iDMAa
idmaa.org

The Journal of the International Digital Media and Arts Association

The Journal of the International Digital Media and Arts Association volume seven > number one > fall two thousand ten

2009 Conference Issue

volume seven > number one > fall two thousand ten

The Journal of the International Digital Media and Arts Association

Submission Guidelines

Articles on digital media and art related topics are welcome at any time. An abstract of not more than one page should be submitted to the editor via e-mail (mniederman@colum.edu). Please include "iDMAa Journal Submission" in the subject line. Upon review, authors will be advised of acceptance for submission. The Journal will include a section for invited and refereed articles. While length will vary from issue to issue due to themes, articles will generally be 1500 to 4000 words. Any author preferring a peer review will automatically have the submission considered for the refereed section of the Journal. While the Journal will normally appear in electronic form (PDF), at least one print version will be published annually. All new Journals evolve and the iDMAa Journal is no exception. Please refer to our web site www.idmaa.org for updates.

Subscriptions

Membership in iDMAa includes a subscription to the journal. See the web site (www.idmaa.org) for details. The annual subscription rate for institutions is $95 which covers access to the electronic version as well as two copies of the printed issues per year.

volume seven > number one > fall two thousand ten

Table of Contents


keywords
geometry, plane, iDMAa conference 2009
Ritchie, Jeff
_img_phot... of
colin
LVC Jan. 2010
New Media
Web TV
Computer
budget
Idmaa Tenure a
Recycle Bin
ELI notes
lvc
15760_1162...
Writing concentrat...
flash
Course Description
Pleet Grant Proposal
DCOM 100 01
Copy of Travel_Vou...
po-requisit... of fiscal year
olc
camera
CSS-Expres...
Information Design
Applican
Berea College IPR
DCOM.09FA
Interview questions
Reasheh
21W-765JS...
dean meeting
Jenkins
Narrative20...
Interaction
INVOICE for
Jeff Ritchie
Jeff Ritchie is director of the Digital Communications program and associate professor of English and digital communications at Lebanon Valley College. He teaches courses in writing, literature, digital media, and communications. He received a B.A. in English and a B.S. in Marketing from Indiana University, an M.A. in English from the University of South Carolina, and an M.Ed. in Educational Media and Computers and a Ph.D. in English from Arizona State University. His current research focus is digital media narratives and the rhetoric of interactivity. He serves as an Assistant Editor for The iDMAa Journal and sits on iDMAa's advisory board.
Sustainability Task Force ...
To do
final to Randal
My LVC - Google C...
Inbox - Microsoft O...
Microsoft Word

introduction

“At the digital edge – innovations and challenges,” the seventh annual International Media and Arts Conference (iDMAaC) was held at Ball State University in November 2009. Given the ubiquity of digital media in our culture, the conference theme seems somewhat at odds with the state of the world. It’s not that the subject matter of the conference is really marginal or being written from the margins, although interdisciplinary programs and work seem to be marginalized by the taxonomies of our silo dominated world.

Reflecting on this theme and ubiquity, to say that we’re “at the edge” brings to my mind my disjointed, dim memories of junior high geometry class and of the Euclidean plane. The only edge of a plane is essentially the area of the plane itself, a vast projection dividing space. So to, the “digital edge” of media and arts is everywhere.

No, rather than placing the works presented at iDMAaC 09 at the edge (or vexingly ask the question, “at the edge of what?”), I’d argue that our writing and work is placed on the “edge” of a vast Euclidean plane, a plane that forms a portion of the foundation of the modern world as we know it and is as nearly universal as the awkwardness of those middle school years. That this plane intersects nearly all aspects of our culture is seen in the disparate disciplines demonstrated in the selected papers presented in these conference proceedings.

Jeff Ritchie, @ some point along a plane

keywords
industrial design, product design, craft, simulations, rapid prototyping, biomimetic, scripting

Richard Elaver

Richard Elaver is a designer and educator. A graduate of the Cranbrook Academy of Art, he completed a Fulbright Fellowship in the Netherlands in 2006 where he worked with Droog Design and studied the history of craft and design at the University of Leiden. The focus of Richard's work is integrating the tools of industrial design and manufacturing with the craft methods of metalsmithing. He develops computer simulations of biological phenomena used to create design objects reflecting nature. Richard is assistant professor of design at Indiana University - Purdue University Fort Wayne.

Adapting Craft, Adopting Technology, Expressing Nature

Richard Elaver
Indiana University - Purdue University Fort Wayne

Abstract

With the co-evolution of technology and our understanding of the natural world, what are the characteristic forms that the machine should be used to create? This project is an investigation within the space between craft and design, where digital and analog processes mix. Reinterpreting the craft revival through desktop manufacturing, a newfound capacity for the production of one-of-a-kind products is outlined. Virtual simulations of natural processes provide a methodology for design that takes advantage of digital design and production processes. Working as a designer/programmer, the computational capacity of the machine and intuitive human skill sets are merged.

The natural evolution of craft

With opposable thumbs and capacity for abstract thought, we primates have the ability to hold and manipulate tools to achieve imagined ends. Through symbolic representation, man has the added capacity to use tools to manipulate symbols, further abstracting our unique abilities as *homo faber*, man as tool-maker. Through our conscious evolution, we continue to develop new tools – cheaper, faster, better, and more enjoyable ways of doing whatever it is that we do. Over centuries of accumulated knowledge, we have added enormous capacity in power and precision to these five-fingered extensions of ourselves.

With this ubiquitous use of tools, trying to define what is 'hand made' is a slippery slope and one of the shortest paths to an argument among craftsmen. Technical arguments are used to prove what are essentially moralistic positions. In an attempt to clarify the argument, David Pye supplants the term 'hand-made' with 'the workmanship of risk' contrasted with 'the workmanship of certainty.' 'Workmanship of risk' is associated with human-centered processes dependent on judgment and dexterity, while the 'workmanship of certainty' depends on 'determining-based' methods of manufacturing using mechanical or computer control. Yet Pye states that, "In fact the workmanship of risk in most trades is hardly ever seen, and has hardly ever been known, in a pure form, considering the ancient use of templates, jigs, machines and other shape-determining systems, which reduce risk."[1] He explains that we maintain a romanticized view that before the Industrial Revolution, everything was made without machines. However, the reality is that even medieval craftsmen used machinery to reduce risk and multiply labor. In fact, the aspect of pre-19th century production that most interested William Morris was not the use of machines, but the lack of division of labor.[2]

It is, therefore, a question of autonomy, not technology, which defines the boundaries of craft. Humans have always worked to extend their capacity with tools. It wasn't until separation by specialization in industrial manufacturing isolated the individual from the whole of the process that we experienced our loss of participation. The romantic term 'hand-craft' is more about a level of autonomy that existed at a time when manufacturing was done by an individual. In *Abstracting Craft: the Practiced Digital Hand*, Malcolm McCullough writes, "The degree of personal participation, more than any degree of independence from machine technology, influences perceptions of craft in work."[3]

If craft is thus defined by breadth of participation rather than historical technique, then the technical argument is irrelevant. The goal is no longer moralistic preservation but optimistic evolution. Before the reaction to mass-production that pushed craft into romantic historicism, the crafts were the source of innovation, product development, and new means of manufacturing. Continuing in that tradition today, the craftsman has the capacity to borrow from industry in the same way that industry borrows from craft. Technical and industrial processes are not the enemy; they are an option (an option that can be recombined with other methods to engender something new). And the maker is free to use any technology at his fingertips to materialize his vision.

The natural evolution of technology

As calculus emerged in the 17th Century to explain concepts for rate of change, the rate of change for technology became exponential. Through an evolutionary process, each successive technology builds on the knowledge base that preceded it, complementing the accumulated knowledge in society. And with each new development evolves new possibilities for application and expression. Pye writes: "In its early days the Modern Movement… held that machine tools and mechanical processes, i.e. determining-systems, ought not to be used to reproduce forms which originated in hand work, but that *The Machine* should be used so as to evolve its own characteristic forms."[4] Much of modernism worked to develop characteristic forms for the technology of the time. But for most of the 20th Century machines followed Euclidean geometry, isolating movement and form development into arcs and lines. Most books currently available on the geometry of design reflect the same Euclidean perspective. Today, however, computer-aided design and manufacturing allows *the Machine* to generate objects composed of complex curves and surfaces. And beyond the processes of material removal and deformation, additive Rapid Prototyping processes have been included in the repertoire of *The Machine*: SLS, SLA, FDM, LOM, and other acronyms have been added to the vocabulary of form-giving that give us

1 David Pye, *The Nature and Art of Workmanship* (London: Cambridge University Press, 1968), 10.
2 Ibid., 10-12.
3 Malcolm McCullough, *Abstracting Craft: The Practiced Digital Hand* (Cambridge, Mass: The MIT Press, 1996), 69.
4 David Pye, *The Nature of Design* (Reinhold Publishing Corp., 1964), 60.

the capacity to generate extremely complex forms, detailed to a thousandth of an inch, with interior surfaces never possible before. Considering this expanded palette, what are the characteristic forms that *The Machine* should now be used to evolve?

Growth structures in nature

Consider that *the machine* and our 'man-made' reality are not outside of nature, but a continuation of its evolution, subject to the same physical and mathematical laws. Historically, the applied arts have looked to nature for inspiration in structure and aesthetics; and today we can look more deeply. By mapping the human genome, we engender an understanding of the world as the developmental expression of underlying encoded structure. Through our understanding of chaos and other complex mathematics, we believe that the world is an expression of emergent systems. In his book, *Emergence: the Connected Lives of Ant, Brains, Cities and Software*, Steven Johnson describes how trees, lungs and ant colonies emerge through an accumulation of discreet responses based on a series of simple rules. The study of fractals, chaos, and swarms have changed our understanding of the development of forms, both natural and man-made. What were mathematical monsters, the 'pathological' exceptions to Platonic and Euclidean ideal forms, have become natural expressions of universal systems; clouds and coastlines are not what they used to be. Fractal geometry provides a means of deconstructing the forms of nature into primitive elements for more complex compositions based on self-similar, repeating patterns. As our understanding of nature changes, so does our interpretive expression of it.

Biophilia – the nature of our nature

Man is a product of, as well as an integral part of, nature. Edward O. Wilson "…proposed the existence of a genetic basis for the human predilection towards the natural world. This concept, which Wilson called 'biophilia,' is loosely suggested by certain affinities and aversions which occur in societies widely separated by geography and ritual."[5] His 'Biophilia Hypothesis' was about our socio-biological development, in which culture developed in tandem with the genes of our existence. Genes and 'memes' (Richard Dawkins idea-genes) are not two isolated systems of transferring information through time, but two interdependent systems developing in a symbiotic relationship.

Paul Weiss detailed some of the structure of our biophilic proclivity:

> (1) The pleasing aspects of organic forms stem from their high degree of general regularity combined with an infinite variety of detail. (2) The order expressed in the developed form, however, is but the result of the orderliness of the underlying formative processes which have led to the formed product and have left their imprint on it: what we read in the finished form is the historic record of it formation. (3) Even if two organic systems were to start out in absolute identity, the fact that in their subsequent developmental histories they would be faced with non-identical incidents and environmental contingencies would necessarily make for divergence in the details of their final products. (4) Yet, since their overall results still turn out to be reasonably similar, we realize that capricious and unpredictable deviations form the standard course must have been kept, if not strictly in line, certainly within a safe margin by the governing action of their respective systems, which resist disruption; a system owes its orderly self-realization and self-preservation to its very capacity to moderate or compensate the excesses of its members. (5) The overall result thus gives us the satisfying impression of a collective task well accomplished by the harmonious cooperation under mutual control of members of a group which, but for these restraints, would yield blind chaos. (6) The viability of an organic form depends on the precarious balance between rigidity of overall design on the one hand and flexibility of adjustment left to its execution on the other; too much aberrance on one side or the other would jeopardize survival. This is the biological foundation of what we call 'sense of proportions.'[6]

I would like to focus on the third point from Weiss' list: organic systems that may start from an identical position, inevitably diverge into unique outcomes. This is the biophilic explanation for variance. Nothing in our biological surroundings is a direct duplication--nature is very efficient that way. Reproduction in nature, whether the splitting of an

5 *David Stairs,* "Biophilia Technophilia: Examining the Nature/Culture Split in Design Theory," *Design Issues* 13, no. 3 (Autumn 1997): 37-39.

6 Paul Weiss, "Organic Form: Scientific and Aesthetic Aspects," in *The Visual Arts Today*, ed. Gregory Kepes (Connecticut, USA: Wesleyan University Press, 1960), 181-194.

amoeba or the replication of human DNA, inevitably results in slight mutations, which over time, translate into significant changes.

In evolutionary terms, nature creates variety to ensure survival. Multiple mutations are generated, and only some will thrive and survive. There is no one answer to continuously changing environmental conditions, no way of predicting the future. So the best answer at any given moment is the greatest number of answers possible, some of which will succeed and propagate. What if designers mimicked nature, and designed greater and greater varieties of things, letting individual choice decide what goes forward? Why not design for variety, for distinction, for individual nuance, as nature does?

Variance

Modernism and the Industrial Revolution standardized production. Prioritizing consistency over variety, quantity over quality, industry took the lowest cost approach to serially produce identical multiples. The Craft Revival fought to sustain the unique object through more autonomous, human-centered means of production. The laments of Walter Benjamin and David Pye are based in duplication, on methods of manufacture that create copies of an original prototype. In an essay titled "The Technologies of Self-Fashioning," Tufan Orel explains that the model-series relationship of duplication is not the only possible format. He describes another option; that of theme and variation, where each reproduction in the series is a unique application of the model with changes. In this type of system, the outcomes vary rather than duplicate the original model.[7]

As a part of this natural order, our perceptual skills are tuned to change, and we are drawn to such variation. In *Notes on the Synthesis of Form*, Christopher Alexander writes that it is "departures from the norm which stand out in our minds, rather than the norm itself. Their wrongness is somehow more immediate than the rightness of less peculiar behavior, and therefore more compelling."[8] Similarly, Gombrich wrote about how this awareness by difference then keys in our scrutiny in perception, moving from 'seeing' to 'attending,' or from an unnoticed equilibrium in the dynamic of 'seeing, knowing, and expecting' in a more actively engaged investigation.[9]

Pleasure in perception exists somewhere between monotony and confusion, where there is a level of order that keeps the eye moving without overwhelming the mind.[10] Identical elements are quickly rendered into pattern as the mind searches for peculiarities and differences. A line of identical beads are quickly reduced to pattern. However, if one perceives complexity through variety, self-similar rather than self-replicating elements, then the eye continues searching for relationships, keeping perception engaged.

Towards a new system of production and a new aesthetic

If Wilson's sociobiological gene-culture co-evolution is true, and our cultural cravings and perceptual systems evolved in tandem with nature, then it is no wonder that we find pleasure in variety. How can we reestablish that sense of variety in the products with which we surround ourselves? Ruskin, Morris, and Ashbee, leaders of the Craft Revival, advocated 'the hand' as the savior against the machine, returning to individual making as a social resistance to the homogenization of machine culture, heralding the individual object as a metaphor for humanity. However, they lost the war to economies of scale, and the mighty Bic pen won out over the hand-made.

New means of flexible manufacturing could attain what an earlier generation sought to accomplish. By integrating *rapid prototyping* and *desktop manufacturing*, we have the potential to bring manufacturing back into the atelier. Ruskin might turn in his grave at this suggestion, as it does not share the same romanticism for the pleasure of handwork, but it does share the goal of individual production for the masses, personal objects for every-day use.

Organic Programming

As digital manufacturing processes open up new means of making, they will also afford new aesthetic formats. Peter Fuller, in his insightful essay "The Search for a Postmodern Aesthetic," advocates a rejection of modernist machine aesthetics and looks to the emergence of a new aesthetic rooted in nature via digital processes. He explains that

7 Tufan Orel, *"The Technologies of Self-Fashioning: Beyond Universality and Variance of the Industrial Product,"* in *The Immaterial Society* (Prentice Hall, 1992), 46.

8 Christopher Alexander, *Notes on the Synthesis of Form* (Cambridge, Mass: Harvard University Press, 1964), 22.

9 Ernst Gombrich, *The Sense of Order: A Study in the Psychology of Decorative Art*, (Ithaca, New York: Cornell University Press, 1984), 151.

10 Ibid. 54.

"the problem for a new aesthetic based on an imaginative response to nature, on the recovery of biophilia, has been our inability to 'read' and make sense of these 'natural languages', or to find any effective symbolic equivalents for them. But it may be that it is just here that the higher mathematics, physics and new information processing procedures associated with advances in computer technology, can help."[11]

How can we reestablish that sense of variety in the products with which we surround ourselves?

Utilizing natural simulations in programming, we can create generative systems for the design and manufacture of objects of use. By integrating the mathematical structures of nature responsible for variance, along with the continuous changeability of computer-controlled manufacturing systems, each object produced has the potential to be an original, sharing characteristics and evolutionary history with its sibling (same genetic code, different expression).

What if objects are generated like trees; if the object is the expression of the entelechy, or intention, not in an absolute way, but more through methods of suggestion rather than command, evolutionary rather than deterministic. In writing code to generate objects, elements of organic growth can be included. Describing such generative systems, McCullough explains this "design process really occurs in two stages: composing a structure, and then exploring the consequences of that structure.[12] Parameters in code establish the boundaries and proclivities of the design, while the specific outcome is a product of the program.

Negotiating the space between control and chaos, allowing the affordances of unpredictability to be a significant part of the process of form generation is akin to the 'happy accident' of craft. One cannot know the outcome until the process is complete. Describing similarities in software development, Steven Johnson writes, "The first few decades of software were essentially creationist in philosophy--an almighty power wills the program into being. But the next generation is profoundly Darwinian."[13]

From hand to machine and back again

In this enhanced cyborg reality, as we reprocess cultural content, the 'digital' enhances our man-made reality. But because we are physical, sentient beings processing our empirical experience through polysensory input, it is important to acknowledge the need for the digital to cycle back to the analog for our apprehension. We do not think, see, or feel in binary. Sound, image, and touch are the major inputs, followed by synaesthetic experiences of taste and smell.

The development of the digital is dependent on a feedback loop through the analog. The immediate example of this is the hand-eye coordination of the mouse interface. The hand moves the mouse, which moves the cursor; the eye sees the cursor, tracks the motion; the brain redirects the hand to redirect the mouse… It is a cyclical feedback loop through physical+artificial intelligence, executed dynamically, on-the-fly.

Expand this model to the processes of computer aided design and manufacturing. Just as one follows the signs and feedback of moving a knife through a loaf of bread, the process of moving from physical to virtual to physical is

11 Peter Fuller, "The Search for a Postmodern Aesthetic," in *Design After Modernism*, ed. John Thackara, (New York: Thames and Hudson, 1988), 130.
12 Malcolm McCullough, *Abstracting Craft,* 229.
13 Steven Johnson, *Emergence – The Connected Lives of Ants, Brains, Cities, and Software* (New York: Scribner, 2001), 169.

an informative feedback cycle of input and output. At each step there are affordances and limitations of the tools being used. Consider a virtual CAD model executed through a series of mouse clicks and menu choices then output to a 3D prototyping machine to manifest a physical representation of the virtual model. That step requires a translation resulting in changes to the form (like the old game of 'telephone,' where an idea is whispered from one person to the next resulting in a radical transformation via sequential shifts in translation creating an informational butterfly effect). Most 3D prototyping processes divide a model into a stack of layers to varying degrees of resolution, resulting in tiny visible steps in the model. The grainy, opaque, stepped, slightly warped object result from a prototyping machine can be surprisingly far from the digital rendering of the virtual model. Results from the process can be a supreme disappointment or a 'happy accident.' Either way, it informs the process going into the next cycle.

We are moving towards something between mass production and the 'hand-made,' a way of creating individual objects on a mass-production scale.

Tightening the loop

With the tools of industrial design and production becoming more accessible, both technically and financially, the divisions of labor decried by Morris are being reversed. Just as a single individual using desktop publishing technology can now run a publishing house or recording studio from their living room, so they will soon be able to build their own integrated manufacturing plant and design office. Desktop manufacturing systems are being designed to not only manifest a form, but to manufacture a product replete with internal circuitry and user-interface.

Through the process of making, by whatever means chosen, one must negotiate the space between vision and actualization. Whether drawing or drilling, there is a feedback loop between action and reaction that informs process. By tightening the loop, speeding the circuit of communication between visualization and tangible production, the process of design and making becomes a more direct manipulation of material. Reading the prototype is like reading the saw cut or hammer-mark-- action, affect, adjustment, action… It's a conversation with the medium through process. Discussing how this applies in the digital context, McCullough writes, "Tightening this loop between conception and execution has the potential to reconcile some of the separation of design and fabrication… Thus, after two centuries of separation, the conception and execution of everyday objects are once again in the same hands."[14]

Returning to the idea of craft as breadth of participation, we now have a new model of something between craft and design, more akin to a time when craftsmen made the products of a society. We are moving towards something between mass production and the 'hand-made,' a way of creating individual objects on a mass-production scale.

Designer as Programmer

Code is currency; it is an equalizing environment that is text as object. Rule structures become the basis of form evolution. The specific outcome is an emergent result of the execution of the program. The idea is scripted; the result is experienced. For what is the designer responsible? What is the designer's product? The designer-as-programmer determines the parameters and establishes the basis of form generation.

John Frazer of the Architectural Association in London has been working with similar processes in architecture. He describes the approach as a packet-of-seeds as opposed to a bag-of-bricks process, in which the architect is a catalyst rather than a designer. The architecture is then a form of artificial life subject to replication and selection.[15]

How much control does the designer/programmer maintain or how much is relegated to the process/program? Consider that any software environment is a collection of options, relegating control. Even the underlying language behind it is a rule-based system with its own limitations. For example, in Rhino3D a derivation of Visual Basic, RhinoScript can be used to drive the command structure of the software. In the end, it seems akin to using sign language

14 Malcolm McCullough, *Abstracting Craft, 178-179.*
15 James *Steele, Architecture and Computers: action and reaction in the digital design revolution* (London: Lawrence King, 2001), 38.

to a direct a crane operator; the communication is very limited, but effective.

The tool affords a limited range of possibilities to the user. What about customizing the tools? As Mike Cooley explains in an essay titled "From Brunelleschi to CAD-CAM," "The computer excels in analysis and numerical computation, the human mind in pattern recognition, the assessment of complicated situations and the intuitive leap to new solutions. If these different abilities can be combined, they amount to something much more powerful and effective than anything we have had before."[16] By hybridizing the human-computer skill-sets, the designer/programmer can maximize the symbiotic potential of digital tools by climbing behind the graphical user interface and making changes. By including flexibility and interactive development in the digital environment, the tools can grow and change, departing from, but still a product of, the original intention.

One of the departures here is that the designer is making the tools he uses. This is similar to the tradition of the blacksmith – for whom, if a project warrants a tool that is not at-hand, such as a chisel or pliers, then the smith makes it (interestingly, out of the same material he will be affecting with the tool). The designer-as-programmer creates his own scripts, toolbars, and icons, tailored to the job at hand – fulfilling the evolutionary role as homo-faber, or tool maker, using the medium to affect the medium. By customizing tools, one opens up new possibilities for what they might do. By getting behind the scenes of the virtual stage of digital design, a new level of control and exploration is exposed.

Works Cited

Alexander, Christopher. *Notes on the Synthesis of Form*. Cambridge, Mass: Harvard University Press, 1964.

Benjamin, Walter. *"The Work of Art in the Age of Mechanical Reproduction."* In *Illuminations. Trans.* Hannah Arendt. New York: Shocken Books, 1969. 217-252.

Cooley, Mike. "From Brunelleschi to CAD-CAM." In *Design After Modernism.* Ed. John Thackara, New York: Thames and Hudson, 1988. 197-207.

Dormer, Peter, ed. *The Culture of Craft*. New York: Palgrave Macmillan, 1997.

Elam, Kimberly. *Geometry of Design*. New York: Princeton Architectural Press, 2001.

Flake, Gary. *The Computational Beauty of Nature: Computer Explorations of Fractals, Chaos, Complex Systems, and Adaptation*. Cambridge, Mass: MIT Press, 2000.

Fuller, Peter. "The Search for a Postmodern Aesthetic." In *Design After Modernism.* Ed. John Thackara. New York: Thames and Hudson, 1988. 117-134.

Gombrich, E.H. *The Sense of Order: A Study in the Psychology of Decorative Art*. Ithaca, New York: Cornell University Press, 1984.

Johnson, Steven. *Emergence – The Connected Lives of Ants, Brains, Cities, and Software*. New York: Scribner, 2001.

Lesmoir-Gordon, Nigel, et al. *Introducing Fractal Geometry*. Cambridge, UK: Icon Books Ltd., 2000.

McCullough, Malcolm. *Abstracting Craft: The Practiced Digital Hand*. Cambridge, Mass: The MIT Press, 1996.

McCullough, Malcolm. *Digital Ground*. Cambridge, Mass: The MIT Press, 2004.

Orel, Tufan. *"The Technologies of Self-Fashioning: Beyond Universality and Variance of the Industrial Product"*. In *The Immaterial Society*. Ed. Marco Diani. New York: Prentice Hall, 1992. 43-59.

Pye, David. *The Nature and Art of Workmanship*. London: Cambridge University Press, 1968.

Pye, David. *The Nature of Design*. USA: Reinhold Publishing Corp., 1964.

Rashid, Karim, et al. *Karim Rashid: I Want to Change the World*. New York: Universe Publishing, 2001.

Shaviro, Steven. *Connected: or what it means to live in the network society. Electronic Mediations, Vol 9.* Minneapolis, Minn.: University of Minn. Press, 2003.

Stairs, David. "Biophilia Technophilia: Examinging the Nature/Culture Split in Design Theory." *Design Issues* 13, no. 3 (Autumn 1997): 37-44.

Steele, James. *Architecture and Computers: action and reaction in the digital design revolution*. London: Lawrence King, 2001.

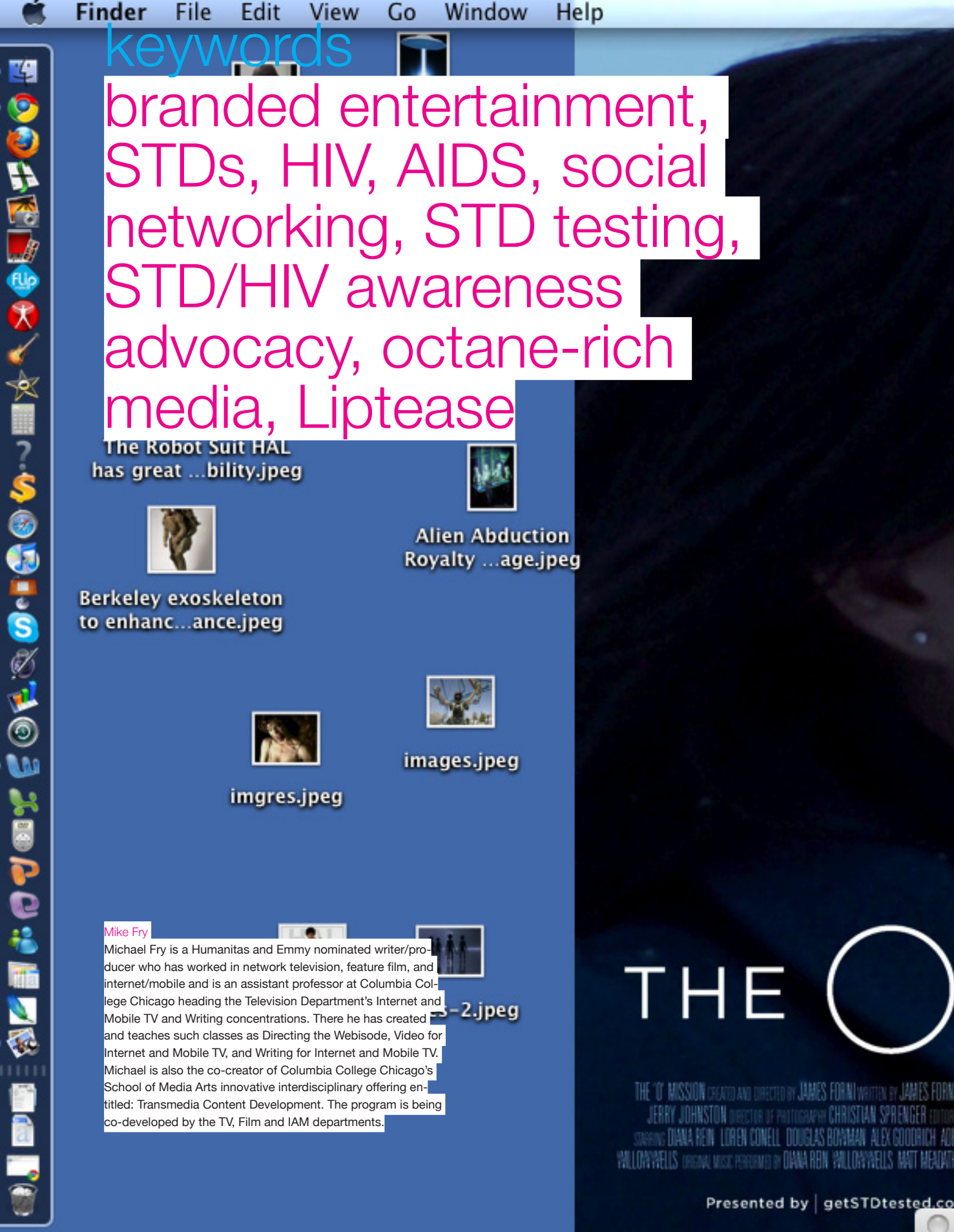
Thackara, John. *Design After Modernism*. New York: Thames & Hudson, 1988.

Weiss, Paul. "Organic Form: Scientific and Aesthetic Aspects." In *The Visual Arts Today*. Ed. Gregory Kepes. Middletown, Conn.: Wesleyan University Press, 1960: 181-194.

16 Mike Cooley, "From Brunelleschi to CAD-CAM," in *Design After Modernism,* ed. John Thackara (New York: Thames and Hudson, 1988), 205.

keywords

branded entertainment, STDs, HIV, AIDS, social networking, STD testing, STD/HIV awareness advocacy, octane-rich media, Liptease



Mike Fry

Michael Fry is a Humanitas and Emmy nominated writer/producer who has worked in network television, feature film, and internet/mobile and is an assistant professor at Columbia College Chicago heading the Television Department's Internet and Mobile TV and Writing concentrations. There he has created and teaches such classes as Directing the Webisode, Video for Internet and Mobile TV, and Writing for Internet and Mobile TV. Michael is also the co-creator of Columbia College Chicago's School of Media Arts innovative interdisciplinary offering entitled: Transmedia Content Development. The program is being co-developed by the TV, Film and IAM departments.

The O Mission

Mike Fry
Television Department, Columbia College Chicago

Abstract
The Omission is a branded entertainment web-series targeted at sexually active 18-25 year olds who are potentially at risk for STD's, HIV and AIDS. The goal was to connect to this demographic through simulating their technology driven way of life and to encourage them to go to our sponsor's website, www.getSTDtested.com, and get tested in order to create a 'trend-stickiness' around sexual history transparency. The unexpected lessons learned yielded a greater knowledge and understanding of social health advocacy and the hard truth about the financial difficulties associated with online series distribution.

Figure 1: Screen shots of *The O Mission*

The Omission is a branded entertainment webisode targeted at sexually active 18-25 year olds who are potentially at risk for STDs/HIV and AIDS. The creative goal was to engage the demographic by creating a story and characters that simulated their way of life. The marketing strategy was to involve the audience in the story and characters and to allow the natural use of a product to rise from story organically. The unexpected lessons learned yielded a greater knowledge and understanding of social health advocacy and the hard truth about the financial difficulties associated with online series distribution.

As sponsors struggle to find a way to keep 'eyeballs' on their ads in the post-TiVo/DVR world, 'branded entertainment,' the introduction of brands into already existing storylines, has become a common media industry experiment across all screens; Film, TV, internet, and mobile. The overt and comical insertion of Verizon phones into the sitcom "30 Rock" is a great example of 'product placement,' where products are displayed, often numerous times, during an episode. However, there is a much more subtle and possibly more sustainable type of branded entertainment called 'brand integration.'

The idea behind brand integration is to create a storyline and characters that are, in themselves, 'sticky' or endearing to an audience. As the audience becomes engrossed in the story they will notice that the characters are organically using certain branded products. Electric Farm's new sci-fi online hit, Gemini Division using the attractive star-power of Rosario Dawson, is one such success. The series uses Cisco devices as an integral part of the storytelling process.

In our original branded web series, The Omission, we were the first to use brand integration to address sensitive topics such as destigmatizing STD/HIV/AIDS. Along with Octane Rich Media and a small boutique digital ad agency called Method Engine, I developed the series for getSTDtested.com.

We were approached by Tracy Powell, CEO of getSTDtested.com, to develop a website for their brand. We were charged with destigmatizing the idea of being tested for STDs while also 'sexualizing' the brand and making transparency around sexual history a hot topic. We immediately seized the opportunity to pitch the idea for a branded entertainment web series. I would co-create, co-write, co-produce and be the second unit director as well as help to put together an original pop-punk girl-band and release two original songs. The task was to attract the 18-25 demographic who were known for at-risk behaviors making them extremely vulnerable to STDs.

These consumers are 'digital-natives,' living a double life – online and off. They extend themselves on social networking sites like Facebook and MySpace, interacting with strangers and friends moment to moment, around the globe. It occurred to me that the way that one makes new friends on social networking sites is an interesting parallel to the way that STDs are potentially spread. When you 'friend' someone on Facebook, you then are exposed to all of their friends just as when you have sex with someone you then are exposed to everyone that they've had sex with and possibly to their STDs as well. If you sleep with Jane, you sleep with Bob – who Jane slept with last – but you also sleep with everyone Bob has slept with, etc. The flowchart gets pretty wild. And so we began to develop a story that would address 'hook-ups' as having exponential consequences, explored through the using social media as both a framing device and as 'sexual-networking' tools.

The challenge now was to find a way to communicate with the 'digital-natives' in their own language, with a tone that would inspire them to get tested without chastising them or making them feel that they had done something 'bad.' How? By creating characters that not only imitated their way of life but that were 'aspirational' to the target demographic. All 18-25 year olds want to be rock stars and quiet as it is kept, most 25-60 year olds, our auxiliary demographic, also have a lust for the fortune and fame of rock stardom.

But rock stars are inaccessible, too large to have the same problems that we have and too rich to care. However

The idea behind brand integration is to create a storyline and characters that are, in themselves, ‘sticky’ or endearing to an audience. As the audience becomes engrossed in the story they will notice that the characters are organically using certain branded products.

aspiring rock stars, twenty-somethings struggling to make it, speak the language of the digital-native. And the risky world of rock and roll with its seedy clubs, hot people, and intoxicated fans is the perfect climate for reckless hook-ups, mash-ups, and break-ups – the stuff of good drama – and the power to make getting tested for STDs cool.

The result of our efforts, a nine page script, seven leads, 100 extras, and a three day shoot using a RED camera, as well as a small HD for webcam confessionals, yielded the web series, The Omission. The Omission is the story of LipTease, a hot female driven punk-pop band on the brink of success. The lead, Indya, hot, young, and looking for lasting love, is constantly tempted by her band and caught in the excesses of rising stardom. They have fans and groupies, lovers and friends, all sharing the same technologically connected web of risky sexual activities. The reviews from ReelChicago.com, The Chronicle and Web Series Magazine have been great and the site, www.getSTDtested.com, has begun testing thousands of new at-risk clients. A screening at the Gene Siskel Film Center, followed by a panel with Lynn Barclay President of American Social Health Association (ASHA), and a Columbia College Chicago screening and free STD/HIV/AIDS testing event helped to kick off The Omission's release.

The 'O' in The O mission is a double entendre – 'O' for orgasm and 'O' for omit, because we tend to make tiny omissions as we lie about our true and complete sexual histories. In 'real life' these omissions lead to 19 million new cases of STD/HIV infections each year in the United States. As I researched the epidemic of STDs in America and globally, I realized that this project was not simply a means by which to tell a hip and exciting, sexually charged story fuelled by technology – but a way to save lives.

As a screenwriter my work usually involves telling stories to entertain and manipulate the emotions of an audience – and at its best, to teach. As a copywriter the 'work' usually involves using my creativity to market or 'sell' products to a specific demographic, creativity with profit as its end. *The Omission,* however, had an additional end goal – to encourage sexually active 18-35 year olds to get tested for HIV/AIDS and STDS. The possibility of motivating even one person to be tested could save a life – a powerful charge. Digital media used to prevent the spread of STDs, HIV/AIDS. An ethical motivation inspired the storyline, characters, and distribution. The good news was that we were fully funded, at a cost of $40,000, by getSTDtested.com. The reality, however, was that corporate sponsorship has its price – investors demand a return on their investment.

And so the idea of corporate sponsorship and ownership of art, the reality of art as business, was always in play. Within the definition of 'branded entertainment' is the concept that entertainment is a marketing tool, a means by which to attract consumers to a product or service. For www.getSTDtested.com the first priority was to make a web series that would drive clients to the website – the creativity and story had to serve this end. The film/series needed to make more money than it cost to make. We quickly learned how to service the client and service the greater ethical needs of the subject matter through research and empathy--we began to view ourselves as advocates creating for a cause.

Never before had I been tasked with researching STDS and HIV/AIDS. I knew what most people know and didn't really want to know more. The topic, in my mind, had a stigma. I felt uneasy and uncomfortable talking about it – I was afraid to know more, afraid to expose myself to the truth. And so, as a creative and as a teacher, I had to step out of my comfort zone and become an advocate for HIV, AIDs, and STD testing. Along the way I also became a huge advocate for prevention and counseling – not the primary goal of www.getSTDtested.com. The word 'tested' is the key – the company makes its money from online testing, not from promoting condom usage, etc. But we realized that the testing message runs hand in hand with the prevention and counseling message. *The Omission* became a vehicle by which to expand the dialogue about testing, prevention and counseling. And in our early discussions with the CEO of the company, we encouraged more attention, at the website level, to the free counseling links and to the need for prevention.

When Lynn Barclay and American Social Health Association (ASHA)[1] came aboard, I was suddenly on a panel with Lynn and several doctors who were indeed experts in the field. But because of our research, learned sensitivity, and advocacy I was able to speak not only on the topic, but to extend the conversation as it related to the usefulness of digital media to inform about and encourage responsible sexual networking, safe sex, and sexual history transparency.

The impact of social networking sites, IM, and 'chat,' on human sexuality and relationships is profound. The troublesome concept of the one night stand, meeting someone in a bar or elsewhere for the first time and then engaging in often unprotected alcohol or drug assisted sex, has become antiquated. Today's 18-35 year old, and often even

1 American Social Health Association. http://www.ashastd.org/

younger, sex seeker is 'hooking up' with an often anonymous partner online. The true identity of this person can be concealed through various means and the exchange of sexually explicit media – 'sexting' or sexual photos and films are often exchanged via these technologies and often – two strangers will meet in 'real life' and engage in sexual activity. According to The National Campaign to Prevent Teen and Unplanned Pregnancy, 22 percent of girls and 18 percent of boys say they have electronically sent or posted nude or semi-nude images of themselves.[2] The 'mystique,' risk, and trendy nature of activities such as 'sexting' has become infectious among this demographic. With technologically assisted sex being the 'hot' trend with the digital native, technology is also the key to intervention, to information, and ultimately to a new paradigm of sexual responsibility fueled by sexual history transparency dependent on frequent testing. This new sexual arena, the idea of 'sexual networking,' of digital user-driven media as a real aspect of modern human sexuality, is at the core of The Omission. Other online testing sites have digital video, but nothing as innovative or aesthetically vibrant.

There are numerous competitive online testing sites, some of which have also invested in digital video messages. Sites like *www.justgettested.com* and *www.stdtest.com* both have videos that speak to the ease and necessity of their testing methods. The messaging here is 'about the brand' experience first. They are 'ads' or commercials, how to use instructional videos. *The Omission* takes a risk. It seeks to involve and encourage its audience not only to participate in the dialogue but to make them 'care' about characters who look and act like them – and to see the results of irresponsible sexuality dramatized on screen, leading them to examine their own sexual activity and to question the sexual history of those they have sex with.

Did we get the results we were looking for?

Creatively we succeeded. *The Omission* has been well received and the accolades have been many. However, we do not exist solely as entertainment content, we have an important message and we have the goal of driving commerce to our sponsor's site, we miss both well defined genres and fall into a sort of entertainment/PSA/Music video void. And so the challenge of online distribution, of getting your message to the demographic en masse, is still preventing the series from being a 'financial success.' In short, we have created a remarkable web-film/series that, when viewed, serves all of its creative and marketing goals. The lesson still to be learned is how the film/series can get the hits needed to justify the investment without star power or a minimum of $150,000 to market and distribute via existing online networks with guaranteed hit counts. The content remains relatively 'unused' and the corporate sponsor – spending upwards of $40,000 on the show, still desires a much greater return on the investment.

What's the solution? Spend less on high end production values, and produce the series on a significantly smaller budget, spend more on 'on the ground' marketing and extend to 'digital events' – virtual concerts at college STD events all over the world. These are in the works along with a unique educational opportunity.

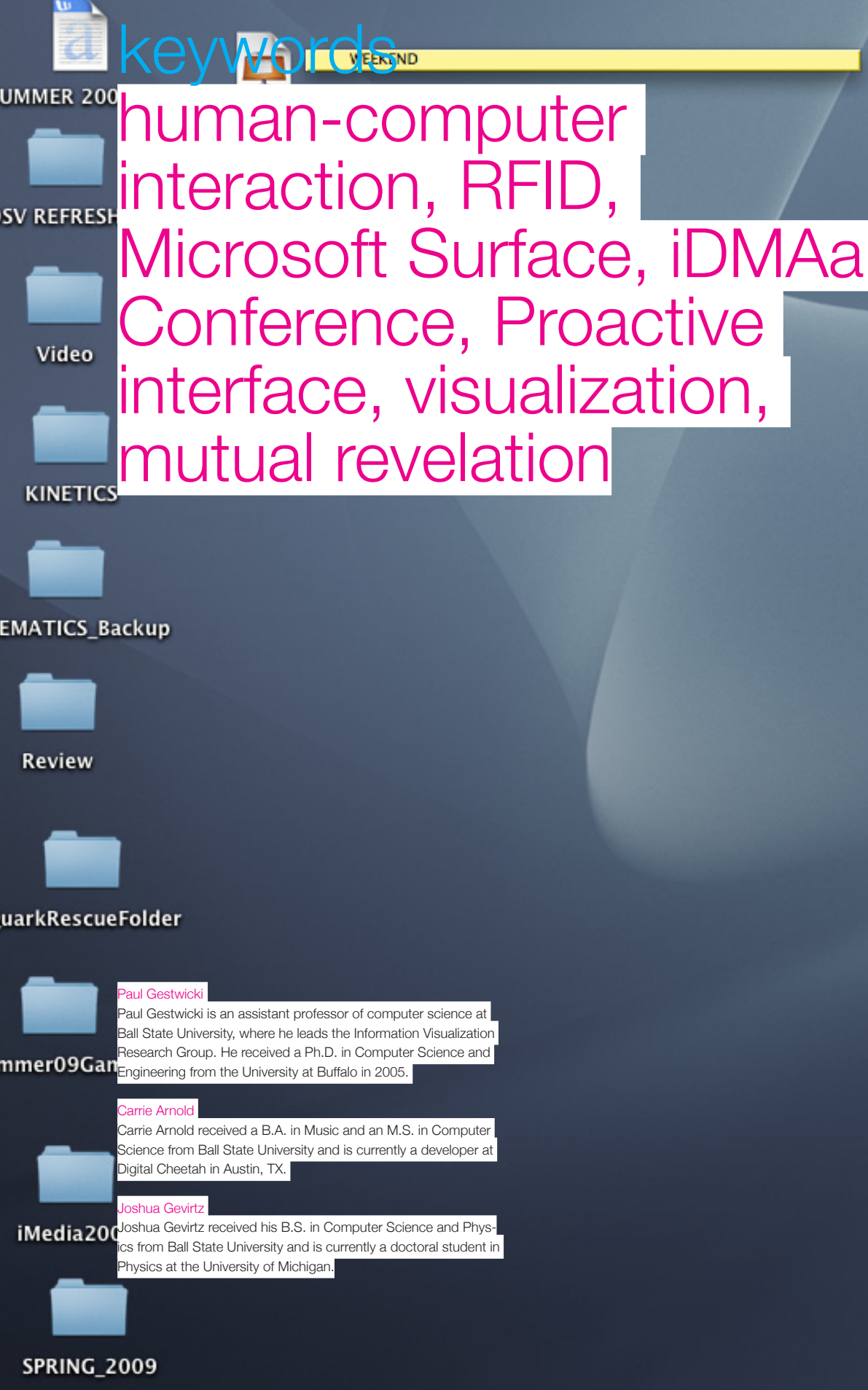
We are now involved, along with *www.getSTDtested.com*, in getting a grant to create STD UNIVERSITY, a digital education portal for colleges and universities designed to spread the message of STD, HIV/AIDS prevention, testing and counseling. *The Omission*, its characters and its band Liptease, are included in the proposal. The STDU project will lead to the development of curricula, an immersive online experience and even 'serious gaming' around these sensitive topics.

To see the first four episodes of the web series, *The Omission*, please go to our site: *www.omissionthemovie.com*.

Works Cited

Omission, The. www.omissionthemovie.com. National Campaign to Prevent Teen and Unplanned Pregnancy,The, *Sex and Tech: Results from a Survey of Teens and Young Adults,* http://www.thenationalcampaign.org/sextech/PDF/SexTech_Summary.pdf. (accessed June 17, 2010).

2 The National Campaign to Prevent Teen and Unplanned Pregnancy, *Sex and Tech: Results from a Survey of Teens and Young Adults,* http://www.thenationalcampaign.org/sextech/PDF/SexTech_Summary.pdf. (accessed June 17, 2010).



keywords

human-computer interaction, RFID, Microsoft Surface, iDMAa Conference, Proactive interface, visualization, mutual revelation

Paul Gestwicki

Paul Gestwicki is an assistant professor of computer science at Ball State University, where he leads the Information Visualization Research Group. He received a Ph.D. in Computer Science and Engineering from the University at Buffalo in 2005.

Carrie Arnold

Carrie Arnold received a B.A. in Music and an M.S. in Computer Science from Ball State University and is currently a developer at Digital Cheetah in Austin, TX.

Joshua Gevirtz

Joshua Gevirtz received his B.S. in Computer Science and Physics from Ball State University and is currently a doctoral student in Physics at the University of Michigan.

Designing a proactive multi-touch display to support professional networking and planning at an interdisciplinary conference

Paul Gestwicki, Carrie Arnold, and Joshua Gevirtz
Ball State University

Abstract

We present the design of a proactive multi-touch display that promotes interdisciplinary communication. The interface was designed for the 2009 International Digital Media & Arts Association Conference. Metadata was collected regarding presentation topics and registrants' interests. Visualizations are generated as users approach, highlighting relationships among attendee's interests and relevant conference events. Hence, the system assists with session selection while promoting discussion. The interface is implemented on a Microsoft Surface, and proximity is detected via radio-frequency identification. This design builds upon related work by focusing on a task that is challenging at multidisciplinary conferences, specifically selection during concurrent sessions.

Introduction

We present the design of Confluence, a system that enables conference attendees to explore the conceptual space of a multidisciplinary conference, to make deliberate decisions about the relative values of sessions with respect to personal interests, and to promote impromptu mutual revelation in a fluid social context. It is a novel proactive interface whose main components are a multi-touch table-top interface, radio frequency identification, and custom information visualization software.

The system was designed specifically for the 2009 International Digital Media & Arts Association Conference, which is notable for the breadth of interest of its attendees, including art, humanities, technology, social sciences, usability, education, and business. The mission of the International Digital Media & Arts Association (iDMAa) is to promote the development, application, and understanding of digital media and arts.[1] The organization represents educators, practitioners, scholars, and organizations with interest in digital media and arts. The organization's seventh conference was held in 2009, and it served as a test for Confluence.

Complications of Multidisciplinary Conferences

Conferences serve several important purposes for both academics and practitioners. Conference organizers promote the theme of a conference by gathering speakers, papers, tutorials, panels, and so on. Thus, the organizers seek to advance understanding and the state of the art within their areas of interest. Individual attendees have the opportunity to disseminate their work, learn new skills, and develop social and professional networks. McCarthy et al. describe this as mutual revelation, "allowing attendees to learn more about others and their work, as well as being open to opportunities to tell others about themselves and their own work."[2] Effective mutual revelation depends upon attendees' shared interests and similar expertise. An attendee who knows little about the conference domain will have difficulty integrating information shared by other attendees. Normally, this problem is avoided implicitly since, generally, only individuals who are interested in the conference domain would attend a disciplinary conference. However, multidisciplinary and interdisciplinary conferences pose a particular problem: the attendees, by definition, come from a wide variety of background and represent a broad range of expertise. That is, it is no longer the outliers who are potentially perplexed by conference activities but the majority.

Proactive Interfaces

A proactive interface is one that shows content based on a combination of program logic and proximity of individuals. This is in contrast to conventional interfaces, which are reactive: they respond to discrete user interactions such as mouse, keyboard, or voice commands. In this project, we use radio-frequency identification (RFID) to detect the approach and departure of conference attendees. The interface changes proactively based on who is nearby rather than strictly reactively.

We are not the first to see the potential for proactive interfaces to enhance the conference experience. Three prominent examples are AutoSpeakerID, Ticket2Talk, and the SpotMe Conference Navigator. AutoSpeakerID displays the information of speakers and questioners during sessions, providing people with a quick visual synopsis of who is asking a question, their interests, and their affiliation.[3] Ticket2Talk serves as a conversation piece during breaks: it shows pictures of people near the display, along with a profile and interests.[4] Both applications encourage social networking, though in different ways. Ticket2Talk is a direct integration with presentations, while AutoSpeakerID provides a more ambient experience. These two have been positively evaluated for their installation contexts, although the developers admit concerns about distraction and intrusiveness.[5] The SpotMe Conference Navigator is notable for its applicability to conferences: it runs on a PDA and notifies the user when another attendee is nearby with a similar profile.[6]

1 International Digital Media and Arts Association. "Digital Media and Arts Association Constitution." International Digital Media and Arts Association. http://idmaa.org/images/stories/idmaa_constitution.pdf (accessed October 19, 2009).

2 Joseph F. McCarthy et al., "Augmenting the social space of an academic conference," *Proceedings of the 2004 ACM Conference on Computer Supported Cooperative Work* (2004): 31.

3 David W. McDonald et al., "Proactive displays: Supporting awareness in fluid social environments," *ACM Transactions on Computer-Human Interaction* 14, no. 4 (2008): 6-8.

4 McDonald et al., 8-10.

5 McDonald et al., 18-20.

6 Ben Congleton et al., "The ProD framework for proactive displays," *Proceedings of the 21st Annual ACM symposium on User interface software and technology* (2008): 221-230.

Tagging Interests

Confluence helps attendees decide which sessions to attend by highlighting those that may be of interest, and by this, promotes enhanced mutual revelation. The team was inspired by the use of tags on Web-based social media as a means to this end. A finite set of tags was chosen rather than user-specified tags, since the latter introduces problems that are beyond the scope of this work.[7] The set was developed by analyzing past conference schedules and consulting with members of the community. These interest tags were incorporated into both the conference registration site and the paper submission site. Thus, every paper is tagged with interests that are represented in the work, and every attendee has the opportunity during registration to identify his or her interests. The tags are: Architecture; Computer Music, Cyberculture/Internet Culture; Digital Fabrication; Educator/Pedagogy; Entrepreneurship; Ethics; Film; Film/Video Production; Futurology; Game Design; Graphic Design; Human/computer interaction; Humanities; Interface design; Journalism; Legal Issues; Machinima; Marketing; Music engineering; Open source; Painting & Drawing; Philosophy; Sculpture; Social Networking; Software development; Theatre & Dance; Ubiquitous computing; Virtual Worlds; Visualization; and Web design/development.

Multi-touch Interaction on the Microsoft Surface

While the RFID provides a capacity for proactive interfaces, the Microsoft Surface provides multi-touch interaction in a tabletop computing environment. The tabletop orientation facilitates multiple users, and the recognition of multiple concurrent touches promotes collaborative use.

Primary among the design principles for multi-touch tabletop computing is direct manipulation: users interact directly with the interface content rather than through indirect widgets such as menus and text commands.[8] Designing direct manipulation multi-touch interfaces is a difficult design challenge as this technology is still in its infancy. All users in the intended audience are intimately familiar with the WIMP (Windows, Icons, Menus, and Pointers) paradigm, where learned affordances can be exploited to expose novel functionality. However, in multi-touch collaborative environments, practically all users (aside from the occasional researcher who focuses on this technology) are novices or advanced beginners.[9] Therefore, in order to empower novice users while maintaining continuous collaboration in a fluid social environment, the interaction model must leverage clear affordances while supporting scaffolding toward more advanced use cases.[10]

Design

The Surface-based interface is divided into three sections: the Navigation Bar, the Workspace, and the Gutter. Figure 1 is a screenshot of a pre-release build of Confluence, showing a sample interaction with the system. The Navigation Bar is on the left, the Workspace is the central area, and the Gutter surrounds the workspace on the top, right, and bottom sides.

Navigation Bar

The Navigation Bar displays the conference schedule. The 2009 iDMAa conference is a three-day event, and the three buttons at the top of the navigation bar represent the three days. Pressing one of these buttons selects that day, and the rest of the Navigation Bar is populated with the events from that day. For example, in Figure 3, the Thursday button is highlighted and so Thursday's events are shown below it. Animated transitions are used to improve the aesthetics and the utility of the system. Specifically, animated transitions leverage cultural conventions to assist in developing the user's mental model of time: the days' schedules fly in from the left or right depending on whether the newly selected day is in the past or the future, in accordance with this culture's left-to-right reading order.[11]

At any time, the Navigation Bar clearly shows, through color highlighting, which day and which conference event are selected. The name of the currently selected event in the Navigation Bar is also embedded into the Workspace background, so users who are not aligned for convenient reading of the Navigation Bar can also ascertain the current context by inspecting the Work space background. Thus, the Navigation Bar and the associated Workspace background labels provide the context for the rest of the interactions, stable locations from which new users may

7 Cameron Marlow et al., "HT06, tagging paper, taxonomy, Flickr, academic article, to read." *Proceedings of the seventeenth conference on Hypertext and hypermedia* (2006): 38.

8 Ben Shneiderman, "Direct manipulation: a step beyond programming languages," *IEEE Computer* 16, no. 8 (1986): 57-69.

9 Hubert Dreyfus and Stuart Dreyfus, Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer (New York: Free Press, 1988): 22-23.

10 Donald A. Norman, "Affordances, conventions, and design," *Interactions* 6, no. 3(1999): 41.

11 Norman, 41.

Figure 1: *Confluence* screen shot

acclimate themselves to the more complex Workspace and Gutter interactions.

Workspace and Cards

The work space is the largest region of the interface, and it is where we expect the majority of attention to be focused. The work space is a "scatter view," an area in which items are placed that can be moved, scaled, and arranged using multi-touch interactions. Scatter views have featured prominently in the Microsoft Surface promotional materials and sample applications, and the interaction model is reminiscent of the popular multi-touch iPhone and iPod Touch devices from Apple: one finger will move an item, two fingers will scale an item, and interacting with any item will bring it to the "top." We have also integrated a common idiom wherein the cards behave as if they have two sides. A quick tap of a card will cause it to flip over, revealing complementary information on the other side.

The Keynote, Plenary, and Presentation Cards are similar in design and intent: one side shows the title, speaker, and abstract, and the reverse side shows the title, speaker, and a photograph of the speaker. Also, this side contains a QR-code[12] that links to the speaker's profile page on the interactive conference Web site. The Session Cards are different: these are designed to assist users in seeing the contents of concurrent sessions at a glance. The Session Cards list the name of the session along with the names and authors of each of the presentations within that session. The reverse side shows a montage of speaker photographs along with the QR-code that encodes the event URL.

As in the Navigation Bar, animated transitions are applied for aesthetic and utilitarian purposes. When a new conference event is selected, those cards in the workspace are animated away from the navigation bar, which is also the dominant reading direction of the workspace background image. The new selections animate to random positions in the workspace from the navigation bar side of the interface,

12 Quick-Response Code, a two-dimensional barcode, as shown in the screenshots. QR-Codes can be read by camera-equipped smart phones such as the iPhone and most Android phones.

visually indicating that it was the navigation bar that caused the transition.

Gutter, Attendee Icons, and Interest Lines

The Gutter runs along the side of the workspace, and it is in this area that Attendee Icons are shown. These icons represent individuals who are detected to be nearby via the RFID system, and they show the attendee's name as well as photograph, when available. Note that this means that the Gutter should never be empty when the interface is approached by a properly tagged attendee: rather, the attendee will immediately see a recognizable representation of him or herself as part of the interface.

Strongly related to the Attendee icons in the Gutter are the Interest Lines. These lines connect Attendee Icons to those Cards in the Workspace that have corresponding interests. As mentioned above, these interest tags are selected by authors during paper submission and by attendees during registration. The intensity of the line indicates the degree of similarity. This is designed not only to help an individual attendee to easily see the conference events of potential interest, but also as a means for enhancing mutual revelation among concurrent Confluence users. The presence of the interest lines is intended to spark conversation among concurrent users, since each will be able to see how all are connected to the currently selected conference event.

Integration with the iDMAa Web Site

Confluence was developed in parallel with an experimental conference Website that integrates social media with the iDMAa conference, as has been explored in related projects such as Pathable.[13] The site was developed by the Institute for Intermedia Arts and Animation, and it features a unique page for each conference event.[14] These pages link to professional and contact information about the speakers, including links to social networking services such as Facebook and Twitter.

13 Shelly D. Farnham et al., "Leveraging social software for social networking and community development at events," *Proceedings of the fourth international conference on Communities and technologies* (2009): 237–239.
14 Institute for Digital Intermedia Arts. "Arts + Technology." Institute for Digital Intermedia Arts. http://www.idiarts.org (accessed October 25, 2009).

As mentioned above, each card in the Workspace contains a QR-code that encodes a URL, as shown in Figure 2. Attendees with appropriate mobile devices, such as the Apple iPhone or Android-enabled phones, will be able to scan the QR code and be taken directly to the corresponding page on the interactive iDMAa conference site.

Presence Detection through RFID

RFID technology is employed in our project in fashion similar to that of Ticket2Talk and Neighborhood Window.[15] We used an ALR-9650 RFID reader and associated tags by Alien Technology. The antenna is placed above the Microsoft Surface unit on which Confluence software is running. Passive RFID tags are put on each attendee's name tag. The RFID reader was connected, through a standard Ethernet connection, to the university's network. Upon initialization, Confluence listens for broadcasts sent by the reader. Once a broadcast is received, the software establishes a connection with the RFID reader and creates a thread that periodically polls it for tag presence information. When this thread detects that an attendee has left or arrived, the information is propagated to the necessary portions of the program.

The presence detection subsystem is based on the ProD framework.[16] The approach and departure of attendees is detected by the RFID reader. Since there is a finite amount of space for Attendee Icons, a queuing system ensures that attendees are processed in the order they arrive.

Data Representation

Confluence loads conference information from a set of configuration files. The two most important are encoded in ConferenceML and PeopleML, XML-based file formats that were designed specifically for this project. ConferenceML is used to represent all of the conference data, including the schedule of events, the interests corresponding to those events, and the speakers at each event. PeopleML represents the conference attendees, including their names, affiliations, and interests.

These two types of information are represented separately due to the volatility of attendee lists. Conference events

15 McDonald et al., 8-13.
16 Congleton et al., 223-226.

are generally fixed in advance of the conference, but the list of attendees almost always changes due to on-site registrations and unforeseen impediments to attendance. Representing attendees separately from the conference allows us to easily upload new attendee information to the installation.

The Navigation Bar and all Workspace cards are automatically generated from ConferenceML. This facilitated the rapid prototyping of design ideas, since the initial design began well in advance of the iDMAa 2009 call for papers and therefore well before schedule finalization. Certainly, a graphic artist could likely create a visual representation of a specific schedule that is more visually appealing than a generic, computationally generated one. However, given the time and human resources constraints of this project, the benefits of automatic generation and the rapid prototyping it facilitated were determined to outweigh the aesthetic costs.

Discussion

Confluence is a hybrid of proactive and reactive interaction, the former through RFID and the latter through the Microsoft Surface. The team followed an iterative design process for both aspects of the system. For the multi-touch interface, physical prototypes were first used to simulate on-screen interactions. This led to the development of electronic prototypes for both the proactive and reactive subsystems, and these prototypes were used to generate feedback into the iterative design process. For example, the RFID system was simulated in Surface control so that the multi-touch behavior could be tested as if the presence detection system were completely operational. Problems with the reactive system could be fixed while the proactive system was still being developed, and vice versa. We found that a direct manipulation, multi-touch interaction paradigm lends itself naturally to physical prototyping. Physical prototyping not only helped us simulate possible interactions, but it allowed us to see how quickly your objects would clutter up the workspace.

Early Designs

The design and development of this project began in the summer of 2009 following discussions with the Institute for Digital Intermedia Arts at Ball State University and representatives of the International Digital Media & Arts Association. The team spent most of the summer acclimating themselves with the technology and the philosophy of hybrid proactive/reactive interface development. This led to the design of a system that encourages social networking through an interactive "interest graph," similar in some ways to Neighborhood Window.[17] This system used the GraphViz library for a force-directed, spring model for automatic graph drawing.[18] However, there were two major complications with this design. First, the automatic layout of items conflicted with the direct manipulation that is both natural on a tabletop computing device and recommended by the Surface design guidelines.[19] Second, we found that the working area of the Microsoft Surface was too limited to display this information adequately, according to our desired visual designs. In retrospect, these conclusions would have arisen more quickly had the team incorporated physical prototyping more rigorously; while the specific software developed in this first iteration was abandoned, the lessons allowed us to make much faster progress on the design of what became Confluence.

Complications of Website Integration

As mentioned above, Confluence integrates with an interactive conference Web site through embedded QR codes. The site allows attendees to share professional contact information and also to participate in Web-based discussion about the conference and associated projects. Early designs of Confluence included similar functionality, such as the ability to drag representations of individuals together to share contact information. However, this design introduced two significant problems. First and more importantly, it is not possible within our design to authenticate that a user is a specific conference attendee, and so it would be possible for third parties to create social media connections between two other people. The presence detection system would have ensured that at least the attendees' badges would be nearby to initiate such a connection, but this design clearly introduces identification uncertainty. The second problem is that the semantics of combining individuals was determined not to be immediately clear. Hence, the interaction would require a notification and verification.

17 McDonald et al., 10–13.

18 Emden R. Gansner and Stephen C. North, "An open graph visualization system and its applications to software engineering," Software – Practice and Experience 30, no. 11 (2000): 1207.

19 Microsoft Corporation. "ScatterView Design Guidelines." Microsoft Surface Community. http://community.surface.com/blogs/develop_going_deeper/archive/2009/08/13/scatterview-design-guidelines.aspx (accessed October 19, 2009).

Traditional dialog box confirmations would be out of place in a collaborative multi-touch interaction space, and so the visual design would need to be augmented to include specific references to social network interactions. Such a design was outside of the scope of the project, although it could be considered for future work.

Conclusions and Future Work

Confluence integrates proactive and reactive interfaces by combining RFID presence processing with a multi-touch table-top interface. This design is intended to improve the mutual revelation and professional networking that takes place at conferences, which can be challenging at multidisciplinary conferences such as iDMAa. Following the best practices of proactive interfaces facilitated the design and development of this system.[20] The ProD framework also provided a useful reference model for data flow in a presence detection and processing system.[21]

Several features have been explored and prototyped during the iterative design process, and many of these have not been incorporated into the iDMAa experience. Particular features that are expected to further enhance the goals of the system include integration with social networking sites such as Facebook and LinkedIn as well as real-time editing of interests and on-line profiles, akin to the approach taken by Pathable.[22] Authentication and security are two of the primary challenges of including these into a system such as ours. We have also explored the potential for integration of machine learning and data mining algorithms. These could be used, for example, to incorporate explicit event suggestions to users based on their interests, an enhancement of the current ambient recommendation system that shows connectivity between Attendee Icons and Event Cards.

Acknowledgements

This work was supported by the Institute for Digital Intermedia Art, Emerging Media Initiative, and Department of Computer Science at Ball State University as well as the International Digital Media & Arts Association. We are especially grateful for the assistance and support of John Fillwalk, Jesse Allison, Ina-Marie Henning, Jessica Gestwicki, Erin Moore, and Dave Ferguson.

20 McDonald et al., 27–28.
21 Congleton et al., 223–226.
22 Farnham et al., 237–239.

Works Cited

Congleton, Ben, Mark S. Ackerman, and Mark W. Newman. "The ProD framework for proactive displays." Proceedings of the 21st annual ACM symposium on User interface software and technology (2008): 221–230.

Dreyfus, Hubert, and Stuart Dreyfus. *Mind over machine: The power of human intuition and expertise in the era of the computer.* New York: Free Press, 1988.

Farnham, Shelly D.,Peter T. Brown, and Jordan L.K. Schwartz. "Leveraging social software for social networking and community development at events." *Proceedings of the fourth international conference on Communities and technologies* (2009): 235–244.

Gansner, Emden R., and Stephen C. North. "An open graph visualization system and its applications to software engineering." *Software – Practice and Experience* 30, No. 11: (2000) 1203–1233.

Institute for Digital Intermedia Arts. "Arts + Technology." Institute for Digital Intermedia Arts. http://www.idiarts.org (accessed October 25, 2009).

International Digital Media and Arts Association. "Digital Media and Arts Association Constitition." International Digital Media and Arts Association. http://idmaa.org/images/stories/idmaa_constitution.pdf (accessed October 28, 2009).

Marlow, Cameron, Mor Naaman, Danah Boyd, and Marc Davis. "HT06, tagging paper, taxonomy, Flickr, academic article, to read." *Proceedings of the seventeenth conference on Hypertext and hypermedia* (2006): 31–40.

McCarthy, Joseph F., David W. McDonald, Suzanne Soroczak, David H. Nguyen, and Al M. Rashid. "Augmenting the social space of an academic conference." *CSCW '04: Proceedings of the 2004 ACM conference on Computer supported cooperative work* (2004): 39–48.

McDonald, David W., Joseph F. McCarthy, Suzanne Soroczak, David H. Nguyen, and Al M. Rashid. "Proactive displays: Supporting awareness in fluid social environments." ACM *Transactions on Computer-Human Interaction* 14, no. 4 (2008): 1–31.

Microsoft Corporation. "ScatterView Design Guidelines." Microsoft Surface Community. http://community.surface.com/

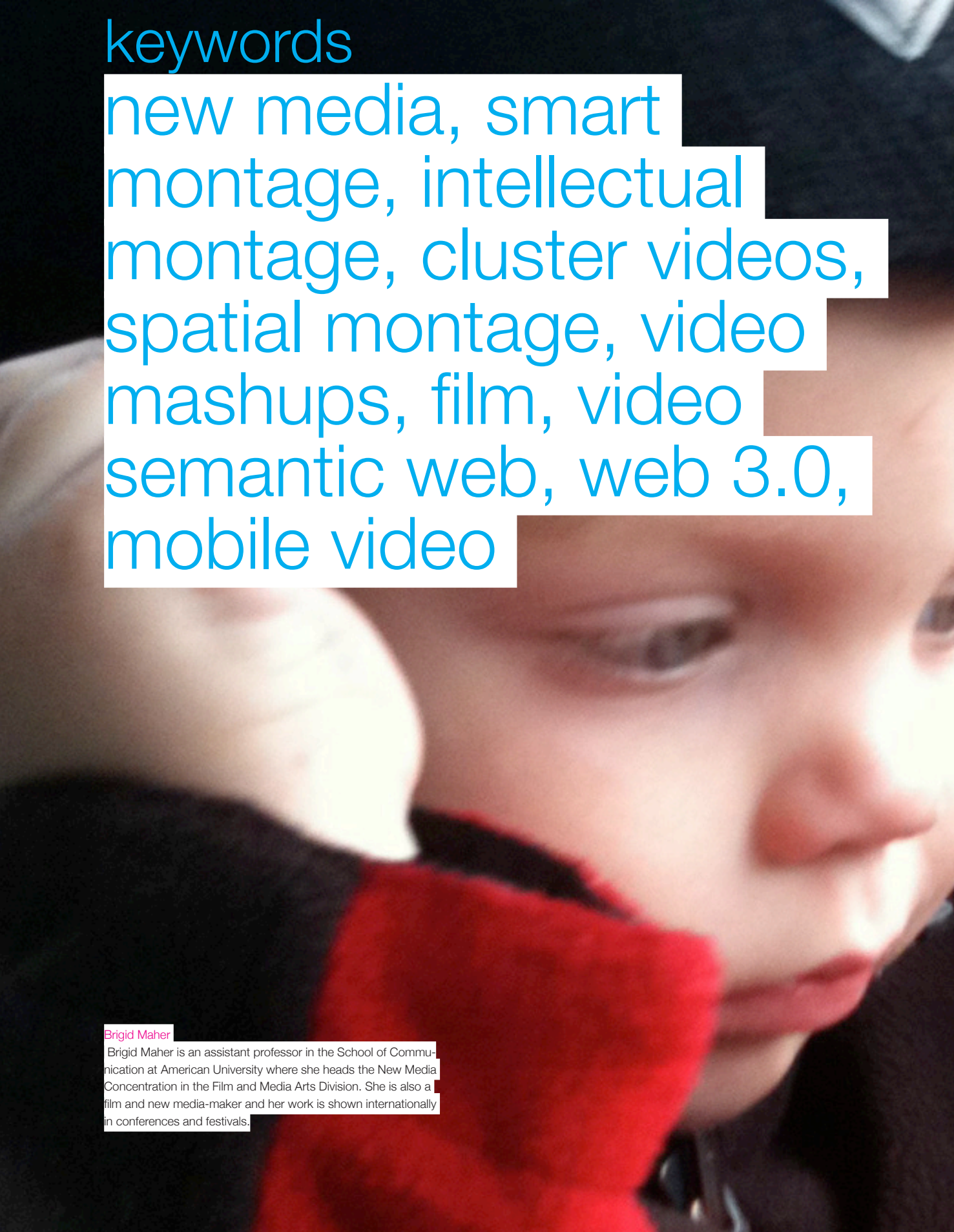
blogs/ develop_going_deeper/archive/2009/08/13/scatterview-design-guidelines.aspx (accessed October 19, 2009).

Norman, Donald A. "Affordance, conventions, and design." *interactions* 6, no. 3 (1999): 38–43.

Shneiderman, Ben. "Direct manipulation: a step beyond programming languages." *IEEE Computer* 16, no. 8 (1983): 57–69.

keywords

new media, smart montage, intellectual montage, cluster videos, spatial montage, video mashups, film, video semantic web, web 3.0, mobile video



Brigid Maher

Brigid Maher is an assistant professor in the School of Communication at American University where she heads the New Media Concentration in the Film and Media Arts Division. She is also a film and new media-maker and her work is shown internationally in conferences and festivals.

Smart Montage: The New Mobile Dialectic

Brigid Maher
School of Communication, American University

Abstract

Smart Montage is a new-media visual language development, building off and integrating a number of existing concepts and technologies such as video mashups, intellectual montage and spatial montage and can be output to both traditional devices, web and mobile devices utilizing the latest Web 3.0 technologies. A core element to the development and implementation of Smart Montage is the *Video Mashup*. A Video Mashup uses multiple source materials to create new and powerful social or intellectual statements using digital video. Smart Montage can also use techniques such as *Spatial Montage* where multiple images share the same space and time to both tell a story and make a dialectical statement. Spatial Montage was a term coined by new media theorist Lev Manovich and is seen in examples such as the television series '24' or in a hybrid media forms such as a CNN broadcast which fuses multiple streams of video, text, photography and graphics working with sound which may or may not be sampled. By using Spatial Montage, and sampling possible through Video Mashups, media makers can create a new Smart Montage that creates visual intellectual statements using symbols and ironic commentary while still keeping the audience engaged within a narrative. Smart Montage uses the new technologies to successfully resurrect previous montage theories, such as Eisenstein's *Intellectual Montage*.

Introduction

The convergence made possible through the Internet and "new media" has been widely talked and theorized about. Yet, the convergence of visual material possible through the semantic web,[1] is altering the grammatical structure of how we view and absorb visual information. The semantic web has now expanded to the iPad, Smart Phone, and Web TV where users can access the same media using different devices at different times. The implications are only now rising to the surface but it appears that not just the structure or narrative grammar is expanding, but the nature of storytelling itself.

I'm choosing to speak about one segment of this vast expansion, how these convergent forms create a new 21st century visual grammar or syntax. For the purposes of contextualizing what I'm talking about, I'm going to coin the grammatical phenomenon smart montage. In coining this term, I am quite consciously being a bit cheeky. I am aware that the development as well as the term may soon be dated, but I expect this, as smart montage may be just a step in the evolving new media language.

Smart Montage is a new-media visual language development, building off of, and integrating, a number of existing concepts and technologies such as video mashups, cluster video, intellectual montage and spatial montage and can be output to both traditional devices, web and mobile devices utilizing the latest semantic[2] technologies. Many of these developments are not new, but rather have been bubbling up from media experiments, such as Eisenstein's attempts at an intellectual montage, since the beginning of cinema. Digital editing technology and the semantic web, however, have created a moment where all these techniques can converge to push the language of editing into smarter, more mobile forms.

Defining the Visual Dialectic

To understand the possibilities of smart montage, it is critical to look to the birth of the visual dialectic. Eisenstein saw montage as a dialectic, which could serve not just a narrative purpose, but a wider Marxist dialectic.

1 The Semantic Web provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries, as defined according to the W3C. "W3C Semantic Web Activity," *W3C Semantic Web*. http://www.w3.org/2001/sw/ (accessed March 16, 2010).

2 Also referred to as Web 3.0.

In the realm of art this dialectical principle of the dynamic is embodied in CONFLICT as the essential basic principle of the existence of every work of art and every form. FOR ART IS ALWAYS IN CONFLICT: 1. because of its social mission. 2. because of its nature. 3. because of its methodology.[3]

Eisenstein shifted from his contemporaries, Pudovkin, Kuleshov, and Vertov in defining montage as "not an idea composed of successive shots stuck together but an idea that DERIVES from collision between two shots that are independent with one another (the 'dramatic' principle)."[4]

Intellectual Montage

Eisenstein became less interested in the shock and drama, which he so adeptly crafted, and more interested in how to communicate ideas through a visual language. He developed what he labeled, "intellectual montage" which was a new visual syntax for relaying Marxist theory.

A purely intellectual film, which freed from traditional limitations, will achieve direct forms for thoughts, systems and concepts without transitions or paraphrases. And which therefore becomes a *synthesis of art and science*.[5]

Eisenstein's attempt at intellectual montage is most applicable in discussing contemporary techniques in spatial montage. Spatial montage is the technique of placing multiple images on the screen at the same time as seen on a TV show such as 24 and can be a technique that incorporates the failed attempts of Eisenstein as part of a smarter montage. Eisenstein through intellectual montage attempted to use film "to develop and direct the entire thought process."[6] October was Eisenstein's attempt to apply his theoretical principles regarding film as an intellectual dialectic, however, audiences found the experiment almost unreadable. As Murray Sperber points out in his article in "Jump Cut" on Eisenstein's October, most critics were unable to appreciate Eisenstein's attempt at a new cinematic form.[7] From a physicality standpoint, Eisenstein's intense use of symbolic imagery to push a political ideology either appeared too obvious or he veered too far away from

3 Sergei Eisenstein, "The Dramaturgy of Film Form," in *Writings, 1922-1934,* 1st ed., ed. Richard Taylor (Bloomington and Indianapolis: Indiana University Press, 1988), 161.

4 Ibid., 163.

5 Ibid., 180.

6 Ibid., 180.

7 Murray Sperber, "Eisenstein's *October*," *Jump Cut: A Review of Contemporary Media,* March 1977, 15.

the emotional and shock cinema which he was so adept at. His epic, *October* created a semiotic statement, rather than a cohesive fused narrative about the *10 Days that Shook the World.*

Extensions of Intellectual Montage: Smart Montage

Let's fast forward for a moment to contemporary film practice. For most of cinematic narrative history we embraced the importance of emotion within the narrative construct; exactly what Eisenstein stated was effective about cinema. Yet cinema did not embrace or develop intellectual montage beyond Eisenstein's own experiments.

Film language, however now has a possibility of living in a shared temporal and spatial frame of video commonly known as spatial montage. Spatial Montage was a term made popular by new media theorist Lev Manovich and is seen in examples such as the television series '24' or in a hybrid media forms such as a CNN broadcast which fuses multiple streams of video, text, photography and graphics working with sound that may or may not be sampled. Multimedia, installation, and experimental artists have long used spatial montage, however the technical ease in how the techniques may be applied with present day technology is what has made them explode into mainstream use. By using spatial montage, media makers can create a new smart montage that creates visual intellectual statements using symbols and ironic commentary while still keeping the audience engaged within a narrative. Smart montage is a culmination of editing techniques that uses new technologies to successfully resurrect previous montage theories, such as Eisenstein's Intellectual Montage.

The Question of Visual Dissonance and Narratives

The smart montage phenomenon can be used to create new narrative forms as well as a visual dissonance that is not dissimilar to the narrative dissonance aesthetic.[8] At moments the mashups, sampling, or spatial montage form itself creates an emotional reaction as a sum of all images meant to be read as a discontinuous whole.

The smart montage phenomenon can be used to create new narrative forms as well as a visual dissonance that is not dissimilar to the narrative dissonance aesthetic.

Early Examples of Smart Montage: Manovich's Soft Cinema

Manovich discusses in his essay Database as a Symbolic Form how the new media narrative can make use of elements, which are entirely organized by a software database, and construct narratives using random algorithms. The result of this discussion was the 'Soft Cinema' project, which originated via computer and released on DVD in 2005. Manovich's primary focus of his co-authored Soft Cinema piece was how traditional cinema can be altered through the use of a computer database. He states, "The Soft Cinema project is interested not in the digital computer per se, but rather in the new structures of production and consumption enabled by computing."[9]

Figure 1: Excerpt from *Soft Montage*, Lev Manovich, 2005

This means that the three film narratives, which they construct, and can be seen on DVD (although it originated in kiosk form), has film narratives which are based on traditional genres, however by virtue of a database can "con-

8 Daniel C. Melnick has an interesting discussion of this in his book, Daniel C. Melnick. *Fullness of Dissonance: Modern Fiction and the Aesthetics of Music*, (Cranbury, NJ: Associated University Presses, 1994)..

9 Lev Manovich, *Soft Cinema: Navigating the Database* booklet (Cambridge, MA: The MIT Press, 2005), 40.

struct a potentially unlimited number of different films."[10] In the Soft Cinema visual framework Manovich and his collaborator Andreas Kratky follow what they describe as "the standard convention of the human-computer interface, the display area is always divided into multiple frames."[11]

From an intellectual montage standpoint, what is significant is how even with a database driven narrative there can be a dialectic between the various frames viewed on the screen at the same time and connections are made even if by random. This provides the groundwork for further pushing this medium into the realm of smart montage.

New Narrative Experiments

Bruce McDonald's spatial montage narrative, Tracey Fragments, exploits spatial montage to tell the story of a young teenager's search for her nine year old brother. Based on the book and screenplay of Maureen Medved, the story is told in flashback and exploits spatial montage to show Tracey's fragmented identity and emotional state. Most of the film uses the technique to show parallel action, yet through its use of symbolic imagery within the scene we gain a larger intellectual and emotional sense of Tracey's state of mind and in doing so there are moments of smart montage. What is intriguing about this experiment is that through spatial montage, McDonald attempts to reflect the fragmentation that is part of the narrative style in Medved's novel.

Figure 2: Excerpt from *Tracey Fragments,* directed by Bruce McDonald, 2007.

Ultimately, it's a toss up whether the fragmented narrative successfully sustains the audience through its full length. But, it is one of the boldest narrative experiments to date. Tracey Fragments also opens up the question of eye tracking within spatial montage. The sizes of the images within the screen themselves as well as their position in the screen can help point the audience to the significant moments and what the eyes should focus on while the background creates a fragmented dissonance and noise.

Music Videos

Music videos for decades have driven innovations in editing form from pacing to associational edits. Ken Dancyger in his book The Technique of Film and Video Editing discusses how the music video influenced the downgrading of plot and privileged time and place shifting.[12] Music videos created a disjunctive editing style that "obliterates" time and space and focuses on feeling states.

To counteract the impulse to organize those images and sounds into the narrative that may not be present, the filmmaker must challenge the impulse more deeply. She must undermine the sense of time and space in the MTV-style film or video.[13]

And yet Dancyger points out that these notions are already reflected in the work of Kurosawa, Resnais, Fellini and Wenders.[14] In fact these tenets originated in Soviet montage and in particular intellectual montage.

Pet Shop Boys video Integral[15] makes use of a stop motion camera capturing the rapid pace of everyday life and juxtaposes it with graphically pixelated images to reinforce the association themes of the song as well as the artists themselves. Integral pushes spatial montage further with fast edits further expanding viewers ability to absorb simultaneous multiple visuals and messages and create a

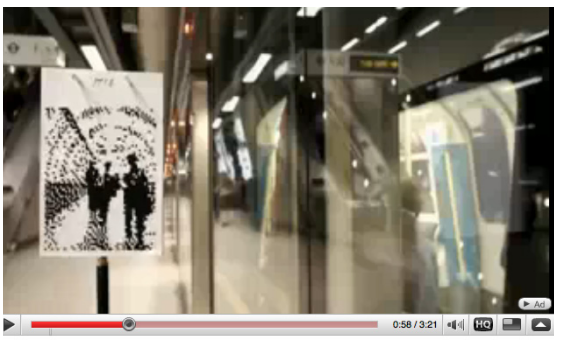


Figure 3: Pet Shop Boys music video for *Integral*, 2008

10 Ibid., 40.
11 Ibid., 40.

12 Ken Dancyger, *The Technique of Film and Video Editing: Fourth Edition* (Burlington, MA, Oxford, UK: Focal Press, 2007), 188-189.
13 Ibid., 189.
14 Ibid., 189.
15 Pet Shop Boys, "Integral," http://www.youtube.com/watch?v=4kx05kU5gZg (accessed March 16, 2010).

wider opening for smart montage. Furthermore, through embedding QR codes, smart montage can provide users with additional data and interactivity.

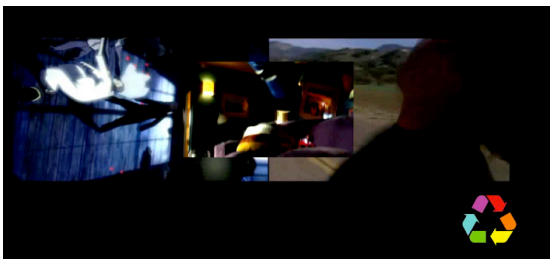


Figure 4: *Tarantino Remix* by Eclectic Method, 2009

Eclectic Method[16] is a "vj" group that has gained popularity for its immediate cultural remixes in clubs in New York, Los Angeles and London. They have also worked to remix popular media such as the Tarantino MixTape,[17] which utilizes spatial montage, repetitive action, and music, to juxtapose scenes out of multiple Tarantino movies into a cohesive and yet disjointed whole.

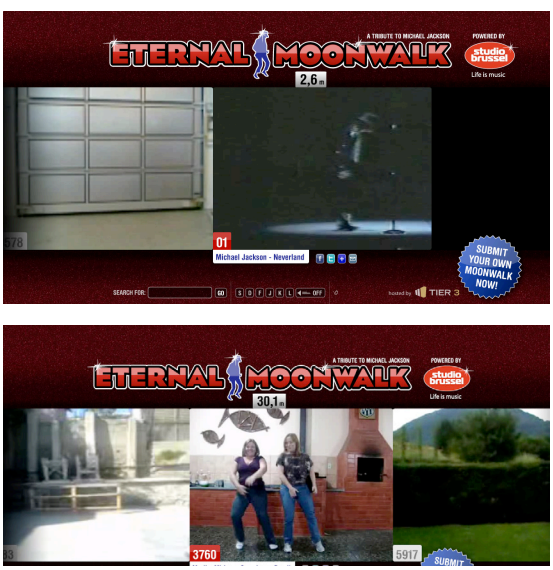


Figure 5: *Eternal Moonwalk* (online website), 2009

After the passing of Michael Jackson, Studio Brussel created a site to pay tribute and eternalize Michael Jackson's moonwalk. They asked users to capture their own moonwalk and upload it to the website, "Eternalmoonwalk.com."[18] The site samples all of the clips to create a multi-frame or spatial montage of users "moon walking." This site opens up the question of interactivity within the narrative and how this one action can change according to time and place.

Artist Fredo Viola of Woodstock, New York has gained popular recognition through his music that combines and layers multiple tracks of his singing. He launched a website last year, TheTurn.TV[19] that uploads his music videos, or what he calls cluster video,[20] revealing the visual multi-frame process and spatial montage of how he produces his multimedia compositions. Viola intentionally works with multiple frames in his work as a result of his experience as

Figure 6: *Sad Song* by Fredo Viola at Turn.tv

an editor and motion graphics artists.[21] Sad Song, the song that brought him recognition, can be seen as a cluster video of 15-second videos that are composited in Adobe After Effects.

Rather than creating a kind of visual and aural dissonance, Fredo uses smart montage to create a harmonic visual and aural consonance that brings us into a rich multidimensional emotional experience.

Found Footage and Video Mashups

Found Footage filmmakers remixed cinematic cultural symbols a long time before the web yet had the access to such footage was always limited and guerilla style at best. Media ready for recycling is dumped everywhere on the web. And a new media and found footage hybrid has developed through the evolution of the video mashup. A video mashup uses multiple source materials to create new and powerful social or intellectual statements using digital

16 Eclectic Method. http://www.eclecticmethod.net/ (accessed March 16, 2010).
17 Eclectic Method. *The Tarantino Mixtape*, 7 min., 16 sec.; online video; from YouTube, http://www.youtube.com/watch?v=uEIPCOwY4DE (accessed March 16, 2010).
18 Studio Brussel. "Eternal Moonwalk." http://www.eternalmoonwalk.com (accessed March 16, 2010).
19 Fredo Viola. "The Turn." http://www.theturn.tv/ (accessed March 16, 2010).
20 Fredo Viola. "Fredo Viola Bio." Because Music. http://www.becausemusic.tv/en/artists/fredo-viola/index.php/ (accessed March 16, 2010).
21 Ibid.

video, which is often then posted on the web. Influenced by both the concept of the software mashups and found footage filmmaking, media makers have created a new form of storytelling through user generated content. Many of these mashups have a social implication or message and make use of spatial montage to do it. Furthermore because of new media tools, the general public is invited to participate in a remix culture on the web. For instance remixamerica.org[22] and totalrecut.org[23] provide users materials, instructions, and how to videos on how to create their own mashup.

Alice in Wonderland Remix

The website Moving Web now includes a category on spatial montage and multi-frame work[24] that tracks this growing form of storytelling. One example is the Alice in Wonderland Remix,[25] which samples the story of Alice using spatial montage.

By keeping a consistent soundtrack and cutting on beats, we gain emotional dissonance and entirely new side to Alice stuck inside the rabbit hole.

Figure 7: *Alice in Wonderland Remix* (online)

22 http://remixamerica.org (accessed March 16, 2010).
23 Total Recut. "Total Recut Homepage." http://www.totalrecut.com (accessed March 16 2010).
24 Moving Web. "Archive for the 'Spatial Montage (Multi Frame)' Category." http://www.movingweb.org/category/spatial-montage-multi-frame/ (accessed March 16, 2010).
25 "Alice in Wonderland Remix." From yooouuutuuube.com, http://www.yooouuutuuube.com/v/?rows=18&cols=18&id=pAwR6w2TgxY&startZoom=1 (accessed March 16, 2010).

Figure 8: *Call and Response* by Wreck and Salvage

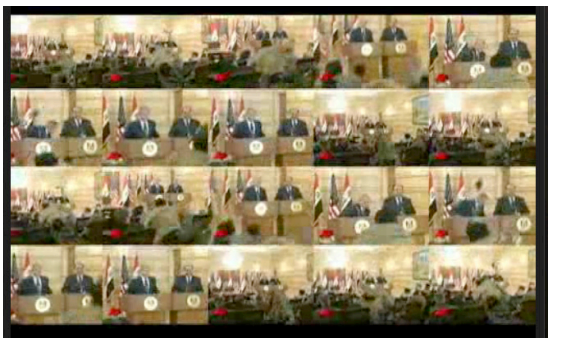


Figure 9: *100 Farewells* by Wreck and Salvage

Wreck & Salvage Collective

The Wreck and Salvage Collective describe themselves as "a collective of three like-minded artists producing original video content for the Internet. We share a love of rust and rotting wood, postcard landscapes and decaying industry."[26] They publish several series of mashups via their website and a channel on vimeo. What is notable about their work is that they make significant use of spatial montage, which can be seen on both the web and mobile phone so the spatial montage technique is not limited by size or platform. Their work samples commercials, original video, motion graphics, and "other forms of new and old media technology."[27]

26 Wreck and Salvage Collective. "Wreck & Salvage: About Us." http://wreckandsalvage.com/about/ (accessed March 16, 2010).
27 Ibid.

The short Call and Response,[28] uses spatial montage and repetition to define "the fine line between catchy commercial jingles and mental paralysis." The piece makes use of smart montage to create an intellectual message about the hypnotic effect of advertising. In Wreck and Salvage's video-goodbye to former president George Bush, in 100 Farewells,[29] they repeat the moment when an Iraqi journalist tosses the infamous shoe and use spatial montage to reinforce the repetition of the action. This use of repetition is reminiscent of Soviet montage. Both shorts reflect a smarter use of montage to create hybrid social statements through their use of spatial montage and the simultaneous editing of images on the screen at the same time.

Conclusion

Spatial montage and emerging new media genres open up the possibility of creating the intellectual montage hybrid of smart montage, which Eisenstein originated.

Moving beyond linear narratives, new media artists can create a smart montage, which embraces the principles of intellectual montage while creating a possibility of simultaneously preserving the narrative and emotional engagement of the viewers. Artists use symbols to reinforce the intellectual message while placing it within a narrative by having the images appear simultaneously in a spatial montage format. This new form is in its infancy, but the possibilities and successes may alter the future of narratives and the semantic visual form.

Works Cited

Alice in Wonderland Remix. From yooouuutuuube.com, http://www.yooouuutuuube.com/v/?rows=18&cols=18&id=pAwR6w2TgxY&startZoom=1 (accessed March 16, 2010)

Dancyger, Ken. *The Technique of Film and Video Editing: Fourth Edition* Burlington, MA, Oxford, UK: Focal Press, 2007.

Eclectic Method. http://www.eclecticmethod.net/ (accessed March 16, 2010).

Eclectic Method. *The Tarantino Mixtape*. 7 min., 16 sec.; online video. From YouTube, http://www.youtube.com/watch?v=uElPCOwY4DE (accessed April 16, 2010).

Eisenstein, Sergei. "The Dramaturgy of Film Form." In Writings, 1922-1934. 1st ed. Edited by Richard Taylor. Bloomington and Indianapolis: Indiana University Press, 1988.

Manovich, Lev. *Soft Cinema: Navigating the Database* (booklet) Cambridge, MA: The MIT Press, 2005.

Daniel C. Melnick. *Fullness of Dissonance: Modern Fiction and the Aesthetics of Music*, (Cranbury, NJ: Associated University Presses, 1994).

Moving Web. Archive for the 'Spatial Montage (Multi Frame)' Category. http://www.movingweb.org/category/spatial-montage-multi-frame/ (accessed March 16, 2010).

Remix America. http://remixamerica.org. (accessed March 16, 2010).

Sperber, Murray. "Eisenstein's October." *Jump Cut: A Review of Contemporary Media*, March 1977, 15-22.

Studio Brussel. Eternal Moonwalk. http://www.eternalmoonwalk.com. (accessed March 16, 2010).

Total Recut. Total Recut Homepage. http://www.totalrecut.com (accessed March 16 2010).

Viola, Fredo. Fredo Viola Bio. Because Music. http://www.because.tv/en/artists/fredo-viola/index.php/ (accessed March 16, 2010).

Viola, Fredo. The Turn. http://www.theturn.tv/ (accessed March 16, 2010).

W3C. W3C Semantic Web Activity. W3C Semantic Web. http://www.w3.org/2001/sw/ (accessed March 16, 2010).

Wreck and Salvage Collective. 100 Farewells. From Youtube.com, http://www.youtube.com/watch?v=hafjz0eWLBw (accessed March 16, 2010).

Wreck and Salvage Collective. Call and Response. http://wreckandsalvage.com/pure-salvage/call-and-response-2/ (accessed March 16, 2010).

Wreck and Salvage Collective. Wreck & Salvage: About Us. http://wreckandsalvage.com/about/ (accessed March 16 2010).

28 Wreck and Salvage Collective. "Call and Response." http://wreckandsalvage.com/pure-salvage/call-and-response-2/ (accessed March 16, 2010).

29 Wreck and Salvage Collective. "100 Farewells." From Youtube.com, http://www.youtube.com/watch?v=hafjz0eWLBw (accessed March 16, 2010).

keywords

Twitter, writing, invention, creativity, microblogging, juxtaposition, commonplace books

Brian J. McNely

Brian J. McNely researches the confluence of rhetoric, meaning-making, and emerging media platforms. He is an assistant professor of English (rhetoric and writing) at Ball State University, and a faculty fellow with the campus-wide Emerging Media Initiative.

Locus Communis: Twitter as Digital Commonplace

Brian J. McNely
Ball State University

Abstract

Commonplace books are staples of western thought; through their pages many of the world's renowned thinkers created meaning by juxtaposing heterogeneous information. Additionally, maintaining a commonplace book was a means for fostering invention and creativity. While blogging activities have been loosely related to commonplacing, the proliferation of microblogging services has fomented writing activity that bears a striking resemblance to the practices typical of the commonplace book. This article considers the pedagogical import and application of digital commonplacing activities, seeing Twitter as a writing practice that is aggregable, searchable, persistent, and

"Each commonplace will be very short: how pleasant it would be to feel copious as well as fluid! the modern mind takes such small flights."

– E.M. Forster, *Commonplace Book*[1]

Introduction

Commonplace books are staples of western thought; in and through their pages many of the world's most renowned writers and thinkers cobbled together bits of information gleaned from their studies and observations, from literary quotes to tables and measures. Maintaining a commonplace book was also a practice that fostered invention and creativity – a means by which an individual could make sense of the world around her. Through activities of collecting and cobbling, information gained new meaning by juxtaposition and alternate contextualization, so that connections could be made upon a theme or themes. In terms more congruent with our contemporary, digitally-networked society, the commonplace book was an analog aggregator of external content.

While blogging activities have been loosely related to the practice of commonplacing, the proliferation of microblogging services – most notably Twitter – has fomented writing activity that bears a striking resemblance to the rapid, variegated, and brief entries typical of the commonplace book. This article considers the pedagogical import and application of digital commonplacing practices, seeing Twitter in particular as a way to foster invention and creativity through writing and rhetorical practice which is aggregable, searchable, persistent, and collaborative in ways that the analog commonplace book never could be.

Drawing specifically from research in computer-supported collaborative work, rhetoric and writing studies, and specific use cases which leveraged Twitter to support both student-led thematic inquiry and professional academic

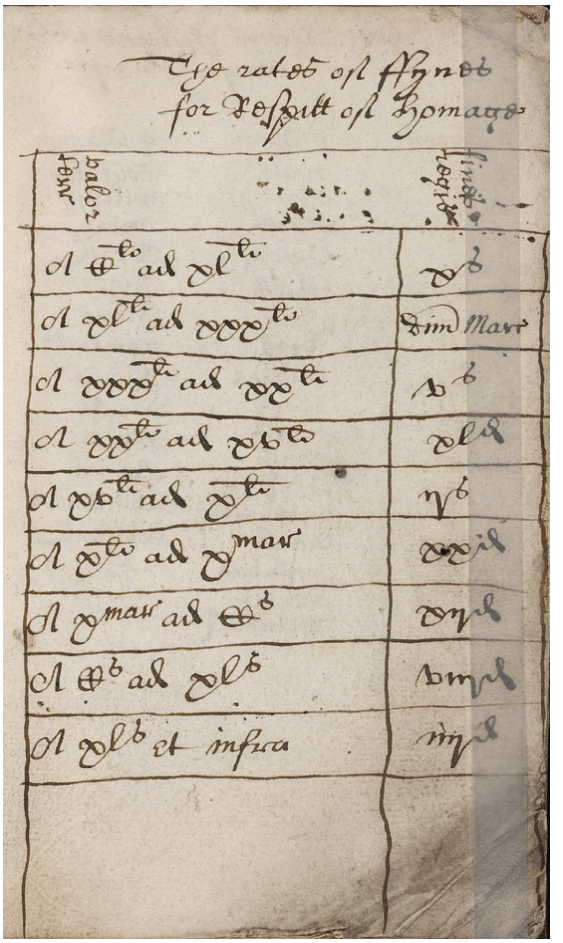


Figure 1: *Commonplace Book of Francis Grosvenor,* circa 1620. Beinecke Rare Book and Manuscript Library, Yale University. Beinecke Flickr Laboratory, licensed by Creative Commons.

research, this article applies long-standing norms of literate meaning-making to a radically misunderstood and emerging platform. While there are several applications that allow for the kinds of commonplacing discussed in this article (most notably, Facebook), Twitter provides interesting affordances for heterogeneous interaction because of its unabashedly public structure and its asymmetric follower model. In other words, while Facebook encourages one-to-one social ties, Twitter's public and asymmetric model means that anyone can follow and receive updates from any other public user. While Facebook relies on structured homophily, Twitter encourages public heterogeneity. Because of these affordances, Twitter enables something that analog commonplacing could do only marginally: the addition of overlapping publics – a self-selected, real-time, mobile, and constantly shifting integration of thoughts and ideas from distributed participants.

1 E.M. Forster, *Commonplace Book* (Palo Alto: Stanford University Press, 1988), 1.

The sociotechnical infrastructure of Twitter as digital commonplace can support rhetorical invention, creativity, and learning activities from individuals around the world, in real-time, giving students an entirely new understanding of "places in common." Beginning with a review of the traditional practice of commonplacing, this article will examine current information aggregation norms before focusing on Twitter and its application in pedagogical and professional environments for collaborative meaning-making. By examining typical use cases, this article considers implications and best practices for fostering effective digital commonplacing.

The Tradition of Commonplace Books

A practice first enacted in antiquity in conjunction with the formation of classical rhetorical principles, the early modern notion of commonplacing – and its application in the increasingly ubiquitous platform of bound books – is most often attributed to Erasmus in the early 1500s. Moss notes that "it was Erasmus in De copia who gave the first systematic guidelines for commonplace-books".[2]

Throughout Western Europe in the sixteenth century, schoolboys and grown men educated in the Latin schools of the humanists would recognize the commonplace-book as an indispensable tool for making sense of the books they read, for assimilating the written culture transmitted to them, and for possessing the means of production in their turn.[3]

A commonplace book was analogous to the modern "notebook," but it was something more. While notebooks, scrapbooks, and journals all represent rough contemporary analogues, none of them really approaches the kind of systematic and functional role that commonplace books provided for sixteenth and seventeenth century learning. In fact, Moss argues that "the commonplace book is central to an understanding of how knowledge was organized in the early modern period."[4]

In the middle 1600s, John Locke began developing a "particular system for indexing the entries of a notebook that

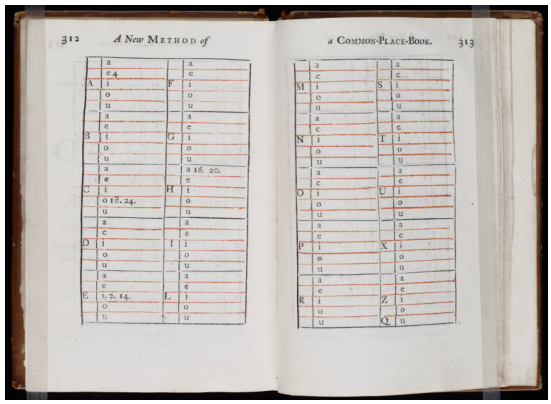


Figure 2: John Locke, *A New Method of a Common-Place-Book*, Beinecke Rare Book and Manuscript Library, Yale University.

became popular in the eighteenth century."[5] By the time that Locke's new method was introduced, the practice of commonplacing systematized by Erasmus was well established. Dacome notes that

> Throughout the early modern period, commonplace books provided repositories for arranging notes, excerpts, drawings, and objects. Regarded as aids to memory and storehouses of knowledge, they were part of a pedagogic tradition related to rhetoric and the art of memory that dated back to the classical period. Reducing vast amounts of knowledge to a manageable form, they instantiated a special relationship between the accumulation of knowledge and the organization of space.[6]

Locke's "new method" relied on a system of shorthand techniques that allowed practitioners to compile, retain, and recall more information within the space of one commonplace book. Dacome argues that "Locke's new method promised to facilitate the compilers' task by providing a new way of accumulating *multum in parvo* ["much in little"] at a time of increasing concern for the uncontrollable growth of the 'Stock of Knowledge.'"[7] Blair's "Reading Strategies for Coping with Information Overload ca. 1550-1700" draws obvious parallels to our contemporary lament concerning the difficulties of corralling the flow of information.[8] Such research – and the systematic approach to commonplacing indicative in Locke's work – reveals how

2 Ann Moss, "The *Politica* of Justus Lipsius and the Commonplace-Book," *Journal of the History of Ideas* 59 (1998): 421-436.
3 Ibid. 422.
4 Ibid. 421.

5 Lucia Dacome, "Noting the Mind: Commonplace Books and the Pursuit of the Self in Eighteenth-Century Britain," *Journal of the History of Ideas* 65 (2004): 603-625.
6 Ibid., 603-604.
7 Ibid., 604.
8 Ann Blair, "Reading Strategies for Coping with Information Overload ca. 1550-1700," *Journal of the History of Ideas* 64 (2003): 11-28.

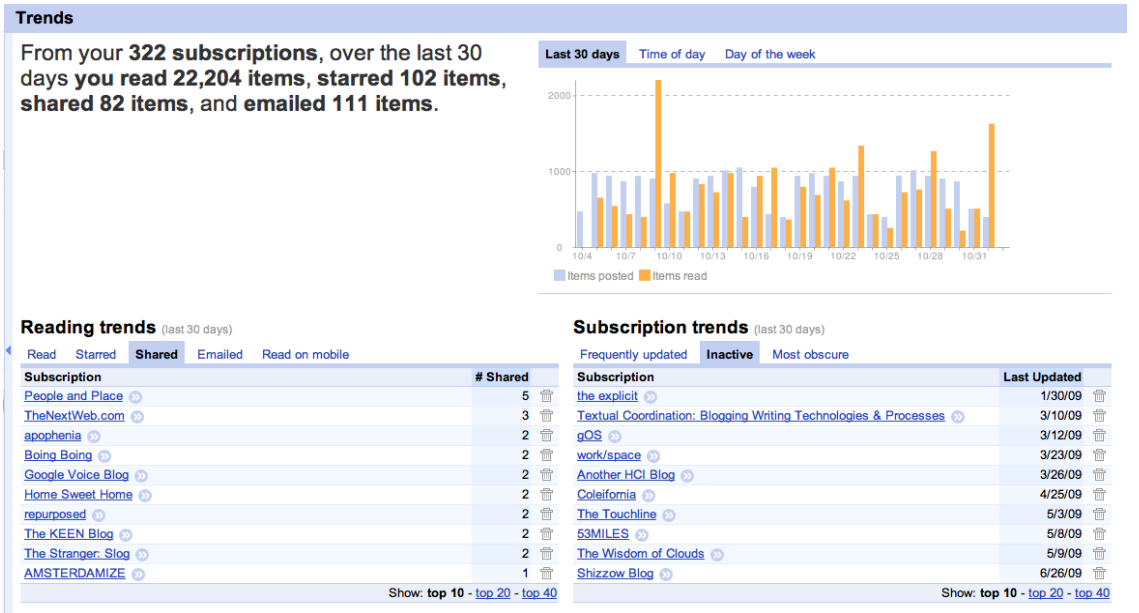


Figure 3: Screen capture of author's Google Reader activity, November 1, 2009

the challenges of compiling and contextualizing increasing amounts of knowledge are congruent with the rise and spread of literate meaning-making, and certainly not unique to our current networked and digital situatedness.

Among the most essential purposes of commonplacing, therefore, is the attempt to contextualize ever increasing amounts of information; in this sense, the commonplace books of the seventeenth and eighteenth century have much to teach us about contemporary content and knowledge-acquisition practices. Dacome suggests that "commonplace books were meant to help students and scholars to manage substantial amounts of knowledge."[9] More importantly, commonplacing had very public, very rhetorical implications, as they fostered "the memorization of sentences and arguments, [and] they provided a means to enhance performance in public situations."[10] Commonplace books acted as a storehouse of "arguments and topics to those who wanted to show inventive genius by elaborating upon them."[11] In this sense, commonplace books were places to memorize, contextualize, and repurpose information for the purposes of rhetorical invention and creativity. They acted as both record and heuristic – a repository of previous knowledge expressly directed toward the creation of new knowledge.

To that end, the classical definition of commonplace – *locus communis* – "referred to a general argument capable of being used in different situations."[12] As a heuristic compilation, the commonplace book fostered rhetorical practices that aggregated relevant content for specific yet shifting reuse; storing information in a common place created affordances for juxtaposition and contextualization – a move that allowed information to be applied to a variety of contexts. Commonplace books, then, served many functions and many ends.

Contemporary Information Aggregation

In just the last few years, applications and platforms for information aggregation have become increasingly sophisticated. Really Simple Syndication (RSS) – especially as manifested in a feed reader such as NewsGator or Google Reader – enabled easy aggregation of disparate content. Any site with an RSS feed – from blogs, to traditional news outlets, to anything in between – could be imported into a feed reader, giving users an easy means for aggregating content. Moreover, applications like Google Reader have made that aggregation marginally social by enabling the sharing of content with friends and the general public.

Services such as Facebook and FriendFeed have expanded the social aspects of aggregation, allowing users

9 Lucia Dacome, "Noting the Mind: Commonplace Books and the Pursuit of the Self in Eighteenth-Century Britain," *Journal of the History of Ideas* 65 (2004): 603-625.
10 Ibid., 610.
11 Ibid., 610.
12 Richard R. Yeo, "Ephraim Chambers's *Cyclopeadia* (1728) and the Tradition of Commonplaces," *Journal of the History of Ideas* 57 (1996): 157-175.

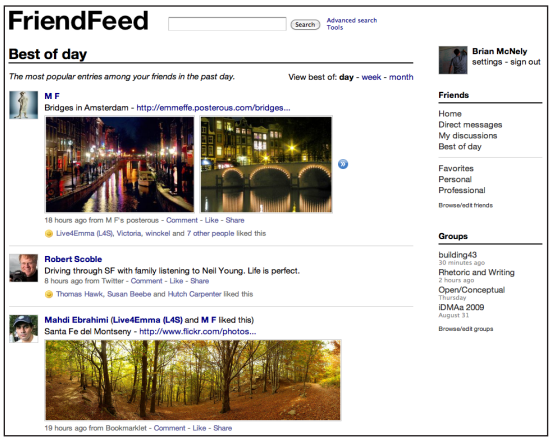


Figure 4: Screen capture of author's FriendFeed stream, November 1, 2009

Figure 5: Screen capture of author's Twitter favorites, November 1, 2009

to syndicate, collect, share, and discuss any number of digital artifacts or ideas in the same space.

The primary difference between these kinds of aggregators is the measure of social interaction afforded by each application. While feed readers technically afford sharing and discussion (for example, through Google Reader's comment function), they are used primarily as aggregators only among most users, despite Google's recent (2010) integration of its Buzz application with Reader. In other words, feed readers are used primarily to collect and consume information. Moreover, feed readers do not explicitly promote distance, separation, or distinction among items and content streams. While items in Google Reader may certainly be "starred" and tagged (and in this way distinguished from the rest), material is not explicitly exported away from the application in the sense fostered by commonplacing, where ideas were physically excerpted from books or lectures and recontextualized in a different place, in a new common place. A feed reader only seems to do so, but since it pulls all content from a given site, the act of commonplacing is largely absent.

FriendFeed suffers from a similar flaw, though the platform is much more conversational, dialogic, and explicitly social than the typical feed reader. What we see in these kinds of platforms generally are varying levels of purposeful user contextualization. In Google Reader, for example, the primary activity is reading – interaction with the application is about consuming content. In FriendFeed, where social streams from across the web can be aggregated (from one's blog, Facebook profile, Delicious page, etc.), discussion is more robust, but the activity is ultimately about centralization. This clearly echoes the practices of commonplacing discussed above, with one important exception: users often do not write or otherwise produce content in FriendFeed. Instead, they write on their blog, on Twitter, or on Facebook, and that content is then imported and aggregated in FriendFeed's user interface, where it can be further parsed, or simply left alone (as is often the case).

Interactions on Twitter, however, are explicitly enacted in and through rhetorical activities: writing, linking, repositioning, and exporting all manner of content – photos, videos, alphabetic text, etc. Since Twitter does not aggregate content in the same ways that a feed reader or FriendFeed does, interactions become both passive and active – both readerly and writerly – in much the same fashion as the practice of commonplacing. And yet, because Twitter allows one to follow the content produced by others of interest, it ultimately aggregates the rhetorical work of these others. Finally, because one of the more common activities prevalent on Twitter is the sharing of hyperlinks to other content, the social aggregation, consumption, contextualization, and recontextualization of content most clearly mirrors the knowledge work of commonplacing. The key in both scenarios – both traditional and contemporary – is the continual instantiation of rhetorical work (most often instantiated in writing activity) in the process of meaning-making.[13]

13 As a platform, Twitter is entirely use agnostic. While it is certainly used for public expressions of the quotidian or banal ("I'm eating an apple!"), it can also be used to quickly share timely information to mass audiences (as in the contested Iranian presidential elections of 2009) or to share peer-reviewed academic research. This article, while focusing on professional and pedagogical applications of Twitter, simultaneously acknowledges (and embraces) quotidian use.

While commonplacing surely enacts multiple rhetorical practices (visual, oral, associational), an overarching characteristic of effective commonplacing in any era is the practice of writing as a key mediator in the construction of meaning. Dautermann argues that "writing can be thought of as mediation among the perspectives of those who generate, regulate, and use the discourse produced" in a given communication environment.[14] Following LeFevre,[15] Bruffee,[16] and several other researchers in writing studies, Dautermann saw collaborative writing activity as a key driver of social meaning-making. Her work reinforces that of Emig[17] and Lauer,[18] who argued for the central role of writing to knowledge acquisition.

Similarly, Swarts notes that "knowledge is negotiated and negotiation requires a different kind of cognitive effort than simple sharing."[19] In forms of coordinative online activity mediated in and through writing production – such as the creation, aggregation, and contextualization of content on Twitter – meaning-making is built "through back and forth writing, editing, and revising, through periods of negotiation."[20] These periods of negotiation may be seen as tests in the development and ongoing configuration of provisional knowledge. They act as a means through which inputs can be contextualized and new approaches can be ventured; they are heuristic writing practices that foster invention.

The kinds of negotiated meaning-making that take place through platforms like Twitter actually mirror that of commonplacing, with the crucial addition of overlapping publics. Here, writing activity is not enacted in isolation or predicated upon a static target (as in an individual excerpting information from a book, for example). In discussing weblogs, Shirky suggests a continuum of audience size and communication pattern that varies from "broadcast" to "tight conversation," with a nebulous construct of "loose conversation" that falls somewhere in between.[21] Microblogging on Twitter, for most users, tends toward loosely formed, potentially coordinative networks mediated most often in and through writing activity, where meaning-making can be negotiated collaboratively within a broad public space, where the sense of "public" dissolves and is replaced by "publics."[22]

Microblogging on Twitter, for most users, tends toward loosely formed, potentially coordinative networks mediated most often in and through writing activity, where meaning-making can be negotiated collaboratively within a broad public space, where the sense of "public" dissolves and is replaced by "publics."

In short, Twitter gives users access to conversational and informational aggregation in the same space, with networked publics comprised of individuals from disparate disciplinary and professional domains. Here expertise overlaps, ideas collide, and users are left to make sense of the collision through their writing and rhetorical practices. In organizational and educational settings, such loosely

14 Jennie Dautermann, "Negotiating Meaning in a Hospital Discourse Community," in *Writing in the Workplace: New Research Perspectives*, ed. Rachel Spilka (Carbondale, IL: SIU Press, 1993), 99.
15 Karen LeFevre, *Invention as a Social Act*. (Carbondale, IL: SIU Press, 1986).
16 Kenneth Bruffee, "Social Construction, Language, and the Authority of Knowledge: A Bibliographical Essay," *College English* 48 (1986): 773-790.
17 Janet Emig, "Writing as a Mode of Learning," *College Composition and Communication* 28 (1977): 122-128.
18 Janice Lauer, "Writing as Inquiry," *College Composition and Communication* 33 (1982): 89-93.
19 Jason Swarts, "The Collaborative Construction of 'Fact' on Wikipedia," *Proceedings of the 27th ACM international Conference on Design of Communication* (2009): 281-288.
20 Ibid., 282.
21 Clay Shirky, *Here Comes Everybody*. (New York: Penguin, 2008).
22 Brian McNely, "Backchannel Persistence and Collaborative Meaning-Making," *Proceedings of the 27th ACM international Conference on Design of Communication* (2009): 297-304.

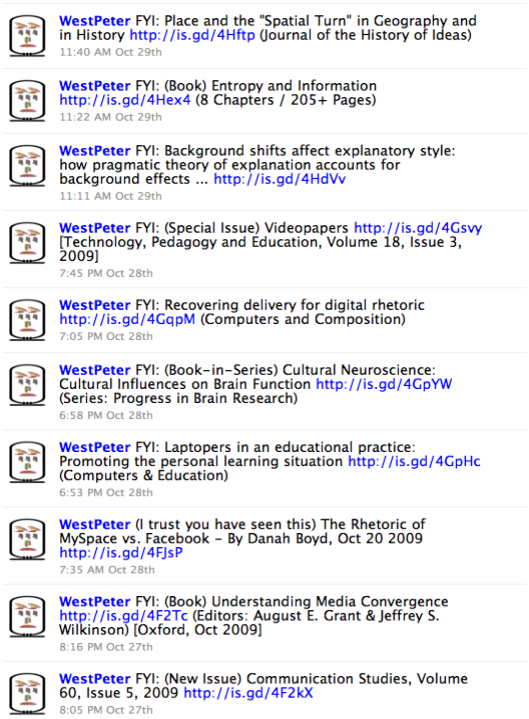


Figure 6: Screen capture of author's recent Twitter Direct Messages, November 1, 2009

formed collaborative networks may be ideal, as they afford both tight conversation (with co-workers or classmates) and interaction with a public community through direct and informal addressivity.[23]

Twitter Use Cases

Among the simplest and most common professional uses of Twitter in the commonplacing tradition of the collection and sharing of hyperlinks. Figure 6 details a series of recent Direct Messages from a key Twitter contact, illustrating the sharing of several peer-reviewed academic journal articles and volumes in rhetoric and communication. McNely detailed the practices of this Twitter power user, who shares research prolifically with others interested in knowledge work, knowledge management, and organizational communication.[24] For Twitter users following the updates (tweets) of Peter West (@WestPeter), a steady stream of information concerning their specific field of interest can be aggregated and recontextualized for later use, often by rewriting and disseminating interesting information for themselves and others.

For example, I received the following Direct Message from Peter West, who shared a peer-reviewed journal article that he thought might be of interest (see Figure 7):

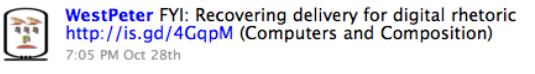


Figure 7: Screen capture of Direct Messages on Twitter, November 1, 2009

Because of the professional relationship I have developed with Peter West, and because of our mutual and overlapping interests, we often share research with one another that we feel may be of use. Here, Peter sent along a link to a peer-reviewed article on the rhetorical canon of delivery, published in Computers and Composition. After following the link, I determined that it was not only an article that I should read, but one that others on Twitter might benefit by seeing as well, others whose interests may not overlap with Peter's the way that mine do. So after reading the content, I contextualized it anew and placed it in my Twitter stream, which functions as my digital commonplace (see Figure 8):

Figure 8: Screen capture of author's tweet, November 1, 2009

By commonplacing this information through Twitter, I am enacting my understanding of the material through writing, while also re-aggregating the information in my own digital commonplace. Yet even as I do so, because of the highly integrated social affordances of the platform, my commonplacing effectively broadcasts this information to a new audience which can also make use of the article that Peter shared (see Figure 9):

Here, my commonplacing of the article originally shared by Peter becomes favorited by two other users that follow

23 Courtenay Honeycutt and Susan Herring, "Beyond microblogging: Conversation and collaboration on Twitter," *Proceedings of the 42nd Hawaii International Conference on Systems Sciences* (2009): 1-10.

24 Brian McNely, "Tweet Research: Aggregating and Disseminating Organizational Knowledge Work Through Twitter," (paper presented at Computers and Writing, University of California Davis, June 18-21, 2009).

Figure 9: Screen capture of tweet marked "favorite" by other users, November 1, 2009

my updates. The commonplacing in this sense serves multiple aims simultaneously: first, content is consumed via the platform's penchant for social sharing; second, that content is contextualized, excerpted, and recontextualized by the act of commonplacing; third, by the very act of commonplacing in a public forum (rather than in a private book), the sharing of information continues to other publics which overlap through my writing activity; finally, the original information is in some sense re-commonplaced by some of those who follow my tweets, as they have chosen to set aside that article by employing the "favorite" function.

While this is one limited use case in a professional setting, the potential benefits to students in a given content area are many. In the fall of 2008, four undergraduate Professional and Organizational Communication students and I used Twitter to aggregate and share content in concert with a research project that culminated in a conference presentation for those students. As this use case will show, the pedagogical implications for commonplacing with Twitter are potentially significant.

Because we were studying corporate brand-management in and through social media platforms, commonplacing on Twitter offered numerous and tangible benefits for content acquisition and creation. Initially, the chief benefit was aggregating content from key sources in our respective Twitter streams. We followed professionals like Daniela Barbosa from Dow Jones and Jeremiah Owyang (formerly) of Forrester Research. In doing so, we received insights and links pertaining directly to our topic of study. Undergraduate student researchers were given a real-time immersive feed of information from professionals working directly in our field of study.

Moreover, students were able to share information by commonplacing on Twitter, so that when they encountered an article related to our topic in a feed reader, for example, they recontextualized and shared that information through their own writing and rhetorical practices on Twitter. This form of sharing led directly to conversation online, and more discussion and recontextualization of content – again, an activity both closely related to the traditional norms of commonplacing yet vastly more social, interactive, and responsive.

Most importantly, however, is Twitter's integration with the SMS messaging capabilities of standard mobile phones. I was able to continue research conversations with students beyond the classroom and beyond the campus, checking in from time to time, commonplacing new hyperlinks or discussing developing approaches. In like fashion, we continued to trace the conversation and sharing activities of the professionals we were following, so that knowledge acquisition in our research area continued, provoking repeated thinking in the content area beyond the confines of typical classroom-based learning situations. This is perhaps the single most important pedagogical affordance of Twitter as digital commonplace: it is mobile, and it can extend the classroom and student thinking in the core content area, all through brief but frequent student writing activities.

Implications and Best Practices

While the comparison between Twitter and traditional approaches to commonplace books will never be a perfect one, the reality is that both practices aggregate information from other sources, recontextualize that information through writing and rhetorical practices, and potentially serve as heuristic material for new knowledge making. In fact, platforms such as Twitter add the crucial characteristics of mobility, social interaction, and overlapping publics, attributes that can potentially increase the very effectiveness of commonplacing for knowledge acquisition. An effectively structured pedagogical approach to Twitter can enable the best of traditional commonplacing and contemporary networked information sharing.

Some best practices for using Twitter as a pedagogical enhancement include frequent instructor interaction and modeling behavior, a robust framework of strategic overlapping publics, and an organic culture of student adoption.

The first of these considerations is relatively self-evident. Locke's improvement on commonplacing practices was

Twitter works best when interaction is organic, just as commonplacing is most effective when aggregation and contextualization is self-directed.

predicated upon his own long-standing trial and error in systematization and use. Instructors need to work with Twitter extensively, learning how to cultivate contacts in their content area, how to effectively share and recontextualize information, and how to use Twitter as their own digital commonplace first. Such facility with the platform will go a long way in determining effective pedagogical use.

By exploring Twitter, instructors will get a strong sense of the kinds of publics that will most benefit their students. The key is to establish a strategic framework that begins with homophily (a network of contacts and professionals working in the same area as the instructor) but that also fosters social heterogeneity. Following Burt, such networks can help students bridge "structural holes" in social capital, helping them to see affinities across disciplinary and professional domains, to see where publics overlap and inform one another.[25]

Finally, social networks are spaces often resistant to encroaching pedagogies. Twitter works best when interaction is organic, just as commonplacing is most effective when aggregation and contextualization is self-directed. The most effective Twitter experiences, in terms of pedagogy, have often resulted from voluntary participation. Students who choose to commonplace through Twitter will be more likely to sustain an interest in the platform, and more likely to contribute items of substance. Students who feel forced to participate may not see the need for self-directed inquiry and for robust interaction.

25 Ronald Burt, "Social origins of good ideas." MIT. http://web.mit.edu/sorensen/www/SOGI.pdf (accessed October 16, 2009).

Bibliography

Blair, Ann. "Reading Strategies for Coping with Information Overload ca. 1550-1700." *Journal of the History of Ideas* 64 (2003): 11-28.

Bruffee, Kenneth. "Social Construction, Language, and the Authority of Knowledge: A Bibliographical Essay." *College English* 48 (1986): 773-790.

Burt, Ronald. "Social origins of good ideas." MIT. http://web.mit.edu/sorensen/www/SOGI.pdf (accessed October 16, 2009).

Dacome, Lucia. "Noting the Mind: Commonplace Books and the Pursuit of the Self in Eighteenth-Century Britain." *Journal of the History of Ideas* 65 (2004): 603-625.

Dautermann, Jennie. 1993. "Negotiating Meaning in a Hospital Discourse Community." In *Writing in the Workplace: New Research Perspectives*, ed. Rachel Spilka. Carbondale, IL: SIU Press, 1993.

Emig, Janet. "Writing as a Mode of Learning." *College Composition and Communication* 28 (1977): 122-128.

Forster, E.M. *Commonplace Book.* Palo Alto: Stanford University Press, 1988.

Honeycutt, Courtenay and Susan Herring. "Beyond microblogging: Conversation and collaboration on Twitter." *Proceedings of the 42nd Hawaii International Conference on Systems Sciences* (2009): 1-10.

Lauer, Janice. "Writing as Inquiry." College Composition and Communication 33 (1982): 89-93.

LeFevre, Karen B. *Invention as a Social Act*. Carbondale, IL: SIU Press, 1986.

McNely, Brian. "Backchannel Persistence and Collaborative Meaning-Making." *Proceedings of the 27th ACM International Conference on Design of Communication* (2009): 297-304.

McNely, Brian. "Tweet Research: Aggregating and Disseminating Organizational Knowledge Work Through Twitter." Paper presented at Computers and Writing, University of California Davis, June 18-21, 2009.

Moss, Ann. "The Politica of Justus Lipsius and the Commonplace-Book." Journal of the History of Ideas 59 (1998): 421-436.

Shirky, Clay. *Here Comes Everybody*. New York: Penguin, 2008.

Swarts, Jason. "The Collaborative Construction of 'Fact' on Wikipedia." *Proceedings of the 27th ACM international conference on Design of communication* (2009): 281-288.

Yeo, Richard. "Ephraim Chambers's *Cyclopeadia* (1728) and the Tradition of Commonplaces." *Journal of the History of Ideas* 57 (1996): 157-175.

keywords

smartphone, interactive news, interactive advertising, iPhone, News App

Jennifer George-Palilonis

Jennifer George-Palilonis is the George & Frances Ball Distinguished Professor of Multimedia Journalism and assistant professor in the Department of Journalism at Ball State University. She teaches multimedia storytelling, interactive media design, and information graphics reporting. Her research focuses on research-informed design, serious games, blended learning and multimedia teaching and learning tools. She has a Master of Arts in English Composition and Rhetoric and a Bachelor's Degree in Journalism from Ball State University.

Kirsten Smith

Kirsten Smith is the sssociate director and the technology officer at the Center for Information and Communication Sciences (CICS) at Ball State University. Kirsten is the director of the Software Testing Institute within CICS, working with industry partners on improving their products and processes. Ms. Smith serves on various boards and chairs the Women Working in Technology Conference focused on providing professional and personal development opportunities for women working in the multitude of technology fields.

Michael Hanley

Michael Hanley is director of the Institute for Mobile Media Research and associate professor of Advertising in the Department of Journalism at Ball State University. He teaches advertising, branding, media planning and buying, and media research. His research focus is mobile advertising and marketing. He has a Master of Arts in Journalism from Ball State University and a Bachelor of Arts in Visual Design from Purdue University.

Suzy Smith

Suzy Smith is an assistant professor of telecommunications at Ball State University. Smith teaches courses in news writing and multimedia story presentation, specializing in sports and news delivered via multiple storytelling formats. Before joining Ball State Smith spent more than 24 years in the news industry as a senior producer with CNN.com, a senior producer at the Weather Channel, a supervising producer with CNN/Sports Illustrated, and a producer with CNN Sports.

Chris Flook

Chris Flook is an instructor of telecommunications at Ball State University. He specializes in multimedia instruction including web design and motion graphics. Prior to teaching, Chris worked at the Indiana Academy for Science, Mathematics, and Humanities where he produced distance learning courses. He also worked at Indiana Films editing short form documentaries and television advertisements.

Vinayak Tanksale

Vinayak Tanksale is a faculty member in the Computer Science department at Ball State University and has been a faculty fellow in the University's Center for Media Design. He has received six Ball State Emerging Media Innovation grants. He has been a member of the inter-disciplinary iMedia project (2009 runner up in the AT&T Big Mobile on Campus competition) since its beginning. He has successfully led a variety of mobile and multi-touch computing projects.

Creating Smartphone Interactive News and Advertising Content: A Study Testing A Graphically Enhanced Multimedia Application for the iPhone

Jennifer George-Palilonis
Department of Journalism, Ball State University
Kirsten Smith
Center for Information and Communication Sciences, Ball State University
Michael Hanley
Department of Journalism, Ball State University
Suzy Smith
Department of Telecommunications, Ball State University
Christopher Flook
Department of Telecommunications, Ball State University
VinayakTanksale
Department of Computer Science, Ball State University

Introduction

According to a 2009 Pew Research Center report, 39 percent of the U.S. adult population has seen the frequency of their online use grow as their reliance on mobile devices has increased.[1] Consequently, the desktop Internet experience switches to "on the go" when users leave home and "the handheld becomes a complementary access point to connect with people and digital content wherever a wireless network reaches."[2] At the same time, news organizations are expanding their online efforts to develop mobile media sites allowing users to access content in formats customized for mobile devices. By fall 2009, for example, the iPhone app store was offering more than 40 applications that aggregate world, nation, and city specific news in iPhone-optimized formats. Likewise, many newspapers and broadcast news programs around the world, from the New York Times to BBC News have launched their own iPhone-optimized sites. And as the number of touchscreen models such as the Apple iPhone, Blackberry Storm, and Palm Pre increases, content developers continue to look for ways to take advantage of this platform. Thus, "as a large portion of the online population gravitates to wireless and mobile access to supplement their home high-speed wired connections, the supply of and demand for online content increases."[3]

With the emergence of new mobile devices, a need exists to test new design, functionality, and presentation strategies for news and advertising content for mobile media. This paper offers the results of a four-week study that presented iPhone users with a graphically enhanced multimedia news and advertising application. Developed by an interdisciplinary team of professors and students at a Midwestern university, the application was created to explore how users respond to a site that offered advertising and news story forms, including video, text, information graphics, interactive timelines, and photo/audio slideshows. Often, a single news package on one topic included several of these different story forms to offer users a multifaceted, multimedia experience.

This application was inspired by the relative lack of innovation related to the presentation of news content on most mobile media sites currently used. A preliminary content analysis of the top 25 iPhone-optimized news sites (from newspapers and broadcast networks) found that content generally appears as either video or text. Furthermore, it seems that news organizations generally use familiar formats; newspaper sites present most stories in text and sites operated by television stations often present stories as videos and/or written text. Yet, none of the sites take full advantage of the interactive potential of the touch screen device by offering layered story packages as integrated multimedia content. Thus, the following report attempts to provide a snapshot of how news organizations can better harness the power of the web through mobile media sites that use sophisticated graphical interfaces and content in rich multimedia forms to better engage users.

Trends in Mobile Media

Rabin and McCathieNevile[4] note that mobile users are likely to have more immediate and goal oriented intentions than their counterparts. Likewise, they are typically less interested in lengthy documents. Add smaller bandwidth connections, small keyboards, poor graphic representation and interactivity limited to basic tasks on most mobile phones, and you have a distinctively different usability model for cell phones than desktops. However, the proliferation of touchscreen phones has increased the interactive potential of smartphone use, causing some to predict that mobile devices will become the primary content delivery method of the future. One reason is the growth of mobile devices. By the end of 2008 there were 4.1 billion mobile phone subscribers around the world, or two-thirds of the global population.[5]

The growth of mobile devices, while slowing overall during the economic downturn of 2008-09, has accelerated for smartphones.[6] Sales of regular mobile phones with smaller

1 John B. Horrigan, "A Typology of Information and Communication Technology Users," *Pew Research Center Report* (2007), http://www.pewinternet.org/Reports/2007/A-Typology-of-Information-and-Communication-Technology-Users.aspx. (September 10, 2009).
2 John B. Horrigan, "Internet Typology: The Mobile Difference," *Pew Research Center Report* (2009), http://pewresearch.org/pubs/1162/internet-typology-users-mobile-communication-devices. (September 10, 2009).
3 Ibid.

4 World Wide Web Consortium. "Mobile Web Best Practices 1.0.Basic Guidelines." World Wide Web Consortium. http://www.w3.org/TR/mobile-bp/ (accessed May 1, 2009).
5 International Telecommunication Union, ICT Statistics Database. http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx#. (accessed May 1, 2009).
6 NPD Group, "Feature Phones Comprise Overwhelming Majority of Mobile Phone Sales in Q2 2009," NPD Group, http://www.npd.com/press/releases/press_090819.html. (accessed May 1, 2009).

Add smaller bandwidth connections, small keyboards, poor graphic representation and interactivity limited to basic tasks on most mobile phones, and you have a distinctively different usability model for cell phones than desktops.

screens, declined five percent during the same period.[7]

Due to this growth, a number of new opportunities have arisen for news and advertising content providers. For example, mobile marketing companies are testing technologies that allow consumers to scan barcodes on advertisements with their mobile phones to receive product information.[8] Cameras on mobile phones can also be used to access information about products and services by simply taking a photo of an advertisement, product, building, or location. The picture is sent to an image recognition database that matches the picture with information in the database, which is then sent to the user.[9]

By 2000, the number of households that were online had exceeded those subscribing to a newspaper,[10] driving some media analysts to predict that the Internet would "radically and unexpectedly" change the way daily print journalism is practiced. Yet, studies like the 2007 Project for Excellence in Journalism have found little evidence that newspaper and broadcast web sites are taking full advantage of the web's interactive potential. Likewise, the ability to deliver web-based news, information, and advertising via mobile devices presents another set of challenges to news organizations. A mobile web usability study conducted by Jakob Nielsen[11] found that mobile users face four main usability hurdles:

Small screens mean fewer visible options at any given time, requiring users to rely on their short-term memory to build an understanding of an online information space.

It is hard to operate GUI widgets without a mouse: menus, buttons, hypertext links, and scrolling all take longer and are more error-prone, whether they are touch-activated or manipulated with a small trackball.

7 NPD Group, "Feature Phones Comprise Overwhelming Majority of Mobile Phone Sales in Q2 2009," NPD Group, http://www.npd.com/press/releases/press_090819.html. (accessed May 1, 2009).

8 Anne Cassidy, "Interactive Outdoor Advertising," *Campaign* (2008): 14.

9 SnapTell, "Technology Overview," SnapTell Co., http://www.snaptell.com/technology/index.htm. (accessed August 29, 2009).

10 Bruce Garrison, "Online Newspapers," in *Online News and the Public,* eds. Michael B. Selwen, Bruce Garrison and Paul D. Driscoll (New Jersey: Lawrence Earlbaum Associates, 2005).

11 Jakob Nielsen, comment on "Mobile Usability," Nielsen Alert Box Blog, comment posted July 20, 2009, http://www.useit.com/alertbox/mobile-usability.html (accessed August 29, 2009).

Getting to the next screen takes forever – often longer than it would on dial-up, even with a supposedly faster 3G service.

Because web sites are typically optimized for desktop usability, they do not follow the guidelines necessary for usable mobile access.

Nielsen also found the key to mobile user experience was mainly defined by screen size. Unsurprisingly, the larger the screen size the better the mobile experience when accessing mobile web sites. The key, it appears, for news organizations and advertisers hoping to maximize the mobile web and video experience is to design effective interactive sites for smartphones and touchscreen phones.

Consequently, three research questions arise from the literature review, one related to usability and two to multimedia content.

RQ1: How do users rate the news consumption experience and usability of a graphically enhanced mobile news and advertising site with multimedia content in the form of text, photo slideshows, video, and interactive graphics?

RQ2: Do users prefer one type of multimedia content–i.e., text, photo slideshows, video, and interactive graphics–over another?

RQ3: Does a user's preference for a specific type of story form–i.e., text, photo slideshows, video, and interactive graphics–affect his or her decision to engage with a particular story?

Methods

This study was driven by two main research strategies: usability testing and surveys intended to gauge users' opinions of content developed over four weeks for a news and advertising mobile media site designed specifically for the iPhone.

The Interface

During the fall 2008 semester, students designed a graphically enhanced iPhone news interface and an interactive advertising application that would be used as the test object for this study. They implemented a research-informed design method that allowed them to solicit user feedback through several usability tests along the way. Usability tests with 12 to 15 participants were intended to

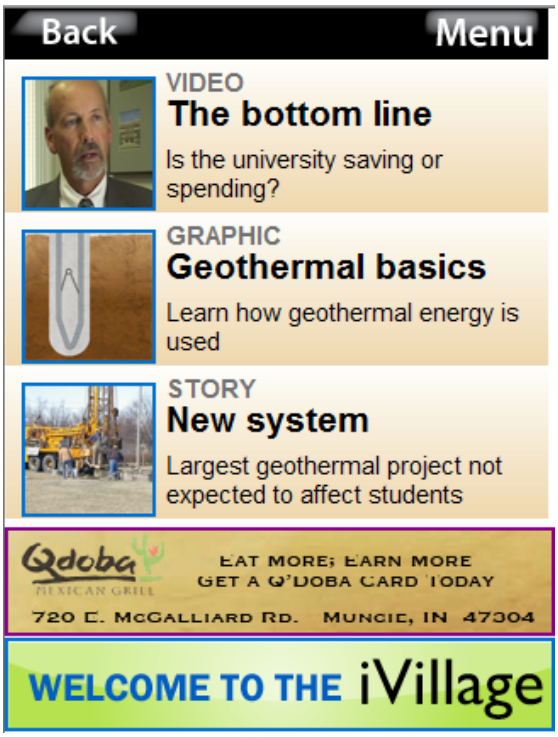


Figure 1 (left): The news interface includes a drop down menu allowing users to navigate various sections of content, including news, entertainment, weather and sports. The drop menu is retractable so users may hide it when viewing content in each section.

Figure 2 (right): A single story (in this case geothermal energy) is broken into multiple "chunks" each representing a different story form (i.e., video, graphic and text-based story).

Figure 3: In the interactive ad portion of the site, users can "walk" down a campus street by using the iPhone's finger swipe functionality, "enter" a business by clicking on a building, and view food and drink specials by clicking on a menu icon. Users can also automatically call a Taxi by clicking on the car.

gauge user interest in the interface, discover design flaws, and collect preferences that could improve the interface. Figures 1 and 2 show frame grabs from the news portions of the mobile media site, illustrating the basic design for news in this particular interface. Figure 3 shows the basic design for the interactive advertising application called "iVillage".

Usability Tests

At the start of a four-week research period, subjects met with a research team member. After completing a brief written demographic survey, subjects participated in a usability test of the iPhone news and advertising site specifically for this study. The initial usability test was intended to gauge subjects' first interactions with the web application and measure their levels of comfort with it during the early stages of research. Usability tests were video and audio recorded and observed through one-way glass by the mobile media site designers.

The research plan included collecting quantitative feedback on the initial user experience using the System Usability Scale (SUS). Developed in 1986 by Digital Equipment Corporation, the SUS is a simple, 10-item scale giving a global view of subjective assessments of usability. The SUS was used to solicit a "grade" on the interface from the participants in order to understand their starting points. The average score of the 19 subjects was 87.5 out of 100, suggesting that with no training or previous exposure to the interface, most participants were very comfortable using the application. This is confirmed by user feedback recorded at the orientation session.

Weekly Surveys

Once a week for four weeks, the research team pushed news content to users' phones through the mobile media site. iPhone user subjects were alerted when new content was posted, at which time they were expected to engage with the news programming and advertising content and then respond to online surveys about the experience. In weeks one and two, 17 of 19 subjects completed surveys, in week three, 13 of 19 subjects completed surveys, and in week four, 14 of 19 respondents completed surveys. At the end of the four weeks, subjects were also asked to complete an online survey about the overall experience to gauge their level of comfort with and acceptance of the mobile media site and its content as a viable news and advertising distribution program. The final survey had 13 responses. Researchers were disappointed at the fall off of participants, however, it is important to note that where usability is concerned, trends begin to emerge in sample sizes of 10.[12] Thus, the final participation numbers still warrant solid findings for a usability model.

Focus Groups

Subjects were also asked to attend a one-hour focus group to engage in an open discussion after completing the four-week study. Those sessions were audio and video recorded and observed through one-way glass by the mobile media site designers. The number of participants in the focus group was 8 of 19 participants. Their feedback was considered anecdotally valuable.

Results

University faculty, staff, and student subjects were recruited through the school's mass email system. All subjects were iPhone owners and users prior to the start of the study. Participants ranged in age from 19 to 34; 17 were male and two were female. Subjects were primarily students. Although this is a small sample size, it is important to note that most usability experts maintain that with as few as five users, researchers can begin to find about 85 percent of the problems that will negatively impact one-third or more of users.[13] Thus, researchers uncovered a number of specific points related to the interface that are significant and could be applicable to this and other endeavors in related research and development.

RQ1 asked how users rate the news consumption experience and usability of a graphically enhanced mobile news and advertising site. According to the final survey results (n=14) the average rating for users' overall reaction to the application was 3.5 out of 5.0. This rating comes from an individual item that seeks an overall reaction without breaking down the experience or the application into individual components. All of the respondents rated the news and advertising experience as either average or above average, though none rated it as excellent.

12 Jakob Nielsen & Thomas K. Landauer, "A Mathematical Model of the Finding of Usability Problems" (proceedings of INTERACT '93 Conference, April 23-29, 1993).
13 Ibid.

Overall, the researchers believe this study indicates that a graphically enhanced news, information and advertising application has value in the marketplace.

As part of the final survey, a version of the Questionnaire for User Satisfaction (QUIS) survey tool was also included.[14] This tool provides a quantitative result from a qualitative experience. Eighty-seven percent (12) respondents indicated they would like this application available all the time. Some individuals also indicated a preference for this kind of news and information application over a physical newspaper. The combined average rating for the 32 individual items in the QUIS that cover such areas as layout, ease of learning, application capabilities and quality of video was 4.0 out of 5.0. The survey data also suggests that participants found the interface easy to use. During the initial orientation to the interface none of the participants found the interface difficult to learn. Interestingly, once the four-week content push started, the participants did not provide much feedback about the design of the interface. The vast majority of user concerns centered on the relevance or quantity and quality of content; for example, at one point in the study, the video quality was improved and participants noted the improvement. This suggests that once users accepted the design and were using the application, the content captured their attention.

RQ2 asked whether users prefer one type of multimedia content–i.e., text, photo slideshows, video, and interactive graphics–over another. The data indicates the likelihood that users would choose to use the news and information application on a daily basis was also related to the relevance of the content as much as the interface itself. This relevance, as may be expected, was topic dependant. For example, one user watched every video and interacted with every content type in the sports area because the topic was of interest. Another user watched no sports videos.

One issue that affected the study was the difficulty involved in viewing video on the AT&T EDGE network, which is commonly called a 2.75G network. The original Apple iPhone used the EDGE network. The second-generation iPhone 3G was capable of using high-speed 3G networks, but this research study was conducted prior to the introduction of AT&T's 3G offering in the study's geographic region and, as such, the connection was slow and users generally gave up trying to view video. As a result users accessed video via the university's Wi-Fi network or their home networks. Even given the ability to quickly start the streaming process on a Wi-Fi network, many participants expressed the preference for viewing video under two minutes in length. Some of this had to do with when and how they use their iPhones. For example, several focus group members indicated they might view video during the few minutes they have waiting for a bus or while walking across campus. Waiting for the video to download and taking a full three to four minutes to watch a video did not fit into their usage habits. They indicated a preference for scanning a text story first to see if they wanted to dig deeper into other content types on the topic. They also indicated they did not want to watch and would not watch videos with pre-roll commercials.

In addition to the news and information application, the student team also developed an advertising platform called iVillage. It was an interactive graphic representing an area near campus with restaurants, bars and shops that students and faculty patronize. The iVillage application provided users a way to check menu items and see weekly specials and upcoming events at local eateries. It also included the ability to directly call the restaurant for reservations or ordering, and to call a cab. The iVillage application rated highly with a majority of users. Most users indicated they would use such an application if it were available.

RQ3 asked whether a user's preference for a specific type of story form (e.g., text, photo slideshows, video, and interactive graphics) affect the decision to engage with a particular story. Based on feedback given during the final focus group, it appears users interacted with all content types (e.g., text, interactive graphics, photo slide shows, and video) only because they were in a study and felt they should. This makes data about time spent on a particular content type difficult to analyze. There were no obvious trends in the data supporting one content type over another due to this non-natural use pattern.

14 University of Maryland at College Park, "QUIS ™ (Questionnaire for User Interface Satisfaction)," Kent L. Norman & Ben Shneiderman, http://lap.umd.edu/quis/. (accessed April 1, 2009).

Overall, the researchers believe this study indicates that a graphically enhanced news, information and advertising application has value in the marketplace. Particularly in the age group studied, whose members live in a world populated by multimedia, their expectation of a news source that is more than just text and even more than just video is clear. It is understandable that for subject matter which holds interest to the user, all types of content - video, text, information graphics, interactive timelines and photo/audio slideshows - add a desired depth of understanding about that topic which users appreciate.

Discussion and Future Research

This paper's authors acknowledge the relatively small scope of this study. Admittedly, the findings reflect a very small research sample, focused on one particular touchscreen device, and one discreet interface for multimedia news and advertising content. However, the data collected for this project does help lay the foundation for broader research that helps us begin to understand the types of interfaces and content that will be enticing to mobile audiences. Thus, although the researchers cannot make definitive judgments about what will work for all news and advertising interfaces, a few conclusions that will inform future projects can be drawn.

First, graphically enhanced news and advertising interfaces for touchscreen devices show promise as a content delivery tool. Based on feedback from subjects in this study and others mentioned earlier in this paper, it is safe to say that just as design enhancements in other types of publications, such as newspapers, magazines and web sites, attract and engage users, so do ones for a mobile device. Although smaller than most platforms that make use of design enhancements, the iPhone, Palm Pre, Blackberry Storm and other smart phones offer designers a suitable palette for graphically enhanced information architecture. Not only does this have implications for how news and advertising content is presented on mobile devices, but it also presents graphic design professionals with a new opportunity for showcasing their work.

Because of the age group, results of this study may reflect generational trends away from traditional print news to digital versions. Several of the subjects commented that they would favor having access to a graphically enhanced mobile news and information application over traditional news. However, the results of this study also support the notion that their viewing and reading habits on mobile devices differ dramatically from how they would interact with traditional counterparts. Subjects noted that they were most likely to engage with the mobile site between classes, waiting for the bus, or while standing in line. This "information snacking" suggests the need for content creators to reconsider story formats and story lengths. Videos, text, and slideshows must be shorter in length and information graphics smaller and more condensed.

Subjects' general interest in the story forms this study employed (e.g., video, text, information graphics, interactive timelines and photo/audio slideshows) is encouraging and helps address the idea that story presentation must be customized for mobile sites. Multimedia packages allow content creators to present complete stories; however, the definition of a "story" is different in the multimedia mobile context. Where most traditional media would present a complete story in a single format, multimedia packages allow journalists the opportunity to break stories into multiple pieces. This layered storytelling approach meets the "information snacking" routines of users by offering them bite-sized segments, while also offering a multifaceted package that tells a complete story.

The multiple story forms used by journalists can be effective for advertisers. The traditional 30-second TV commercial has been proven to be ineffective on mobile devices. Recent experiments testing acceptable viewing times for mobile commercials or videos found that 10 seconds is the optimum viewing length. Adding interactive elements to mobile ads increases user acceptance and usability, as found in this study with the iVillage application.

Acknowledgements: The authors thank the following individuals and organizations for contributions: Students in the 2008-2009 iMedia course–Cameron Andry, Stephanie Bane, Kyle Bentle, Katherine Bostdorff, Logan Braman, Natasha Caldwell, Stephanie Cope, Marty Filogamo, Dustin Frey, Jeffrey Kew, Bryan McWhirt, Carl Miller, Shelby Murphy, Siraj Pathan, Jeff Renoe, Amitesh Ramname, Elliot San, Kenneth Sothman, Bala Veera Ravichandra Tadavarti, Cody Thompson and Corey Walsh; ICS 660 students who assisted with usability studies–Jess Coffin, Thomas Besluau, Lindsay Smith, and Scott Wood; The Center for Media Design, Jacqueline Martinsen, Bill Vaughan, Mike Bloxham, and David Ferguson for continued support; CCIM Dean Roger Lavery; Provost Terry King; and graduate assistant Mary Phillips-Omotosho. This research was supported in part by a Digital Exchange grant from the Lilly Endowment, administered by the Ball State University Center for Media Design.

Cassidy, Anne. “Interactive Outdoor Advertising.” *Campaign* (2008): 14.

Garrison, Bruce. “Online Newspapers.” In *Online News and the Public*. Edited by Michael B. Selwen, Bruce Garrison and Paul D. Driscoll. New Jersey: Lawrence Earlbaum Associates, 2005.

Horrigan, John B. (2009) “Internet Typology: The Mobile Difference.” *Pew Research Center Report* (March 25, 2009). http://pewresearch.org/pubs/1162/internet-typology-users-mobile-communication-devices (May 1, 2009).

Horrigan, John B. “A Typology of Information and Communication Technology Users.” *Pew Research Center Report* (May 6, 2007). http://www.pewinternet.org/Reports/2007/A-Typology-of-Information-and-Communication-Technology-Users.aspx (May 1, 2009).

ICT Statistics Database. http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx# (accessed May 1, 2009).

Nielsen Alert Box Blog. http://www.useit.com/alertbox/mobile-usability.html (accessed August 29, 2009).

Nielsen, Jakob & Landauer, Thomas. K. “A Mathematical Model of the Finding of Usability Problems.” Proceedings of INTERACT ’93 Conference, April 23-29, 1993.

NPD Group. “Feature Phones Comprise Overwhelming Majority of Mobile Phone Sales in Q2 2009.” NPD Group. http://www.npd.com/press/releases/press_090819.html (accessed August 1, 2009).

SnapTell. “Technology Overview.” SnapTell Co. http://www.snaptell.com/technology/index.htm (accessed July 30, 2009).

University of Maryland at College Park. “QUIS ™ (Questionnaire for User Interface Satisfaction).” Norman, K. L. & Shneiderman, B. http://lap.umd.edu/quis/ (accessed August 20, 2009).

World Wide Web Consortium. “Mobile Web Best Practices 1.0.Basic Guidelines.” World Wide Web Consortium. http://www.w3.org/TR/mobile-bp/ (accessed May 1, 2009).

keywords

narrative, digital/electronic literature, affect, hypertext, hypermedia

Elise Takehana

A doctoral candidate at the University of Florida, Department of English, Elise Takehana's research concentrates on 20th century area studies, particularly aesthetic and new media theory. Her dissertation addresses experimental writing in print and digital spaces and the increased convergence of disciplinary conventions and pop culture forms. Other essays include "Associations Through (Re)Mediations: The 'Cut and Paste' Aesthetic and Transparency" published in Artciencia and "Legitimizing the Artist: Avant-Garde Utopianism and Relational Aesthetics" published in Shift.

Browsing the Data Narrative: Affective Association and Visualization

Elise Takehana
Department of Journalism, Ball State University

Abstract

As the computer is increasingly used as an aesthetic of literary production for electronic and print narratives, prose literature must reevaluate what constitutes narrative and how the convergence of image and verbal texts affect it. To accommodate the digital environment, narrative must cede its stronghold on literary expression giving way to ordering structures other than plot and character. Instead, database logic and aesthetics are based on what Stuart Moulthrop calls an “itinerant desire” or what Rick Altman defines as “multiple-focus narratives” . Addressing the claims works such as Stephanie Strickland and Cynthia Lawson Jaramillo’s *slippingglimpse* or Mark Amerika’s FILMTEXT make about digital writing and reading as interpretations based on recomposing and visualizing data, I conclude that writing in the digital environment is a practice of collecting affective potential and reading becomes an act of browsing and remixing.

The personal computer is perhaps the most significant invention of the 20th century, altering our daily lives and cognitive patterns. Much more than a tool of convenience the computer introduces a new lifestyle metaphor that defines contemporary subjectivity. As with any major technological and social shift in human history, the advent of the digital age has met with resistance and nostalgia. This is perhaps nowhere more true than in narrative. As the field of digital storytelling has developed into hypermedia and the differences between digital literature and digital art becomes harder to discern, we cannot deny that digital storytelling is neither an amplified print narrative nor a new literary genre but belongs to a model beyond print literate thinking. The act of reading and writing in the digital environment can no longer be about composing or determining an objective plot if we are to take advantage of the characteristics of new media. Judging digital writing as fragmented, chaotic, or disastrous assumes that we measure digital writing against the same criteria as print narratives before it.[1] While the print book on the whole creates an authoritative uni-linear narrative, digital storytelling explicitly invites user intervention, interaction, and subjective ordering through a reader's personal desire or interest. While skimming and non-sequential reading are possible in the print narrative, they are not premised in its present culturally accepted structure or assumptions.

With the continued technological advancements of the 20th and 21st centuries, subsequent experiments in writing and narrative have shown a drive toward and increasingly imperative need of finding new ways to tell stories in a digital environment. While the advent of the digital is not inherently positive, it is assuredly a societal, technological, and increasingly global change that cannot be ignored. Such potential changes rely on the characteristics of new technologies. In examining what digital writing is we must look to the characteristics of digital systems. Marie-Laure Ryan describes such digital systems as algorithm driven operations, interactive and reactive presentations, volatile and variable representations, multi-sensorial, and networked based organizations.[2] Several critiques of electronic literature credit early generative print literature projects and especially William Burroughs' cut-up as pioneers of enfolding mechanical and computer technologies with practices of writing (Swiss 290).[3]

Burroughs' writing has brought about an interest in "networked and programmable media as the material basis for artistic innovation and creation."[4] His repeated assertions that cut-up was not machine writing but a collaboration between machinic abilities and human intellectual agility show the computer and the human user as collaborators articulating the experience of living in a digital world. The computer's ability to converge human and machine, reader and writer, as well as many media from audio, visual, pseudo-haptic, and verbal models only solidify what previous print experiments in prose literature have been pointing toward since the late 19th century: the digital subject as storyteller is markedly different from the print literate subject as storyteller.

For N. Katherine Hayles, using the computer to compose and the Internet to distribute literary texts has greatly altered what literature is in the digital era. As electronic literature depends less and less on verbal narrative and instead on code, we as readers and critics have to question what we consider to be prose literature.[5] Perhaps the most significant realization we as readers and critics have reached with electronic literature is that styles, media, and genres come with certain assumptions that qualify their use and limits. By maintaining the assumptions and qualities of other media like print books or oil paintings when approaching new media projects, we can easily miss what new media can offer as well as misjudge the effectiveness of new media's potential in aesthetic and political realms.[6] The very network capabilities of computers today bring certain assumptions about how writers and artists should work with and create through that medium.

1 Jay David Bolter, *Writing Space: Computers, Hypertext, and the Remediation of Print*, 2nd ed.(Mahwah, NJ: Lawrence Erlbaun Associates, Publishers, 2001), 204.

2 Marie-Laure Ryan, *Avatars of Story* (Minneapolis: University of Minnesota Press, 2006), 90.

3 Thomas Swiss, "Electronic Literature: Discourses, Communities, Traditions," in *Memory Bytes: History, Technology, and Digital Culture*, ed. Lauren Rabinovitz and Abraham Geil (Durham, NC: Duke University Press, 2004), 283-304.

4 N. Katherine Hayles, *Electronic Literature: New Horizons for the Literary* (Notre Dame, IN: University of Notre Dame Press, 2008), 20.

5 Ibid., 4.

6 N. Katherine Hayles, "Translating Media: Why We Should Rethink Textuality," *The Yale Journal of Criticism* 16, no. 2 (2003): 263.

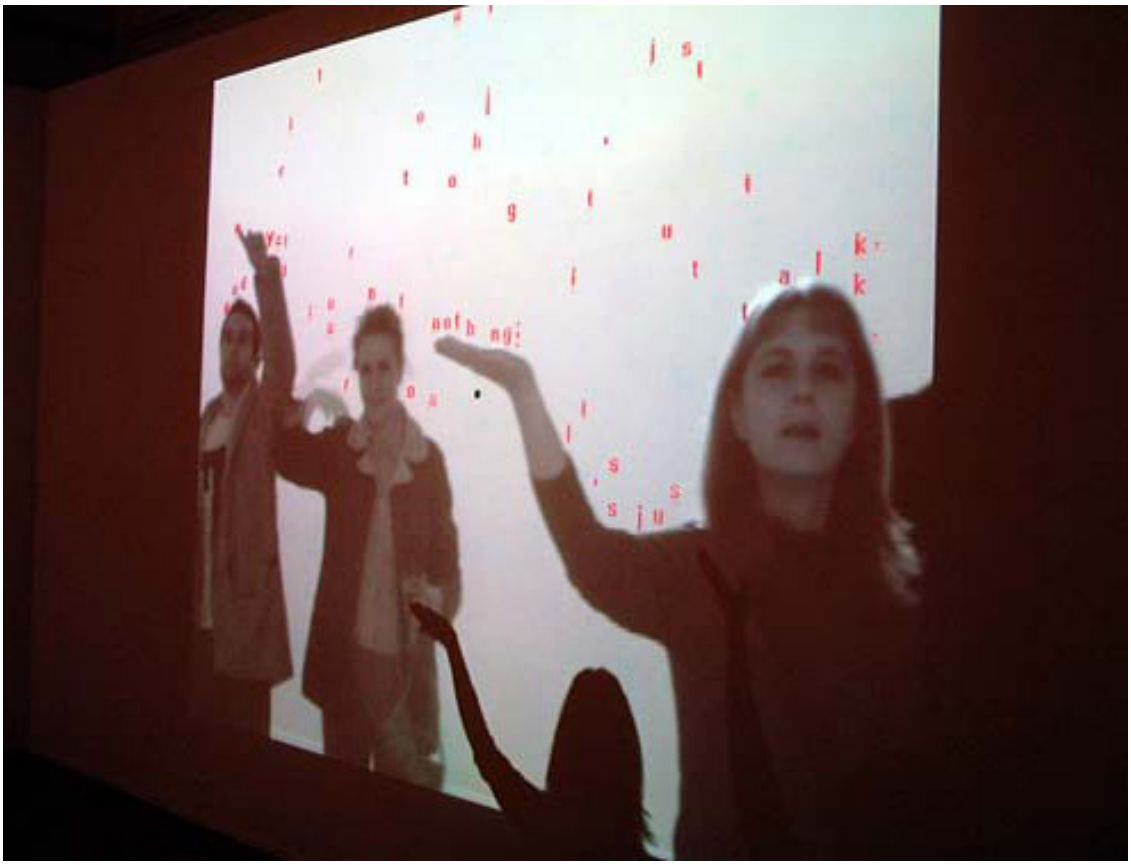


Figure 1: *Text Rain* by Camille Utterback, 1999

The idea of the network as a model for living and experiencing the world is far from foreign, already infiltrating American political rhetoric as Rita Raley points out in her discussions of terrorism. She cites the first report on the 9/11 attacks, which describe the terrorist cells as "shadowy networks" that work with computers to penetrate their enemies rather than with tanks and missiles.[7] As Craig Saper notes, mail artists of the 1950s used the postal service as a network to distribute and collectively create art and literary pieces. What makes digital media and the computer significant is that the assumptions of working in a network are already built into the machine itself. When Burroughs was working with typewriters to do his cut-ups, the network of texts he used were analog thus not prefaced or prominent to the consumer of the cut-up without serious archival research. The network of text existed in Burroughs' mind but with networked computers such connections are made visible as the very structure of web writing. While oral cultures advanced performance and literate cultures forwarded hierarchical ordering, our present experience in the digital era has brought the order developed with literacy into an openly accessible network rather than obscured in authorial intent and singular vision.[8] The act of reading and writing in the digital can no longer be about composing or determining an objective plot if we are to take advantage of the characteristics of new media. As more writers, poets, and artists enlist digital technology as integral parts of their composition process, we come to understand technology as a collaborator in our goals of expression and community building rather than an impediment to Romantic conceptions of creative authorship.

The boundary pushing and interdisciplinarity forwarded by experimental print literature has often made categorizing pieces difficult, particularly between the literary and visual arts. Such obstacles are only aggravated by new media, where all media are embedded in one another and encoded into the same 0s and 1s.

7 Rita Raley, *Tactical Media* (Minneapolis: University of Minnesota Press, 2009), 77.

8 Jay David Bolter, *Writing Space: Computers, Hypertext, and the Remediation of Print*, 2nd ed. (Mahwah, NJ: Lawrence Erlbaun Associates, Publishers, 2001), 106.

Bertrand Gervais argues that these digital hybrids are *iconotexts* that combine visual and linguistic reading methods, merging the semantic meaning of words with graphic design components making digital texts "first and foremost seen as images instead of writing.

Camille Utterback's digital art piece, Text Rain provides such an example. While it is discussed as an art piece, it is clear that the words that rain down onto the viewers' shadows are coherent, even poetic. Roberto Simanowski suggests that a work is not digital literature unless the text is a significant linguistic phenomenon meant to be read.[9] Since he does not view the linguistic portion of Text Rain to be the central focus of the piece, he does not recognize it as digital literature. On the other hand, Marie-Laure Ryan argues that Michelle Glaser, Andrew Hutchinson, and Marie-Louis Xavier's Juvenate is a piece of digital literature even though it lacks written language. Because Juvenate introduces characters and a chronology of a family's life, Ryan recognizes the purely visual piece as having a substantial amount of narrative information that would warrant the title of digital literature.[10]

Categories themselves pose a challenge to digital literature because the vast majority of literary works made to be read on the computer are hybrids. Bertrand Gervais argues that these digital hybrids are iconotexts that combine visual and linguistic reading methods, merging the semantic meaning of words with graphic design components making digital texts "first and foremost seen as images instead of writing. They are no longer read, they are experienced as a spectacle."[11] While Gervais leans heavily towards the visual aspects of digital texts, the idea that verbal and visual marks are entwined in varying degrees has a long history. Loss Pequeño Glazier argues that visual elements were always important to writing evident in Chinese characters, Egyptian hieroglyphics, and cave paintings. The codex form delivers a short reprieve in which the text and image were separated in history.[12] Friedrich Kittler affirms that early print technologies like Gutenberg's press were designed to visually compete with handwritten manuscripts rather than become machines of mass production.[13] On a more fundamental level, orthography theorist, Pierre Duborgel claims that children learning to write make no distinction between writing and drawing, viewing each as equally iconic and gestural.[14] The concrete stability of the printed letterform gives way to such effect as John Cayley's use of letter permutations in translation and Judd Morrissey's smooth page transitions in *The Jew's Daughter.*

Figure 2: *Translation* By John Cayley, 2004

Audio elements are not foreign to digital literature either. With the inclusion of visual, kinetic, and auditory elements in digital literature, it cannot rely on traditional emphases on narrative or narrative theory conceived for print literature that do not credit extra-verbal components. If we are not looking for plot, character development, diegesis,[15] or other such staples of literary narrative theory, what are digital writers and artists using as the keystone to their projects? In essence, the question asks what motivation lies behind prose literature that is augmented[16] by the networked space of the computer?

As a piece of electronic literature, Maria Mencia's Birds Singing Other Birds' Songs offers no plot but rather movement through a compositional space. The piece is composed of one looped animation of a blue sky with white fluffy clouds on the bottom half of the screen. The bottom

9 Roberto Simanowski, "Holopoetry, Biopoetry and Digital Literature: Close Reading and Terminological Debates," in *The Aesthetics of Net Literature: Writing, Reading and Playing in Programmable Media*, ed. Peter Gendolla and Jörgen Schäfer (New Brunswick, NJ: Transaction Publishers, 2007), 53.

10 Marie-Laure Ryan, *Avatars of Story* (Minneapolis: University of Minnesota Press, 2006), 166.

11 Bertrand Gervais, "Is There a Text on This Screen? Reading in an Era of Hypertextuality," in *A Companion to Digital Literary Studies*, ed. Ray Siemens and Susan Schreibman (Malden, MA: Blackwell Publishing, 2007), 196.

12 Loss Pequeño Glazier, *Digital Poetics: The Making of E-Poetries* (Tuscaloosa: The University of Alabama Press, 2002), 169.

13 Friedrich Kittler, "The Perspective of Print," trans. Geoffrey Winthrop-Young and Michael Wutz, *Configurations* 10 (2002): 38.

14 Carrie Noland, "Digital Gestures," in *New Media Poetics: Contexts, Technotexts, and Theories*, ed. Adalaide Morris and Thomas Swiss (Cambridge, MA: MIT Press, 2006), 223-224.

15 The unfolding or telling of the story space rather than the showing (mimesis) of the story space. Strong diegetic elements often hint at a strong narrator however, narrative theorist Gérard Genette argues that all texts contain a diegetic element and narrator.

16 I felt that "augmented" underlined the idea that digital literature does not abandon all elements of print literate devices. Just as the switch from oral to literate culture did not completely obliterate oral devices (we are still talking about rhetorical structures), the digital will not completely eclipse the linear and hierarchical ordering abilities of the literate apparatus.

Figure 3 *Birds Singing Other Birds' Songs* By Maria Mencia, 2001

center of the screen has thirteen numbered sets of "play" and "stop" symbols that the viewer can manipulate. Each play button will introduce one flying bird and its bird call onto the screen and each stop button will make that corresponding bird quickly disappear and its call cease. The idea of interacting with the piece is not the major conceit of the work given the ease of the interface and the lack of any hidden triggers. Rather the pleasure derived from this work seems to arise from being able to compose the space by choosing which bird images and sounds should and should not play together.

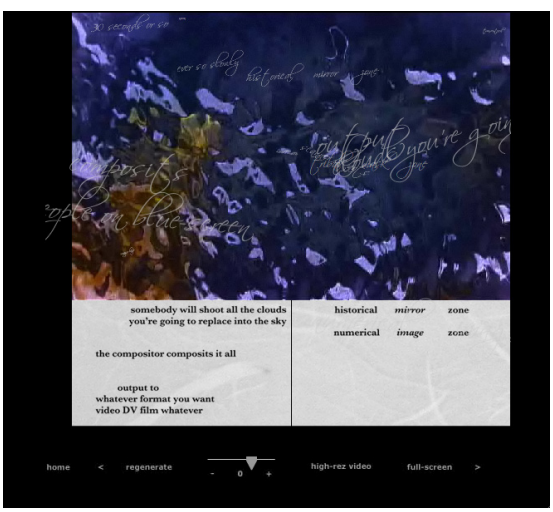


Figure 4: *slippingglimpse* by Stephanie Strickland and Cynthia Lawson Jaramillo, 2007

Composing a digital space is equally a central trope in Stephanie Strickland's poem, *slippingglimpse*. While *slippingglimpse* works with moving background images and animated text, it does not contain an audio track. On each text screen short phrases and words appear to move with the background image and seem to recede and approach the viewer by shrinking away and returning. The words are shown in a script font to resemble handwriting. Eventually the background fades to black and only the words are visible. At the bottom center of the screen is the option to call forth a scrolling screen that reveals a portion of the poem. Unlike Mencia's piece where the viewer can manipulate which birds to activate, the reader of *slippingglimpse* does not choose the words or control their movement. The undulating words and phrases create a dynamic network of linguistic material providing a potential space for the reader to make their own mental connections between the phrases. Turning to the scrolling poem, the reader seems to

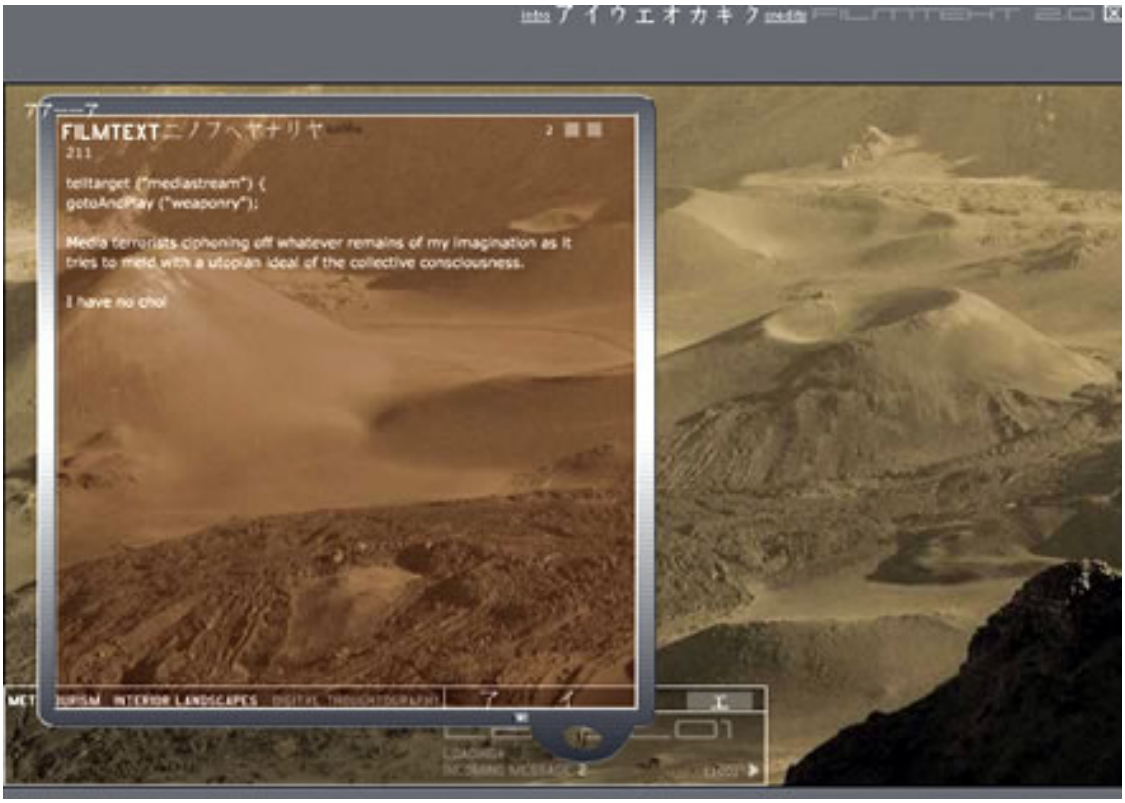


Figure 5: *FILMTEXT* by Mark Amerika, 2002

have gotten the phrases and words to scatter themselves into a recognizable textual order. Because each line of the poem seems to be able to move to several places without diminishing semantic value, the reader cannot help but wonder if the scrolling poem is composed as an anchor, as the poem, or if this is one version of how all the words and phrases found one another when they receded into an illegible squiggle.

Similarly, Mark Amerika incorporates multiple media in order to expand writing beyond the verbal especially because he found that his literary and artistic works were converging with, or as he states, "infecting," one another. He understands this infection of the literary onto the artistic and vice versa to stem from a common agenda of finding "Life Style Practices" for the "digital apparatuses" dominant today.[17]

FILMTEXT seems to combine the qualities of Mencia and Strickland's works, blending the reader's ability to compose the screen space with a poetic quality of verbal expression. FILMTEXT includes eight levels, each containing a still image of rocks, deserts, cliffs, or space satellites. Each level includes elliptical rings that can be clicked to activate either an email in-box or a video screen each with the option to choose audio loops, video thumbnails, or pop-up and animated text. The piece itself claims to be an event rather than an institution or document and with the reader's role of selecting what elements are activated; the event is one of a reader-driven remixing of the composition. With FILMTEXT, the reader scans the screen space looking for the elliptical spaces in order to find additional material to build an associative web of information that the author supplies. The reader's ability to choose between set options is not posited as empowering. Rather Amerika seems to take FILMTEXT as a demonstration of what reading and writing are in the digital appartus. The writer creates a space with certain thematic qualities and potential for sensational connections to which the reader processes and composits the material.

Mencia, Strickland, and Amerika's pieces each present themselves as processes of composition in which the viewer or reader must negotiate by making choices. Rather than offering a comprehensive plot and narrative

17 Mark Amerika, "Expanding the Concept of Writing Notes on Net Art, Digital Narrative and Viral Ethics," *Leonardo* 37, no. 1 (2004): 11.

exposition, the digital writer has to create a space that has the potential to evoke sensations in the reader who is essentially placed in a situation of constant choice and risk, choosing a path on which to build meaning and risking incoherence with each step. While the writer is turned into a sensation sower, the reader is made into a hunter-gatherer skimming through information in the networked databases of the digital world looking for information he or she can use to solve problems and build meaning.[18] Instead of building grand narratives, writing and reading in the networked space of the digital is invested in creating areas where sensational occurrences are possible. These sensational occurrences risk a visceral experience, which can mediate between contemplative and immersive models of understanding. Ryan describes Saint Ignatius's Exercises as exactly that, saying that the practice of imagining the descent into hell through our five bodily senses immerses the practicant in the world space of hell while also causing him or her to contemplate the state of their soul.[19] While Saint Ignatius's Exercises, as a print example, is confined to verbal semantic material to allude to sensational occurrences that the reader must imagine, the digital apparatus and its multimedia capabilities can include visual, aural, and pseudo-haptic elements that augment the immersive experience demonstrated in Exercises. Sensation is so powerful because it combines the awareness of embodiment and the risk of that body being compromised that come with contemplation. Because sensation is immediate and captivating, it compels us to participate even given the risks of immersion.

Stepping away from plot-centric narrative becomes a crucial difference between print narrative and digital narrative. Instead of honing causal relationships the digital reader browses, exploring a space of potential associative connections. Narrative is clearly becoming an exploration in pattern recognition where instead of closing off interpretations of a text, narrative satisfaction results from a process of exploring and wandering through a text.[20] Stuart Moulthrop's examination of hypertext resulted in similar findings concluding that narrative is a question of "itinerant desire" rather than of logic or sequence.[21] Even studies

18 Richard Johnson-Sheehan and Craig Baehr, "Visual-spatial Thinking in Hypertext," *Technical Communication* 48, no. 1 (2001): 24.
19 Marie-Laure Ryan, *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media* (Baltimore: The John Hopkins University Press, 2001), 116.
20 David Ciccoricco, *Reading Network Fiction* (Tuscaloosa: The University of Alabama Press, 2007), 42.
21 Ibid., 43.

Figure 6: *Children's Games* by Pieter Bruegel, 1560

in more traditional narrative theory conclude that narrative is turning to thematic, associative, and spatial elements. Rick Altman uses Pieter Bruegel's The Fair at Hoboken and Children's Games to show that multiple-focus narrative is unique because it does not privilege a central figure but instead create a consuming periphery where a theme or set of connections can be developed.

While he used literary texts to explicate his other narrative models, Altman chose to use the woodcarvings of Pieter Bruegel and their subsequent drawings to demonstrate the functions of the multiple-focus narrative. This seems particularly appropriate for digital literature that is increasingly indistinguishable from digital art. Altman argues that because readers or viewers of a multiple-focus narrative are placed in the position of following an "itinerant desire" and of building thematic associations from non-hierarchical material, the readers or viewers take up questions far beyond plot and character that are central to dual and single-focus narratives.[22] Rather, the reader or viewer becomes interested in theme and mood, or building up a sensual subjective interpretation of the narrative tidbits the writer or creator assembles in one composition. Here the reader/viewer does not identify with a character but develops a theme from the growing intersections of paths. By fixating on common traits Altman argues that characters are no longer autonomous but representative of a reader determined theme.[23] Altman recognizes these traits of multiple focus characters in the lack of detail Bruegel uses in the facial features of his villagers. No villager has individually distinct characteristics but rather, Altman argues that they become vectors or lines of sight that the viewer of the drawing follows to explore other elements of the composi-

22 Rick Altman, *A Theory of Narrative* (New York: Columbia University Press, 2008), 263.
23 Ibid., 286-287.

In place of the causal line, storytelling in the digital environment occurs in an associative and thematic mass. Writers must take into account the role of reader participation that alters the progression of the storyline...

tion. The reader determines a trajectory through which he or she travels through the narrative space, moving from vector to vector made available in the compositional elements of the piece. Multiple-focus narratives are for the people at large. While the reader does not necessarily become the author of digital spaces, he or she does serve as a compositor. The reading experience is thus increasingly personalized by enacting reader-motivated connections as an integral part of narrative development or progression.

What happens to narrative in the discussion of prose literature in the digital space? Narrative has served as a backbone of literature for such a long period of time that it is unreasonable to expect it to lose all relevance despite the growing similarity between literature and other arts in the digital era. Narrative cannot ignore the interactive and programmatic capacities of the computer. Marie-Laure Ryan explores changes brought about by an overlapping of narrative and interactivity. She argues that interactive media are not very good storytellers chiefly because narrative meaning comes from responding to linear structure assumed by the text rather than any combination of texts a reader may compile.[24] In order to make room for interactive elements in storytelling, narrative has to let go of plot as its defining feature.[25] Whether the process feels more like skimming, browsing, searching, or contemplating; making connections, recognizing patterns, and interpreting are all essentially acts of reading. With digital technologies like the computer to aid and increase the flow of information, we have only more cause to view narrative as firmly based in data accumulation and movement through that data driven by itinerant desire rather than by self-knowing subjects and their representations. In contrast to the self-knowing subject who works in closed systems with a knowledge of the end, those subjects driven through a narrative space by itinerant desire process one intersection or choice at a time without a universal knowledge of the structure of a system. The self-knowing subject depends on logical progression towards a known end while the subject driven by itinerant desire depends on affective choices to make associative links. Digital technologies have only made people more aware of reading extending beyond studying the poem or novel and traditional models of narrative as a linearly sequential diegesis of causal events.

Norman Klein points out that while data during the Enlightenment was the fodder of science and few narrative films, with the exception of documentaries, were dominated by data, data became the mode of storytelling for computer and video games, the Internet, and mapping by 2004.[26] With the prolific amount of information made available by digital networks, it is no surprise that uni-linear narrative is overwhelmed by the data influx. Writing and reading in the digital apparatus becomes clearly much more than creating and consuming verbal semantic material. Instead writing and reading is a massive field of data forcing the writer and reader to face risk, desire, penetration, interpretation, and constant remixing of the composition. In place of the causal line, storytelling in the digital environment occurs in an associative and thematic mass. Writers must take into account the role of reader participation that alters the progression of the storyline, the presence of the computer as a collaborator in the act of writing, and the database logic that comes with working on computers and the Internet. Readers must use their own desires and experiences to navigate through unfamiliar territory risking incomprehension and exposure. With the nature and expectations of the writer and reader so significantly altered by digital technologies, the time has arrived for the humanities to take up the challenge of incorporating these traits into our cultural capital, building a rhetoric to bring to our schools where our ideas of literacy are far too limited to be of use to a digital subject working with a networked computer.

24 Marie-Laure Ryan, "Beyond Myth and Metaphor: Narrative in Digital Media," *Poetics Today* 23, no. 4 (2002): 607.

25 Marie-Laure Ryan, *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media* (Baltimore: The John Hopkins University Press, 2001), 257.

26 Norman M Klein, "Waiting for the World to Explode: How Data Convert into a Novel," in *Database Aesthetics: Art in the Age of Information Overflow*, ed. Victoria Vesna (Minneapolis: University of Minnesota Press, 2007), 86.

Works Cited

Altman, Rick. *A Theory of Narrative*. New York: Columbia University Press, 2008.

Amerika, Mark. "Expanding the Concept of Writing Notes on Net Art, Digital Narrative and Viral Ethics." Leonardo 37, no. 1 (2004): 9-13.

FILMTEXT. Mark Amerika. http://www.markamerika.com/filmtext/ (accessed July 12, 2009).

Bolter, Jay David. *Writing Space: Computers, Hypertext, and the Remediation of Print.* 2nd ed. Mahwah, NJ: Lawrence Erlbaun Associates, Publishers, 2001.

Cayley, John. *translation*. Electronic Literature Collection. http://collection.eliterature.org/1/works/cayley__translation/translation5.mov (accessed July 12, 2009).

Ciccoricco, David. *Reading Network Fiction*. Tuscaloosa: The University of Alabama Press, 2007.

Gervais, Bertrand. "Is There a Text on This Screen? Reading in an Era of Hypertextuality." In *A Companion to Digital Literary Studies*, edited by Ray Siemens and Susan Schreibman, 183-202. Malden, MA: Blackwell Publishing, 2007.

Glazier, Loss Pequeño. *Digital Poetics: The Making of E-Poetries.* Tuscaloosa, Alabama: The University of Alabama Press, 2002.

Hayles, N. Katherine. *Electronic Literature: New Horizons for the Literary*. Notre Dame, IN: University of Notre Dame Press, 2008.

"Translating Media: Why We Should Rethink Textuality." *The Yale Journal of Criticism* 16, no. 2 (2003): 263-290.

Johnson-Sheehan, Richard, and Craig Baehr. "Visual-spatial Thinking in Hypertext." *Technical Communication* 48, no. 1 (2001): 22-30.

Kittler, Friedrich. "The Perspective of Print." Translated by Geoffrey Winthrop-Young and Michael Wutz. *Configurations* 10 (2002): 37-50.

Klein, Norman M. "Waiting for the World to Explode: How Data Convert into a Novel." In *Database Aesthetics: Art in the Age of Information Overflow*, edited by Victoria Vesna, 86-94. Minneapolis: University of Minnesota Press, 2007.

Mencia, Maria. *Birds Singing Other Birds' Songs*. Electronic Literature. http://collection.eliterature.org/1/works/mencia__birds_singing_other_birds_songs/index.html (accessed July 12, 2009).

Morrissey, Judd. *The Jew's Daughter.* Electronic Literature Collection. http://collection.eliterature.org/1/works/morrissey__the_jews_daughter.html (accessed July 12, 2009).

Noland, Carrie. "Digital Gestures." In *New Media Poetics: Contexts, Technotexts, and Theories,* edited by Adalaide Morris and Thomas Swiss, 217-243. Cambridge, MA: MIT Press, 2006.

Raley, Rita. *Tactical Media*. Minneapolis: University of Minnesota Press, 2009.

Ryan, Marie-Laure. *Avatars of Story*. Minneapolis: University of Minnesota Press, 2006.

"Beyond Myth and Metaphor: Narrative in Digital Media." *Poetics Today* 23, no. 4 (2002): 581-609.

Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media. Baltimore: The John Hopkins University Press, 2001.

Saper, Craig J. *Networked Art*. Minneapolis: University of Minnesota Press, 2001.

Simanowski, Roberto. "Holopoetry, Biopoetry and Digital Literature: Close Reading and Terminological Debates." In *The Aesthetics of Net Literature: Writing, Reading and Playing in Programmable Media*, edited by Peter Gendolla and Jörgen Schäfer, 43-66. New Brunswick, NJ: Transaction Publishers, 2007.

Strickland, Stephanie, and Cynthia Lawson Jaramillo. *slippingglimpse*. Stephanie Strickland. http://www.stephaniestrickland.com/ (accessed July 12, 2009).

Swiss, Thomas. "Electronic Literature: Discourses, Communities, Traditions." In *Memory Bytes: History, Technology, and Digital Culture*, edited by Lauren Rabinovitz and Abraham Geil, 283-304. Durham, NC: Duke University Press, 2004.

Utterback, Camille. *Text Rain.* 21c Museum. http://www.21cmuseum.org/museum/exhibits/text-rain.aspx (accessed July 12, 2009).


12
Wed 10:59 AM
untitled
iDMAAa Journal
7.1 Cover.tiff