlessly learn their code as their western counterparts learn ours.

With the invention of the alphabet, stories could now be encoded as prose on stone, on scrolls and eventually on bound sheets called, appropriately, codexes. These codexes now embody our recorded civilization; the repository of our collective wisdom, our memory our brain. Should this collective backlist vanish so would our knowledge of who we are, where we came from or where we may be going. Within a few generations as memory deteriorates our civilizations would be lost. Whatever blessings our new technologies may bring one must pray that this heritage will not be hostage to an electronic malfunction, that the physical form in which our written civilization has resided for thousands of years will be spared the random hazards of an electronic future.

Having said this, let me say what is now perhaps too well known to bear repeating: that many texts including many of real value are intrinsically ephemeral and need no longer be

printed, bound and shelved except in some cases as archival records. This is true not only of much contemporary fiction and non fiction, books which are read once, if at all, and never opened again but also encyclopedias, dictionaries, manuals, atlases and so on that are obsolete on the day of publication. Such ephemeral content will increasingly be accessed by multi-purpose devices, bundled and sold by category to subscribers and stored, emended or discarded as needed. I say ephemeral not disparagingly but to emphasize the extreme volatility of today's reference and technical content. Targeted subscription programs will be widely marketed on line by publishers of trade as well as technical and scholarly data, to research libraries and everyday users. News gathering institutions will increasingly serve individual users on line, though so far no viable business plan has emerged that confronts the cost of news gathering and editing. Universities with their costly physical facilities may eventually dematerialize and offer their curricula on-line, a prospect I do not welcome but whose convenience in our decentralizing world is undeniable.

Today's costly, dedicated handheld readers will either become or be replaced by relatively inexpensive multipurpose mobile devices with extended battery life and more legible screens, a process already apparent, serving not only passive consumers of texts but active creators perhaps on the model of Japan's cell phone novelists. In the meantime these devices are powerful inducements for publishers to digitize their lists and for readers to become comfortable with digital technology. Whether works of permanent value emerge from the unforeseeable iterations of this creative opportunity is impossible to say but it is not unreasonable to imagine a future Whitman or Dickenson or Ginsburg working in such media.

Beyond these obvious expectations the digital future for writers and writing can be only speculative, including the ramifications of the fact that work composed on a keyboard and screen will always be work in progress. My own strong belief however is that distinguished fiction and non fiction -- what the heirs of Faulkner, Nabokov and Mailer create -- will continue to be written by highly specialized individuals struggling at their desks in deep seclusion and not by linked communities of interest. Our pre-literate epics, sagas, mythologies, and sacred texts were composed over centuries by what might today be called social networks, likeminded generations of cultural conservators but under strict priestly supervision: how else explain their amazing artistry. Encyclopedias dictionaries and so on, have also been disciplined communal efforts like today's brilliant, ambitious, frustrating, work in progress Wikipedia, but literary work since the invention of writing is with very few exceptions the solitary product of individual genius. One need only recall Coleridge's problem with Kubla Khan, assuming his story is true, of being interrupted by an unexpected visitor, to know the intensity and fragility of a writer's concentration. The last thing a writer in search of meaning wants is a team of collaborators at his electronic elbow, which is not to deny the value of researchers and editors. On the other hand, multi media experiments on line- I phone operettas, animation, pornography and who knows what else - will proliferate and may produce a few gems amid the rubble.

Authors' work must be legally protected for how else will writers survive? They must eat. They are not musicians. They cannot give concerts or make commercials. Though traditional territorial rights will become superfluous as the web dissolves historic boundaries, digital rights management, however unpalatable to cultural libertarians, file sharers and re-mixers of genres is essential to any literary future. Copyrighted content downloaded onto an electronic device must

not be shared with other devices, converted to other formats or mixed with other media without permission. At issue is not the greed of publishers but the survival of writers. A Napster solution would be disastrous. The term of copyright however is too long and should be shortened to cover the lifetime of authors and their immediate survivors.

The decentralized digital marketplace and the proliferation of files in all languages argue against monopolization of the digital marketplace, though an ASCAP-like clearing house where authors' digital royalties will be aggregated and disbursed seems to me both desirable and inevitable as is a multilingual directory compiled by competent bibliographers and librarians where readers in search of books on fly fishing in the Andes, the etymology of Urdu terms or the best edition of Shakespeare's sonnets will find perhaps for a small fee authoritative links to what they are seeking. Files will also gravitate to web sites of related interest where readers interested in Andean fly fishing may also turn for expert bibliographic guidance, also for a small fee per download. Owners of content may list their files with Google, Amazon and similar aggregators, but these arrangements will not be exclusive any more than publishers today offer their titles exclusively through a single retailer or channel. Content owners will continue to seek maximum exposure in search of paying readers.

The future of traditional booksellers in the radically decentralized world wide marketplace is unclear, but enterprising retailers with limited shelf space but with access to practically limitless digital multilingual inventories and print on demand technology will offer readers unprecedented access to titles anywhere on earth, including areas in Africa, Asia and Latin America too thinly settled or culturally isolated to have developed a literary culture during the Gutenberg era.

Some booksellers have already become publishers in their own right of regional authors and self published titles, a vigorous new industry even at this early stage of development and one that echoes the early development of Gutenberg technology. Word of mouth has always been the best source of information about books for which the web is an ideal medium. Criticism of various genres and intellectual levels will proliferate on the web and of these the most trustworthy will survive.

The radically decentralized digital marketplace has already rendered traditional publishing infrastructure -- warehouses, inventory, shipping, returns and so on redundant. Like American automobile manufacturers traditional publishers will persist in their traditional mode as long as they can, but they cannot indefinitely defend their institutions against disruptive technologies any more than the monks in their scriptoria could withstand the urgency of movable type. As factory based production and distribution gradually give way to web based production and marketing the cost of entry for publishers will decline to practically zero. Such traditional publishing functions as publicity, design, marketing, legal, record keeping and so on will be sub contracted as will web marketing and design. Talented editors require only minimal managerial services and in the digital future will require even fewer provided they resist inducements to expand or merge. Today's unwieldy conglomerates, trapped in a bad economy within their Gutenberg mode and motivated only by profit rather than the intrinsic value of the work itself -- the joy of publishing distinguished books, the primary motive of successful publishers -- will deconstruct, leaving their surviving imprints to fend for themselves under diverse ownership or

vanish. Resourceful agents may become business managers for groups of like minded editors and authors whose imprints will become recognizable brands, distinguishing their content from the great sea of helter skelter digital content while authors, as stakeholders along with their editors, may opt for profit sharing arrangements rather than traditional royalties. Best selling branded authors who require only minimal publishing services beyond manufacturing and distribution may become their own publishers, retaining their agents as business managers, subcontracting essential functions, and forgoing today's unsustainable guarantees in exchange for the entire net proceeds of their titles. Customers will pay less but pricing must still cover traditional author royalties, residual publishers' overheads and profit.

Whatever new publishing paradigms emerge, narrative will persist as a permanent expression of our human nature. We are a storytelling animal and all the world's tyrants from the beginning of human time have been unable to thwart us. The triumph of samizdat over tyranny is a very old story.

Ten years ago in a series of lectures that I delivered at the New York Public Library in which I sketched out the digital future as I saw it then and as it has since emerged I said that a book making machine, an ATM for books that receives a digital file and automatically prints, trims and binds single copies on demand at remote locations anywhere on earth where connectivity exists was an essential component of the decentralized digital future. In 2007, the last year for which figures are available 3.2 billion books according to the Book Industry Study Group were sold in the United States alone, not including the rapidly growing self-publishing category made possible by print on demand technology. In the digital future the world wide production of titles in all languages can hardly be imagined, creating myriad opportunities for decentralized print on demand and improved mobile, multipurpose devices with longer battery life and more legible screens. To speculate further at this stage is useless, except to posit billions of texts for billions of readers: the Gutenberg effect to the power of x.

Dedicated reading devices have a place in the digital future but as their form and function increasingly approach those of the traditional codex, even to the extent of pages that seem to turn, I am reminded of the feeding machine in Chaplin's *Modern Times*, his parody of a futuristic factory in which Chaplin and his fellow workers are fed at lunchtime by complex machines that approximate the function of knife and fork: a case of reinventing the wheel which like the codex and the fork doesn't have to be reinvented. Today's single purpose reading devices will encourage publishers to digitize their backlists: those who can afford them may prefer these devices for books not meant to be kept. But for the billions of books soon to be available digitally to billions of readers in all corners of the world the multipurpose mobile device will proliferate while the codex will remain the most efficient, durable and economical format for textual content worth saving.

The ATM for books that I envisioned ten years ago is today's Espresso Book Machine whose latest iteration is here on display. Together with a high speed duplex printer this compact version 2.0 which, when its design is completed, will accommodate books of as many as 800 pages and can produce a 320 page, library quality paperback of any size between 4 x 4 and 8.5 x 11 identical to the factory made original in seven minutes for about a penny a page for consumables. The eventual cost of the machine will be no more than an office copier. The

Espresso machine eliminates completely the Gutenberg supply chain by delivering a finished book from a selected digital file to the end user with no intervening steps: no inventory, no warehouse, no delivery cost, no spoilage and no returns. Ten test versions of Espresso 1.5, a predecessor version, are now operating in bookstores and libraries in the United States and Canada, Australia, Egypt and Great Britain. One of these machines, installed a year and a half ago in the bookstore of the University of Alberta now makes about one hundred books a day, seven days a week, including publisher owned custom course books, professor created course materials, out of print and pd titles, custom anthologies, short print runs for small publishers, vanity titles, conference proceedings, user manuals, facsimiles of rare library books, replacement titles for the library and so on. These results can be achieved on the appropriate scale in any of the 4,500 college and university bookstores in the United States and the 200 in Canada; for the smaller ones perhaps through a joint facility.

There are 23,000 sites in the United States that sell books of which 5,700 are traditional book sellers and of these barely fifty stock deep backlist. In the decentralized world wide digital marketplace these outlets, including coffee shops, hotels, hospitals, museums, airports, cruise ships, big box retailers, Wal-Mart's and so on will be multiplied many times. Fifteen percent of the American population is Hispanic and poorly served by traditional retailers and publishers. Vast Asian markets both within their home countries and overseas are similarly ill served. Our company is developing a program for sub-Saharan Africa, the most poorly served market of all. To list even a fraction of the marketing opportunities, several of which are pending and will be announced over the next twelve months, will keep us here all night. Meanwhile I hope you will have a chance to see the 2.0, the latest Espresso iteration. The machine on display is served by a relatively low speed Kyocera printer. With the much faster -- and more expensive -- Xerox machine a 320 page book can be printed, bound and trimmed in four minutes. The machine on display here is a handmade prototype, a work in progress, of a device that will soon be re-engineered for factory production. It is brand new and not fully tested, but those who see it in action will have seen an essential component of the publishing future.