4 ELECTRONS ARE CHEAP; SOCIETY IS DEAR

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The most visible impacts of new communicative technologies are in the attention-grabbing and expressive potential of greater design control at the desktop, hypertext, and multimedia (graphics, animation, video, sound, haptics, and ultimately immersive virtual and augmented reality). Nonetheless, the most significant impacts of new communicative technologies are likely to be in the changing activities and communities facilitated by new potentials of transmission, storage, and accessibility that change time, space, memory, informational resources, and economy of social encounter. Beyond providing students with facility in design tools and multi-media rhetoric, teachers of rhetoric need to provide students with analytic tools to understand the changing locations and informational richness of encounters they will be creating, the larger knowledge, social, and activity environments that surround the particular encounter and activity spaces they are working in, and the ways in which communications will mediate transformed work, citizenship, and personal relations. Increasingly, to lead a full and productive life requires learning to navigate, maintain, and constantly reconstruct the built symbolic environment we share with others and which forms the basis of social cooperation in a knowledge society. And a core part of that learning is to understand how that communication, information, and cooperation can support humanly satisfying modes of social life.

Animals were social before they were communicative. Even coral requires a colony. Animals were social and communicative before they were symbolic; witness ants being led by each other's pheromones. Animals were social and communicative before they had language; bees dance to direct each other to pollen. Each of these developments in sociality extended the possibilities and range of interaction, cooperation, sharing, and intersubjectivity. Consider the complex and affectionate parent-child relations among advanced mammals,

such as horses or chimps. Each of these developments also made activities more interesting, more complex, and more difficult to manage.

With language, our social groups extended beyond the family, flock, or pack to complex, differentiated tribes, villages, and cities. Levels of cooperation and task delegation increased for constructing dwellings, determining ownership, hunting, food growing and storage, domestication of plants and animals. Our arrangements for group security and aggression also grew, along with the technologies of metals and weapons.

Language, as well, fostered misunderstandings, disputes, assigning responsibility, blaming, adjudication, rules, and decrees. Force took on new roles in society as it was instigated, reinforced, and extended by threat and directed by language. Lore, tales, songs, and knowledge passed from generation to generation. Ancestry and genealogy became important for identity, status, and authority. Barter, deal making, distribution of property, as well as the need to adjudicate disputes and create collective will through words all increased the value of people who could wield words.

When humans, five thousand years ago, added literacy to our social tools, they further extended the boundaries of sociality across time and space. They also made possible the crafting of complex documents demanding high cognitive attention and contemplation, expanding the semi-private work in our heads we call consciousness. Writing brought accounts, ownership documents, aggregation of more wealth than you could keep an eye on, tax rolls, scribes, scribal schools, written laws, textually bound courts, lawyers, legal schools, religious scriptures, and interpretation, priestly classes, religious schools, apostasy, sectarian conflict, secular knowledge, and secular schools. Again, sociality became more extended, interesting, complex, and hard to manage.

With the increasing need for people of advanced language and literacy, so has the length of schooling increased. High schools were an invention of the nineteenth century, extending schooling in the middle, to prepare students for the new style of research, discipline-based university. Electronic production and distribution of text has opened a new chapter in the story. The first signs are that the plot will be the same—more extended, interesting, complex, and hard to manage—but we will return to that after an excursion inwards.

Though language has helped Humans become the most deeply and complexly social of beings, it has also made us, as best we can tell, the loneliest. Ants lead socially demanding and constraining lives, driven by each other's pheromones, but only an incurable anthropomorphizer would call it a life of quiet desperation, for as far as we know there is little depth of soul and individuality and aspiration in the ant. It appears that ants are perfectly content to be ants. Nor

do wolves express a need to unburden the guilty depths of their violence-ravaged consciousnesses for violating the laws of god and tribe.

As language and literacy have expanded the complexity and potential of our lives, allowing us to live in relation to distant and complex bodies of thought, knowledge, and institutions, it has brought us interiority, individuality, and difference. We talk to different people and can read different books. A child not only can speak to strangers, but can abandon the scriptures of the parents for a competing church or a new philosophy learned in schools.

It was, after all, a novelist, a person of letters, a bookish person, who plaintively proclaimed, "Only connect." We have new possibilities of loneliness and difference, driven by our hunger for the stimulation of novelty and the practical possibilities of improving our lives. We are hungry for connection, making new connections, at greater and greater distances from the here and now where ants smell each other and horses nuzzle. Paradoxically, this hunger for connection of consciousness through communication makes us different and more distant from those most immediate to us, even though we have greater weight and complexity of perceptions, thoughts, puzzles, fantasies, and games to share.

The Internet has only exacerbated this paradox. A few centuries ago only a small number of scholars led quietly bookish lives, and even the expansion of publishing created only a limited market of novel readers and intellectuals, whose best friends were in their books. But this is nothing compared to those legions of teenagers with thousands of best friends on Facebook or the twenty-somethings who find fulfillment in their Second Lives. While these connections may seem to be pale shadows of those in embodied lives, seeking the easiest simulacra of gratification—witness the proliferation of porn on the Internet—yet people are drawn to these in a hunger for connection, a connection that will focus and activate our complex neural systems of meanings and emotions. Consider, too, the many academics and professionals who spend half the day on e-mail or preparing documents for electronic transfer, or telecommuting, working in a home office; they too are only connecting. They are all connecting with a pervasive intensity that was not previously available unless you worked in the city room of a busy urban newspaper.

Electrons, on the other hand, are pervasive, but happy to go to lowest state, even more than ants, for ants are still driven to explore for foods and build colonies. Electrons are easily organized, even self-organizing at lower energy levels, not really excited to be "excited." In fact, they need a lot of externally-provided energy to get them "excited." Yet humans have found machines to create energy differentials, organize the electrons, and make them work, despite their entropic natures. We have marshaled their energies to do human work—first mechani-

cal energy for material work, but now we have them carry out communicative, symbolic work—helping us connect with each other through telegraph, radio, television, and now the Internet.

They excite us much more than we excite them. Yet our excitement has been focused largely on what we do to them and not what we do to ourselves, what we are trying to accomplish with each other, what new forms of social organization we are building, and how difficult it is to connect in meaningful activity. Rather, we have at first employed them within already existing social worlds. Some of the earliest activities that have driven the creation and proliferation of the Internet have been within well-developed social systems from the literate world that already have large institutional and economic presence.

The large economic stakes along with the complexity, stability, and power of those social systems mean that the technology gets designed to facilitate the existing work and arrangements, making it cheaper and quicker, but not disrupting it. Markets have intensified and sped up, and even reorganized some of their activities, eliminating some trading floors replaced by electronic queuing systems—even creating a low-cost trading system for day traders who no longer need a seat on the markets. Yet the underlying activity and market relationship is more robust than any technology, which has been bent to the needs of the robust social system and those groups that already hold power in these systems.

Similarly, legal reports were among the first documentary systems widely available electronically. Lexis/Nexis and Westlaw subscriptions eliminated expensive law libraries (though these services were not cheap, drawing profit from the same expensive law firms). Nonetheless, the legal process did not change much nor did the set of relationships among judge, lawyers, and clients. The publishers of information and other communicative resources serving the legal and market sectors carved out lucrative and even monopolistic niches, but they did not call the shots. Design followed the needs of the powerful clients and the social systems within which they maintained and exercised power.

An example of a much weaker system under much strain, more easily reorganized by technology, is personal relationships. While the biological impulses to mating, family, and friendship have remained constant and strong over millennia, urbanization, salary employment among strangers, social and geographic mobility, extended education, individualized economic resources, leisure, social heterogeneity, and other aspects of modernity have made the organization and management of personal relations a complex and fluid matter, very unlike the days when family, village, property, and agricultural ways of life limited one's social circle and reinforced local dependencies and bonds. For the last two centuries we have been caught up in the restless self-remaking and elective affinities of urban life, creating ad hoc systems of meeting, courting, and establishing

longer-term arrangements. Forming and managing relationships is one of the great problems facing individuals living modern lives. The Internet with social network sites ranging from Craig's List to Match to MySpace has offered new sets of solutions and arrangements for personal life, extending the range of social contacts and possible mates, while bringing in whole new sets of dangers and contingencies.

It is unclear where this is going. Clever designers are finding ways of drawing people together into social networks that address all aspects of our personal needs, as we can see in the expanding range of activities on Second Life. News, spiritual advice, psychiatric counseling, homemaking tips, medical advice, cooking instruction—all are found on the Internet, sometimes provided by individuals connecting, but often enough by a smiling persona projected by entrepreneurial or large corporate organizations.

In the middle at risk are social systems that have some previously stable organizational presence, but lack the institutional, legal, or financial clout of markets or the legal profession. The introduction of new technology with new communicative designs is threatening existing arrangements in these cases. For example, the music and film entertainment industries have been cast into uncertain futures by the emergence of downloading and sharing technologies.

Even more at risk are newspapers—and current trends in television and internet news threaten even the newsgathering function. The technology has offered many new opportunities for defining, organizing, and commenting on the news. But these arrangements put at play such fundamental issues as who are journalists, who are commentators, who is professional and amateur, what is valid news, and who pays attention and when? At play as well is where we identify our citizenship, community knowledge, and the public sphere. While there are many issues of page design and information structure—how we organize the electrons in data bases and page displays—the deepest issues are what the vehicles for public participation will be and who participates with what knowledge. It is those that need most experimentation as well as careful rhetorical thought by communication designers.

Academic publishing is another domain caught in fluid instabilities of institutions, power, economics, and new potentialities of technology. While the economic stakes seem to be lower than in business markets or law, the high stake parts of academic knowledge such as medical biotech have tempted the same monopolistic information providers that control legal and market information to seek control of knowledge by sequestering it in their servers and selling it back at exorbitant rates. But here there are countervailing forces—like public health and public funding for research on one side, and improvisatory academic entrepreneurship made possible by technology on the other. At stake is whether

we will be in a world of monopoly knowledge for a few elite institutions in rich countries or whether knowledge will flow freely for the good of all. No matter how this struggle plays out, the old academic publishing arrangements are breaking up.

At the same time the structure of disciplines and professional societies is at stake as their control over accreditation and distribution of knowledge built over the last century is up for grabs, as is their economic dependence on earlier modes of publication. Again, while page design and use of dynamic data bases and multimedia are always interesting, the real design issues concern identifying channels and connections to keep knowledge communities together, create new ones, provide infrastructural incentives, and identify economic resources. In the process, the forms and substance of what counts as knowledge and the products of disciplinary work may also be renegotiated, as they were in the printing revolutions of the fifteenth and nineteenth centuries.

Finally, educational social arrangements have been put up for renegotiation by new technologies, though it is unclear how well we are finding solutions and satisfactory arrangements. Schools in one sense are well-established government-funded institutions with enormous bureaucratic inertial force. Accordingly, providers are using new technologies to feed the existing bureaucracy with tests and materials, reinforcing and intensifying pre-existing dynamics. On the other hand, technology seems to hold the promise of just-in-time, convenient, high interaction, individualized educational experiences. Writing has been at the heart of this, as most of the models are based on the sending of texts back and forth, creating discussion boards, and similar written word media.

Virtuality provides special opportunities for education but also poses special problems. Writing itself is a virtual distance technology, but, typically, support for writing and learning to write has been local and personal—classroom teaching, editing, tutoring, peer group commenting. The transportable text may be sent out into the world, but production is also local—here and now. The thought, consciousness, affect, and sensibilities of the writer are here and now. They are located in the neuro-body and motor selves at the keyboard. It is not by accident that writing pedagogy is built on the local community of the classroom, the small group interaction, the in-class process, and even the communicative dyad—from the earliest emergent literacy experiences through the dissertation written in collaboration with and for the advisor and a small committee. These face-to-face interactions help us understand the sociality to be negotiated by the text as it moves through a social world at a distance.

Distance education has proved a puzzle because of social engagement issues of high dropouts, loss of motivation, weaker guidance, and a tendency towards objectification of other participants. A quick review of the journal *Comput-*

ers and Composition about experiences with online education reveals concerns about communal accountability and students' responsibility for each other. One author notes that facelessness makes it easy for students to silence each other and turn them into objectified "others." In response, the teacher needs new techniques to monitor and shape the character of the emergent community and the virtual space which contains it (Fleckenstein, 2005). Another study notes the failure of students in a virtual workshop to connect with the author as a real person and engage with dialogue about writing (Hirvela, 2007). Another interview study suggests the cause of high online dropout rates may be a lack of interpersonal rapport arising from a failure of the instructor to project trust, empathy, and credibility (Sapp & Simon, 2005). Another notes that in an online ESL class the identities and solidarities based on age, gender, and status forged in a face-to-face classroom are replaced by the textualized identities and authority systems afforded by the linguistic system (Matsuda, 2002). Despite these challenges to maintaining rapport and cooperative interaction, one study did notice that adding tools, such as a whiteboard, can affect an orientation toward task and idea generation, thereby positively changing the interaction (Hewett, 2006). This problem of virtuality challenging the learning relationship is not new, as Plato and Socrates pointed out 2,500 years ago. Somewhat more recently, it was the practice in humanist libraries to place busts of the great authors on the shelves so readers could feel the personal authorial presence.

E-mail and the Internet have particularly teased us with the possibility of offering personalized, individualized mentoring, without the inconvenience of moving bodies around. Mentoring is the quintessence of the sociality that sponsors learning to write, as Deborah Brandt's (2001) wonderful studies have reminded us. Mentoring is at the heart of Vygotsky's (1978) vision of learning within the Zone of Proximal Development. Resilience studies of those protective factors that allow young people to prosper despite adversity have identified mentoring as a key factor (Arellano & Padilla, 1996; Garza, Reyes, & Trueba, 2004). A recent study of students from homes where no English was spoken who became identified as excellent writers at college again notes the crucial role of mentorship (Singer, 2007).

A recent initiative seems to capture the essence of the promise of online mentoring. As we know, the concentration of scholarly publication in a few countries has lead to barriers of language, professional experience, and contact with knowledgeable colleagues for scientists whose primary language is not English. A group of senior scientists and editors of scientific journals are planning an online mentoring system called AuthorAid with the aim of increasing publication and professional development of international scholars (International Network

for the Availability of Scientific Publications, 2006). This seems an enormous opportunity to ameliorate obvious inequities.

Those who have worked with universities where English is not the first language know that the need for faculty to publish internationally is a major perceived problem and one of the strong motivators of English language training. Following behind this are the many issues of English being used as the primary or supplementary medium of education. I have seen this configuration of need in projects I have been working on in Brazil, Mexico, and Nepal. On the European Association for the Teaching of Academic Writing (EATAW) list and the European Writing Center Association (EWCA) list, this topic has been a matter of great discussion. So, such a mentoring program at the highest level could strengthen academic language education at all levels.

Yet, mentoring is a deeply personal social relationship. We are lucky if we can, a few times in our lives, form the bonds of trust and interchange that allow us to learn deeply from a mentor. It is not clear what it would take to make this online mentoring system work beyond the level of a correction service. Such a superficial service is not likely to hold the attention or cooperation of experienced scientists for long; only a more satisfying sense that they are truly helping a younger colleague to be a more articulate and powerful scientist is likely to create an ongoing commitment to the project. Yet, such a satisfying experience of mentoring is hard to come by. The complex history of writing center practice, theory, and research has been in fact a testament to how much thought must be given to making mentoring work well, even within a face-to-face environment.

The fact that the mentoring will be carried out by senior scientists experienced in the ways of publishing will help in the knowledge they have to offer, as will their experience mentoring their own students. In addition, their authority would likely evoke respect and perhaps trust on the part of the mentees. On the other hand, that authority may also impose distances if the issue is learning and development, and not simply conforming to correction. The authoritative word must somehow merge with the internally persuasive word.

The growing literature about online mentoring provides some guidance about the importance of the interface design to mediate relationships, establish roles and expectations, shape participation, create task orientations, and establish or hinder collaborative interactions. But the literature also warns us that online interactions create distances and obstacles for an ethos of care and trust—especially when the mentees are adults where issues of roles, privacy, identities, feelings about work and competence, and the like touch on complex human sensibilities (Blair & Hiy, 2006).

The senior status of the professionals may also create challenges in providing the mentors guidance as to how to work best in an online environment across such physical and social distances. Again, the writing center literature has let us know, even in face-to-face settings, the value of tutor training, no matter how knowledgeable the tutor is about the subject. A study of training for online tutors suggests that online tutors whose entire relationship is mediated by text need to have even more specialized training, helping them understand the dynamics of text-only dialogue, to introduce them to text moves that encourage dialogue, to provide comment structures that advance serious inquiry and further articulation of thought (Breuch, 2000; Anderson, 2002). Traditional marginalia and editing comments and even electronic editing tools may disrupt the mentee's relationship to the text and sense of the meaning projected. More needs to be understood about the experience of submitting to such an online service and how the user interprets that experience.

In our own field, the Research Network Forum is also in the process of creating an online mentoring system as an extension of the face-to-face mentoring provided annually at the Conference on College Composition and Communication (www.rnfonline.com). Making the face-to-face version a success has had challenges, which have only been sometimes met—including providing a satisfactory enough experience so that the mentors as well as mentees keep returning. These challenges will be made even greater on the Internet. But I am sure in both cases, if we approach the issues with understanding, creativity, and the right intellectual tools, we will meet the challenge.

This returns me to my main message. Our challenges are not only in creating attention-grabbing design, but also, more fundamentally, in the mediation of information-rich social processes. It is this challenge we need to prepare our students for—to make deeply satisfying and socially advancing experiences, capable of supporting complex cooperative work and creating environments for human growth and sharing. Elsewhere I have talked about the challenge of the cyborg way of life, saying the challenge is not only in creating the technological enhancements, but our growth as people to interact with and act intelligently with and through those enhancements (Bazerman, 2007). But as cyborgs we are not just individual creatures, we remain social humans. So, society and our understanding of it must also grow to manage the new forms of enhanced communal intelligence that new forms of communication are making possible for us. The society of cyborgs has the potential for deeper interiorities, deeper loneliness—nonetheless it also has the potential of deeper sharing, deeper intelligence, deeper cooperation, and deeper connection.

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