PAYING ATTENTION TO ATTENTION:
NEW ECONOMIES FOR LEARNING

Suzanne de Castell

Faculty of Education
Simon Fraser University

Jennifer Jenson

Faculty of Education
York University

INTRODUCTION

The technological infrastructure of the new economy brings in its wake an unprecedented challenge to formal education's traditional monopoly over the mass-scale acculturation of youth: a new "*attentional* economy" in which anyone, adult or child, with "access" (to television, movies, advertising, computer games, and, above all, the Internet) owns and controls a full economic share of her or his own attention. Education, which has always been in the business of capturing and holding attention, has sustained serious blows to its capabilities as core values, along with traditional tools, means, and purposes, have been progressively troubled, destabilized, and finally unseated by new literacies and digital epistemologies. Vastly complicating this challenge is a corporate-owned, profit-driven means of educational production transplanted into the heart of the public school: networked digital technologies of construction, representation, expression, and communication.

Attention is a critically important consideration in the design and development of virtual environments for learning — environments whose very existence depends upon learner attention. Unlike the independent reality of material classrooms and teachers and textbooks, virtual educational realities must address attention as an essential condition of their functioning. Indeed, attention may take on renewed significance for education to the extent that "e-learning" strengthens its grip on the current development of education's "delivery." For just as digital texts are "written" only as they are read — appearing as readable text only when users scroll through them — so for virtual knowledge-artifacts, their very existence is conditional upon user attention. In this respect, a virtual tree falling in a digital forest is not at all like a real tree falling in a real forest. The latter, we may at least argue, still makes a resounding crash, whereas the former's silence makes the virtual tree no tree at all: neither sound nor forest nor tree itself comes to "life" until some user activates the would-be event with eyes to see and ears to hear.

The primary currency of an information society — that is, a society in which information is designated the main commodity produced, marketed, and consumed — is necessarily attention. And education, which has *always* sought, however imperfectly, to cultivate a "knowledge society," has therefore always had

attention as its primary currency. In this respect, if in no other, education is a step ahead in the ''information society'' game, having given considerable thought and paid considerable attention to the culture and management of attention. In schools, attention has been ''traded,'' both by students and their teachers, whether for marks, for disciplinary action, or for praise. Attention is captured and held by compulsory schooling laws and, more traditionally, by fear: fear of failure, fear of corporal punishment, and fear of disapproval. Furthermore, teachers have typically positioned themselves as the center of attention, at the front of the class, ''all eyes forward,'' and as the central figures in the distribution of information (textbooks, worksheets, library) and knowledge (subject matter).

Today, attention in schools is altered by political and technological conditions that have disrupted the traditional distribution of ''information,'' and thereby knowledge, where — at least in schools — the role of the teacher has been central. Pervasive cultural shifts toward progressive, ''learner-centered,'' and, more recently, constructivist orientations to education have invited parents and students to challenge school-based norms, and the legitimating principles that once regulated a stable universe of authoritative texts and authoritative teachers are losing their hold on public sentiment about education. Structures of perceiving, thinking, and feeling that kept students attentive to teachers, tests, and texts are being challenged both directly (students attend, as they always have, to something other than the teacher — writing notes, sending text messages, making faces at each other, staring out the window) and, increasingly, indirectly through popular cultural media that satirize or disregard altogether the importance of ''paying attention'' in school. What is different here is children's sense of entitlement: whereas under earlier conditions students had to earn, to merit, to ''deserve'' their teachers' attention, nowadays increasingly the tables are turning, and it is the teacher who must earn or deserve the attention of her students — or her students will turn it elsewhere.

Further destabilizing authority relations between students and teachers, new technologies have afforded children far greater power, and therefore greater choice, in what they can see, think, and do, because now their attention, as we seem to like to say, ''adds value.'' In an increasingly commercialized culture under conditions of massive information surplus and saturation, attention acquires its own independent worth. As education's monopoly over credentialism is broken, largely externally but in collusion with schools and universities, terms of value between private and previously public sectors begin to converge. Children take economic control with political consequences: whereas children's rights have always been grounded in age-restricted legal rights, an attentional economy has no ''age of majority,'' and children are enfranchised as full citizens the moment they gain access

SUZANNE DE CASTELL is Professor of Curriculum and Instruction on the Faculty of Education at Simon Fraser University, 8888 University Dr., Burnaby, BC, Canada V5A 1S6; e-mail <decaste@sfu.ca>. Her primary areas of scholarship are multimodality, new media, and educational games/play research and development.

JENNIFER JENSON is Assistant Professor of Technology and Pedagogy on the Faculty of Education at York University. Her primary areas of scholarship are new media studies, game studies, and gender and technology.

to, and are themselves being (re)formed by, the global mass-media industry that is already actively working to attract their attention.

Children quite literally *pay* their attention to new multimodal tools designed for them. These tools undermine singular modes (such as text) so completely that even technologies like the telephone, once tied to boxes and switches, have broken free both materially and symbolically: cell phones disengage users from wires, and phones are no longer just for verbal communication but for textual (text messaging) and visual communication (the ''top-selling'' cell phone in Europe for the year 2003 enables users to exchange digital images with other users). When we pay attention (as when we talk on the phone, for example), we may often be ''multitasking'' (chatting on the computer, and/or watching a movie, and/or playing a game). The school's traditional forms of authority for commanding student attention, along ''unimodal,'' text-based lines, offer diminishing returns to both teachers and students in such an economy: the technologically supported transformations of both individual and collective attentional structures toward multimodality and multitasking impacts most profoundly on youth, who have never known the text-bound world from which their elders have come.

One powerful result of this new attentional economy, and its attendant and very real increase in children's rights, freedoms, and powers, has been the ability — and the notable success — of a commercialized, globalizing popular culture to school a voluntary mass audience in patterns and practices of consumption. We are witnessing the economic consequences of this evolution of a mass entertainment industry that extends deeply into every aspect of children's (and their teachers') lives. This collision of the hitherto relatively disconnected spheres of education and entertainment has changed how both teachers and students can ''do'' schooling.

Video Games and Popular Culture

Very much unlike children before them, students at school today have grown up with structures of meaning and of feeling defined by global and local commercial advertising systems and delivered through corporate-controlled communication networks. Today, for example, even very young children enjoy and find significance and identity in commercial products and commercialized activities of consumption, and they are indeed seen as their own ''market'' in North American capitalist economies. At the same time, vastly increased attentional demands on parents, as boundaries separating labor from leisure erode and work intrudes into ''private'' life, mean that children are growing up with diminishing parental time — a consideration that ought to challenge received understandings of the home as the primary site of socialization. Moreover, for many children today, increased population density and unstable patterns of ''community'' growth mean greater dangers and diminishing physical space for embodied, nonvirtual play, particularly for boys.[1]

---

1. Henry Jenkins, ''Complete Freedom of Movement: Video Games as Gendered Play Spaces,'' in *From Barbie to Mortal Kombat: Gender and Computer Games*, eds. Justine Cassell and Henry Jenkins (Cambridge: MIT Press, 1998), 262–297.

For children, if not also for teachers, little worthwhile is left of the traditional separation between education and entertainment. Incontrovertible is the fact that video games have been the most successful medium at grabbing the attention of millions of young men and boys (as well as some girls and women) worldwide. We therefore see it as valuable to consider what may be learned from studying computer games as virtual learning environments and from looking, in particular, at emerging structures and forms of attention within computer-based play to consider their implications for new structures of knowledge. This perspective sees educational promise in computer gaming for "serious play."[2] As a cultural form highly successful at attracting and maintaining human attention, commercial gaming may have much to tell us about developing, gaining, and keeping audiences both engaged and immersed. Under conditions of diminished external control and increasingly self-regulated and "voluntary" attention, it is important to investigate how games frame information, engaging players' attention in ways that give pleasure. What conceptions of learning, and what contents and practices of teaching and learning, do entertainment-oriented computer games appear to have?

In educational contexts, as learning continues to migrate from teachers, texts, and classrooms to virtual interactions regulated by learners themselves, there is a need to create learning resources capable of attracting and equipping novices with basic operating skills to mobilize program content, while motivating and supporting for experienced users the kind of sustained learner engagement required to pursue demanding and sophisticated intellectual activity. To learn more about how multimodal, fast-paced, and interactive media successfully attract, capture, and hold attention, we look to the best tool digital technologies have thus far developed possessing these properties: computer-based gaming.

Studies of teaching and learning in the "new information economy" pay increasing attention to computer-based gaming not least because this field represents the area of greatest financial investment in multimedia design and development. The return on that investment is that state-of-the-art games today embody the most sophisticated technology, and the most fully developed applications of programmers' capabilities, that we have available in the public domain. These resources enable games to support a thriving network of users, many of them children and youth, making gaming today's most successful and widest-reaching global subculture — one that comes closer to comprising a virtual community than any other cyberculture to date.

Gaming's ability to mobilize and sustain a culture that immerses and fully absorbs its participants makes it threatening to many parents and teachers. And in many ways, it is. Today, for example, as a direct result of the proliferation of digital technologies in education, in work, and in social life, children live in the same physical spaces as their parents but inhabit different worlds, speak in new languages, write in new forms, and communicate using media in ways and for

2. Lloyd P. Reiber, "Seriously Considering Play: Designing Interactive Learning Environments Based on the Blending of Microworlds, Simulations, and Games," *Education Technology Research & Development* 44, no. 2 (1996): 43–58; and Suzanne de Castell and Jennifer Jenson, "Serious Play," *Journal of Curriculum Studies* 35, no. 5 (2003): 1–17.

purposes their parents can scarcely comprehend. Understandable as the repudiation of computer gaming may be, the benefits to education of engaging with and learning from commercial gaming's phenomenal success, popularity, *and its effectiveness as a learning environment*, might far outweigh the benefits of attempting myopically to ignore or suppress it — something that, in any case, is unlikely to succeed in the long term.

The rich potential of learning from games and play has not been entirely unrecognized in education, which has largely reserved play-based teaching approaches to the child's earliest years of schooling. For the most part, and for many teachers and parents, playing is the *opposite* of "school," and it is probably safe to say that few teachers would embrace the idea that game-based learning offers a useful and appropriate medium for their students.[3] Most educational uses of gaming and play have limited its role to an extrinsic motivational one — a practice that further supports the general tendency to devalue play as "distraction," or to relegate its use to the child's earliest years and to content that is not significant. Any sustained attempt to grasp the profound epistemic and sociocultural significance of play is rare. In industry, though, corporate trainers have been quick to capitalize on these new possibilities, as evidenced by the burgeoning of digital game-based learning for the workplace.[4] However, educational theory and research have only recently begun to explore what education may learn from the successes of entertainment-oriented commercial game development about how to engage and "immerse" people in a virtual universe that develops, through play, both psychomotor skills and a host of analytic processes, including sociocognitive attitudes and understandings.[5]

Currently, men and boys are the primary users (and beneficiaries) of computer-based gaming. As has been repeatedly observed, boys' early and continued involvement with gaming has been a key factor contributing to their greater interest in, as well as their greater competence/confidence with, new technologies.[6] This early gaming experience amounts to a "head start" for boys that accrues incrementally for the duration of schooling and beyond, such that we continue to see a dramatic, and indeed increasing, underrepresentation of women in computer- and technology-focused subjects and fields.[7] It is important to stress that commercially-based, entertainment-oriented gaming, for all its technological sophistication and cultural power, has been and continues to be inhospitable to women and girls; proclamations of gaming's "virtual equality," which identify the largest percentage of gamers as

---

3. This is not to suggest that game-based learning offers a useful and appropriate "motivator" or "support" for existing learning goals, but that it provides learners with an environment and a set of tools that will make them want to think and to do very different things than the curriculum guide prescribes.

4. Mark Prensky, *Digital Game-Based Learning* (New York: McGraw-Hill, 2001).

5. James P. Gee, *What Video Games Have to Teach Us About Learning and Literacy* (New York: Palgrave Macmillan, 2003).

6. Justine Cassell and Henry Jenkins, "Chess for Girls: Feminism and Computer Games," in *From Barbie to Mortal Kombat: Gender and Computer Games*, eds. Cassell and Jenkins, 14.

7. This also presents a powerful sociocultural disincentive to female participation in these subjects and fields.

adult single women, depend on our ignoring the vast differences between playing solitaire ''online'' and playing Everquest.[8] As soon as we look at differences in computer-based play by gender, it is clear that the vast majority of women and girls remain at best marginal participants in gaming activities as well as in gaming's larger cultures. To look to computer-based gaming for new means for retooling public education's knowledge production, representation, and dissemination possibilities *without* taking gender seriously into account is to compound girls' disadvantage with respect to developing competence and confidence with new technologies, a consideration worth exploring further.

THE ECONOMICS OF ATTENTION

A key to gaming's spectacular success has been its savvy engagement with, and its ability to map absorbing and pleasurable activity onto, the new structures and functions of attention youthful consumers are being taught to use in attending to and interacting with information and experience in multimediated virtual environments.

While Canadian psychologist Warren Thorngate initially formulated the principles of an economics of attention several years ago, the concept of attentional economy has been further and differently elucidated within contexts of economics, business, rhetoric, psychology, and education, each of which has helped to map out a significant dimension of this construct.[9] It should be noted, however, that much of this work seems less oriented toward education than toward advertising, business, and entertainment contexts. When and if it is taken up and used as a construct relevant to the field of education, concepts and theories of attentional economy will need to be developed more specifically with that field in view, not merely ''imported'' and applied unproblematically.

Writing for a corporate/business audience, Michael Goldhaber sees attention as indexical to originality and prophesies a replacement of monetary economies by attentional economies: ''attention can ground an economy because it is a fundamental human desire and is intrinsically, unavoidably scarce.''[10] Elsewhere, he expands on this idea, observing that

---

8. One recent claim of this sort is contained in a recent report by the Pew Internet and American Life Project, which concluded that ''women are more likely than men to be regular players of computer and online games — approximately 60% of women compared to 40% men reported this, while about the same number of men and women reported playing video games.'' See Pew Internet and American Life Project, ''Let the Games Begin: Gaming Technology and Entertainment Among College Students,'' http://www.pewinternet.org/reports/toc.asp?Report=93 (last accessed June 25, 2004).

9. Warren Thorngate, ''On Paying Attention,'' in *Recent Trends in Theoretical Psychology*, eds. William J. Baker, L. Mos, Hans van Rappard, and Henderikus J. Stam (New York: Springer-Verlag, 1988), 247–264; Warren Thorngate, ''The Economy of Attention and the Development of Psychology,'' *Canadian Psychology/Psychologie Canadienne* 31, no. 3 (1990): 262–271; Warren Thorngate, ''More Than We Can Know: The Attentional Economics of Internet Use,'' in *Culture of the Internet*, ed. Sara Kiesler (Mahwah, New Jersey: Lawrence Erlbaum, 1997); and Warren Thorngate and Fatemeh Bagherian, ''The Political Economy of Attention and the Limits of Pedagogical Technologies,'' in *Technology/Pedagogy/Politics: Critical Visions of New Technologies in Education*, eds. Lee Easton and David Hyttenraugh (Calgary, Alberta: University of Calgary Press, 1999).

10. Michael H. Goldhaber, ''Attention Shoppers!'' *Wired Magazine* 5, no. 12 (1997), http://www.wired.com/wired/archive/5.12/es_attention.html?pg=3&topic= (last accessed June 24, 2004).

> We search for meaning in our lives especially once pure material needs are already given to us with little effort on our part. Why are we here, and how do we know that we are somehow worthwhile? If a person feels utterly ignored by those around her, she is unlikely to feel that her life has much meaning to them, and since all meaning ultimately is conferred by society, one must have the attention of others if there is to be any chance that one's life is meaningful.[11]

A flaw in this argument is that while many people may indeed crave unlimited or at least large amounts of others' attention, by no means does everyone, even in an entrepreneurial, self-promotional employment culture such as our own, which teaches that attention-seeking is perfectly acceptable and in fact a highly pragmatic disposition. From Greta Garbo to Harry Potter, personalities both real and imaginary have begged to be left alone. It is possible that business ventures do crave the maximum attention from the maximum number of people, but it is odd — and highly questionable — to construe from that circumstance that this desire is a deep-seated *psychological* need. Whatever the case, the presumption is false, as is Goldhaber's reciprocity thesis: in order to get attention, you have to pay attention. This principle supports his idea that what we all have to learn is how to give ''illusory attention'' — making others believe we are giving them a fair attentional exchange so that they will give their attention to us. However, a number of culturally significant practices absolutely depend upon asymmetrical attentional relations, most obviously sabotage, surveillance, stalking, ''intelligence,'' and so on. In all of these practices it is critical that one pay attention without having attention ''paid back.'' Interestingly, this analysis, proposed as having economic implications concerned with innovation, again grounds its understanding of economies of attention in the fundamentally psychological terms of the emotional needs of persons for recognition.

It follows from his essentially psychologistic way of looking at the matter that, for Goldhaber, ''The limits on real attention per capita are absolute.''[12] This ''zero-sum'' viewpoint is shared by fellow attentional economists Fatemeh Bagherian and Warren Thorngate, who explain that

> though information continues to grow, attention remains a fixed resource, simply because to "pay" attention is to "spend" time and nature does not expand lifetime to fill the information available. The result is an attentional economy in which attention is exchanged for the production and consumption of information and in which an abundance of information creates a buyer's market.[13]

Although real ''lived'' or ''embodied'' time is certainly a fixed resource, Herb Simon's oft-cited observation about the dramatically altered ratio of information to attention under conditions of information proliferation (''infoglut'') can be read in two ways. Simon argues that ''What information consumes is…the attention of its recipients. Hence a wealth of information creates a poverty of attention.''[14] On one view, the poverty information creates is a poverty of attention as intersubjective

---

11. Michael H. Goldhaber, ''The Attention Economy Will Change Everything,'' *Telepolis* (May 1998), http://www.heise.de/tp/english/inhalt/te/1419/1.html (last accessed June 24, 2004).

12. Ibid.

13. Fatemeh Bagherian and Warren Thorngate, "Horses to Water: Student Use of Course Newsgroups," *First Monday* 5, no. 8 (2000), http://firstmonday.org/issues/issue5_8/thorngate/index.html (last accessed June 28, 2004).

14. Herb Simon, ''Designing Organizations for an Information-Rich World,'' in *Computers, Communication and the Public Interest*, ed. Martin Greenberger (Baltimore: Johns Hopkins University Press, 1971), 109.

recognition; on the other view, a glut of information creates a poverty of intellectual engagement. The differences between intersubjective recognition and intellectual engagement — between deriving meaning and significance from the attention of others, and making and finding meaning and significance through one's own attentional investments — prove to be, educationally, very significant indeed.

In the first place, even though there is a dramatic drop in the relative amount of attention vis-à-vis information, and an absolute limit to human lived/experiential time, it by no means follows (as the "intersubjective recognition" view of attention supposes) that while "The size of the attention pie can grow as more and more people join the world audience…the size of the average slice can't," and that "the total available attention per capita (per mind) is simply not going to change."[15] Such a view presupposes that "Technology…doesn't alter what human attention is or how it works in any very basic way, but by changing the conditions under which we can give it, and to whom, it alters how it gets distributed and how important it can be for us."[16] Granted that much depends here upon what is meant by "basic," it can nevertheless be demonstrated that with respect to many contemporary cultural activities — computer gaming prominent among these — the ways attention is deployed, as well as the subjects and objects of attention, have already changed significantly. Technology has played a substantial role in the ways these changes are occurring and will continue to occur — with real prospects for an enlargement of human information-processing capabilities.

MULTITASKING

Born into a culture of information surplus and time scarcity, many young people have developed information management capabilities that often amaze incredulous parents and teachers. Of course, it was always true that students, through a kind of "illusory attention," have paid less than their full, focal attention to their teachers, texts, and tasks.[17] But now we are seeing, not suboptimal attention/competence, but in fact highly efficient *and* effective deployments of partial, subsidiary, and intermittent attention strategies routinely used by students, who have learned to do homework while watching television and listening to music on headsets — with that homework being done on a computer whose multiple screens are simultaneously at work and at play, between Internet research, chat programs, word processing, e-mail, and, of course, online games, users switching rapidly among the screens to minimize any loss of time associated with waiting for processing, loading, connecting, and the like. If we look back to Phillip Jackson's landmark ethnography of schooling, *Life in Classrooms*, or to subsequent similar studies, we can recall the then-sobering observation that what students learn to do most of all at school is wait.[18] How much more

---

15. Goldhaber, "Attention Shoppers!"

16. Goldhaber, "The Attention Economy Will Change Everything."

17. "Illusory attention" is Goldhaber's term for ways of giving others the impression that one is paying attention to them when, in fact, one's attention is directed elsewhere. Goldhaber argues that since giving attention is necessary in order to get attention, we will effectively get more attention than we give only insofar as we can devise convincing forms of illusory attention.

18. Philip W. Jackson, *Life in Classrooms* (New York: Holt, Rinehart and Winston, 1968). For a subsequent study that draws similar conclusions, see John I. Goodlad, *A Place Called School* (New York: McGraw-Hill, 1984).

absurd it must seem to today's students that they should spend so much time simply waiting on teachers — it is not at all surprising that they often do not. This attentional restructuring has presented particular difficulty for teachers trying to adapt to instruction in computer lab settings: students at computers do *not* just "wait until the teacher is ready"; they do their e-mail or surf the Web or chat or draw. They do not keep their "eyes front," but on their personal screens, as teachers compete with the infinitely engaging capabilities of networked computers.

These are preeminently technologies of communication, exchange, and production, and user agency is an essential constituent in technology-enabled learning. Given that, it is interesting that Goldhaber metaphorically construes intense attention as a species of enslavement:

> Someone who "enthralls" an audience is in quite a real sense temporarily making the audience members her "thralls" — or, slaves. The very act of paying attention may seem voluntary, but often it is not completely so. There is a definite element of compulsion involved. It's no coincidence that people say things like, "I have to check out that Web site," "You've gotta watch that show," or "That book is a must read." And each of those activities takes physical as well as mental effort.[19]

On this view, agency drops out and bewitchment takes over, making this a less than useful conceptual framework for investigating the impact and implications of new attentional economies for education, concerned as it is with how people might be supported in learning to operate, manage, channel, conserve, and control their own attention as an increasingly required commodity over which they retain and exercise sovereignty.

ATTENDING TO EDUCATION

The preceding discussion briefly outlined current understandings of attentional economies primarily oriented toward a business audience and attempted to show the ways in which those analyses break down when applied to education specifically. In the remaining sections, we more fully elucidate what we see to be some *educational* implications of an analysis of attentional economy, drawing particularly on arguments by Richard Lanham.[20] Here we are most concerned with demonstrating the importance of Lanham's work for developing an educational framework to understand the epistemological impacts of new technologies (and their resulting economies) as educators struggle with how to "make room" for these new ways of knowing, these "new literacies" for knowledge production, representation, and transmission.[21]

---

19. Goldhaber, "Attention Shoppers!"

20. Richard A Lanham, "The Economics of Attention," *Michigan Quarterly Review* 36, no. 2 (Spring 1997): 270–284, also available at http://www.arl.org/arl/proceedings/124/ps2econ.html (last accessed July 27, 2004); and Richard A. Lanham, "What's Next for Text?" *Education, Communication and Information* 1, no. 2 (2001), http://www.open.ac.uk/eci/lanham/femoset.html (last accessed June 25, 2004). The latter work will be cited as *WN* in the text for all subsequent references.

21. For more on this issue, see Gee, *What Video Games Have to Teach Us About Learning and Literacy*; Gunther Kress, *Literacy in the New Media Age* (London and New York: Routledge, 2003); and Colin Lankshear and Michele Knobel, *New Literacies: Changing Knowledge and Classroom Learning* (Buckingham and Philadelphia: Open University Press, 2003).

Less "corporate" in its values and orientations than Goldhaber's, and markedly less prophetic in its style, is Lanham's analysis of the attention economy. Its focus on the epistemic conditions and consequences of attentional economies in an information society makes Lanham's work a rather more promising theoretical resource for building an *educational* theory of attention than one focused on the psychological needs for recognition.

In a pathbreaking paper published in 1997, Lanham construes attention as "the action that turns raw data into something humans can use," and he proposes that under conditions of information "saturation" the work of human attention is primarily to enframe, select, and organize from the vast stores of available "raw data" those elements that enable the movement from information to knowledge, to understanding, to (in his terms) "wisdom."[22] Echoing educator A.N. Whitehead's critique of "inert" knowledge, Lanham points to the tendency in a so-called "information economy" for fundamentally meaningless and useless data to accumulate in repositories whose only purpose is collection; he therefore urges and then elucidates the kind of intellectual work needed to make information meaningful.

Lanham's later work develops a rhetorical theory of attentional economy that demonstrates how digital technologies, far from installing a new framework for the operation of human attention, have in fact enabled a return to older, preliterate attentional practices.[23] New forms of multimedia information display mean that "Text is being put back into three-dimensional space" (*WN*, np).[24] "Text," in Lanham's view, "seeks to monopolize our attention" (*WN*, np), and new multimodally grounded attentional structures break up the attentional monopoly of the text, eliciting a series of bifurcated responses:

> Response to text and its argument vs. response to voice, gesture, clothes, lighting. Response to a fixed two-dimensional space from which the distractions of ordinary 3D behavioral space have been carefully sieved out vs. response to exactly that world of ordinary 3D behavioral space that floods the margin when Prof. Minsky [the author of the CD-ROM book Lanham uses as an example;] is allowed out of his box. Two different kinds of space, 2D symbolic vs. 3D behavioral… contend often in the attention structures through which digital text is finding its way (*WN*, np).

These new attentional structures are what reinstate the rich rhetorical traditions, suppressed and rendered unconscious by text-based attentional demands, back into our cognitive repertoire. As Lanham points out, "The expanded palette of textual display offered by digital expression again and again pulls us back into the history of Western notation. The whole weight of these alternative display modes recaptures this history instead of, as the media prophets of doom argue, repudiating it" (*WN*, np).

To further explain the reductiveness of the two-dimensional symbolic space of textually oriented attention versus the three-dimensional behavioral space of

---

22. Lanham, "The Economics of Attention."

23. He articulates this most fully in Lanham, "What's Next for Text?"

24. To illustrate these forms of multimedia information display, Lanham gives examples from avionics, in which complex images are combined with alphanumeric displays in airplane cockpits, and of CD-ROM versions of books in which an author can appear with, within, and superimposed upon her or his text to assume multiple roles, not least the hitherto quite separate roles of both author and critic simultaneously.

attention to multimodal representational forms, Lanham invokes arguments by
Hellenist Eric Havelock concerning the ways this reduced alphabetic notation, the
form of notation that has reigned supreme over all others so far as modern educa-
tion is concerned, functions to render us less rather than more conscious of our
informational environment, excluding as it does all manner of semiotic modes and
messages — and their "play" — in favor of a literal, "logocentric" approach to
knowledge and experience.[25] Echoing Havelock, Lanham explains,

> the Greek alphabet underwrote Western literacy because it was simple enough to learn in
> early youth, and thus to internalize totally. It became transparent to the conceptual arguments
> it set forth. The letters themselves, bleached by the very force of thought, lost their visual con-
> tent. In serious, genuinely literate reading, they had no calligraphic power, *never* made you
> think about them at all (*WN*, np).

For Havelock, this paradigmatic cultural shift from orality to literacy was
greatly facilitated by the alphabet's easy internalization, since the less conscious-
ness needed to be paid to the tools and means of communication, representation,
and expression, the more attention could be paid to their contents. Culturally, this
"reorientation of the sensorium" from medium to message enabled an explosive
growth in the production and transmission of knowledge.[26] Relieved of the burden
of attending to form — a necessity for ease of memorization and recollection in
cultures without writing — and with cultural knowledge now able to be preserved
in text, human intelligence was "freed up" as intellectual resources were increas-
ingly diverted from memorization to knowledge creation. Written language al-
lowed the preservation, and thence the criticism and growth, of knowledge.[27]

Modernist education has embraced these new capabilities afforded through text-
based literacy: postmodern education begins to detect certain limitations. Lanham
sees the easy internalization of alphabetic literacy as having effected a repression of
our consciousness of the reductiveness of text — a reductiveness inevitable in the
epistemic shift from 3D to 2D perceptual frames. Confounded by our cultural reli-
ance upon texts and writing as both vehicles and vessels for knowledge, we have
been unable until recently to perceive clearly that, as Lanham puts it, "The history
of Western alphabetical notation has constituted one long flight from such self-con-
sciousness" (*WN*, np). Lost here are both the vast repertoire of communicative tools
and supports afforded by situated human embodiment as well as any reflective con-
sciousness of how choosing text as the means of representing the world becomes
a decision to misrepresent it. Like all rhetorical decisions, this choice, if consciously
apprehended, has ethical and not just communicative implications, a significant
point to consider in developing educational conceptions of attentional economy.

---

25. See, for example, Eric Havelock, "Instruction of Preliterate Cultures," in *Language, Authority and
Criticism*, eds. Suzanne de Castell, Allan Luke, and Carmen Luke (London: Falmer Press, 1988), 223–232;
and Jacques Derrida, "Structure, Sign, and Play in the Discourse of the Human Sciences," in *Writing and
Difference*, trans. Alan Bass (Chicago: University of Chicago Press, 1978), 278–293.

26. See, for example, Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (London:
Methuen, 1982); and Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York:
McGraw-Hill, 1964).

27. Jack Goody, *The Domestication of the Savage Mind* (Cambridge: Cambridge University Press, 1977).

Far from diminishing our traditionally text-driven intellectual accomplishments and abilities, then, new multimodal technologies of representation, Lanham suggests, can actually consolidate, extend, and improve upon our literate capabilities:

> The alphabet in digital 3D space returns us to the world Havelock dismissed. It *makes us think*. We ask, for a start, questions that never occur to us in conventional reading….How does spatial awareness work as the fundamental reading skill in this kind of literacy? What architectural disciplines are needed to illuminate such an expressive field? To what expressive ends might such a notational space work? (*WN*, np).

These are questions suppressed by our literate biases, questions that have become increasingly important as education finds itself having to work with media around, over, and above the alphabetic text.[28]

Lanham's proposal for a rhetorical analysis of attentional economy is thus a proposal for more self-conscious, accountable, and ethical communicative practice, and we argue that his is an approach to understanding the new attentional economy more salient to education than economistic or psychologistic models because it stresses, as both a cognitive and implicitly an ethical imperative, the need to *think* — to engage ''mentally,'' as we like to say, with *both* information and the medium and conditions of its transference.

Education's ideological allegiance to ''intellectual engagement'' as a central human value and as a productive and transformative force for the flourishing of both cultures and individuals is an important factor that distinguishes it from schooled consumption, and its imperatives are not oriented toward recognition of individuals except as their development can be grounded in, and potentially contributory to, the advancement of human knowledge. Attention, on this view, is an intellectual, not an emotional, requirement; it is an intellectual, not an emotional, need and value.

Educational Implications of an Attentional Economy Analysis

This is not, or not yet, the way attentional economy has been elucidated in educational contexts. Colin Lankshear and Michele Knobel, for example, consider the consequences of digitization for a thorough rethinking of epistemology (a rethinking, they explain, of knowledge, knowers, processes of coming to know, and the relative importance of knowledge forms).[29] Their work offers a detailed, thoughtful, and provocative look at the very different ways the traditional attentional economy of schools is negotiated by students and teachers, and at how it is reconfigured with emerging ways of managing attention under new technological conditions. In their characterization of alternative conceptions of attentional economy, they note that ''These differences will result in varying implications for formal education'' (*YA*, 20).

---

28. For extensive discussions on the importance of a multimodal literacy, see Donna E. Alvermann, *Adolescents and Literacies in a Digital World* (New York: Peter Lang, 2002); Gunther Kress and Theo van Leeuwen, *Multimodal Discourse* (New York and London: Oxford University Press and Arnold, 2001); Kress, *Literacy in the New Media Age*; Gee, *What Video Games Have to Teach Us About Learning and Literacy*; Lankshear and Knobel, *New Literacies*.

29. Colin Lankshear and Michele Knobel, ''Do We Have Your Attention? New Literacies, Digital Technologies and the Education of Adolescents,'' in *Adolescents and Literacies in a Digital World*, ed. Alvermann, 19–39; and Lankshear and Knobel, *New Literacies*. The former work will be cited as *YA* in the text for all subsequent references.

Concentrating in particular on how Lanham's perspective differs from Goldhaber's, Lankshear and Knobel rightly conclude that "Rather than focusing on how to gain and maintain attention, Lanham is concerned with how to facilitate or enable attention to data by developing new attention structures for attending to the flood of information-as-data that we face constantly" (*YA*, 24). However, given the choice between Goldhaber's recognition-oriented conception of attention, which is centered on "paying, attracting and maintaining attention" (*YA*, 20), and Lanham's epistemic conception of attention as a kind of intellectual engagement in the exchange of postliterate forms, including their attendant and emergent structures of attention, Lankshear and Knobel focus their own attention on the former. Important to note here is attention's very different object: in illustrating the role of technological literacies in transforming school-based attentional economies, Lankshear and Knobel report with approval how the boys in their classroom-based study of new technological literacies succeeded in attracting and maintaining their teacher's attention, something they had been unable to do in traditional text-based lessons. But in their elucidation of the shift from privileging propositional knowledge to privileging student performance and production, set aside is any consideration of the intellectual values of such an accomplishment. We are left asking what, besides gaining the fuller attention of their teacher and a stronger sense of their own agency, has this performance-oriented pedagogy actually enabled for these boys?

While agreeing entirely with Lankshear and Knobel that "schools ought to be paying more attention to attention" (*YA*, 37), and agreeing that this challenge will require us to take seriously into account a range of "new literacies," we would urge a different theoretical path from theirs. For we fear that concentrating on those "new literacies" that create opportunities for gaining and maintaining attention too often means neglecting those mobilizations of learner-intelligence that might frame and structure attention to greater *educational* effect. What Lanham's analysis of attentional economy would suggest is to refocus the boys' attention, not on themselves (something many boys are already very accomplished at doing in classroom settings), but on their work, on the meaningful and productive organization of their own doing and thinking and learning, without which performance and production, digitally literate or not, have no necessary educational value. While offering a thorough and useful account of both viewpoints on attentional economy, Lankshear and Knobel, in their own development of a construct, sideline Lanham to follow Goldhaber in construing social relations within an attentional economy in terms of "Fans versus Stars," "winners and losers," and "insiders versus outsiders."[30] Lanham's alternative view, which does not presume a finite quantity of attention in a zero-sum game,

---

30. We should note that Lankshear and Knobel actually describe three perspectives; however, we take the third — drawn from advertising's concern with gaining consumer attention — to be sufficiently similar to Goldhaber's analysis to justify treating them as a single perspective, one that is focused on seeking, gaining, and maintaining attention. Whether that securing of attention is for individual satisfaction or for corporate gain seems, from an educational standpoint, more a difference of degree than of kind. For more on Goldhaber's account, see Goldhaber, "Attention Shoppers!"; and Michael H. Goldhaber, "The Attention Economy and the Net," *First Monday* 2, no. 4 (1997), http://firstmonday.org/issues/issue2_4/goldhaber/ (last accessed June 25, 2004).

offers, we think, a more "democratic" scenario in which any individual's own attentional capabilities can and must get refined, enlarged, and reconstrued in the process of learning, significantly including processes of technologically remediated learning.

It is, then, to a consideration of new forms, frames, organizations, and structures for attention that we should turn in thinking about what a theory of attentional economy has to say to education. And, funnily enough, this brings us squarely back to gaming as exemplary of the ways new attentional structures are at work in play. In education, the concern is far less with absorption, immersion, and the payoff of one's own attentional efforts in a maximally efficient assimilation of new knowledge, new skills, and new ways of thinking, than it is with gaining and keeping the attention of other people.

Playing Attention: The Educative Possibilities of Video Games

By way of concluding, we will briefly outline some ways in which video games capture and hold the attention of their players that appear to be pivotal for beginning to theorize the impact of new technologies on structures and forms of knowledge, including the resulting destabilization of text as the primary communicative medium.[31] In the past, texts held our attention as a kind of "conduit" for imaginative expression, news, personal feelings, documentation, religion, and argumentation, among many other things. Today, all sorts of media compete for our attention: consider the popularity of Harry Potter, which is not simply generated by mass-scale excitement about the books, but by the "spin off" toys, candies, movies, and video games — Harry has our attention *outside* of the text in ways that Madame Bovary never could have imagined. In schools and in classrooms, our attention is no less bifurcated, no less hybridized, and, yet, in those places text is still precariously perched as the dominant medium of expression; this is in direct conflict with knowledge and experience of the "real world," in which textual sovereignty is no longer the case. This conflict creates new tensions in classrooms, tensions related directly to the new economies of attention suffusing those places. While it would be inaccurate, for example, to describe the teacher or the curriculum as ever holding the full attention of students, it was most often the will of the students to "pay attention" to both, since they have both traditionally been seen as authoritative sources, models, and repositories of worthwhile knowledge. But in cultures radically and rapidly transformed by technological advances; by ideological, cultural, and economic changes; and by widely available and easily harnessed access to "information," our attention now has "value" in ways that it never did before, as a kind of "commodity" that bears not just intellectual worth, but economic worth as well. This changes the rules and tools of the learning game, and youth today know that.

In economic terms, video games now capture more money, and presumably more of our attention, than the film industry. We would follow Lanham in pursuing a theory of attentional economy in which attention is directly related to intelligence,

---

31. This is an argument for the development of a theory of attentional economy better attuned to educational ends, and although its intent is to offer some generative directions for that project, it by no means achieves the larger goal of theory development.

as it is when and where attention is "paid" that intelligence is mobilized in whatever forms that might take. In video games, for example, the attention of the player is central: she must first *choose* to play, and then, once playing, the game encourages her to continue to play through both sophisticated and simplistic reward structures that help the player to *learn quickly*. The game itself — its environment, tasks, puzzles, quests, rewards — must have some kind of *contextual meaning* that continues to capture the attention of the player beyond the manual skills required to be successful at the game. The player has agency, and, in more than a trivial sense, significant meanings have "play."[32] These devices, among others, are part of the reason video games are so successful at capturing and holding the attention of their players: pleasure, choice, and immersion; speed and efficiency of learning; and finally, meaningfulness of topic, subject matter, and experience. We ask, then, what might education "learn" from the attentional structures of video games?

In what is still considered a "radical" treatise on education, Jacques Rancière considers what might happen to education if we assumed that intelligence is *not* something that one individual has more or less of and that, in fact, everyone is equally intelligent, given how widely distributed is humanity's capacity to focus its intellect, effort, and attention on accomplishing its various goals. The implications of this argument are that all people are *capable* of learning whatever they put their minds to, without the "aid" of an instructor, tutor, or institution, and that their *choice* in what they learn is the key to realizing their goal, which is simultaneously pleasurable (something the will actively wants to accomplish and does) and immersive (the problem is engaged with behaviorally, not merely symbolically, and so it is experienced viscerally and/or cerebrally and/or emotionally). In the first twelve years that mark compulsory schooling in North America, "choice" is parceled out in the later grades in the form of the option to choose among a limited range of elective subjects. Even there, as in all other subject-based learning throughout the grade levels, there is little if any "choice" about what to focus on in any given day, and rarely time given to attend to a specific task without interruption by the teacher, other students, or the institution, which rings a bell to move students on to the next class or subject.[33]

It is no wonder, then, given the real-world importance (and economies) attached to their attention, that the attention of students in schools is becoming increasingly difficult to attract and hold. This is not to say (as Rancière argued) that students should only study what they choose to, but that until now schools have somewhat successfully monopolized students' attention. However, because under contemporary conditions structures and forms of knowledge have shifted, so too

---

32. de Castell and Jenson, "Serious Play"; and Derrida, "Structure, Sign, and Play."

33. This may represent a very significant difference between pedagogy in nonformal versus formal educative environments. In schools, curricular objectives, which are scoped, sequenced, and timetabled, regulate prescriptive attentional economies; in nonformal learning environments, it is more often the learner's attention, including both its focus and its duration, that shapes how learning activities are regulated. For a more extensive discussion of the centrality of learners' attention to developing non-school-based pedagogies, see Suzanne de Castell and Jennifer Jenson, "It's All Happening at the Zoo: Attentional Economies in Non-formal Learning Environments," in preparation.

have the "terms of engagement." For example, Lankshear and Knobel, in the study mentioned previously, quote one of the students as choosing not to attend to school work when he is unable to solve a problem, focusing his attention instead on listening to music: "Mr Y…just tells me to sit there and do nothing if I don't know how to do it. So I just sit there and get my Walkman out."[34] Here, the choice is to "do nothing" or to do something that is usually pleasurable (listening to music) in the absence of being helped or even addressed; in the meantime, the student's learning is "on hold" while he waits for his teacher.

Video games, as James Gee has recently chronicled, are extremely adept at helping their players "learn" quickly.[35] By contrast, schools and teachers, as the preceding quote implies, are notoriously poor at facilitating and/or enabling learning that does not follow the prescribed curricular rate of achievement — don't learn too quickly or you will be bored or asked not to participate, and don't learn too slowly or you will be quarantined from the rest of the class to "make up" the work. That everyone is equally intelligent (says Rancière), and that each and every one of us "learn" at whatever rate we are able given shifting constraints, such as time, attention to the task, experience, interest, and the like, is, in a way, precisely what video games do presume — that anyone who plays the game can learn to fight, to drive, to jump, and so on, so that variation in ability is, more than anything, a by-product of time spent within the game's structures. Skills and "intelligence" are acquired and mobilized particularly as they relate to the game, and are decidedly *not* related to some extrinsic standard or notion of what it means to be "intelligent." This is very different from school-based assumptions of learning and "intelligence": there the standards are always "outside," and performance, competence, and skills are to be found "inside" learners whose "talents" and "intelligence" are always already largely predetermined and judged by "standards" that even teachers themselves claim neither a "stake" in nor "control over." What we see represented in video games, therefore, is the fundamental principle at work in Lankshear and Knobel's valorization of performance and production and in Lanham's analysis of attentional economy: that intelligence is *always adverbial to attentive action*.[36]

Within the environment of a computer game, the mobilization of players' attention and intelligence through interactive game play can encompass the acquisition of motor and perceptual skills, the completion of increasingly complex interlinked tasks, the learning and systematic pursuit of game-based narrative structures, the internalization and enactment of appropriate affect, and a range of other attendant forms and conditions of learning. It goes without saying that some games can be artless and educationally inert. But as Steven Poole, author of *Trigger Happy*, puts it, "A well-designed videogame…can approach the condition of a work of art simply by virtue of the way such rich, protean transformations in the game's

34. Lankshear and Knobel, *New Literacies*, 203.

35. Gee, *What Video Games Have to Teach Us About Learning and Literacy*.

36. Gilbert Ryle, *The Concept of Mind* (Chicago: University of Chicago Press, 1949).

very structure are linked together for the gameplayer's pleasure."[37] So the structures of the game are predicated not only on whether or not they are relevant, but also on whether or not they are "pleasurable." In education, pleasure does not figure prominently; neither, we would argue, do relevance or context. Schools and governmental policies still prioritize (in print), and teachers still enforce in practice, an "old-fashioned," exclusively text-based literacy, despite well-worn arguments and new theorizations that have taken the term to mean much more than reading and writing text.[38]

Given this multimodal literate context, how relevant is it for an English teacher to worry that her students are using "Internet" spelling/s in their journals and to fret about whether or not they know how to spell the words "correctly" — even though she acknowledges that those words are "spelled correctly" for the environment of Internet chat? What does it mean to the students in her class that she "outlawed" that kind of spelling, even in their personal writing, because it is "wrong," even though that is certainly not the case outside of school? It seems ever more important to make careful connections between "what is taught" and "how that relates to the world"; for it is also the case that, otherwise, our students will not attend: there are just far too many other things to which they have both the power and the right to turn their attention.

As long as education still claims to be "in the business" of the intellect, then we would argue that we need to turn our efforts to finding ways of better supporting the kind of active and playful engagement with what it is we want to "teach" that presumes and engages intelligence and that enriches and extends the now-impoverished literalness of schooled literacy. Doing so may enable us to recapture for our instruction — as well as for our delight — the deep and rich fields of play, both semantic and semiotic. These are fields that modernist schooling's narrowly textual preferences have so readily abandoned in the name of "standards," prespecified "learning outcomes," and myopic visions of "educational accountability," which have far more to do with counting than with educating.

By paying attention to attention, we might better identify and develop forms of productive engagement in which dynamic, multimodal learning environments are animated by students' deliberate and sustained attention: an *educational* engagement that allows for choice and the freedom to be immersed in an intellectual effort without interruption, regulated less by rigid, literal, and indifferent learning goals and schedules, and more by learners' own intelligent attention. To nurture and support attention of this educative kind, we look to play to learn.

---

37. Steven Poole, *Trigger Happy: Video Games and the Entertainment Revolution* (London: Fourth Estate, 2000), 178.

38. For more on how policy entrenches traditional text-based definitions of literacy, see Allan Luke, "What Happens to Literacies Old and New When They're Turned into Policy," in *Adolescents and Literacies in a Digital World*, ed. Alvermann, 186–203. For a recent discussion of new theories of literacy, see Kress, *Literacy in the New Media Age*.