This paper discusses information literacy, teaching, and online technology. The first section introduces the split between mind and body that is made possible by the Internet and related resources. The second section discusses distance learning, including the impact of digital environments in teaching, and the power of virtual education to permit a student to transcend physical limitations. The third section addresses the student/teacher body and emergent phenomena, including the use of online technology as an adjunct to the traditional classroom, the impact of the Internet on education and life, and the demands of instructional modeling and student apprenticeship. The third section considers the cultured classroom, including the dialogic quality of education, the role of the teacher, and the importance of physical presence for learning and culture building. The fourth section covers information literacy and the enhanced classroom, including ways that media and the Internet change learning, the objectives of information literacy, and the structure of the new, information-focused educational environment. The fifth section discusses teaching and information literacy, including the following three guidelines: (1) contextualize all assignments; (2) build the use of information resources into every assignment; and (3) model in every interaction with students the skills of information literacy. (Contains 22 references.) (MES)
Flesh and Bone:
Information Literacy, Teaching, and the Connected Classroom

by

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I am an invisible man.... I am a man of substance, of flesh and
bone, fiber and liquids—and I might even be said to possess a
mind. I am invisible, understand, simply because people refuse
to see me.

Ralph Ellison
Invisible Man, 1952

Though You can fashion everything
From nothing every day, and teach
The morning stars to sing,
You have lacked articulate speech
To tell Your simplest want, and known,
Wailing upon a woman’s knee,
All of that worst ignominy
Of flesh and bone.

William Butler Yeats
“A Prayer for My Son,” 1928

These two works—one by an American novelist and one by an Irish poet and
playwright—affirm remarkably different views of the body, of the flesh and bones which
transport us around this world. For Ellison, the body is something he asserts—he is a man
of substance. He wishes to be seen, acknowledged, and dealt with as a presence. Ellison
claims and affirms his body as a political statement, even as a protest. For Yeats, the
body is something that reins in the transcendent and glowing articulations of the spirit, an
entity which impedes the full expression of our creative power. But what is common to
both passages is that Ellison and Yeats accept unquestioningly that flesh and bone can be
distinguished clearly—devastatingly for Ellison and triumphantly for Yeats—from spirit
or essence.

Mind and Body: From Caves to Cyberspace

Undoubtedly the Greeks set us up for this bifurcated vision of the human experience. The
pre-Socratics had their “appearance/reality distinction,” and then Plato convinced us of a
“forms/world split” because of which we were consigned—if we proceeded without
enlightenment—to an existence within the cave of our own sensory perceptions
(Dictionary of Philosophy of Mind). And even now, the familiar Biblical excuse for
indulgence—”The spirit is willing but the flesh is weak” (Mark 14:38)—strikes us as a
perfectly good reason for choosing the crème brûlée over the unadorned fruit compote.
Most of us came to understand, after our freshman year in college, that the chair we sat in
During our philosophy lecture was—at least from Plato’s perspective—simply a flawed manifestation of some more perfect, more ideal, more essential chair. This reputed cleavage between mind and body has, then, been with us for a long time.

Now, with the advent of the Internet and the concomitant proliferation of resources, databases, communications protocols, and digital “cultures” available to us, the most compelling manifestation of this traditional dualism in the early Twenty-First Century may be the split between mind and body, between thought and action, between being and doing that we experience in our engagement in “life online.” Internet enthusiasts assure us that the age of a fixed, immutable, and physically determined identity is past and that we can liberate ourselves from corporeal burdens and preconceptions to become free online subjects. In cyberspace, we may now “enter into creative relationships with one another in a manner said to be unrestricted and uncontaminated by the burdensome identifiers of race, gender, geographic origin, socio-economic contingency or physical appearance” (Knights).

In a discussion of MUDs (Multi-User Domains or networked virtual realities which permit one to interact online with others in a virtual space), Sherry Turkle asserts that in cyberspace, in the virtual arena in which the body is left behind, “the self is not only decentered but multiplied without limit. There is an unparalleled opportunity to play with one’s identity and to ‘try out’ new ones” (“Constructions”). Elsewhere, she explains that “In...computer-mediated worlds, the self is multiple, fluid, and constituted in interaction with machine connections; it is made and transformed by language; sexual congress is an exchange of signifiers; and understanding follows from navigation and tinkering rather than analysis” (Life on The Screen, 15). Finally, in her foreword to High Wired, Turkle makes the point that “The anonymity of most MUDs (one is often known only by the name one gives to one’s persona) provides ample room for individuals to express unexplored parts of themselves” (xii). For Turkel the life of the mind in virtual realms is liberating and even enlightening and fulfilling.

**Distance Learning: The Disembodied Scholar, the Intangible Student**

This abandonment of limiting, real spaces for such liberating, virtual realms has been made possible by digital environments of many kinds. And all have had a profound impact on those of us involved in teaching. Institutions of higher education worldwide have embraced, indeed, have run headlong to embrace (as David Noble says), a kind of online education which makes possible community, conversation, and interactivity among virtual teachers and students. The zeal with which proponents of online teaching describe these cyber encounters is awe inspiring and frequently unnerving—perhaps because such enthusiasts eagerly encourage us to view the physical as a liability to be disposed of in our effort to learn, to teach, and to build the online campus. Unlike Ellison’s Invisible Man, these educators view the body as an encumbrance to be—in Yeats’s terms—transcended.

Cynthia Haynes, for instance, extols the virtues of the educational MOO (another sort of networked digital reality providing students and teachers a virtual space in which to interact) and asserts the fustiness of the traditional classroom: “Somehow, between the
1960s revolution and the age of digitized books, we found ourselves trapped in the conventional classroom, haunted by stifled learning, oppressive seating arrangements, time and space—boundaries we long to transgress. And then there was MOO" ("Help," 161). It is telling that Haynes is positively Platonic in her denigration of the physical. It is the mental, the digital, the unembodied that frees us and enables us to learn. Rachel Hartigan Shea and Ulrich Boser characterize online education in this way: "the Internet has kicked learning out of the classroom and into cyberspace, making education available anywhere, anytime, even "just in time" (1). In a newspaper article on online learning at the University of Massachusetts Lowell, Caitlin Moody praises the power of virtual education to permit a student to transcend the physical limitations of her existence:

While earning her degree from the University of Massachusetts at Lowell, Jeanine Marie Tamboli kept a hectic schedule.

She would wake each morning at 5 to catch the train to her Boston office, often reading course material during her commute. Each afternoon she returned home around 2 to care for her children, William, 4, and Christina, 9, and to run her home-based computer business.

Tamboli would have had no time to earn her degree. But one thing made it possible: Her courses were offered online, and she could log on at 9 p.m., after her children had gone to bed.

"I am a mother of two kids, my son has health problems, my husband works Saturdays, and it was the only way I could finish my degree," she said. Tamboli earned her degree in information systems online through UMass-Lowell's distance learning program.

Practically unheard of five years ago, distance learning—taking courses online—is the newest trend in higher education, with classes filling up as soon as they are offered, according to college representatives in the North region.

Online learning has rocketed students from the classroom into cyberspace, where time constraints and travel no longer prevent them from earning degrees. (Moody)

The Student/Teacher Body and Emergent Phenomena
But despite the fact that many educators happily enumerate the virtues of anywhere, any time learning; despite the fact that some even seem to believe that learning can be modularized and "delivered" in appropriate chunks, "just in time," many cling to traditional notions of the classroom and classroom instruction. In fact, many would insist that the bodily presence of students and teachers in the physical classroom is a precondition to learning, and some may even wonder if our reverence for the physical has been lost and our understanding of its place in learning forgotten.
Van B. Weigel, for instance, believes that deep learning—"learning that promotes the development of conditionalized knowledge and metacognition through communities of inquiry"—is possible only if teachers use both online and onground resources. Weigel explains that to allow for the development of the conceptual understanding and reflective attitudes necessary for deep learning, an instructor must provide opportunities for modeling, coaching, scaffolding, articulating, reflecting, and exploring. All such activities are time consuming, intense, and—it goes without saying—demanding on both teacher and student. But with the resources of the Internet and online communication, Weigel claims, such powerful student-to-teacher, teacher-to-student, and student-to-student interactions can be enabled and fostered: "From a practical standpoint, deep learning and e-learning are inseparable. It is simply not economically feasible to provide a broad cross section of students with depth educational curricula unless Internet technologies are used" (5).

But Weigel adds that such technology is best used as an adjunct to the traditional classroom. Nor can we, he adds, hope to do more easily online what we already do well onground: "the teacher's passion for intellectual inquiry and love for his or her subject" and "the unique chemistry of each class...are best experienced in real time" (26). Thus, even as he argues for the enhancement of post-secondary education with technology, Weigel insists on the necessity of the embodied. He calls to our attention as well the importance of emerging phenomena in the classroom. Things happen that we did not predict. And while these unforeseen events may be enacted online, much of the richness of discovery and of possibility is available only in the immediate presence of the event and the participants themselves.

In a compelling work on the philosophical, social, and personal implications of the Internet, Hubert Dreyfuss asks what effect the Internet is having on education and life in the human community. After considering the efficacy of the Internet and digital simulation as teaching tools and after exploring the "loneliness and depression" (3) that frequently accompany excessive devotion to life online, Dreyfuss concludes that what is most significant in certain human interactions is "people's actual embodied presence to each other" (2-3). Learning which is decontextualized in any way, asserts Dreyfuss, is not ultimately effective learning and can accomplish only very basic skill development. Dreyfuss goes on to criticize those who would move us too far from bodily presence: "some enthusiasts rejoice that, thanks to progress in achieving such telepresence, we are on the way to sloughing off our situated bodies and becoming ubiquitous and, ultimately, immortal" (50).

Dreyfuss maps the "stages in which a student learns by means of instruction, practice, and, finally, apprenticeship, to become an expert in some particular domain and in everyday life" (32). He questions whether "the stages [can] be implemented and encouraged on the Web" (32). After a careful exploration of these stages, Dreyfuss demonstrates that "disembodied interactions" (51) are insufficient to real learning. Because apprenticeship is—for Dreyfuss—an important aspect of learning, the corporeal presence of instructor/mentor and student in the same physical area is vital.
While apprenticeship may certainly be carried on virtually and while many of us have coached students and colleagues by means of email, Dreyfuss considers at length the demands of instructional modeling and student apprenticeship. He finds the cyber classroom lacking for the practice of these essential elements of teaching and learning. The loss of eye contact in virtual spaces, the inability to observe the instructor fully as he/she deals with information or materials, and the subtle and sometimes not-so-subtle responses of the class—all shape the learning experience, all embody the instructor as a model in ways at once intellectual, emotional, and physical. And all embody the student as a full participant/apprentice in the learning community: "Leaving the body behind would have pleased Plato, who subscribed to the saying that the body was the tomb of the soul and followed Socrates in claiming that it should be a human being's highest goal to 'die to his body' and become a pure mind" (5). But Dreyfuss warns that for teachers such a move must be carefully considered:

we should remain open to the possibility that, when we enter cyberspace and leave behind our animal-shaped, emotional, intuitive, situated, vulnerable, embodied selves, and thereby gain a remarkable new freedom never before available to human beings, we might, at the same time, necessarily lose some of our crucial capacities: our ability to make sense of things so as to distinguish the relevant from the irrelevant, our sense of the seriousness of success and failure that is necessary for learning, and our need to get a maximum grip on the world that gives us our sense of the reality of things. Furthermore, we would be tempted to avoid the risk of genuine commitment, and so lose our sense of what gives meaning to our lives...if our body goes, so does relevance, skill, reality, and meaning. If that is the trade-off, the prospect of living our lives in and through the Web may not be so attractive after all. (6-7)

As we noted earlier, Sherry Turkle asserts the absence of risk as one of the most positive aspects of digital realities. But for Dreyfuss the absence of risk proves a limitation to effective teaching and meaningful learning. In fact, Dreyfuss argues that risk is an necessary component of learning: "only emotional, involved, embodied human beings can become proficient and expert. So, while they are teaching specific skills, teachers must also be incarnating and encouraging involvement" (48):

The idea that the teleteacher could equal the powerful effect of a skilled teacher who is present in the same room with her students seems unlikely. Without the sense of the mood in the room as well as the shared risk, the involvement of the students with a movie-actor teacher will almost surely be less intense than that of students and teachers reacting to each other's presence." (62, emphasis added)

The Cultured Classroom
Thus Dreyfuss and Weigel call for an embodied presence, a committed presence, in the classroom. Although Jerome Bruner does not specifically address the issues of modeling and apprenticeship or raise the question of physical presence in his considerations of
learning, his vision of the learning environment and the teacher’s role in that environment is relevant:

The teacher can...open wide a topic of locution to speculation and negotiation. To the extent that the materials of education are chosen for their amenableness to imaginative transformation and are presented in a light to invite negotiation and speculation, to that extent education becomes a part of..."culture making." The pupil, in effect, becomes a party to the negotiatory process by which facts are created and interpreted. He becomes at once an agent of knowledge making as well as a recipient of knowledge transmission. (Actual Minds, Possible Worlds, 127)

The late Bill Readings also brought to our attention the dialogic quality of education. He emphasizes, like Bruner, the need for the cultivation of a culture of learning. In teaching, learning, and life, Readings tells us, we must “pose a challenge to the ever-increasing bureaucratization of the University as a whole.” To do so we need to see the entire institution as a place where we listen to thought: “to listen to Thought, to think beside each other and beside ourselves, is to explore an open network of obligations that keeps the question of meaning open as a locus of debate” (164-5). Meaning, for Readings, is not fixed or immutable. It is emergent, a function and product of the conversing, thinking, listening learning community.

The role of the teacher in this negotiatory, dialogic community is central. Bruner foregrounds the importance of the teacher in this learning community when he fondly remembers his science instructor, Miss Orcutt. She served as a model to him in her engagement with the subject, she served as a challenging interlocutor in her engagement with the students: in her teaching she was, Bruner says, “inviting me to extend my world of wonder to encompass hers. She was not just informing me. She was, rather, negotiating the world of wonder and possibility....She was a human event, not a transmission device” (126).

As teachers, thus—as “human events”—we impart a special culture to our students, a way of being, many ways of thinking. In terms of modeling our professions and our disciplines, we must let students “see” us, observe us, encounter us as we manage information and as we create knowledge and achieve wisdom with them. This meeting of the body and the mind happens best in the enhanced classroom, which is really nothing more than the traditional classroom enhanced with a display system, a computer, a connection to the Internet, a television screen, and a VCR. In this environment, we model for students all our thinking strategies, all our ways of working, all our systems of inquiry and ethics. We embody our discipline and our practice.

As teachers, we must work before our students with the complete armamentarium of our respective fields: the books, papers, machinery, cables, plugs, pens, blackboards, brochures, websites. Everything we use and everything we do must be brought to their awareness. Thus, the blind students in our class comes to understand how material is made available for the student who cannot see. The sighted student observes how the
instructor struggles with intractable and difficult computer machinery. All students watch as we seek answers together to the questions the class poses. We consult our books, we consult online resources, we decide when the library will help. We model finding information, dealing with information, assembling information, and turning information into learning, in the real physical world. Learning is not solely a province of the mind...the body learns...no matter how it takes in the information.

Dreyfuss insists that physical presence is a precondition, then, not just for learning but also for culture building. And this culture building serves for our students as an introduction to our respective disciplines:

Like embodied commonsense understanding, cultural style is too embodied to be captured in a theory, and passed on by talking heads. It is simply passed on silently from body to body, yet it is what makes us human beings and provides the background against which all other learning is possible. It is only by being an apprentice to one's parents and teachers that one gains what Aristotle calls practical wisdom—the general ability to do the appropriate things, at the appropriate time, in the appropriate way. If we were able to leave our bodies behind and live in cyberspace and chose to do so, nurturing children and passing on one's variation of one's cultural style to them would become impossible. (48)

If we pay close attention to Dreyfuss's selection of detail, it becomes obvious why the enhanced, onground, physical classroom is the ideal place for learning: he mentions the learning we gain from being apprentices to our parents. To imagine a parent teaching a child—the prototypical learning situation—by means of a chat room or an online class is, clearly, ludicrous.

Information Literacy and the Enhanced Classroom

In bringing the power of the Internet into the classroom, in “blending” our classes, new priorities for teaching emerge. Considering how media and the Internet change learning, Manuel Castells observes that “Internet-based learning is not only a matter of technological proficiency: it changes the kind of education that is required both to work on the Internet and to develop learning ability in an Internet-based economy and society.” Castells goes on to describe this new kind of learning:

The critical matter is to shift from learning to learning-to-learn, as most information is on-line, and what is really required is the skill to decide what to look for, how to retrieve it, how to process it, and how to use it for the specific task that prompted the search for information. In other words, the new learning is oriented toward the development of the educational capacity to transform information in to knowledge and knowledge into action. (259)

What Castells has perfectly outlined here are the goals of information literacy. In language very similar to Castells's, The Presidential Committee on Information Literacy
of the American Library Association declares that to possess information literacy an individual must "be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association: Presidential Committee on Information Literacy: Final Report). The authors of "The Model Statement of Objectives of the Association of College and Research Libraries” make the similarities between Castells's vision of new learning and information literacy resonate even more sharply:

The role of [information literacy] instruction is not only to provide students with the specific skills needed to complete assignments, but to prepare individuals to make effective life-long use of information, information sources, and information systems. A strong information literacy instructional program should include how information is identified and defined by experts; structured; intellectually accessed; and physically organized and accessed. (qtd. in Wright, 23)

As early as 1989, the ALA identified information literacy as “a survival skill in the Information Age” and delineated the structure of the new, information-focused educational environment:

The school would be more interactive, because students, pursuing questions of personal interest, would be interacting with other students, with teachers, with a vast array of information resources, and the community at large to a far greater degree than they presently do today. One would expect to find every student engaged in at least one open-ended, long-term quest for an answer to a serious social, scientific, aesthetic, or political problem. Students’ quests would involve not only searching print, electronic, and video data, but also interviewing people inside and outside of school. As a result, learning would be more self-initiated. There would be more reading of original sources and more extended writing. Both students and teachers would be familiar with the intellectual and emotional demands of asking productive questions, gathering data of all kinds, reducing and synthesizing information, and analyzing, interpreting, and evaluating information in all its forms. In such an environment, teachers would be coaching and guiding students more and lecturing less. They would have long since discovered that the classroom computer, with its access to the libraries and databases of the world, is a better source of facts than they could ever hope to be. They would have come to see that their major importance lies in their capacity to arouse curiosity and guide it to a satisfactory conclusion, to ask the right questions at the right time, to stir debate and serious discussion, and to be models themselves of thoughtful inquiry. (American Library Association)

The Association for College and Research Libraries elaborates the principles set forth by the ALA in emphasizing the importance of information literacy in the whole life of the educated individual: “Information literacy forms the basis for lifelong learning. It is
common to all disciplines, to all learning environments, and to all levels of education. It enables learners to master content and extend their investigations, become more self directed, and assume greater control over their own learning.” The ACRL goes on to identify five abilities necessary for information literacy. In any situation—personal or professional—the individual who has cultivated information literacy will be able to

- determine the extent of information needed,
- access the needed information effectively and efficiently,
- evaluate information and its sources critically,
- incorporate selected information into one’s knowledge base,
- use information effectively to accomplish a specific purpose,
- understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.

Seeking to merge the goals of information literacy with the skills of computer competence, librarians and faculty at California Polytechnic State University shape the skills of the literate individual in terms of his/her mastery of these abilities:

- define the research topic,
- determine the information requirements for the research question,
- locate and retrieve relevant information,
- use the technological tools for accessing information,
- evaluate information,
- organize and synthesize information,
- communicate using a variety of information technologies,
- understand the ethical, legal, and socio-political issues surrounding information and information technology,
- use, evaluate, and treat critically information received from the mass media.

Teaching and Information Literacy

The education of the whole person, the cultivation of the student as lifelong learner, and the introduction of literacy skills at all levels of personal and professional inquiry—these, then, are the goals of information literacy. And these goals are met most fully in an enhanced or blended classroom in which students and teachers meet among all the tools available to them.

To ensure that my students cultivate the skills necessary for information literacy, I follow three guidelines: I contextualize all assignments, I build the use of information resources into every assignment, and I model in every interaction with my students the skills of information literacy. I do not simply “assign a research paper,” nor do I make any assignment that culminates solely with one completed paper. I walk my students through the process of building a topic, asking questions, finding materials, and creating a written document or a media presentation.

If, for example, I want my students to grapple with the difficulties of Mark Twain’s *Huck Finn*, I might ask them to interpret that novel for a group of readers in early Twentieth-
Century America. By insisting on a specific context for their work, I force my students to be aware of the appropriateness of their writing, their thinking, their presentation, and their selection of supporting materials to a group whose values they don't fully comprehend as they begin their work. They must ask relevant questions: who read novels in the early Twentieth Century, how would we know anything about such people, where might we find out what they thought if *Huck Finn*? Of course, as a starting place they will need, as well, to understand their own reading of *Huck Finn* as an emergent phenomenon, having to do as much with their own time as it does with the work itself. And in order to offer an "interpretation," they must be fully aware of what interpretation means and what steps are involved in building an interpretation.

What this approach makes clear is that I am not simply providing my students with content. I am challenging them to complete a wide range of tasks which require information literacy, an understanding of the culture of literary studies, and some awareness of the protocols of communication. Probably the most significant aspect of this work for our students is the collection of strategies they acquire to become successful learners.

Without the traditional research paper assignment, I build the need for finding information, for conducting research, for answering questions, into the fabric of my students' work with me. As they work, I engage myself fully in the process of their work, modeling as we proceed, appropriate strategies for reaching the goals I have set. I do believe that students working in this way reach a respectable level of information literacy, and I believe that the skills and strategies they learn will support them as lifelong learners. I have included an entire selection of assignments for such a project at http://imctwo.csuhayward.edu/klant/InfoComp/sampleassignments.htm.

With respect to students' culminating project, I might ask that they prepare a media enhanced discussion of Mark Twain's possible audience for class presentation rather than a paper. Students would need to find appropriate images, textual resources, perhaps even music. They would need to cite the materials properly, and they would be required to prepare their materials in such a way that all students could access them and learn from them—even students with accessibility limitations. I might ask them to respond to my questions about their work-in-progress by means of email or reports in specific formats so that they came to be comfortable using various information-handling tools. It is important to remember that even though students present their material with a tool such as PowerPoint or Astound (presentation applications), as much research and writing can be built into the assignment as was built into the more conventional research paper.

For faculty, the most significant aspect of this work is the clarity we must bring to an understanding of our respective fields. If we are, indeed, providing our students guidance in the culture of literary study, we must ourselves be clear on our underlying assumptions and orientations. I have provided a worksheet on "Information Literacy and Teaching with Technology," which offers a guide to reflecting on the structure of your discipline. You may find this resources at http://imctwo.csuhayward.edu/klant/InfoComp/infolit.pdf.
In the past, we have occasionally taken the structure and theoretical frameworks of our respective fields for granted. Without ever discussing these matters with our students, we frequently assumed that they—and we—knew what "geology" was or "algebra" or "poetry," that we were clear on the anatomy of our work because that anatomy was self evident—a poem is a poem, literature is literature, and equation is an equation. But now that we all—from the youngest of students in the primary grades to the most venerable of scholars in research institutions—create, format, reformat, move, and manage information with digital resources, the information structure of our work has come more fully to our attention.

The information structure of our respective disciplines has also become more complicated: the proliferation of information on the World-Wide Web has deprived us of the traditional resources we have relied upon to organize information for us. Dreyfuss reminds us that the Web is hyperlinked; that is, it exists as a series of unrelated, disorganized connections. Unlike a library or a database or a book, the Web is organized by no hierarchy. Hyperlinks on web pages are random because "No authority or agreed-upon catalogue system constrains the linker’s associations" (8). Dreyfuss goes on to point out that the "problem of retrieving relevant information from a corpus of hyperlinked elements is as new as the Net. The traditional way of ordering information depends on some one—a zoologist, a librarian, a philosopher—working out a classification scheme according to the meanings of the terms involved, and the interests of the users" (9). This classification system is the structure, the bones and skeleton, of our respective disciplines. When students seek information on the Web, they are unsupported by these structures. This is what we must offer our students, what we must show them in our teaching—the shape of our field, the processes of our work. As they add these conceptual structures to their understanding, they will be better equipped to use and evaluate information.

To put it simply, if we consider teaching the meeting of mind and body for the illumination of each, the place where flesh and bone join essence and spirit, we can enable good teaching that calls upon every resource we use in our daily lives as teachers and scholars. We can share this panoply of riches, this encyclopedia of practices, fully with our students if we use all that is available to us in the digital age. Not just the traditional classroom, not only the virtual space, but both together.

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EFF-089 (9/97)