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DIGITAL GUTENBERG

EVERYPERSON AS PUBLISHER

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INTRODUCTION

THERE ARE A FEW THINGS you need to know in advance about your messenger. First, I do not consider myself a technologist, though I do take an interest in some technologies. And as tricky and capable as some technology seems to be, I am confident that both human intelligence and human imagination are what counts in the making of things, particularly those things that we associate with the word "art."

Second, no one has ever accused me of being on the cutting edge of anything—and for that favor I am most grateful. Too often today we make the mistake of thinking newness is itself a virtue, and also that the mere employment of new technologies is somehow synonymous with originality in thought or even profundity. Third, what interests me most is the idea of art and how that idea helps us to understand what it is to be a human being. And by art I mean all art—art in words, images, and sounds—art in all of its forms and instances—art of every culture and from every impulse. When you consider that human beings have been around for nearly three million years, and that whatever we might have been thinking about ourselves for the first 2,980,000 of those years is either lost or non-existent, then it is clear that we have only just begun.

I tell you these things about me so that you are forewarned. This will not be a technical discussion, nor will it be a promotion of gadgetry and gimmicks. As I said, what interests me most is the idea of art as a path to understanding. And what I hope to show you in the course of my discussion is that computers are not only transforming the character of the path, but also opening it up to two-way traffic. That is why I have titled my essay "Digital Gutenberg—*Everyperson* as Publisher."

GUTENBERG, PART I

For my purposes we must visit a little history, in this case the vicinity of *Gutenberg, Part One,* which begins around the year 1440 in Mainz, Germany. This is generally conceded to be a very important moment in western cultural history, a revolutionary moment. We know this because its effects are everywhere evident, in our schools, libraries, bookstores, and, not least of all, in the numbers of us who can claim to be literate citizens.

When you mention the name Gutenberg most people will say one of two things: "Oh yes, the inventor of the printing press," or "Oh, you mean the guy who invented books." And, of course, neither is correct, and neither has much to do with why we celebrate the name Gutenberg or the men and events that connect to him.

Likewise, it is not the invention of the computer alone that has brought us to what I consider to be another equally revolutionary moment in our cultural history, a moment that may be even more profound than the first, and perhaps more breathtaking in scope. And, of course, I will have more to say about this as I go along. There is still the matter of Johann Gutenberg and what it was that he did do to change things.

He had three good ideas, one of which was actually original. The first was the idea that he could make a serviceable printing press by modifying a wine press. It was no miracle of technology, to say the least, but it worked. Many other people before him and during his time had experimented with making printing presses, and some of them are thought to have been superior to his. The second idea was to make for his printing needs a movable type with sufficient numbers of each character to allow whole pages of a book to be laid out at once. And, as he had in mind to print many pages in many copies, it was important that the type be sturdy and uniform. He was a goldsmith by trade, so it is not surprising that he decided to cast the type in metal. The idea of movable type was not new either. The Chinese inventor Pi Sheng had made movable type in clay in the early part of the eleventh century. Although it proved impractical—the Chinese language has 40,000 characters, and the clay type tended to shrink irregularly—it nonetheless was an idea that attracted some attention. And before that, early in the second century, the Chinese inventor Ts'ai Lun had made exquisite printing paper from mulberry bark and had carried the process of printing from wood blocks to a high degree of refinement. Knowledge of such things had made its way west to Samarkand and Baghdad, and eventually to Europe much before Gutenberg's time, prompting a fair amount of experimentation.

We come to Gutenberg's third idea. As I said, the press was an interesting, but not altogether new idea. And movable type made of metal is a decided improvement over clay or wood, but also not altogether new. With what then does that leave us? It was not the book, of course. Books had been around for a very long time in the form of hand-copied manuscripts. And what is a scroll, but a book with a continuous page. And by some stretch the 5,000-year-old Sumerian clay tablets could be called books, too. There is nothing in the definition of the word that requires that the thing to be made of paper.

What Gutenberg did invent, what he did make that was entirely revolutionary in its effect, was the possibility of the *edition*. This is the possibility of not just making a book in many copies, but also the possibility of proofing, correcting, and printing many books that are as free of error as human hands can make them. In more philosophical terms, it is the possibility of mass producing an idea, each copy exact and true in every detail, and then having that idea put into many heads in many places at about the same moment. This had never been done before, not on this scale, and when Gutenberg did it nothing in our lives was ever the same again.

So you see, technology—in this case the printing press and movable type—was merely the means by which a more profound and creative concept found its way forward.

Gutenberg, poor fellow, was not much of a businessman. Although he did manage one more very important contribution—an ink that would adhere uniformly to his metal type and transfer neatly to the page—he eventually lost his press, most of his type,

and what small fortune he had earned in the printing of his books. The details of that history are interesting, but not vital to our purposes here. What matters is that his idea spread quickly, and in a relatively short time Europe had what might be called a thriving book trade.

By 1470, William Caxton had printed the first book in the English language and had begun to establish order in both spelling and syntax. Among the one hundred titles produced on his press was a book on the game of chess and at least two editions of Chaucer's *Canterbury Tales.* He was also an able translator of French and Latin, making it possible for him to bring to public attention works that would have otherwise suffered neglect. A popular literature in the English language was thus begun.

Foremost among those who took up printing and publishing was Aldus Manutius, who also had the honor of being godfather to the artist Albrecht Dürer. In about 1494 he founded in Venice the first successful mass market publishing house. He was both a scholar and a good businessman, and the company he founded has endured to this day. It is worth noting that the great humanist Erasmus traveled to Venice to live with printers like Aldus. And by the end of the fifteenth century most of the antique manuscripts of Cicero, Horace, Vergil, Ovid, and Seneca had been translated and printed on the new presses. The name Aldus will come up again when I talk about computers. The Aldus company in America (now merged with Adobe Systems) has been a pioneer in computer publishing and graphics software.

Among the many fine craftsmen in the employ of Aldus Manutius were two very important designers of type: Nicholas Jenson, who created the Roman type, and Francisco Griffo, who created the Italic type. Almost all books up to that point had been printed in the German black-letter type, which was not terribly readable or attractive. The new letter styles had great appeal, particularly for those persons who would write and publish books for wide consumption.

The literature of France and the Renaissance begins with the sixteenth-century scholar and printer Robert Estienne. He attracted the interest and friendship of Leonardo da Vinci, who visited his shop often and may have made certain improvements to his presses. And in Estienne's employ was the great type designer Claude Garamond, whose type designs have inspired many of our modern typefaces. And, of course, these new styles made books increasingly "user friendly" for the writer as well as the reader.

One of the immediate effects of Gutenberg's invention was the appearance of popular books in the vernacular—books in English, Italian, French, Spanish, Russian, and so on. Most books before this time—the hand-copied books—were written in either Greek or Latin, and therefore were inaccessible to the ordinary person. Moreover, the new books contained new ideas, and these new ideas encouraged thinking and invention on a broader scale.

As a result, there was an immediate increase in the demand for books, which of course spurred a general increase in literacy throughout Europe. All manner of books began to appear, including books on controversial topics, and books for children and women, two categories of effort previously ignored. H.G. Wells, in his famous *Outline of History,* says of that period: "The book ceased to be a highly decorated toy or scholastic mystery. People began to write books to be read, as well as looked at, by ordinary people."

Before leaving the Gutenberg era behind, I need to say something on behalf of the hand-copied books, and also something about the political consequence of the book trade.

The Gothic hand-copied manuscript, for all of its more serious failings, was a thing of beauty and grace. Many of the copyists were artists of the first rank and able scholars. The Gothic book, with its illuminated pages and esoteric conventions, could hardly be counted as worthless. Many of the new mass-produced books were at least imitative of their form, especially in the matter of the use of illustrations and decorations. In fact, there have been numerous attempts to revive the Gothic book in the five hundred years since, some successful—as in the case of the nineteenth-century English artist and poet William Blake.

It is a fact that without the almost heroic efforts of many of the hand copyists to rescue—sometimes at sword point—the ancient manuscripts stored in the monastic libraries of Europe, the world might well have been deprived of the works of many of the ancient writers. This was certainly the case with Lucretius, whose great work *De rerum natura* was to be a cornerstone of much intellectual effort coming up to that great ferment we call The Enlightenment. For a time it seemed that the fate of Lucretius depended

on the existence of a single manuscript. There are chilling accounts of the mistreatment and neglect of countless other rare manuscripts, as the monks who were their custodians thought nothing of shredding a little Aristotle or Epicurus for stuffing, something to put in the cracks in the old stone walls to keep out the cold of winter.

Finally, it must be said that mass-market publishing put many hundreds of ordinary copyists out of a job. They protested as best they could—picketing the print shops and enlisting the help of authorities—but the tide was against them, just as it was against the censorship that civil and church authorities sought to impose on printers and publishers. What they feared, of course, was a loss of authority and the erosion of doctrine. There was in Europe at that time a rising spirit of humanism, and it was being fed by the new books. The university towns and seats of power, enamored of the status quo, had lost influence to the international trade centers, which were generally more progressive and liberal in their outlook. Printers, to their credit, found ways to avoid censorship, often by making the author anonymous and providing a false publication history. It is easy to suppose, though, that students of the medieval universities may have been the first eager clients of the new booksellers, as the cost of hand-copied texts was entirely prohibitive unless you were fortunate enough to have a wealthy patron.

The stage was thus prepared for the next part of the Gutenberg revolution. I will call this second phase *Gutenberg, Part One and a Half.*

GUTENBERG, PART I AND A HALF

The revolution of the edition—the possibility of transfering an idea from the one to the many—changed dramatically between 1839 and the first part of the twentieth century. The rate of change in technology and conceptual work from Gutenberg's time to the mid-1800s had been rather slow. The automation of typesetting and real technical improvements in presses were slow to arrive. But after 1839 we see a radical acceleration on all fronts. And, I remind you here, everything that happens begins with the proliferation of ideas, which is by this time in the proportions of a plague spreading outward in every direction.

For the sake of brevity I will let a few names stand for many hundreds of names and accomplishments of this period: L.J.M. Daguerre, W. H. Fox Talbot, Eadweard Muybridge, Guglielmo Marconi, Thomas A. Edison. Or let us call them Photography, Motion Pictures, Wireless Radio, Phonographic Recording.

Each of these innovations in different ways increased the power of the edition, the reach of the edition, and, of course, fundamentally altered or enlarged the formal and contextual possibilities far beyond the printed word and the occasional illustration. And the effects are immediate, decisive, and irreversible. Almost overnight distance was abolished and the scale of human operations ceased to be local and increasingly became global. Talbot's paper negatives did for the photographic image what Gutenberg's movable metal type did for the printed page. Marconi's invention of wireless radio transformed the voice of the one into a chorus, as did Edison's phonographic recordings. And Muybridge and Edison planted the seeds for multiplying images of life in motion and also in real time.

Even the imaginative mind of H. G. Wells could take in but a

fraction of comprehensive alterations to our social landscape attributable to this great burst of new possibilities. He exhausted himself trying. But if one book is to stand for the part that was his to understand it was his *The Door in the Wall,* a collection of short stories illustrated by the great photographic artist Alvin Langdon Coburn and set in a type that was designed especially for the book by Frederic Goudy. It was a full-scale collaboration between all parties to produce a total book reflecting the creative vigor of the times. I use it here as a metaphor for the optimism that was taking hold in the wake of so much progress.

There is far too much going on during this period for me to try to itemize even a fraction, but perhaps I can summarize it in this fashion:

In 1928, less than a hundred years after the invention of the photograph in France and England, the National Broadcasting Company (NBC) broadcast the first television image. It was not much, just the face of the cartoon character Felix the Cat. And before we had time to think what the broadcast of that primitive image might portend, the Columbia Broadcasting System (CBS) was showing us live shots broadcast from the surface of the moon. It is the case that from about 1839 every advance stimulated ten more, and those ten a hundred, and so on until we lose interest in counting. Today, of course, we are awash with so many of the elaborations, variations, and extensions of these several technologies that we simply take it all for granted, hoping that someone, someone trustworthy, has it all under control.

Control is one the curious downsides to all this. Who controls the means of production, especially when it comes to the transfer of ideas, is of course a matter of consequence. Gutenberg learned something about this when he lost his livelihood to a shrewd partner. Others after him learned something about it when powerful persons and institutions became aware of both the dangers and the potentialities inherent in the business of the mass production of ideas.

From about the beginning of the nineteenth century—as the industrial revolution was gaining ground—the control of communications technologies, including print publishing, began to be concentrated into fewer and fewer hands. It is the nature of market economies to do that, particularly when large sums of capital are required to purchase and operate them, which was certainly the case with most of publishing by then. The more sophisticated the means, the costlier it is to own and use them. Moreover, the complexities of nearly every phase of publishing and broadcast required people with highly specialized skills, and these people demanded higher and higher salaries for their services. The need for specialists was followed by a need for lawyers, agents, and middlemen.

Hence, as all these things became concentrated in the hands of the few, so did power and privilege. Whether or not there has been an intentional effort to suppress one idea and elevate another is of little consequence. What matters is that this concentration of control over technologies in print and electronic publishing has had the effect of suppressing one thing in favor of another, and the aim, conscious or unconscious, has been to protect the status quo in order to preserve the bottom line.

With economics as the primary engine, only those things that appeal to popular taste are apt to make it to the marketplace. Art of substance gets pushed to the margins, or is neglected altogether. It is an odd paradox, but the arts in general have become increasingly ineffective, while at the same time the means of making and distributing the products of the arts have become increasingly varied and efficient. The concern has been deeply felt by many in our time. Camus, in a famous speech delivered at Uppsala University in Sweden in 1957, said:

> Of what could art speak, indeed? If it adapts itself to what the majority of our society wants, art will be a meaningless recreation. If it blindly rejects that society, if the artist makes up his mind to take refuge in his dream, art will express nothing but a negation. In this way we shall have the production of entertainers or of formal grammarians…

Orwell had something to say about it, too. The following comes from his essay entitled “The Prevention of Literature”:

> Any writer … who wants to retain his integrity finds himself thwarted by the general drift of society rather than by active persecution.… Working against him are the concentration of the press in the hands of a few rich

> men, the grip of the monopoly on radio and films, the unwillingness of the public to spend money on books, making it necessary for every writer to earn part of his living by hackwork…

Or consider the words of the American historian Dr. Henry May. Writing in 1961 for a little pamphlet entitled *The Discontent of the Intellectuals: A Problem of the Twenties,* he says,

> In the philosophy of American publishing, popularity has been regarded not only as a practical advantage but as a virtue as well. Thanks to the peculiar character of our democracy, our publishers have been able to persuade themselves that a book which fails to appeal to the ordinary citizen cannot be good on other grounds.

Dr. May goes on to suggest that in America, at least, there has not been a willingness on the part of the publishing system to provide our artists with so much as a handout, a little hackwork to keep them afloat between disappointments.

"A genius looking for employment is one of the saddest sights in all the world," wrote Henry Miller in his *Time of the Assassins*. And, yes, it is sad to see. Sadder still, in my view, is the picture of whole armies of talent—perhaps not all of them first-rank geniuses—being slowly drained of optimism and capacity until, having achieved the maximum reduction, they fade into either virtual or actual oblivion. As I said, this has been the general drift since at least the beginning of the machine age, which is about when society got in the habit of regarding any disinterested activity—especially the arts—as self-indulgent nonsense.

I want to believe that the revolution of the edition is not finished—not yet, anyway. Happily, I have some grounds for thinking it is not finished—providing, of course, we have not driven too many of our talented persons into one kind of oblivion or another, or so frustrated the young ones coming along that they fail to take an interest.

GUTENBERG, PART II: DIGITAL GUTENBERG

THIS BRINGS ME NOW to that other great moment—to that other revolution in the making—the one I call "Digital Gutenberg." As I suggested, it is a moment that is at least as important as Gutenberg's invention of the edition, and it is a moment that, if we proceed with intelligence and imagination, may ultimately prove to have even more profound consequences.

I will not go into a detailed technical history of the computer. Suffice to say that from about the early 1920s to 1971 it had little to offer the artist, writer, or publisher. It was, in the main, a machine for a new priesthood of scientists, engineers, and accountants, whose interests were defined by government and industry. These early computers were huge, complex, and mysterious. They filled whole buildings, took armies of ant-like operators to keep them going, and they had forbidding names—like EDIAC, UNIVAC, MANIAC, and JOHNNIAC. It took the invention of the silicon chip and the printed circuit to bring those machines down to a more promising scale—to produce what I call "people computers." And even the early people computers were not much, because they lacked the memory and speed required for the kinds of work that graphics and publishing demand. Moreover, the operational systems were still too layered and too mechanical for the sensuous nature of artistic enterprises.

The best technology is the technology you do not have to think about. The artist does not care how the pencil is made, so long as it makes a proper line. The writer does not care about the interior processes of his or her typewriter, so long as the words appear on the paper in readable form. It is enough for the artist to keep focused on the creative act, to keep the flow moving in a productive way. The important thing is that we finally did get some-

thing that was not only a people machine but also a publishing machine. That was barely more than ten years ago. They came in many shapes and sizes, but two in particular have been especially useful and very accessible—the IBM PC and the Apple machines. And it was of course Apple who introduced the world to the Macintosh with that useful little device called a *mouse* and an operating system that de-mystified computer use. And it is fair to say that the Apple computers have come to dominate the market in almost every aspect of creative and publishing work chiefly because they are the technology you do not have to spend that much time thinking about.

What these publishing machines did—and I cannot believe the manufacturers really understood the favor they were doing us—was to, in effect, open the door for a reversal in the trend of owning the means of production. In short, the people computers offered the possibility of ordinary persons with ordinary pocketbooks to own the means of production, and thereby loosened the controls over the kinds and forms of ideas that might be transferred from the one to the many. And this is what makes this a revolutionary moment, a moment of real opportunity for those who care to make artistic effort more effective. Look at what the hand-held camcorder has done to democratize the visual record of life everywhere. From that bloody square in China to the streets of Los Angeles, ordinary people are recording powerful images, alternative images to those produced by the established news and entertainment industries. And now the publishing machines are doing as much, and it is possible to combine the power of things like the camcorder with the power of the computer, and to put the result forward without asking permission.

The first useful publishing software came out just a few years ago. In 1985 Aldus Corporation in America—following in the splendid tradition begun by Aldus Manutius of Venice—introduced PageMaker. It worked in concert with writing programs and graphics applications, and included all the functions necessary for publication design and layout. It was followed by other products from other companies, equally powerful and easy to use—all of which made the computer user increasingly self-sufficient. Nowadays it is commonplace to take your disk with fully laid out and typeset files to a commercial printing shop and have its contents printed directly to plates, thus saving the would-be publisher many hundreds, sometimes thousands of dollars in pre-press work. And for small editions of a few hundred copies it is not necessary to go to a commercial printer at all. It can all be done "in-house," on the computer user's desktop. The digital type foundries—pouring laser light in the place of lead—offer thousands of splendid typefaces in collections of about 238 characters, numbers, devices, and ornaments. And, of course, many offer typefaces in foreign characters for nearly every major language group. For special needs there is software that allows a person to design their own digital type, or to create special effects based on existing type (such as three-dimensional illusions, extruded text, or text attached to a path). No printer in history had these kinds of resources at his fingertips. Charles Bigelow, in his introduction for the 1989 edition of *The Best of Fine Print on Type,* said this:

> What has been noteworthy about the transition is that typography has remained an art, whether based on the casting of intricate sculptures by methods essentially unchanged since their invention or perfection by Gutenberg, or based on the painting of pixel patterns by beams of laser light controlled by algorithms of computer graphics.

As for image making and image manipulation, what has emerged are sets of programs that define images in different ways, depending on the objectives of the artist. There are draw programs which define everything as an object. There are paint programs which define everything as patterns of pixels (or dots). And there are CAD (Computer Aided Design) programs that plot the image from mathematical hints. Of the three types it is probably the paint programs that perform in the way most artists are accustomed to working. They have familiar tools and palettes needed for all the usual sorts of work with line, tone, and color. Improved electronic drawing boards and Zen-like pressure-sensitive pens can give digital art a look and feel almost indistinguishable from that produced by more traditional means. After much waiting, most of today's software for computer imaging is sophisticated enough that the tool—the computer and its accouterments—need not be visible in the

final product. That is to say, computer-generated art does not have to look to like it was produced on a computer—unless, of course, it is to the benefit of the work to let it all hang out.

The arrival of devices that allow sound, photographic images, video images, and line art to be introduced directly into computers as digital information propelled the people computers into the forefront of almost all phases of publishing and art production. Interactive digital publishing is one of the most rapidly expanding areas in computer hardware and software design. It is really quite remarkable, but a single user can now have in-hand all the functions that once required many highly trained persons and a mountain of expensive equipment to accomplish.

As I indicated earlier, the ideal publishing machine needs lots of memory and speed. Computers are very democratic, on the whole; they treat all information the same. It is all just ones and zeros. It does not matter if you type the letter A to mean A, or if you make a mark in a drawing program to create a nose. The computer takes it in and pushes it out as either a one or a zero, or a collection of ones and zeroes. But, as imaging and publishing needs become more complex—as, for instance, in the case of a drawing with many subtle tones or several hundred colors, or a document consisting of both words and pictures—then it takes many more ones and zeroes to describe a given element, which means the computer is soon processing mammoth quantities of ones and zeroes that tend to bunch up, and in effect become caught in a kind of traffic jam, making the progress of work impossibly slow.

When you consider that the first personal computers had only 48 to 64 kilobytes of operating memory, called RAM—and a byte being usually an arrangement of eight digits made up of ones and zeroes—anything more complex than a simple black-and-white sketch was out of the question. The new machines generally have at least a megabyte (one megabyte being 1024 kilobytes) of operating memory, more often 2 to 5 megabytes. And now, with the possibility of capturing full-color photographic and video images, and sound too, we find ourselves buying machines equipped with 20 megabytes or a gigabyte (1024 megabytes) of operating memory. More memory will be needed as the work becomes more sophisticated, of course. And we are going to need better and faster ways to access that memory. I am confident that the computers we will be using in the next decade will have a whole new look and feel—tending, I think, away from linear modes toward more organic schemes.

Yes—bits, bytes, kilobytes, megabytes, and gigabytes are part of our vocabulary now, like it or not. It is important for all of us—even us sensitive types—to learn what they mean. For in the knowing is the power to create in ways we had not thought possible, and also the power to put those creations into the hands of the many. In the knowing is power to be a publisher, not just of words on paper, but images and sounds and new arrangements of words, images and sounds in new orders of integrated electronic editions—using things like the CD-ROM, or tape, or the fiberoptic highways that will soon span continents and oceans.

The power to publish has been put in the hands of *everyperson,* if they want it. The power of the edition is the power to influence, to have an effect, to be part of change, to define change, to share the knowledge of what it is to be a human being with as many others as might want it. We have the machines, not just the computers, but all the machines required for this great new phase of publishing—the age of integrated, interactive, open-ended editions. We have laser printers as good as the best commercial printing presses. We have laser copiers, laser scanners, video capture boards, high-resolution video cameras, still video cameras, musical instrument digital integration devices, and more. There is even now a three-dimensional printer capable of taking designs from the computer and printing out real 3-D molds that can be used to cast intricately sculpted forms. It was made for industry, but I am sure a sculptor or two will soon discover its advantages. One person, with just a few of these things on a desktop at home or in the studio, can be writer, editor, page designer, type designer, type founder, artist, videographer, publisher, printer—and do it without really knowing how, exactly, it all happens. And the cost to one person for all this potential is probably less, but certainly not more, than what he or she might spend on a modestly priced automobile—perhaps less than a good used car.

How much would an artist pay for an electronic gallery?—a poet for an electronic coffee house?—a novelist for an electronic publisher?—a musician for an electronic instrument and studio?—a photographer or videographer for an extended darkroom, gallery,

and electronic theater? What would anyone pay for a digital chameleon capable of becoming whatever his or her mind is able to imagine?

EPILOGUE

IT IS TRUE that not everyone has something to say. Not everyone enjoys the role of participant. But for those persons of intelligence and imagination who have something to say, I say that it is a matter of duty to say it. And the opportunity to say something in a very effective way has presented itself. Certainly the complexity of the technology is no longer a barrier. Nor is the cost. Any person, if they have the skill to tie their shoes, can make good use of these machines and their software.

Beyond the obvious increase in the formal reach of the arts, there is the chance to redefine the path and power of the idea in its transfer from the one to the many. The environment of the edition may no longer be one of merely the producer and the consumer. Rather, the potential is there for something like a community of producers engaged in continuous exchange, a Pascal's circle of intellectual and creative energies in continuous interaction. Pascal's circle, to remind you, is one in which the center is nowhere, the circumference everywhere.

I cannot help but think of William Blake, who wanted very much to revive the form of the Gothic book. I think of his small, hand-printed and hand-colored editions of *Milton* or *Marriage of Heaven and Hell*. They were in editions of less than a dozen, I think, each painstakingly printed from relief plates. It was expedient, of course. Blake was printing on a shoestring. Few of his countrymen took him seriously, and certainly no publisher seemed wont to take an interest. But imagine, if you will, Blake with a Macintosh computer, some modest painting software, a few digital fonts, and maybe a color laser printer. Perhaps none of it would have made him any more interesting to the public or to publishers, but it would certainly have allowed more copies of his work to reach more hands, and that at least would have added volume to his voice and perhaps some potential for greater effectiveness.

I cannot help but think, too, that the world is full of Blakes even now, each engaged in the struggle to make public the fruits of their private invention. They have been put off by the sheer enormity of the maze that stands between them and fulfillment. They are waiting for suggestions. So here, for all the Blakes among us, for you, for me—*for everyperson*—is that opportunity—the chance to have an effect—the chance to be subversive, as only the artist can be. If you believe in the future and in the capacity of human beings to transcend habit and the tyranny of numbers, then the line forms here. The danger rests in not acting. People are going to press this new advantage—all sorts of people. Let us do what we can to ensure that it is the best people who take the lead.