READINGS

[Essays]

THE ELECTRONIC HIVE: TWO VIEWS

1. REFUSE IT

Adapted from The Gutenberg Elegies: The Fate of Reading in an Electronic Age, *by Sven Birkerts, to be published later this year by Faber and Faber. Birkerts's essay "Close Listening: The Metaphysics of Reading an Audio Book" appeared in the January 1993 issue of* Harper's Magazine.

The digital future is upon us. From our President on down, people are smitten, more than they have been with anything in a very long time. I can't open a newspaper without reading another story about the Internet, the information highway. The dollar, not the poet, is the antenna of the race, and right now the dollar is all about mergers and acquisitions: the fierce battles being waged for control of the system that will allow us, soon enough, to cohabit in the all but infinite information space. The dollar is smart. It is betting that the trend will be a juggernaut, unstoppable; that we are collectively ready to round the corner into a new age. We are not about to turn from this millennial remaking of the world; indeed, we are all excited to see just how much power and ingenuity we command. By degrees—it is happening year by year, appliance by appliance—we are wiring ourselves into a gigantic hive.

When we look at the large-scale shift to an electronic culture, looking as if at a time-lapse motion study, we can see not only how our situation has come about but also how it is in our nature that it should have. At every step—this is clear—we trade for ease. And ease is what quickly swallows up the initial strangeness of a new medium or tool. Moreover, each accommodation paves the way for the next. The telegraph must have seemed to its first users a surpassingly strange device, but its newfangledness was overridden by its usefulness. Once we had accepted the idea of mechanical transmission over distances, the path was clear for the telephone. Again, a monumental transformation: turn select digits on a dial and hear the voice of another human being. And on it goes, the inventions coming gradually, one by one, allowing the society to adapt. We mastered the telephone, the television with its few networks running black-and-white programs. And although no law required citizens to own or use either, these technologies did in a remarkably short time achieve near total saturation.

We are, then, accustomed to the process; we take the step that will enlarge our reach, simplify our communication, and abbreviate our physical involvement in some task or chore. The difference between the epoch of early modernity and the present is—to simplify drastically—that formerly the body had time to accept the graft, the new organ, whereas now we are hurtling forward willy-nilly, assuming that if a technol-

ogy is connected with communications or information processing it must be good, we must need it. I never cease to be astonished at what a mere two decades have brought us. Consider the evidence. Since the early 1970s we have seen the arrival of—we have accepted, deemed all but indispensable—personal computers, laptops, telephone-answering machines, calling cards, fax machines, cellular phones, VCRs, modems, Nintendo games, E-mail, voice mail, camcorders, and CD players. Very quickly, with almost no pause between increments, these circuit-driven tools and entertainments have moved into our lives, and with a minimum rippling of the waters, really—which, of course, makes them seem natural, even inevitable. Which perhaps they are. Marshall McLuhan called improvements of this sort "extensions of man," and this is their secret. We embrace them because they seem a part of us, an enhancement. They don't seem to challenge our power so much as add to it.

I am startled, though, by how little we are debating the deeper philosophical ramifications. We talk up a storm when it comes to policy issues—who should have jurisdiction, what rates may be charged—and there is great fascination in some quarters with the practical minutiae of functioning, compatibility, and so on. But why do we hear so few people asking whether we might not *ourselves* be changing, and whether the changes are necessarily for the good?

In our technological obsession we may be forgetting that circuited interconnectedness and individualism are, at a primary level, inimical notions, warring terms. Being "on line" and having the subjective experience of depth, of existential coherence, are mutually exclusive situations. Electricity and inwardness are fundamentally discordant. Electricity is, implicitly, of the moment—*now*. Depth, meaning, and the narrative structuring of subjectivity—these are *not* now; they flourish only in that order of time Henri Bergson called "duration." Duration is deep time, time experienced without the awareness of time passing. Until quite recently—I would not want to put a date to it—most people on the planet lived mainly in terms of duration: time not artificially broken, but shaped around natural rhythmic cycles; time bound to the integrated functioning of the senses.

We have destroyed that duration. We have created invisible elsewheres that are as immediate as our actual surroundings. We have fractured the flow of time, layered it into competing simultaneities. We learn to do five things at once or pay the price. Immersed in an environment of invisible signals and operations, we find it as unthinkable to walk five miles to visit a friend as it was once unthinkable to speak across that distance through a wire.

My explanation for our blithe indifference to the inward consequences of our becoming "wired" is simple. I believe that we are—biologically, neuropsychologically—creatures of extraordinary adaptability. We fit ourselves to situations, be they ones of privation or beneficent surplus. And in many respects this is to the good. The species is fit because it knows how to fit.

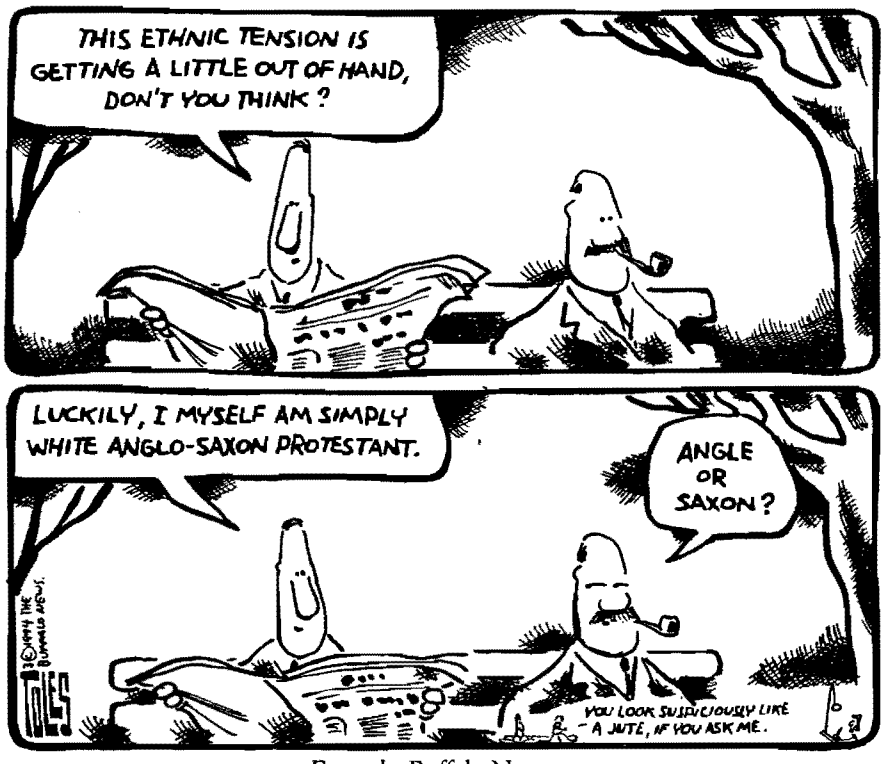
But there are drawbacks as well. The late Walker Percy made it his work to explore the implications of our constant adaptation. Over and over, in his fiction as well as his speculative essays, he asks the same basic questions. As he writes in the opening of his essay "The Delta Factor": "Why does man feel so sad in the twentieth century? Why does man feel so bad in the

[Statement]

CLINTON'S MIDEAST POLICY, EXPLAINED

The response below was given at a news briefing in March by Christine Shelly, the State Department's deputy spokesman, to a reporter who asked whether there had been a "clear statement of [the administration's] policy on settlements in the occupied territories." Shelly's response appeared in the March 14 Washington Post.

"Well, I think our position on settlements is, is well known. It certainly comes up from time to time in the context of, you know, testimony and other things. We do—the briefers—also, from time to time, get those questions as well. As to—you know, nothing has changed on that in terms of our position and, you know, I think it's—you know, I can refer you to, you know, to probably previous statements by officials on that. But I don't have anything—you know, I mean, you know, our—I think—I don't have—you know, I—we—usually we try to have, you know, a little bit of something on that. I'm not sure that it's going to be, you know, specifically what you're looking for. You know, generally speaking, our position on the settlements is that it's the Palestinians and Israelis have agreed that the final status negotiations will cover these issues and, you know, that's—that's also our view."



From the Buffalo News.

very age when, more than in any other age, he has succeeded in satisfying his needs and making over the world for his own use?" One of his answers is that the price of adaptation is habit, and that habit—habit of perception as well as behavior—distances the self from the primary things that give meaning and purpose to life. We accept these gifts of technology, these labor-saving devices, these extensions of the senses, by adapting and adapting again. Each improvement provides a new level of abstraction to which we accommodate ourselves. Abstraction is, however, a movement away from the natural given—a step away from our fundamental selves rooted for millennia in an awe before the unknown, a fear and trembling in the face of the outer dark. We widen the gulf, and if at some level we fear the widening, we respond by investing more of our faith in the systems we have wrought.

We sacrifice the potential life of the solitary self by enlisting ourselves in the collective. For this is finally—even more than the saving of labor—what these systems are all about. They are not only extensions of the senses; they are extensions of the senses that put us in touch with the extended senses of others. The ultimate point of the ever-expanding electronic web is to bridge once and for all the individual solitude that has hitherto always set the terms of existence. Each appliance is a strand, another addition to the virtual place wherein we will all find ourselves together. Telephone, fax, computer networks, E-mail, interactive television—these are the components out of which the hive is being built. The end of it all, the *telos*, is a kind of amniotic environment of impulses, a condition of connectedness. And in time—I don't know how long it will take—it will feel as strange (and exhilarating) for a person to stand momentarily free of it as it feels now for a city dweller to look up at night and see a sky full of stars.

Whether this sounds dire or not depends upon your assumptions about the human condition—assumptions, that is, in the largest sense. For those who ask, with Gauguin, "Who are we? Why are we here? Where are we going?"—and who feel that the answering of those questions is the grand mission of the species—the prospect of a collective life in an electronic hive is bound to seem terrifying. But there are others, maybe even a majority, who have never except fleetingly posed those same questions, who have repressed them so that they might "get on," and who gravitate toward that life because they see it as a way of vanquishing once and for all the anxious gnawings they feel whenever any intimations of depth sneak through the inner barriers.

My core fear is that we are, as a culture, as a

species, becoming shallower; that we have turned from depth—from the Judeo-Christian premise of unfathomable mystery—and are adapting ourselves to the ersatz security of a vast lateral connectedness. That we are giving up on wisdom, the struggle for which has for millennia been central to the very idea of culture, and that we are pledging instead to a faith in the web.

There is, finally, a tremendous difference between communication in the instrumental sense and communion in the affective, soul-oriented sense. Somewhere we have gotten hold of the idea that the more all-embracing we can make our communications networks, the closer we will be to that connection that we long for-deep down. For change us as they will, our technologies have not yet eradicated that flame of a desire—not merely to be in touch, but to be, at least figuratively, embraced, known and valued not abstractly but in presence. We seem to believe that our instruments can get us there, but they can't. Their great power is all in the service of division and acceleration. They work in—and create—an unreal time that has nothing to do with the deep time in which we thrive: the time of history, tradition, ritual, art, and true communion.

The proselytizers have shown me their vision, and in my more susceptible moods I have felt myself almost persuaded. I have imagined what it could be like, our toil and misery replaced by a vivid, pleasant dream. Fingers tap keys, oceans of fact and sensation get downloaded, are dissolved through the nervous system. Bottomless wells of data are accessed and manipulated, everything flowing at circuit speed. Gone the rock in the field, the broken hoe, the grueling distances. "History," said Stephen Daedalus, "is a nightmare from which I am trying to awaken." This may be the awakening, but it feels curiously like the fantasies that circulate through our sleep. From deep in the heart I hear the voice that says, "Refuse it."

[Tips]

ANYBODY HOME?

From "70 Tips for Improving Your Telephone and Voice Mail Communication," a booklet compiled by Val Chevron, a "professional consultant in telephone and listening skills." Chevron offers clients voice analyses and evaluations of their telephone skills, as well as seminars and workshops.

Preparing a voice-mail greeting for people who call you

Every voice-mail greeting should be planned and organized. It is not necessary or desirable to write a script for your greeting; a simple keyword outline will suffice. Use it as the basis for an effective, well-organized dialogue that will sound spontaneous and conversational.

Tips on recording a voice-mail message

Take a silent breath after every six to nine words to keep your voice strong and clear.

Look into the mirror while talking, and notice whether your facial muscles look tight. If so, smile, and watch the muscles relax.

How to improve your telephone voice

Avoid speaking in a monotone. Think of your voice as a musical instrument that can move up and down the scale.

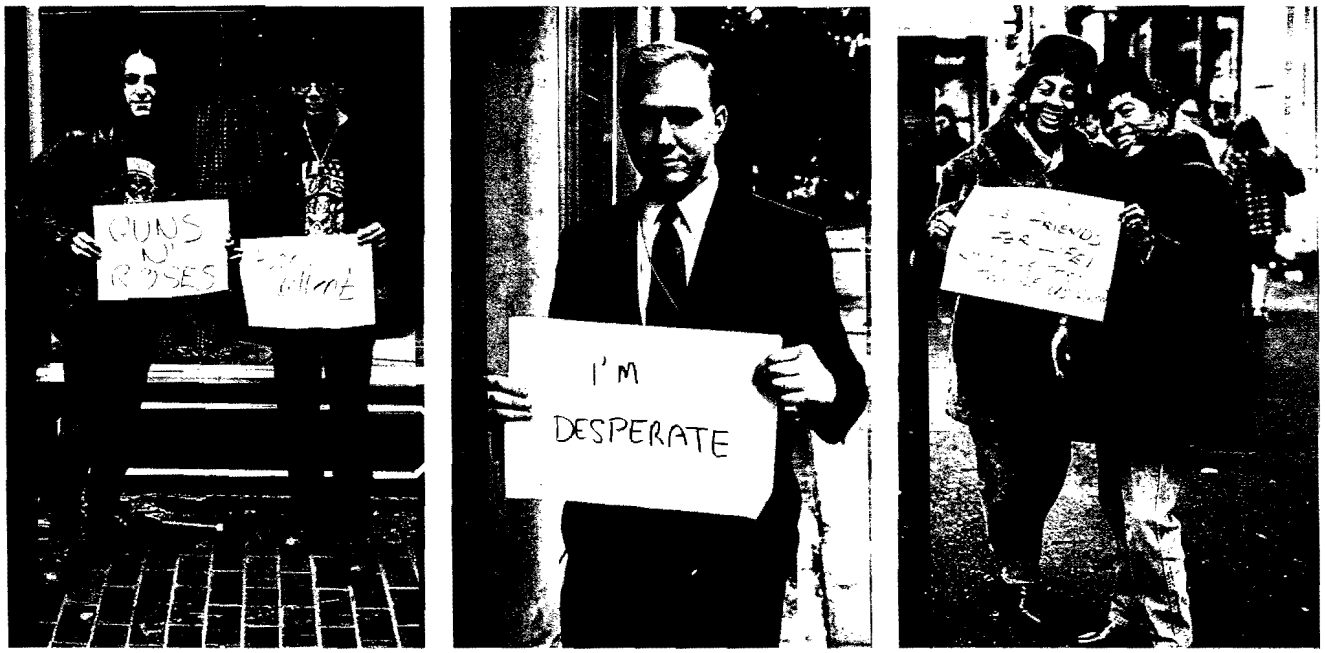
An excellent exercise to keep you from speaking in a flat, uninteresting voice is to sing a song, out loud. Then *speak* the song using the same inflections. Notice how your voice improves.

2. EMBRACE IT

Adapted from Out of Control: The Rise of Neo-Biological Civilization, *by Kevin Kelly, to be published next month by Addison-Wesley. Kelly is a former editor of the* Whole Earth Review *and one of the founders of the WELL, a computer-conferencing system. He is currently the executive editor of* Wired *magazine.*

If twentieth-century science can be said to have a single icon, it is the Atom. As depicted in the popular mind, the symbol of the Atom is stark: a black dot encircled by the hairline orbits of several smaller dots. The Atom whirls alone, the epitome of singleness. It is the metaphor for individuality. At its center is the animus, the It, the life force, holding all to their appropriate whirling station. The Atom stands for power and knowledge and certainty. It conveys the naked power of simplicity.

The iconic reign of the Atom is now passing. The symbol of science for the next century is the dynamic Net. The icon of the Net, in contradistinction to the Atom, has no center. It is a bunch of dots connected to other dots, a cobweb of arrows pouring into one another, squirming together like a nest of snakes, the restless image fading at indeterminate edges. The Net is the archetype displayed to represent all circuits, all intelligence, all interdependence, all things economic and social and ecological, all communications, all democracy, all groups, all large systems. This icon is slippery, ensnaring the unwary in its paradox of no beginning, no end, no center.



From "Signs that say what you want them to say and not signs that say what someone else wants you to say," an ongoing photographic project by Gillian Wearing. Wearing approaches strangers on London streets, offers them materials to make their own signs, and then photographs them. Her work will be exhibited in June at the Interim Art gallery, in London.

The Net conveys the logic of both the computer and nature. In nature, the Net finds form in, for example, the beehive. The hive is irredeemably social, unabashedly of many minds, but it decides as a whole when to swarm and where to move. A hive possesses an intelligence that none of its parts does. A single honeybee brain operates with a memory of six days; the hive as a whole operates with a memory of three months, twice as long as the average bee lives.

Although many philosophers in the past have suspected that one could abstract the laws of life and apply them to machines, it wasn't until computers and human-made systems became as complex as living things—as intricately composed as a beehive—that it was possible to prove this. Just as a beehive functions as if it were a single sentient organism, so does an electronic hive, made up of millions of buzzing, dim-witted personal computers, behave like a single organism. Out of networked parts—whether of insects, neurons, or chips—come learning, evolution, and life. Out of a planet-wide swarm of silicon calculators comes an emergent self-governing intelligence: the Net.

I live on computer networks. The network of networks—the Net, also known as the Internet—links several million personal computers around the world. No one knows exactly how many millions are connected, or even how many intermediate nodes there are. The Internet Society made an educated guess last year that the Net was made up of 1.7 million host computers and 17 million users. Like the beehive, the Net is controlled by no one; no one is in charge. The Net is, as its users are proud to boast, the largest functioning anarchy in the world. Every day hundreds of millions of messages are passed between its members without the benefit of a central authority.

In addition to a vast flow of individual letters, there exists between its wires that disembodied cyberspace where messages interact, a shared space of written public conversations. Every day authors all over the world add millions of words to an uncountable number of overlapping conversations. They daily build an immense distributed document, one that is under eternal construction, in constant flux, and of fleeting permanence. The users of this media are creating an entirely new writing space, far different from that carved out by a printed book or even a chat around a table. Because of this impermanence, the type of thought encouraged by the Net tends toward the non-dogmatic—the experimental idea, the quip, the global perspective, the interdisciplinary synthesis, and the uninhibited, often emotional, response. Many participants prefer the quality of writing on the Net to book writing because Net writing is of a conversational, peer-to-peer style, frank and communicative, rather than precise and self-consciously literary. Instead of

[On-line Exchange]

DECONSTRUCTING THE BOOK

From "Let's construct the backwards world...," a topic posted on the WELL, a computer-conferencing system with 8,000 members that is based in Sausalito, California. The topic began as a discussion of Martin Amis's novel Time's Arrow, *in which the protagonist's life proceeds in reverse chronological order. Contributors to the ongoing discussion consider what various activities and industries would be like in a world where time ran backward.*

ROBERT ROSSNEY: Think about the publishing industry, which receives shipments of books, removes their bindings, reassembles the paper into folios, runs it through a machine that removes the ink, then takes the type out of the machine and the manuscript out of the trash and meticulously matches one against the other, sorting each piece of type back into its bin as it is matched to the marked-up copy. Then they remove all the marks from the copy and mail it back to the author, who completes the process by running the paper through his typewriter, taking off the ink, and putting the fresh clean paper back in the box so that he can return it to the store.

FLASH GORDON MD: . . . which ships it back to the factory to be reassembled into TREES!

ROBERT ORENSTEIN: As the book is progressively unwritten, fewer and fewer people are familiar with the ideas that the author is espousing. Everyone knows who the last person to remember the book will be, since his name appears on every copy. But finally, even *his* memory of the work disappears. It dissipates gradually: first the small details go, then the discussion of his thesis, and he's finally left with one idea that sums up what the larger work once was. That idea doesn't go gradually, however. After he's finished unwriting the book, he's walking along the street, or perhaps eating dinner, and the idea is there. He's thinking about it quite strongly, perhaps congratulating himself on what a tremendous idea he's got, and then suddenly it disappears forever. All that's left are the trees that the fully fleshed-out ideas have become, but they too start shrinking, until they are entirely underground. Finally, these little pebbles that were once trees rise from the ground and cling to other trees; these trees persist for a while, but eventually disappear in the same manner. All that's left of the original work are forests of progressively disappearing and appearing trees.

the rigid canonical thinking cultivated by the book, the Net stimulates another way of thinking: telegraphic, modular, non-linear, malleable, cooperative.

A person on the Internet sees the world in a different light. He or she views the world as decidedly decentralized, every far-flung member a producer as well as a consumer, all parts of it equidistant from all others, no matter how large it gets, and every participant responsible for manufacturing truth out of a noisy cacophony of ideas, opinions, and facts. There is no central meaning, no official canon, no manufactured consent rippling through the wires from which one can borrow a viewpoint. Instead, every idea has a backer, and every backer has an idea, while contradiction, paradox, irony, and multifaceted truth rise up in a flood.

A recurring vision swirls in the shared mind of the Net, a vision that nearly every member glimpses, if only momentarily: of wiring human and artificial minds into one planetary soul. This incipient techno-spiritualism is all the more remarkable because of how unexpected it has been. The Net, after all, is nothing more than a bunch of highly engineered pieces of rock braided together with strands of metal or glass. It is routine technology. Computers, which have been in our lives for twenty years, have made our life faster but not that much different. Nobody expected a new culture, a new thrill, or even a new politics to be born when we married calculating circuits with the ordinary telephone; but that's exactly what happened.

There are other machines, such as the automobile and the air conditioner, that have radically reshaped our lives and the landscape of our civilization. The Net (and its future progeny) is another one of those disrupting machines and may yet surpass the scope of all the others together in altering how we live.

The Net is an organism/machine whose exact size and boundaries are unknown. All we do know is that new portions and new uses are being added to it at such an accelerating rate that it may be more of an explosion than a thing. So vast is this embryonic Net, and so fast is it developing into something else, that no single human can fathom it deeply enough to claim expertise on the whole.

The tiny bees in a hive are more or less unaware of their colony, but their collective hive mind transcends their small bee minds. As we wire ourselves up into a hivish network, many things will emerge that we, as mere neurons in the network, don't expect, don't understand, can't control, or don't even perceive. That's the price for any emergent hive mind.

At the same time the very shape of this net-

work space shapes us. It is no coincidence that the post-modernists arose as the networks formed. In the last half-century a uniform mass market has collapsed into a network of small niches—the result of the information tide. An aggregation of fragments is the only kind of whole we now have. The fragmentation of business markets, of social mores, of spiritual beliefs, of ethnicity, and of truth itself into tinier and tinier shards is the hallmark of this era. Our society is a working pandemonium of fragments—much like the Internet itself.

People in a highly connected yet deeply fragmented society can no longer rely on a central canon for guidance. They are forced into the modern existential blackness of creating their own cultures, beliefs, markets, and identities from a sticky mess of interdependent pieces. The industrial icon of a grand central or a hidden "I am" becomes hollow. Distributed, headless, emergent wholeness becomes the social ideal.

The critics of early computers capitalized on a common fear: that a Big Brother brain would watch over us and control us. What we know now of our own brains is that they too are only networks of mini-minds, a society of dumber minds linked together, and that when we peer into them deeply we find that there is no "I" in charge. Not only does a central-command economy not work; a central-command brain won't either. In its stead, we can make a nation of personal computers, a country of decentralized nodes of governance and thought. Almost every type of large-scale governance we can find, from the body of a giraffe, to the energy regulation in a tidal marsh, to the temperature regulation of a beehive, to the flow of traffic on the Internet, resolves into a swarmy distributed net of autonomous units and heterogeneous parts.

No one has been more wrong about computerization than George Orwell in *1984*. So far, nearly everything about the actual possibility-space that computers have created indicates they are not the beginning of authority but its end. In the process of connecting everything to everything, computers elevate the power of the small player. They make room for the different, and they reward small innovations. Instead of enforcing uniformity, they promote heterogeneity and autonomy. Instead of sucking the soul from human bodies, turning computer users into an army of dull clones, *networked* computers—by reflecting the networked nature of our own brains—encourage the humanism of their users. Because they have taken on the flexibility, adaptability, and self-connecting governance of organic systems, we become more human, not less so, when we use them.

[Transcript]

A BUMPY RIDE ON THE INFO HIGHWAY

From the official transcript of the first-ever on-line White House news conference, held in January by Vice President Al Gore over the CompuServe information network. Three hundred computer users took part in the forty-five-minute conversation, which was moderated by Bill Allman, a senior writer at U.S. News & World Report. *Most of the text of the conference, including the excerpt below, was generated before the vice president joined. The official transcript is twenty-one pages long; Gore first appears on page sixteen.*

(Ricardo Bunge) Mr. Allman, I'm not seeing anything as I type...
(Jim Casey) Thx.
(Larry H. Lewis) is this working?
(John C. Burns) why am I not posting
(Rebecca Winters) Oh, now it is.
(Annette Leonard) isthis working?
(Zach) Can everybody hear/see me all right?
(Josh Harris) buffer
(Byron Odwazny) hello/status
(Jim Casey) Yes zach
(Zach) Thanks.
(Ben Huntoon) implimentation of Internet technology among
(Ben Huntoon) wealthy and poor school districts?
(STEVEN R. KOSS) should I see my # and name after hitting return?
(Hugh McArthur) ??
(Jim Casey) Steven: No.
(Sara Arnold) Hi.
(Betty Knight) This is a test
(Dion Douglas) No name will be returned after typing words
(george smart) this thing is going very fast
(Hugh McArthur) \test
(lou) buffer hellocan y
(Martin Vasko) josh...yes
(Alex Calvo) Bill, I feel I must apologize for all of us...
(Zach) So, Mr. Allman, how did you get him to agree to do this conference?
(Amy Harmon) hi
(Paul De Groot/Canad) [D
(Paul De Groot/Canad) [D
(Arthur Goldstein) Hello
(Robert Pellegrini) hello, is the VP there yet???
(mike powers) Annette: DOn't KNow
(Betty Knight) Hi
(Al) Hi
(jacquelyn a close) hello
(Susan Finster) A transcript of the confer-