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The Electronic Word

Democracy,

Technology,

and the Arts

Cart and horse began to change places. I came to think that the most interesting thing about digital "text" was how directly it fulfilled the expressive agenda of the strand of artistic thinking and practice we nowadays call postmodern. So here I was committed to argue that electronic text expressed both the postmodern spirit and the classical rhetorical one better than print!

And so I argue that at least one strand of postmodern visual art, the one that starts with Italian Futurism and Dada, represents yet another instance of the general revival of rhetorical thinking and education that I discuss in chapter 3. The curricular issues which then dropped out of this essay reappear in chapters 5 and 6 below.

This process, long and labored as it seemed in the doing, showed me that these various issues, or branches of thinking, were all related, all part of one single phenomenon. I try in the essays which follow to describe that phenomenon from the different points of view its essence requires.

We have always, from Pascal to the present, thought of computers, especially digital computers, as logic machines. Whether they helped us with our weaving, our business tabulations, our artillery trajectories, or our atomic bombs, we have always located them where we locate logic: at the familiar Platonic, mathematical center of human reason. It was a Monster of Pure Reason that threatened to fold, spindle, and mutilate the riotous Berkeley students of the sixties. It was the same monster that prompted Hubert Dreyfus to write his equally riotous satire of artificial intelligence,[1] a modern *Dunciad* after which neither satirist nor satirized has ever been the same. I would like, as a supplement and complement to this view from philosophy and theory, to suggest that in practice, the computer often turns out to be a rhetorical device as well as a logical one, that it derives its aesthetic from philosophy's great historical opposite in Western thought and education, the world of rhetoric. I argue, at the same time, that this fixation on logic has so bemused us that we have failed to notice the extraordinary way in which the computer has fulfilled the expressive agenda of twentieth-century art. It thus fulfills at the same time a very new visual agenda and a very old verbal one. I want to suggest some of these remarkable fulfillments here.

What happens when text moves from page to screen? First, the digital text becomes unfixed and interactive. The reader can change it, become writer. The center of Western culture since the Renaissance—really since the great Alexandrian editors of Homer—the fixed, authoritative, canonical text, simply explodes into the ether. We can see that happening in a typographical explosion called *SCRABrrRrraaNNG*, from a 1919 manifesto by Filippo Tommaso Marinetti (fig. 1).

Italian Futurism, which began with Marinetti's famous *Futurist Manifesto* in 1909, was a complex, and as things turned out an extremely prophetic, movement that combined theatrical evenings very like the Happenings

Figure 1. Filippo Tommaso Marinetti, "SCRABrrRrraaNNG,"
from *8 anime in una bomba—romanzo esplosivo*, 1919.
© Marinetti/VAGA, New York 1993.

of fifty years later with political outpourings of an apocalyptically Fascist sort. It created a new, nonharmonic music which used both silence and noise in ways that foreshadowed John Cage, and argued for the primacy of vision over print in ways that point toward Marshall McLuhan. The final aim of all this was, or at least sometimes was, the conflation of the arts into a single theatrical whole, something Marinetti called "Il Teatro di Varietà," a theater that seemed, at least for him, to find its most natural future home not in live theater but in cinema—cinema being then the new technology. (He would now locate it, I think, in the digitally driven "theme park" events

being designed by Lucasfilm, Disney, and MCA. The perfect example of "Il Teatro di Varietà" would be the Disneyland space-travel attraction called "Star Tours.")

I want to single out from this prophetic mélange of violent theater and political rant only one of its dominant interests: the attack on the printed codex book and its typographical conventions, an attack symbolized by Marinetti's *esplosione*. In a tract called *La cinematografia futurista* Marinetti and some of his pals single out the book as the chief villain of the old order:

> The book, the most traditional means of preserving and communi-
> cating thought, has been for a long time destined to disappear, just
> like cathedrals, walled battlements, museums, and the ideal of pacifi-
> cism. ... The Futurist Cinema will ... collaborate in a general renew-
> al, substituting for the magazine—always pedantic—, for the drama—
> always stale—, and killing the book—always tedious and oppressive.[2]

The book is seen as static, inelastically linear, sluggish; the new cine-matographic form as dynamic, interactive, simultaneous, swift. This war on the book chose as its immediate target typographical convention, with results like *SCRABrrRrraaNNG*. Here we see the book and all it represents in the act of deconstructing itself—all unawares the little children played, even as early as 1919—*esplosione* at its center literally shattering typographical convention into distended fragments.

Subsequent collage techniques from Dada to the present day have diffused the force and direction of this attack, but Marinetti was taking aim at the founding convention of a literate society. I quoted in chapter 1 Eric Havelock's thesis that a culture, to be truly literate, must possess an alphabet simple enough to be learned thoroughly in early youth and unobtrusive enough in its calligraphy that a reader forgets about its physical aspects and reads right through it to the meaning beneath. The written surface must be transparent. Transparent and unselfconscious. We must not notice the size and shape of the letters. We may in some subconscious way register the cheirographic or typographic conventions but we must not *see* them. (Havelock, for example, points to early Greek vase-paintings where letters of the alphabet are used as decorative motifs, are noticed for their size and shape only, as registering the preliterate, still oral, use of the alphabet.)

It is to this stage that Marinetti—and electronic text—would return us. He seeks to make us aware of the enormous act of simplification that an ordinary printed text represents; he wants to make us self-conscious about a register of expressivity that as literate people we have abjured. It is common to call experiments of this sort "outrageous," but surely they aim at didacticism much rather. In a literate culture our conception of meaning

itself—whether of logical argument or magical narrative—depends on this radical act of typographical simplification. No pictures; no color; strict order of left to right then down one line; no type changes; no interaction; no revision. In attacking this convention, Marinetti attacks the entire literate conception of humankind—the central self, a nondramatic society just out there waiting for us to observe it—and the purposive idea of language that rests upon it. He would urge us to notice that all this reality-apparatus is as conventional as the typography we are trained *not* to notice. There was a time when it did not exist: in the oral culture, in fact, out of which Greek rhetoric developed.

Marinetti's techniques have been employed often since then. Ted Nelson's *Computer Lib/Dream Machines* offers a handy example from the digital world (fig. 2).[3] Nelson's sometimes cutesy typographical games show more clearly than Marinetti the native didacticism of the genre. Here too, as often happens, the self-conscious typography advocates a theory of prose style— a campaign against "cybercrud" and for an unselfconscious prose style based on the "Clarity-Brevity-Sincerity" trinity—that the self-conscious typography contradicts at every point.

Concomitantly with the explosion of the authoritative text, electronic writing brings a complete renegotiation of the alphabet/icon ratio upon which print-based thought is built. We can detect this foregrounding of images over written words most clearly in the world of business and government communications, but it is happening everywhere. When the rich vocal and gestural language of oral rhetoric was constricted into writing and then print, the effort to preserve it was concentrated into something classical rhetoricians called *ecphrasis*, dynamic speaking-pictures in words. Through the infinite resources of digital image recall and manipulation, ecphrasis is once again coming into its own, and the pictures and sounds suppressed into verbal rhetorical figures are now reassuming their native places in the human sensorium. The complex icon/word interaction of oral rhetoric is returning, albeit *per ambages*.

The struggle between icon and alphabet is not, to be sure, anything new, as the history of illuminated manuscripts attests. This complex interaction of word and image never actually vanished; it only fell out of fashion. The tradition of mixing transparent alphabetic information with opaque pictures formed by the letters goes back at least to Simias, a Greek poet of the fourth century B.C.[4] It was revived first by Marinetti and then by the Dadaists, with a specifically aggressive purpose. And, to some degree, it lurks in any calligraphic tradition. Electronic display both invites manipulating the icon/alphabet mixture and makes it much easier to write.

As one instance of how such calligrams work, we might look at a

Figure 2. Ted Nelson, *Computer Lib/Dream Machines.* Reprinted by permission of Microsoft Press. Copyright © 1987 by Ted Nelson. All rights reserved.

prophetic pre-electronic example in Kenneth Burke's *Collected Poems, 1915–1967* (fig. 3).[5] Burke called these doodles "Flowerishes." The "text" of this particular typographical game is a series of comic apothegms: "In a world full of problems he sat doing puzzles," "One must learn to be just morbid enough," "They liked to sit around and chew the phatic communion," and so on. The core of Burke's philosophy of rhetoric has been his discussion of "orientation," the self-conscious perception of paradigms for apprehending reality that we customarily push to the side, to our peripheral vision. In this doodle, he uses the conventions of typography to pun on orientation. To "orient" ourselves to this self-conscious form of proverbial wisdom, we must, like an illiterate pretending to read, turn the book round and round in an effort to make sense of it. We are made aware of the book as a physical presence in our hands. The printed surface is rendered opaque rather than transparent by changes in typeface, font size, and sequentiality. Text must be read top to bottom as well as left to right, back to front, in a circle, every which
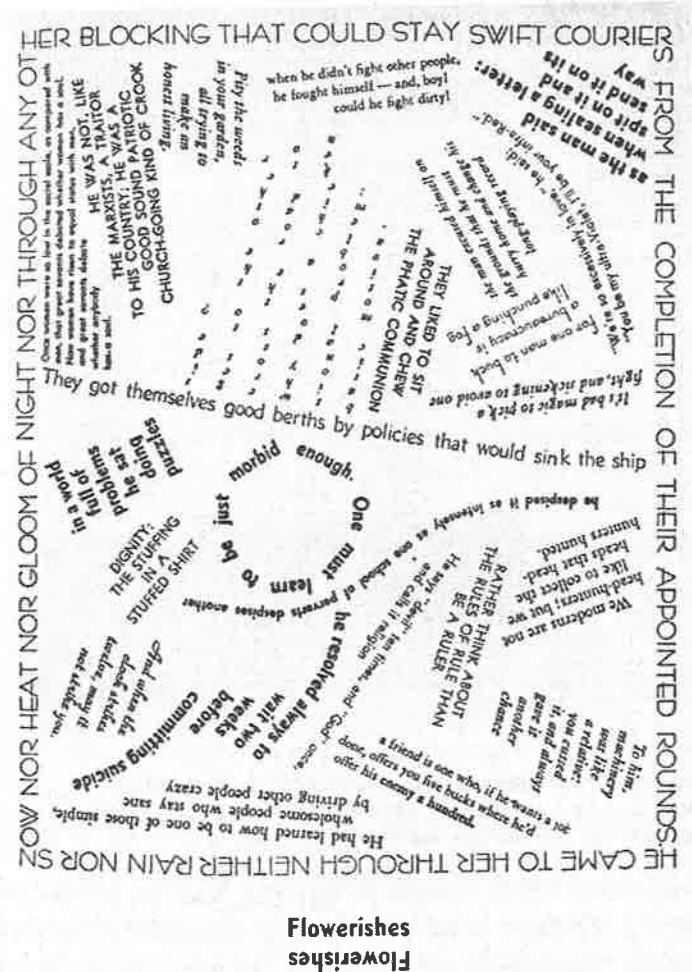
Flowerishes
sǝɥsıɹǝʍoๆℲ

Figure 3. Kenneth Burke, *Collected Poems, 1915–1967*.
Copyright © 1968 Kenneth Burke.

way. Type is "poured," as it is in a desktop publishing system such as *Quark XPress*, rather than set. Spec-ing type in such a frame becomes an aspect of meaning rather than merely a transparent window to it. Does "a grandfather clock, run by gravity," mean something different because the words are presented in Gothic type? Typography becomes allegorical, a writer-controlled expressive parameter, just as it does on an electronic screen. Here, though, as so often, the electronic screen fulfills an already existing expressive agenda rather than prophesying a new one.

The most revered and central function of the literary canon is to transmit the canonical wisdom found quintessentially in the proverb. Burke deliberately calls that tradition into question, breaking the "literacy compact" by introducing visual patterns and typographical allegories to suggest that proverbial wisdom never comes into the world purely transparent and disembodied, totally serious, unconditioned by game and play, by the gross physicality of its display. No formal cause without a material one. Again, the electronic parallels are manifest. The electronic universe's playful attitude toward typographical convention drives the print-based imagination mad.

All kinds of interesting conversions take place when we move from book to screen. Proverbial wisdom, for example, becomes visual. Digital expression has resurrected the world of proverbial wisdom, but through vast databanks of icons rather than words. We buy what are, in effect, catalogues representing commonplace situations and appropriate responses to them: faces, hand gestures, signage of all sorts. Our computer font menus regularly include printer's dingbats— ❏ ▶ ✳ ▼ ❙ ◆ ✳ ✎ ✂ ❽ —but the range of readily available proverbial icons now runs to thousands. The traditional dependence on commonplaces in rhetorical education has been transmuted from word to image.

The same wind that carried away the authoritative text has also ventilated the reverent solemnity with which we view it. Again we encounter the digital aesthetic charted much earlier in the visual arts. The canonical image of this anticanonicity is Marcel Duchamp's urinal. My favorite emblem of compromised canonicity, though, is John Baldessari's *Quality Material* from 1967, which consists of five lines of black alphabetic text on a white ground:[6]

QUALITY MATERIAL – – –
CAREFUL INSPECTION – –
GOOD WORKMANSHIP.

ALL COMBINED IN AN EFFORT TO
GIVE YOU A PERFECT PAINTING.

This textual painting does exactly what the computer screen does: it makes text into a painting, frames it in a new way, asks for a new act of attention— and smiles at the seriousness that text calls forth from us.

Baldessari, by a radical reversal of alphabetic and iconic information, denies an absolute beauty and fitness of things independent of humankind, a fitness we are first to discover and then breathlessly to adore. The painting would seem to suggest that such fitness is not out there in "reality," and it is not out there in sacred texts, either—timeless, unchangeable, self-

explanatory, and canonical—excerpts of which, duly presented as "touch-stones," will impart the healing touch of sacred relics. Instead of a divine icon, we have a human text that substitutes the interpretation for the thing interpreted.

Electronic as comic

Doesn't electronic text often practice a similar comic reversal? The intrinsic motival structure of electronic text is as comic as print is serious. Let me illustrate this reversed polarity of seriousness by alluding to another familiar pre-electronic icon, Duchamp's most famous "Readymade," his mustachioed *Mona Lisa*. The title of this work, the letters L.H.O.O.Q., if pronounced in French, yield the words "Elle a chaud au cul," or in somewhat fractured French, "This chick has hot pants." What, in the process, has happened to "Mona Baby"? First of all, she seems to have undergone a devastatingly effective and economical sex-change operation. By desecrating Perfection, Duchamp has elicited a sexual ambiguity in the picture we had not seen before and could learn to see in no other way. Outrageous art as didactic criticism, once again. Second, Duchamp calls our attention to a powerful canonical constraint. The timeless perfection Mona Baby represents condemns us to passivity. No interaction allowed. Canonical vision moves in only one direction, does justice to an external reality that exists independent of us, but never recreates that reality in the act of perceiving it. The traditional idea of an artistic canon brings with it, by the very "immortality" it strives for, both a passive beholder and a passive reality waiting out there to be perceived, the best that has been thought, said, or painted perhaps, but unchangeable in its perfection, a goddess we can adore but never ask out to play. And so Duchamp asks her out to play. Criticism again. And, again, not so much an attack on the artistic canon as a meditation on the psychology of perception that canon implies. One perceptive critic has called this Readymade full of "quiet savagery." Not at all. Playful didacticism rather. Interactivity deflates solemnity—even as it does with electronic text. If we need a tutelary goddess for digital writing and reading, Mona Mustache is the perfect wo/man, or god/dess, for the job.

Electronic expression fulfills this deep urge in the modern visual arts; it asks the *Mona Lisa* out to play. It was not an accident that the hackers whom Steven Levy describes started out playing with model trains.[7] We can observe the interactive playful drive replacing Arnoldian solemnity in the work of the Swiss sculptor Jean Tinguely. Tinguely welded together junk contraptions that crash, bang, and thump, jiggle, make (for a small coin donation) an abstract drawing, and generally convert the museum into a combination toystore and playground. He took the world of civil engineering and converted it into game in much the same way that the personal com-

puter has begun to convert history into a game, letting us play our way into everything from the Battle of Britain to the fate of the human biosphere.

In photographs of Tinguely's exhibitions the people who come to see them often figure prominently. I saw why this was so in the autumn of 1982, when I spent an entranced afternoon in a huge Tinguely exhibit mounted at the Tate Gallery in London. Instead of a reverential art-gallery hush, the whole place was a symphony of sounds, the whangs, bangs, and whistles of the sculptures blending with the exclamations of the participants—for that is what we were—and the delighted outcries of the children. Most of them had speedily found the great *Rotozaza*, a huge sculpture that takes balls and, after moving them through a series of Rube Goldberg maneuvers, flings them out into the crowd. The viewers then retrieve them and feed them back into the machine.

Part of the show was that part of the Tate which was *not* part of the show, the galleries that still preserved the reverential quiet of a conventional exhibition. But now you heard this silence as one of Cage's "silences," something that you consciously attended to, that you began to "hear." Might I suggest that these conventional galleries allegorize the printed text, as read in a digital age? They are still the same, and yet we listen to them in a different way, and hear silences we have not heard before. And in this new kind of gallery, this new kind of text, we hear voices and we move around.

With Tinguely's kind of junk sculpture comes, needless to say, a flood of Marxist moralizing. Behold the detritus of modern capitalism, the sordid remnants of a junk culture, and so on. The machines themselves, though, when they are working in their native environment—moving, clanking, and whistling, the spectators busy catching the balls, pushing the buttons, commissioning their abstract drawings for a sixpence—don't work this way at all. The machines exude high spirits and good humor. They do not damn a machine culture; like electronic text, they redeem it by returning it to play.

Let me, just for fun, report my own embodiment of this process, as I stood in the Tate exhibition before a machine called *Autoportrait Conjugal*, which dates from 1960. Two objects depend from the bottom of the machine. One is a weight, the other a stuffed bird. When the machine goes into action, a little ladder in the middle moves from side to side and the weight acts as a pendulum, imparting to the stuffed bird a pendulous twitch. I went to the exhibit with a very dear old friend, a remarkably tolerant and sophisticated woman with a wonderful sense of humor, who is also a keen bird-watcher. She had in fact arrived in London from a strenuous birding trip to the Pribilof Islands. She immediately noticed the dead bird and, after identifying it, began to excoriate Tinguely. She knows me extremely well, and when she

saw me trying to flail my face into something resembling moral outrage, she remarked, "I'll bet you find this extremely funny, don't you?" Meaning by "this" both the stuffed bird swinging back and forth at the bottom of the bungee cord, and her outrage at it—which I anticipated—and my efforts to prevent her from seeing that I did indeed think that the dangling bird was, for reasons I could not explain, extremely funny. Finally I burst into laughter. And so did she. Tinguely had written a comedy and both of us had played our parts. *Autoportrait Conjugal* functioned as what the classical rhetoricians called a *chreia*, a little argumentative firecracker that got the argument of a speech going fast.

Electronic text contrives interactive events of precisely this sort, leavens with comedy the serious if not solemn business of clear, brief, and sincere human communication. Is it too fanciful to detect it supplying this comic leaven to the world of work? Aren't we finding that the world of computer-aided design and manufacture, for example, is deeply playful in the kinds of effort it calls forth? After all, screen space is free. You can make carefree mistakes and correct them, doodle with impudence.

Perhaps the most widely debated, though far from the most important, issue involving electronic text is whether writing on a computer creates verbal flatulence or not. Certainly it restores to centrality another element of classical rhetoric, the use of *topics*, of preformed arguments, phrases, discrete chunks of verbal boilerplate, which can be electronically cut, pasted, and repeated at will. Classical rhetoric argued that repetition, without intrinsically changing the object repeated, changes it absolutely, and modern philosophers like Andy Warhol have dwelt upon this theme, replicating everything from Brillo boxes and soup cans to rich and famous faces.

Think, since we have the *Mona Lisa* in mind, of Warhol's *Thirty Are Better Than One*, from 1963. In this painting, which gives us thirty Monas instead of one, her priceless canonical rarity vanishes even as we bring it to self-consciousness. The same aesthetic operates at the heart of electronic text, though we seldom notice it for what it is—an aesthetic of collage, the central technique of twentieth-century visual art. Collage is now a commonplace narrative technique too, as in David Hockney's recent work with photo collage and color photocopies; but my favorite example remains a golden oldie from the 1950s: Richard Hamilton's "Just What Is It That Makes Today's Homes So Different, So Appealing?" (fig. 4). Couldn't this—collaged up as it is with clip art and advertising icons—just as well be called "Just What Is It That Makes Today's Desktop So Different, So Appealing?" Perhaps this technique of the *topos* ought not surprise us; the iconographic computer desktop, after all, was modeled after the memory system in clas-

Figure 4. Richard Hamilton, *Just What Is It That Makes Today's Homes So Different, So Appealing?*, 1956. © Richard Hamilton/VAGA, New York 1993.

sical Greek rhetoric, or so at least says Nicholas Negroponte of MIT. One can even obtain a startup icon (a *turn-on* icon perhaps we should call her) who looks like the lady in Hamilton's painting and who varies the size of her bosom to indicate the amount of data on the disk. *Gentilezza per gentilezza.*

To replicate and juxtapose at will, as collage does, is to alter scale, and scaling change is one of the truly enzymatic powers of electronic text. When you click in the zoom box, you make a big decision: you are deciding on the central decorum of a human event, on the boundary-conditions within which that event is to be staged, and hence on the nature of the event itself. Nobody has toyed with scale as much as Claes Oldenburg, whose gigantic pool balls, electric switches, umbrellas, and baseball bats reached a culmination of sorts in the Swiss Army knife made into a supersize Venetian gondola.[8] When I saw it, it was majestically rowing its way down the courtyard at the Museum of Contemporary Art in Los Angeles. As the oars moved,

the viewer's scale switched back and forth from knife to gondola, and the plain courtyard became alternately trouser pocket and Venetian canal.

To change scale is, as with repetition, to transform reality utterly, without changing it at all. To make art of scaling changes means making us self-conscious about perceptual distance and the conventions, neural and social, that cluster around it. That distance itself can so change an object—give it, to use Duchamp's phrase, a "new idea"—locks us into a conception of art as essentially interactive. This interactivity is the very opposite of canonical passivity.

Oldenburg's *Batcolumn*, erected in Chicago in April 1977, shows how a scale-game works. To render a baseball bat epic in scale, as Oldenburg has done, perpetrates one of those play/purpose reversals so common in Pop art and beyond, the same reversal we create when we zoom in on a letter until we dissolve its meaning into the abstract formal pleasure of the pixel patterns themselves—Havelock's decorative letters on Greek vases again. Oldenburg's bat ceases to be an instrument to hit a ball and becomes an object to be contemplated, to crane your neck up at, a skyscraper of a baseball bat. Yet the eye, less adaptive than the mind, still wants it to be a bat of normal size, and so yearns to make everything else increase in scale to fit it, conjuring up an enormous ball diamond with gigantic players scaled to fit the bat. If the skyscrapers surrounding it dwarf us, then the *Batcolumn* expands us again, restores a more equal relationship with our environment, a playful epic scale. The *Batcolumn* is a thing of beauty, a new shape, but also and more important, it represents one of Duchamp's "new ideas," the idea of scale. Twentieth-century art has often aimed to recreate epic scale in a new form; the big bat does so by scaling up an everyday object. Epic scale, then, but radically democratized.

We do the same thing when we zoom on the screen—we draw far closer to the text than ever we could with the naked eye, and in the magic world we thus enter, the text becomes gigantic, enormously weighty, a physical space, a writing sheet large enough to wrap up the world. Language does indeed become a field of meaning over which we wander. A zooming session leaves the student of rhetoric with a renewed and expanded sense of how much the basic decisions about reading and writing and speaking have to do with scaling arguments, fitting them to time and place. Enlarging and diminishing them is what the basic figure/ground decision that empowers human vision is all about. The scaling powers of electronic text create an extraordinary allegory, almost a continual visual punning, of the stage sets implied by written discourse. The future of rhetorical figuration, which McLuhan in an inspired phrase called "the postures of the mind," looks,

after a long hiatus, promising once again.

Scale-change stands at the heart of Roy Lichtenstein's comic-book paintings, too, and they tell us a good deal about how scale-change operates on the images that electronic display can so easily mix with alphabetic text. Think for a moment of the well-known frame *Live Ammo* (1962). There, a form of commercial art usually presented in a format a couple of inches square suddenly finds a meticulous rendering almost six by eight feet. Again, an artifact of daily life is wrenched, through huge scale-change, into the domain of art. But another profound reversal operates. As these images appear in the funny papers, they function purely transparently, provide immediate access to the narrative they depict. They are the graphic equivalent of Havelock's "literate compact"; they trigger no self-consciousness, provide a pictographic "pure story," "romance" at its most mythically simplified, most unselfconscious. Lichtenstein reverses this convention. The surface is rendered maximally self-conscious. We look at the surface pattern, AT the design rather than THROUGH it. Lichtenstein points this out specifically in a small (sixteen by sixteen inches) black-and-white from 1962 called *Magnifying Glass*. In this small painting (shown most recently in the "High and Low" exhibition mounted by the Museum of Modern Art),[9] the microdot pattern, which in the comic-papers printing technique constitutes the transparent means for creating the narrative image, is deliberately framed in a magnifying glass, made into a self-conscious and opaque design motif, something we are forced to look AT and not THROUGH. So too with the characters in the narrative. "I use them for purely formal reasons," Lichtenstein has said, "and that's not what those heroes were invented for." This AT/THROUGH reversal appears in twentieth-century art in various guises, from the Italian Futurists onward. It is a favorite Lichtenstein motif. In his brushstroke paintings, for example, when he makes monumentality out of artistic means, the AT/THROUGH oscillation fairly jumps out at you.

Such an oscillation between looking AT the expressive surface and THROUGH it seems to me the most powerful aesthetic attribute of electronic text. Print wants the gaze to remain THROUGH and unselfconscious all the time. Lichtenstein's *Magnifying Glass*, like the electronic screen, insists on the continual oscillation between unselfconscious expression and self-conscious design that formed the marrow of the classical rhetorician's art and pedagogy. *Magnifying Glass* is a painting about a different kind of seriousness, a different kind of perception, one that *forgets intermittently*—but must never *forget forever*—the means of perception, the carefully tuned illusions from which Western social reality has always been constructed. It is a painting, too, about what happens to text when it is painted onto an elec-

AT/ Throu

tronic screen, when we can change fonts, zoom in on the pixels until their "meaning" metamorphoses into purely formal pleasure. Again, this oscillation happens continually in electronic text without our recognizing it for what it is, or seeing how deeply runs its cardinal allegory.

Some of Lichtenstein's paintings seem as if created by and for electronic means. I am thinking now of the "Haystack" paintings or the series of Rouen Cathedral, where the microdot technique resembles a pixeled screen seen very close up and the series of paintings seems a series of screen-prints of a dynamically changing electronic representation. One of Lichtenstein's commentators, Lawrence Alloway, remarks that he was "interested in the paradox of a systematically executed Impressionism."[10] That systematic creation has now found electronic expression in a computer program called Monet that paints impressionistic pictures by means of digital algorithms.[11] Perhaps not every aspect of contemporary art will find such heady digital fulfillment, but it is certainly tempting to think of all the series paintings—not only of Lichtenstein, but of Warhol and others—as prophetic. They seem to reach out for the dynamic image as much as Marinetti sought the dynamic word.

It is not accidental, I think, that *animation* has come to be so dominated by digital techniques. Traditional gel-animation takes much longer than its computer-graphic successor, but more important than that, it creates action out of a medium static to begin with. Computer graphics emerge from a medium in itself dynamic. This difference leaps out in the stylistic evolution of comic-book graphics. Even print-based comics exude a computer-graphics feeling. They look like printouts from a program-in-progress. A journal like *RAW*, a folio-sized compendium of "serious" comics, looks like a Marinetti typographical explosion, but in color and ten seconds later. It illustrates the profound remixture of the alphabet/icon ratio that awaits printed text. When Lichtenstein picked out comics, he was being prophetic as a great artist should; it was the narrative/iconic relationship that he zoomed in on.

Serious comics teach one important lesson so obvious that we don't notice it: the impact of adding color to the alphabet/image mix. Both newspapers and magazines are developing the habitual use of color in new ways. But we are only beginning to understand how the black-and-white convention of print will be changed by a color display. The history of typography is another story but clearly every aspect of it has been revolutionized by digital technology. Hot type was *set*. Digital typesetting programs *pour* or *flow* it. We encounter this change in liquidity everywhere in contemporary printed texts, especially in the relation between words and pictures.

Clearly every stage of this revolution has been predicted by the postmodern visual arts. What has collage done from the beginning but imitate this pouring of text around image? What are Jasper Johns's letter paintings but invitations to look AT letters rather than THROUGH them, to think of letters as three-dimensional visual images in color? Oldenburg makes the page three-dimensional by taking letters and numbers and inflating them like overstuffed chairs, as in *Soft Calendar for the Month of August* (1962). Edward Ruscha painted a big red *Annie* over a yellow ground, as the top half of a square whose bottom half was plain blue, making a simple word vibrate against a color exercise à la Josef Albers. And in 1961 Lichtenstein painted a four-foot-square comic-book canvas showing a man looking into a completely dark, wholly black room through a round peephole. Through the peephole we glimpse a man, and a bright yellow background. The caption reads, "I can see the whole room *and there's nobody in it!*" Surely here is the electronic world of three-dimensional color looking back into the world of black-and-white print!

The sheer dynamic power of zooming in and zooming out on an image, this transformatory power of scale-change, seems frozen into a series of snapshots in the tremendous, and tremendously large, paintings of James Rosenquist. When I saw the Rosenquist exhibition in Denver, I felt as if I were a homunculus walking inside a gigantic, multifaceted computer display. The computer's power to transform the imagistic clutter of modern visual life by zooming in very close to it seemed to be what Rosenquist's paintings were about. Rosenquist started out as a billboard painter. His heroic efforts to bring commercial signage into the art gallery (I am not being ironic; *F-III* is a genuinely epic painting) find an exact counterpart on the electronic screen. Rosenquist flies us through the air up to one of his enormous billboards hanging over the city street and then rubs our noses in the billboard. We see it as line and shape and color and pattern, we look AT it rather than THROUGH it. The electronic screen allows us to practice this transformation on the images it displays. It flies us magically through the air, allows us to get closer to an image than normal human focus allows. It can and often does do what Rosenquist's paintings do—transform the public commercial landscape by scale-change, by flying us through and around it. Don't we witness the same process when a life scientist uses computer graphics and virtual-reality goggles to walk into a complex molecule the size of a room, wander around it and try, as it were, various possible junctures on for size?

We might reflect, too, on how easily another dominant theme of contemporary art—quotation—finds expression on an electronic screen. The storehouses of graphic images that all of us now have on our machines at

home are, in effect, mass-produced and copyright-legal quotation devices. Our startup screens are often shifting art galleries of personal quotation—mine today started up with a Ferrari Testa Rossa—and iconic badges. When we have "quoted" the image we want, we can now process it in the same way we process words; we can, that is, "quote" it in the same way one painter quotes another. And the same democratization of "originality" takes place. Electronic display, in fact, spells out the pun in "original." It can easily call up the "original-as-root image" (the *least* original or most topical version) and make it, through now-commonplace manipulation routines, into an "original" in the Romantic "never-seen-before" sense of the word. The digital computer seems a machine created for Art-about-Art.

It also seems created to provide the perfect means for another contemporary artistic technique—the creativity of chance. The genuine ghost in this machine is the spirit not of Alan Turing but of John Cage. Even the simplest computer painting program builds in enormous resources for chance generation that seem taken right out of Cage's exhortation and practice. Take as an unpretentious example a program called Kid Pix.[12] It is as antilinear as Cage himself could have wished. When it is running in "Small Kids Mode," the user need not even know how to read. Scale-manipulation is a principal means of creation in the program—it has a built-in magnifying glass, à la Lichtenstein—but its many kinds of drawing implements depend on random variation. Patterns can be created, enhanced, juxtaposed, dynamically mixed, timed to fade in and out, poured in and out and away, all by random methods. Alphabetic information, in the Kid Pix environment, becomes iconic in the way it does on a Greek vase or in a medieval manuscript. And the program makes possible the three-dimensional layering that so many contemporary painters and collage-makers have striven for. It does so in reverse, going into the surface rather than out from it to build up layers. Kid Pix offers to kids a three-dimensional writing space—it comes with the territory.

We can study an architectural version of the basic electronic AT/THROUGH oscillation in one of the most controversial attempts at postmodern monumentality, the now-famous Centre Pompidou in Paris, the "Beaubourg" as it is called, designed by Richard Rogers and Renzo Piano. The façade reenacts a ritual in contemporary architecture, the reversal of use and ornament. The architects have turned the building inside out, put its plumbing on the outside instead of hiding it in utility shafts. They have made decoration out of ducts, play out of purpose, much as Duchamp did with *Fountain*. The building becomes an allegory of motive as well as a museum, a visual representation of the play/purpose reversal at the heart of post-modern architecture.

This oscillation between use and ornament, between purpose and play, pops out everywhere you look in the history of computers, and especially of private desktop ones. Play continually animates the operant purpose, indeed often becomes it. I have mentioned Steven Levy's history of the personal computer, *Hackers*, which recaptures this motivational mood perfectly. The play impulse symbolized purity of motive to the computer world (as so often to the academic world), and its loss has seemed the loss of innocence itself. I would urge the opposite case—play is as native to electronic text as it is to rhetoric. The purposive Suits and Bean-counters mistake the spirit of the place.

This motivational struggle is dramatized in the long-running struggle between the IBM world and the Apple world. The Apple world, born in personal computers not mainframes, has from the beginning been dominated by the play impulse. It colored motive, style, mood, personality type. Apple's graphics-based computers were built upon, assumed, a transformed alphabet/icon ratio. IBM—serious, indeed humorless—still cannot understand the revolution of electronic text or what it means to their business. Characteristic motivation, not technology, separates the two camps. The quarrel opposes an old way of looking at the world's business and a new way. About how the new way works, the postmodern arts have everything to tell us. The themes we are discussing—judgments about scale, a new icon/alphabet ratio in textual communication, nonlinear collage and juxtapositional reasoning, that is to say bottom-up rather than top-down planning, coaxing change so as to favor the prepared mind—all these constitute a new theory of management. The graphics-based digital computer—the computer as an instrument and work of art—implies this new theory at every point. Apple, because of the circumstances of its creation, knows this and IBM has yet to learn it. That's the real difference between them.

Classical rhetoric, and hence all of classical education, was built on a single dominant exercise: modeling. The key form was the oration, and it was rehearsed again and again in every possible form and context. *Declamatio*, as the modeling of speeches came to be called, stood at the hub of Western education, just as computer modeling is coming to do today. The world of electronic text has reinstated this centrality of modeled reality. The computer has adopted once again, as the fundamental educational principle, the dramatizing of experience; most important, it has dramatized the world of work. Today we model everything digitally, and usually visually, before we build it, manufacture it, or embrace it as policy or sales program. This ubiquitous modeling has reintroduced into the world of work literary

and artistic coordinates which had been, as much as possible, banished from industrial enterprise in the mechanical age. It is not in the museum but in the marketplace, as a managerial agenda, that the extraordinary convergence of artistic impulse with its electronic expression has found its most striking instantiation.

Nothing in the world of postmodern art better illustrates this convergence than the work of the environmental artist Christo Javacheff. His *Running Fence, Sonoma and Marin Counties, California, 1972–76* embodies this rehearsal-reality and everything it implies. It is an epic *declamatio* of the modern integrated visual arts, a didactic rehearsal-reality event of the greatest scale, grandeur, beauty, and meaning. It allegorizes perfectly the influence that electronic expression is now having on the world of work.

In October 1972 Christo made the first drawings of a gigantic "fence" projected to run through farmland and end in the sea. He began to look for a site in northern California or Oregon. The fence was to run for twenty-four-and-a-half miles and to be built in segments eighteen feet high and sixty to eighty feet wide. By July of the following summer he had settled on an area around Petaluma, California, formed the Running Fence Corporation, and placed an order for 165,000 yards of woven nylon fabric. The period from July 1973 to April 1976 was taken up by eighteen public hearings to get the permits to build the fence, by several court sessions, a huge Environmental Impact Statement, and applications to fifteen government agencies, these activities all made possible through the kind offices of nine lawyers. Finally, after a tense final hearing, the project was free to proceed. On 7 September 1976, the part-time army of fabric-installation workers, 360 strong, began to deploy the fence. *Running Fence* turned out to be even more beautiful than Christo had imagined, sailing through the early morning fog, celebrating cows in their fields and the rolling hills in their glory, sailing like a silver ribbon toward the sea, punctuating the day from the dusk, scaling, scaling, forever scaling the landscape with its band of silver white, making from the air a ribbon of light across the earth, until at dusk it plunged into the sea.

Running Fence sounded all the notes in our current aesthetic chord. It was calculated to be of an age and not for all time, mortal rather than immortal, to represent what we cannot do forever, and should not do for long, to the land, to allegorize not our vainglory but our solemn sense of our own limitations. It was completed at noon on 10 September. On 21 September the dismantling began and by 23 October, eight days ahead of schedule, the entire fence had been removed and the pole anchors each driven three feet into the ground.

This powerful allegory of the world of work was not lost on the beholders. As one businessman wrote in the local paper, "the Running Fence will depict the evolution of man from the sea, his enormous efforts to survive and build on the land, and the ultimate destruction of that for which he has strived with such intensity for so very long. It is, indeed, a true artist and businessman that can conceive and execute so huge a philosophical symbol of the determination of man and the futile and transitory nature of his efforts. … In all this I know whereof I speak. I am retired after forty years as an industrialist and rancher and all the businesses and enterprises that I developed are now gone. Little remains to show they were ever here. I have no regrets, it was great fun, but that is the way it is."[13]

Christo earned praise as a businessman by financing this project, as he does all his gargantuan projects, entirely himself. A huge book was published about the making of the fence.[14] Christo signed 3,000 copies of the book, which includes, besides all the gorgeous photographs of the project, a full history of it, copies of the relevant government documents, film stills, and—a relic of the project—a small square of its nylon cloth. I own copy number 133, and what a book it is! For it is no more a normal codex book than the Fence was a normal fence. Like the square of cloth it contains, it is not a book about a work of art which it describes, a work past or present which remains detached from it. The book is part of the work of art, formed part of its essence and design from the beginning. Christo has reached out in time as well as space, included in his work of art the object itself and all the processes, from the beginning, that brought it into, and out of, being. This insistence on art as process rather than product, interactive temporal event rather than untouchable timeless masterpiece, I take to stand at the center of contemporary thinking about art, and about more than art.

I take the *Running Fence* book as a model of how codex books will work in an electronic world. We will construe them not as absolute entities but as part of an expressive process both alphabetic and iconic, an entity whose physicality is manifest, whose rhetoric is perfectly self-conscious, that is to say whose place in a complex matrix of behavior forms a native part of its expression. Most students of the matter agree that books will not vanish. They will, however, like the *Running Fence* book, send out nerve-tendrils to the complex expressive world surrounding them. The book for *Running Fence* is one kind of "printout" among many, which, taken together, form a record of the artistic event.

I would also take the *Running Fence* itself as a model for how the digital computer might function in the everyday world of work. Christo testified before the Sonoma County Board of Supervisors that "the work is not

only the physical object of the fence. The work of art is really right now, and here [that hearing itself]. Everybody is a part of the art, that is, through the project of the *Running Fence,* and it is a most exciting thing, and there is not one single element in this project that is make-believe."[15] Christo has chosen to work in behavior, in human motive, as well as in canvas and light; he has chosen to make art out of economic cooperation, out of the processes of collective work. In America nowadays, these are all bureaucratic processes, and Christo has transformed them into self-conscious art. By subtracting the practical purpose, the enduring object—fence, pipeline, building, whatever—from the process, he has allowed everyone involved (and that includes all of us) to focus on, to become self-conscious about, the process involved, the process of human cooperation. To look AT it rather than THROUGH it. I think we can use electronic text in the same way and for the same purpose. The self-consciousness of the device at least beckons us along this path far more cordially than ever print did.

I suggest, then, that we can use the digital computer, and more specifically electronic text, as a work of art very like Christo's *Running Fence.* It is always inviting us to play with ordinary experience rather than exploit it, to tickle a text or an image a little while using it, to defamiliarize it into art. And, as with scaling-change, as with both the objects and the actors in *Running Fence*—the hearing, the plan, the rendering, the Environmental Impact Statement; the construction worker, the councilman, the artist—human purpose will be both the same and utterly transformed. Is this radical democratization of art, this interweaving of play and purpose, so different from the range of hopes that computers inspired in the first generation of hackers who developed them?

□   □   □

I have been using some examples from the visual arts to sketch out what is sometimes called the postmodern critique, an argument whose elements we have now before us: art defined as attention, beholder as well as object; thus an art that includes its beholder, and the beholder's beholder, an outward frame-expanding, an infinite *progress* rather than *regress*; interactive text, that is, art and criticism mixed together, and so art and life as well; a continually shifting series of scale-changes, of what literary theory would call contextualisms; a resolute use of self-consciousness to turn transparent attention to opaque contemplation, especially, as we began by noting, in regard to the typographical conventions of fully literate reading; above all, a pervasive reversal of use and ornament, a turning of purpose to play and game, a continual effort not, as with the Arnoldian canon, to purify our motives,

but to keep them in a roiling, rich mixture of play, game, and purpose. All of this yields a body of work active not passive, a canon not frozen in perfection but volatile with contending human motive.

Is this not the aesthetic of the personal computer? And is such an aesthetic not part of a world view larger still—as I have tried to suggest by choosing my illustrative images from the pre-electronic world? This larger world view occurs not only in the visual arts from which I have taken my examples, but in perception psychology from the transactionalists onward (the work upon which the Pop artists drew so heavily), in American role theory from George Herbert Mead to Erving Goffman, in evolutionary biology from the New Darwinian Synthesis onward, in Havelock's and Ong's formulation of the literate-oral polarity in Western discourse from classical Greece to the present day, in the East-West polarity which, using Balinese culture as ur-type, first Margaret Mead and Gregory Bateson and then Clifford Geertz have established, and in literary theory, which encapsulates much of this thinking. It occurs, indeed, practically everywhere we care to look in the contemporary intellectual landscape, as I argue in detail in chapter 3.

I have been suggesting that technology isn't *leading* us in these new directions. The arts, and the theoretical debate that tags along after them, have done the leading, and digitization has emerged as their condign embodiment. We needn't worry about digital determinism. We must explain, instead, the extraordinary convergence of twentieth-century thinking with the digital means that now give it expression. It is the *computer as fulfillment of social thought* that requires explanation.

How find a frame wide enough to provide such explication? To explain reading and writing on computers, we need to go back to the original Western thinking about reading and writing—the rhetorical paideia that provided the backbone of Western education for 2,000 years. Digital expression indeed fulfills the postmodern aesthetic, but also a much larger movement that comprehends and explains that aesthetic—a return to the traditional pattern of Western education through words. We are still bemused by the three hundred years of Newtonian simplification that made "rhetoric" a dirty word, but we are beginning to outgrow it. Digital expression, in such a context, becomes not a revolutionary technology but a conservative one. It attempts to reclaim, and rethink, the basic Western wisdom about words. Its perils prove to be the great but familiar perils that have always lurked in the divided, unstable, protean Western self.

NOTES

1. Hubert L. Dreyfus, *What Computers Can't Do: The Limits of Artificial Intelligence* (1972; rev. ed., New York: Harper and Row, 1979).

2. Luciano De Maria, ed., *Marinetti e il Futurismo* (Milan: Mondadori, 1973), 189–90; my translation.

3. Ted Nelson, *Computer Lib/Dream Machines* (Redmond, Wash.: Microsoft Press, 1974; rev. ed. 1987), 27.

4. See, in this regard, Albertine Gaur's discussion in *A History of Writing*, rev. ed. (New York: Abbeville, Cross River), 179–81.

5. Kenneth Burke, *Collected Poems, 1915–1967* (Berkeley and Los Angeles: University of California Press, 1968), 88–92; fig. 3 reproduces p. 88.

6. John Baldessari, *Quality Material*, reproduced in Jean Lipman and Richard Marshall, *Art about Art* (New York: Dutton, 1978), 51.

7. Steven Levy, *Hackers: Heroes of the Computer Revolution* (Garden City, N.Y.: Anchor Press/Doubleday, 1984), 6–11.

8. See Claes Oldenburg, Coosje van Bruggen, and Frank O. Gehry, *Il Corso del Coltello/The Course of the Knife* (New York: Rizzoli, 1987).

9. Roy Lichtenstein, *Magnifying Glass*, reproduced in Kirk Varnedoe and Adam Gopnik, *High & Low, Popular Culture & Modern Art* (New York: Museum of Modern Art, 1990), 229.

10. Lawrence Alloway, *Roy Lichtenstein* (New York: Abbeville, 1983), 53.

11. Monet (Delta Tao Software, 1992).

12. Kid Pix (Broderbund Software, 1991).

13. Werner Spies, *The Running Fence Project: Christo*, rev. ed. (New York: Abrams, 1980), unpaged.

14. *Christo: Running Fence, Sonoma and Marin Counties, California 1972–76* (New York: Abrams, 1978).

15. Spies (n. 13 above).

3

Several years ago, when I was running the UCLA Writing Programs, I visited a large state university in the Midwest to speak and to consult about their writing program. As part of the consulting, I met with the campuswide faculty committee charged with approving the proposed new courses in rhetoric. One member of the committee, a chemist, asked me if this "rhetoric business" had the staying power to become a proper university subject, something worth serious intellectual inquiry.

It was a short question, genuine and well meant, but it required a longer answer than that occasion permitted. How could I adequately explain that rhetoric had not always been a synonym for public flummery and outright lying? That the modern university subjects had spun out of a rhetorical center not much more than one hundred years ago? That for two millennia rhetoric had been the heart of Western education, had supplied its traditional unity, the lack of which we now so deplore? That it was rhetoric which, for most of Western history, had shaped the basic curriculum that taught people how to read, write, and think? It would have taken all morning to make the case, to explain how a subject so long the center of Western education had fallen into such disrepute that its very name meant nothing.

And even if I had persuaded the committee, it would have taken all afternoon to make the second case that needed making, that this "rhetoric business," banished during the Newtonian interlude in Western thinking, was now returning, in one way or another, in every discipline on campus that used words. That second case I try to make in this essay, published in 1989.

The hazards of such an undertaking manifest themselves speedily enough. Not