preface

ELECTRIC SPEED

This book is an extended attempt to think about the object-world of technology as though it belonged to the world of culture, or as though those two worlds were united. For the truth is, they have been united all along. Was the original cave painter an artist or an engineer? She was both, of course, like most artists and engineers since. But we have a habit—long cultivated—of imagining them as separate, the two great tributaries rolling steadily to the sea of modernity, and dividing everyone in their path into two camps: those that dwell on the shores of technology and those that dwell on the shores of culture. The opposition colors much of modern thought. (Even the human brain is now seen as having a lobe for artists and a lobe for engineers.) But it is as false as the genetic separation between human and ape. As was true for the triumph of Darwinism in this century, it has taken a combined effort of art and science to make this error visible.

This is not the first book to proceed from these initial conditions. In fact, the argument here belongs—somewhat grudgingly—to a larger movement, one that is only now

coming into its own. You need only look around you to see the evidence: the word *technoculture* appears on every other page of *Wired* magazine, and the literature departments that once looked enviously to Paris for the latest bon mot now get their source materials straight from Silicon Valley. John Brockman announces the existence of a "third culture," populated by complexity theorists and multimedia savants. Self-help gurus like Anthony Robbins explicitly describe their guides to personal fulfillment as "technologies," while computer-animation companies like Pixar conjure up entire movies out of binary code. Any professional trendspotter will tell you that the worlds of technology and culture are colliding. But it's not the collision itself that surprises—it's that the collision is considered news. You'd think the life of Leonardo da Vinci or Thomas Edison would be enough to convince us that the creative mind and the technical mind have long cohabited. Alas, the doyens of technoculture are too busy proclaiming the Internet "the greatest thing since the invention of fire" to contemplate the great revolutionaries of the past. The digital world may be jacked in, booted up, and wired for sound, but it has a tin ear for history.

There's a funny thing about the fusion of technology and culture. It has been a part of human experience since that first cave painter, but we've had a hard time seeing it until now. When James Joyce published *Ulysses* in 1922 and revolutionized all of our expectations about how books should work, was he so different from Gutenberg himself? You couldn't see it at the time, but Joyce was a highly skilled technician, tinkering around with a book-machine, making it do things it had never done before. His contemporaries saw him as an artist (or a pornographer, depending on who you talked to), but from our vantage point, he could just as easily be a programmer, writing

code for the printing press platform. Joyce wrote software for hardware originally conjured up by Gutenberg. Reverse the angle, and the analogy holds as well: Gutenberg's reworking of the existing manuscript technology of quills and scribes was a creative act as profound as Molly Bloom's final monologue from *Ulysses*. Both innovations came from startling imaginative leaps, and both changed the way we look at the world. Gutenberg built a machine that Joyce souped up with some innovative programming, and Joyce hollered out a variation on a theme originally penned by Gutenberg himself. They were both artists. They were both engineers. Only the four hundred years that separated them kept their shared condition from view.

Why should the connection seem more feasible to us today? The answer is simple: speed. Technology used to advance in slower, more differentiated stages. The book reigned as the mass medium of choice for several centuries; newspapers had a couple of hundred years to innovate; even film ruled the roost for thirty years before the rapid-fire succession of radio, then television, then the personal computer. With each innovation, the gap that kept the past at bay grew shorter, more attenuated. This meant little in the centuries-long increments of the book or the newspaper—not to mention the millennial scale of the cave painter—but as the stages grew more abbreviated, they began to interrupt the life cycles of individual humans. Rousseau lived his entire life under the spell of the printing press. Freud was born during the telegraph's heyday, and he made it all the way to the first stirrings of TV. There is a kind of knowledge to be found in those interruptions, those discontinuities, like the dialectical crosscuts of Eisenstein's *Battleship Potemkin*. (Yet another distinguished artist-engineer.) The explosion of media types in the twentieth century makes it

possible for the first time to grasp the relationship of form to content, medium to message, engineering to artistry. A world governed exclusively by one medium is a world governed by itself. You can't measure a medium's influence without something to compare it with.

This, in fact, turns out to be the largely unsung message of McLuhan's *Understanding Media.* In a book full of radical pronouncements, the most suggestive—and puzzling—assertion comes near the end:

> At no period in human culture have men understood the psychic mechanisms involved in invention and technology. Today it is the instant speed of electric information that, for the first time, permits easy recognition of the patterns and the formal contours of change and development. The entire world, past and present, now reveals itself to us like a growing plant in an enormously accelerated movie. Electric speed is synonymous with light and with the understanding of causes.

There are a hundred books to be written about that "enormously accelerated movie." This is only one of them. But it is worth pausing for a second to be clear about what McLuhan is saying here. What made it possible for him to write *Understanding Media,* what makes it possible to concoct slogans like the "the medium is the message" in the first place, is the sheer velocity with which technology now advances. We can grasp the way different media shape our habits of thought because we can see the progression, the change from one form to another. You're born into a world dominated by television,

and then suddenly you find yourself acclimating to the new medium of the World Wide Web. The shift is startling, even thrilling, depending on your mindset—but however you respond to the new forms, their arrival has an illuminating force. If you live your entire life under the spell of television, the mental world you inherit from the TV—the supremacy of images over text, the passive consumption, a preference for live events over historical contemplation—seems like second nature to you. Only when another medium rolls into view does the television's influence become perceptible. When those paradigm shifts arrive only once every few centuries, you have to be a genuine visionary or a lunatic to see beyond the limits of the form. McLuhan, of course, was a little of both.

Technological change has been a lightning rod for all manner of cultural electricity over the past two centuries. Think of the original Luddites, or the back-to-nature rejections of consumer society in the sixties. McLuhan may have been the most profoundly apolitical thinker in the second half of the twentieth century, but his ruminations on the consciousness-raising powers of technological speed sound uncannily like Karl Marx's—particularly the later Marx of the second and third volumes of *Capital.* "An anarchy of permanent revolution," Marx said of industrial society, not altogether unapprovingly. Where McLuhan saw electric speed as synonymous with the "understanding of causes," Marx saw its industrial equivalent as a force propelling us toward a working-class uprising. The dizzying, incessant waves of technological change—and their secondary effects on social organization—would prove unsustainable, maddening. The capitalist system would invariably come to crisis, reveal itself to be the crazed dervish that it was. The rate of change made it

possible to think *historically* about a culture that liked to think of itself as outside history. It was a way of seeing beyond the current regime, and in doing so, it implicitly raised the possibility of salvation. The faster capital spun out the innovations, Marx argued, the more intolerable it would seem to those living under that accelerating clock. The revolution wouldn't be televised, but it would come from the same edgy, relentless drive for novelty that brought us television in the first place.

Labor historians talk about the great correction Western capitalism made in "allowing" the growth of unions to prevent genuine civil disturbances, but there is another, more subtle correction at work in the twentieth century: capitalism transformed technological speed from a looming, exponential threat—like global warming or overpopulation—into a lifestyle decision, a hip sensibility. Change could be our friend, the ads and the politicians leered. Embrace the speed and the unknowingness of electric society and all your troubles will subside in the rush, in the great leap forward. This is a line that runs like a neon thread through the last hundred years: from the Italian Futurists, fashioning their poetry after race cars and hand grenades, to the glib soothsaying of the AT&T "You will" campaign. And somewhere in this mix, buried beneath all the avant-garde euphoria and marketing hype, lay McLuhan, half-cheerleader and half-agnostic, shocked into recognition by the high voltages of twentieth-century machines. Technological acceleration wouldn't necessarily bring us contentment, he argued, but it would bring understanding. That was the great legacy of "electric speed."

The central topic of this book—the fusion of art and technology that we call interface design—is an offshoot of this same accelerated wisdom. We have reached a point where

the various media evolve so rapidly that the inventors and the practitioners have blurred into one holistic unit, like a science lab hosting a creative-writing seminar. There are no artists working in the interface medium who are not, in one way or another, engineers as well. This has always been the case with culture and technology, of course; it's just that we used to pretend it was otherwise, by dutifully keeping the painters and the mechanics separate, on the college campuses, in the museum halls, on the bookshelves—wherever the twain had the slightest chance of meeting. The artisans of interface culture don't bother wasting time with these arbitrary divisions. Their medium reinvents itself too quickly for false oppositions between creative types and programmers. They have become something else, some new fusion of artist and engineer—interfacers, cyberpunks, Web masters—charged with the epic task of representing our digital machines, making sense of information in its raw form.

There is a kind of secret history to that fusion: Balzac was a printer, and his novels are obsessed with Gutenberg's technology. (His greatest novel, *Lost Illusions,* involves an ambitious tinkerer who concocts a new way to make paper stock.) The first motion-picture stars were the blushing, ill-at-ease relatives of the technicians behind the camera. But for the most part, we have kept the novelists and the mechanics, the painters and the programmers at separate ends of the spectrum, like two boxers restrained by a crowd of hangers-on and referees. Both camps have labored mightily to preserve a safe distance between the two, but the partition will not last long. We are due for a rumble.

A few final observations, and warnings, about the pages that follow. The first should be a comfort to readers who have tired of the recent bombast emanating from both the digital elite and their neo-Luddite critics. I have tried to keep this book as free of dogma and polemic as possible, emphasizing both the tremendous intellectual liberation of the modern interface and the darker, more sinister implications of that same technology. From its outset this book has been conceived as a kind of secular response to the twin religions of techno-boosterism and technophobia. On the most elemental level, I see it as a book of connections, a book of links—one in which desktop metaphors cohabit with Gothic cathedrals, and hypertext links rub shoulders with Victorian novels. Like the illuminations of McLuhan's electric speed, the commingling of traditional culture and its digital descendants should be seen as a cause for celebration, and not outrage. This is likely to trouble extremists on both sides of the spectrum. The neo-Luddites want you to imagine the computer as a betrayal of the book's slower, more concentrated intelligence; the techno-utopians want you to renounce your ties to the fixed limits of traditional media. Both sides are selling a revolution—it's just that they can't agree on whether it's a good thing. This book is about the continuities more than the radical breaks, the legacies more than the disavowals.

For that reason, the most controversial thing about this book may be the case it makes for its own existence. This book is both an argument for a new type of criticism and a working example of that criticism going about its business. For that reason alone, it may strike some readers as misguided. Throughout, I have tried to think about the elements of modern interface design as though they were the cultural equivalents of a Dickens novel, a Welles film, a Rem Koolhaas building—in

other words, as works possessing great creative and social import, and having longer-term historical significance than just the latest product review in the high-tech trades. In the first section of the book, "Bitmapping," I discuss the origins of contemporary information-space and take a look at the way recent television programming anticipates the data filters of the present day. Each of the next five chapters focuses on one component of modern interface, exploring both the future possibilities of the device and its ties to the ancien régime of analog culture. "The Desktop" begins with the discovery of the office metaphor and then examines the difficulties of representing social life within that limited frame. "Windows" looks at the way multiple viewpoints change not only our psychological profiles but also our ethical and legal expectations about the proper use of information. "Links" draws an extended parallel between the hypertext medium of the World Wide Web and the grand synthetic narratives of the Victorian novel. The "Text" chapter makes a case for old-fashioned words on a screen, and explains how a computer managed to become a Shakespearean scholar. "Agents" takes a hard look at so-called intelligent software and speculates on how future interfaces may transform our cultural appetites. In the concluding chapter, "Infinity Imagined," I outline some of the broader themes that will hold sway over the new field of interface criticism in the next decade.

I have tried to strike a balance in the following pages among technical explanations, historical narratives, and cultural analogies. Each chapter braids these three threads together, and I trust that the reader will find that stitch more enlightening than erratic. There are some wonderful stories behind the triumph of the graphic interface, and I have tried to convey a little of the texture and vitality of those events without

turning this book into a historical account. I have also tried to keep the technical descriptions at a level that will appeal to power users and novices alike. My hope is that even the digitally savvy reader will find some revelation in the descriptions of more familiar objects, since part of a cultural critic's role is to make us think twice about experiences that are second nature to us. Of course, writing about technology from a cultural perspective invariably changes the subject matter in all sorts of surprising ways. Readers familiar with the contemporary high-tech landscape will note that I often discuss technologies that were not commercial successes and ignore some products that sold millions of copies. That is the unavoidable consequence of writing a book concerned more with imaginative breakthroughs than with box-office successes, and it will be familiar to anyone who follows the literary world, where mass appeal and aesthetic achievement rarely coexist in the same book. Fortunately, the history of the modern interface includes a number of instances in which mass audiences and creative innovation have managed to exist side-by-side. These happy coincidences of art and commerce are rarities in the cultural record: one thinks of Dickens in the Victorian age, Hitchcock's films in the fifties, the Beatles' recording career after *Rubber Soul*. The modern interface has had moments of comparable dexterity: a mass form that also labors at the cutting edge, a pathbreaker that still manages to attract an audience of millions. These intersection points are like the great eclipses of modern cultural experience, a rare and momentous alignment of forces, one that we may not see again for many years. We do well to take these alignments seriously anytime we are lucky enough to stumble across them. What follows is an attempt to do just that.

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