The Journal of the International Digital Media and Arts Association

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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.

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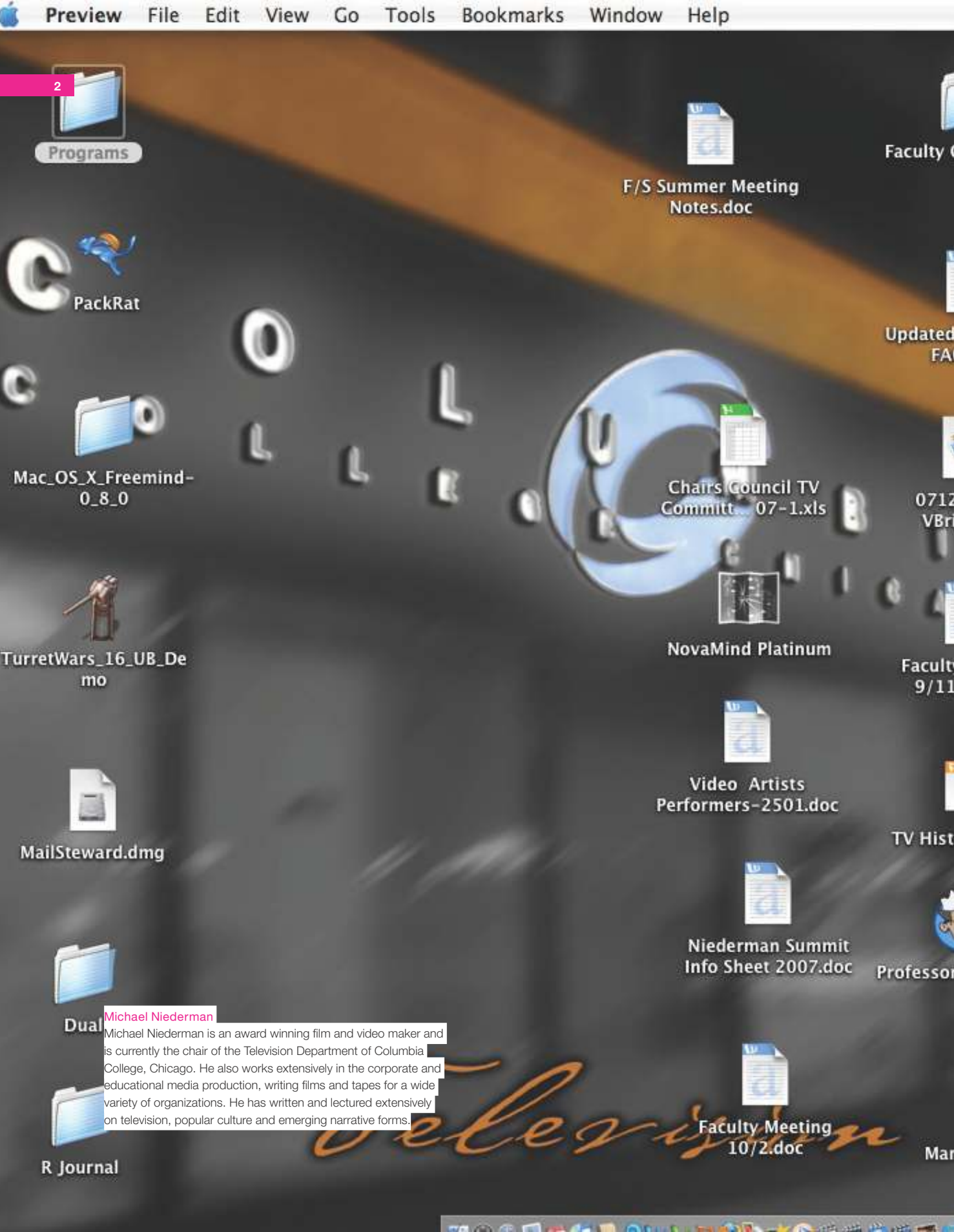
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Michael Niederman is an award winning film and video maker and is currently the chair of the Television Department of Columbia College, Chicago. He also works extensively in the corporate and educational media production, writing films and tapes for a wide variety of organizations. He has written and lectured extensively on television, popular culture and emerging narrative forms.
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Foreword

A conference journal in a perfect world should be an immersive experience, or, better yet, have a tiny time machine built in so that we can go back in time and really see what happened. Okay, the world isn't perfect, but in its own beautiful low-tech way this journal captures the essence of what occurred in San Diego. This version of the conference journal is like the last one in that the topics are far ranging, the insights thought provoking, and the authors articulate. What interests me is that some topics reappear while others go away. Different conference, different topics, right? I would argue that over time these shifts will be observed as something more profound. This "thing" we are all looking at is changing with each passing week, day, hour, minute—you pick. This "field" of digital media and arts is much like the software we complain about learning all the time: Another new version? What was wrong with the last one? (The answer is "nothing," of course!) A strange combination of commerce, technology, and the human spirit drives these processes and nothing will stop it until our heads explode. (My hat is feeling a little tight lately...)

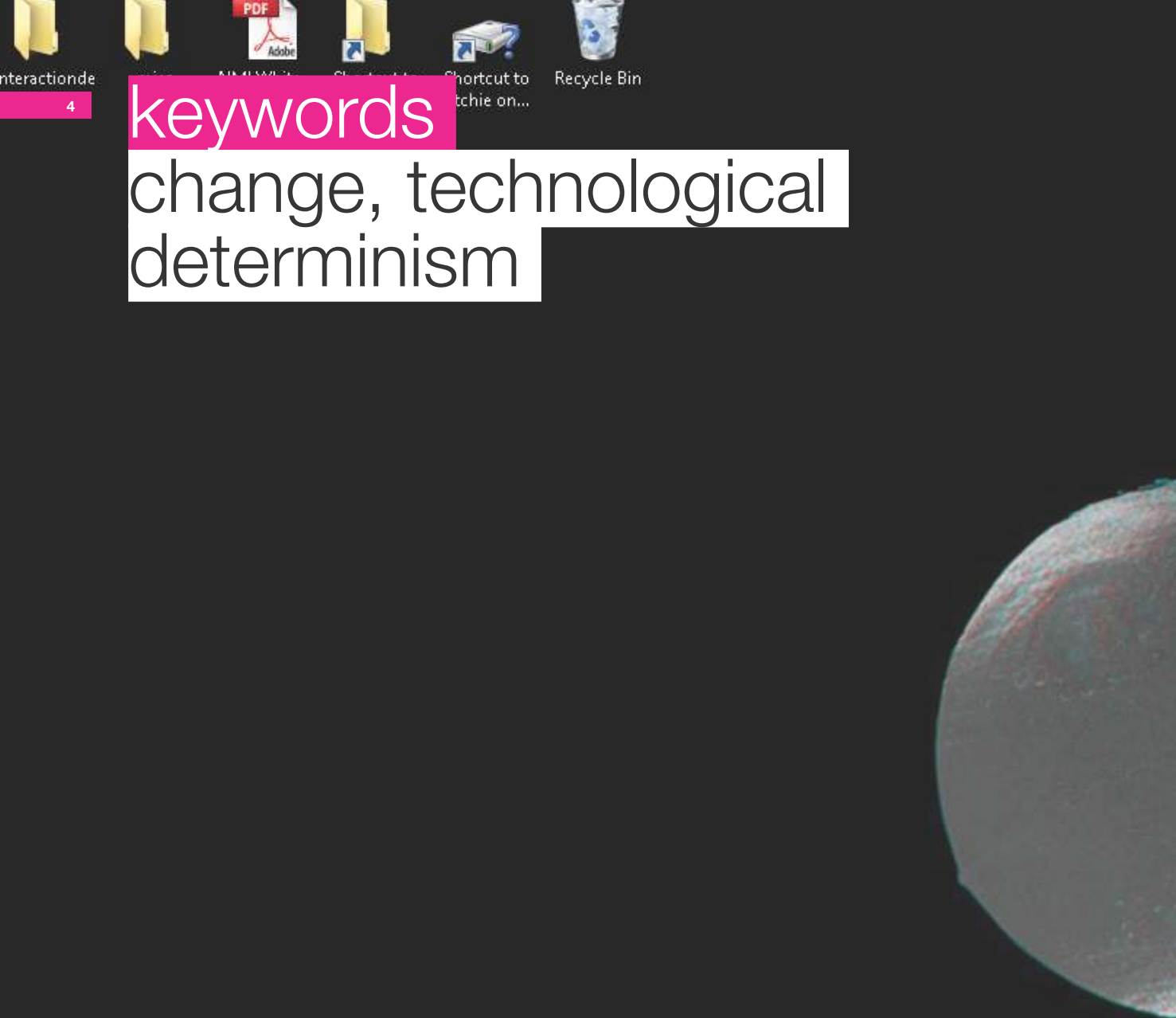
But back to the point, which is that these snapshots are important because without them we can't tell how far we have traveled. This is combined with our most important job, which is to remember. A recent report I read talked about how "young people" are less able to remember basic personal information than their elders. Just where will that take us? As we dive headlong into a world where we forget more and more and just plain miss a lifetime's worth of information in a day, it is more and more important to articulate, codify, and institutionalize important thoughts and perspectives. Blogs are great, but who doesn't like a cool looking journal to lug to the coffee shop?

Keep thinking, keep reading and keep writing,

Michael Niederman, Executive Editor
Columbia College Chicago

P.S. A moment to recognize the real heroes of this work; To Jeff for shaping it, to Randall for transforming it and to Sharon for making sure I don't embarrass myself.

keywords
change, technological determinism



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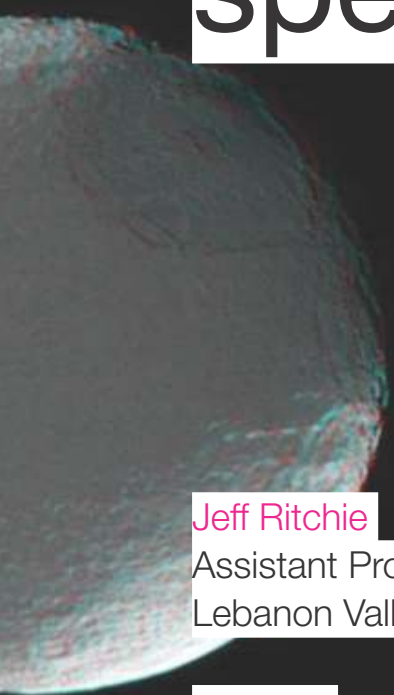
Digital Media and Change: A Literary/Historical Perspective



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Abstract

Change, the theme of the November 2006 International Digital Media and Arts Association conference proceedings, is a long standing theme in western culture and can be understood to represent many ideas. This paper explains a few of these different ideas of change and describes one such idea, change as a subjective reaction to the diffusion of technology in general, and media in specific. Unlike the fixed form of the print edition of this journal, digital media privileges a far more dynamic world view, which more readily accepts change and allows for a greater and wider spread of technological innovation.

Just as the river where I step is not the same, and is, so I am as I am not.
—Heraclitus[1]

Life, the ever-present, knows no finality, no finished crystallisation. The perfect rose is only a running flame, emerging and flowing off, and never in any sense at rest, static, finished. Herein lies its transcendent loveliness. The whole tide of all life and all time suddenly heaves, and appears before us as an apparition, a revelation…. Tell me of the mystery of the inexhaustible, forever-unfolding creative spark. Tell me of the incarnate disclosure of the flux, mutation in blossom, laughter and decay perfectly open in their transit, nude in their movement before us.
—D. H. Lawrence[2]

The adage attributed to Heraclitus above records his musings on one of the essential truths of the human condition. The ephemeral world has been a long-standing trope since at least the time of Heraclitus, whose adage translated above is found in fragments he wrote during what we would consider a slow-paced sixth century B.C.E., well before our digital age. In the twentieth century, the author David Herbert Lawrence similarly reflected on the ephemeral nature of existence—on the fact that our perceived state of being is in fact a process of becoming. Writers and artists, philosophers and industrialists, all have pondered and felt the challenge and exhilaration of a world defined by its constant change. While change is indelibly written on our existence, our desire for fixity and closure, evidenced in print culture especially, seems to be at odds with this idea of change. With the use of digital media as a means of communicating, however, this desire is increasingly called into question if not downright abandoned.

This conference requested "papers that ostensibly explore the reality of the constantly changing digital universe in which we live," but what does the term "change" really mean? As Heraclitus noted, change ironically stands as the only constant in our lives. The very idea of change is also a relative notion rooted in temporality and subjectivity. The term can refer to the mere unfolding of time—the cause and effect that is the unfolding of life. It can refer to our *perception* of life's unfolding. However, the change of Heraclitus and Lawrence is not necessarily the same sense of change upon which this conference focused.

The focus of this conference seems to be not so much on change-as-the-passage-of-time or its effects on the material world, but rather on issues surrounding the idea of change as technological innovation—particularly as it relates to digital media–experienced in the hypermediacy of our culture.[3] While change visits us all, at all times in human history, the rapid rate of change seen in today's modern, digital setting *seems* faster compared to earlier descriptions of the slow, plodding change witnessed in oral, scribal, and early print cultures. Time moves no faster than it did three thousand years ago, but the apparent rate of change in the world—and the value on and expectation of how fast life is to react to this change—seem to have accelerated.[4] Of course, implicit within my pairing the diffusion of technological innovation to perception is how technological innovations spread through society and the influence of this technology—those pertaining to digital media in this case—on our perception of the world. And our perception has changed. If Paul Saffo's "thirty year rule"[5] holds true, however, it's not that technological innovations are taking place at such a fast rate after all, but rather that there are more changes taking place at the same time—giving the appearance of a faster rate of change. The manufacturing-centric approach to technological innovation sought to satisfy the needs of large heterogeneous markets with homogenous selections that did not efficiently meet the needs of users and more particularly of "user-innovators," who have the ability to modify existing products to meet their needs. The nature of the Web 2.0 culture allows for what Eric von Hippel calls democratized

1 Heraclitus, *Fragments*, trans. Brooks Haxton (New York: Penguin Classics; 2003), 51. The works of Heraclitus remain only in the form of fragments.

2 David Herbert Lawrence, *D. H. Lawrence: Complete Poems*, eds., Vivian De Sola Pinto and Warren F. Roberts (New York: Penguin Classics, 1993), 182.

3 Hypermediacy is "an intense awareness of and reveling in the medium" as opposed to striving to make the medium transparent, such as in those narrative works that show the story unfolding, rather than revealing the artifice of the work. Jay David Bolter, *The Writing Space: The Computer, Hypertext and the History of Writing* (New Jersey: Lawrence Erlbaum Assoc., 2001), 25-26.

4 Modern technology such as microchips and digital media allow have allowed our culture to accelerate the rate at which we transact life. For an easy to read discussion of the acceleration of life, see James Gleick, *Faster: The Acceleration of Just About Everything* (New York: Pantheon, 1999).

5 The "thirty year rule" states that new technologies take approximately 30 years to develop and become widely diffused in society. Roger Fidler, "Principles of Mediamorphosis," in *Living in the Information Age: A New Media Reader*, 2nd ed., ed. Erik P. Bucy (Toronto: Thomson Wadsworth, 2005), 34-35.

Oddly enough, how we understand how change takes place has itself changed.

innovation[6] and helps increase the rate-of-change-as-technological-innovation that we perceive. Circumventing the traditional, manufacturing-centric technological innovation process, consumers who take part in hacking, user-adaptation, crowdsourcing,[7] and peer-created content,[8] are now increasingly developing new technologies and new uses for new and existing technologies. When combined with on-demand-manufacturing,[9] this trend decreases the time it takes to speed the diffusion of innovations and increases the number of innovations introduced to society, creating in turn the perception of increased rate of change in our society. User-innovation sites such as hackzine.com or the smart-mob meetings of barcamp.com[10] represent how the Web 2.0 environment offers dramatic increases in the number of "products" created and increases how quickly these innovations diffuse through society.

Oddly enough, how we understand how change takes place has itself changed. In the late 17th and early 18th centuries, the process of how change took place was envisioned through the "great man" theory of history, which was validated by the late 18th and early 19th century's valorization of the individual and genius and theories of history. The concept perceived the agent of change as a single lone genius who stood on the shoulders of giants to see farther than his peers. In regards to innovation, this theory is perhaps best illustrated by the figure Sir Isaac Newton. This idea of historical change described a world in which history was wrought by individual great men of great talents who, with knowledge of what other great men had done, could

6 Eric Von Hippel, *Democratizing Innovation* (Cambridge, Mass: The MIT Press, 2005).

7 Crowdsourcing is defined as when corporations outsource work to a large group of networked amateurs. Jeff Howe, "The Rise of Crowdsourcing," *Wired Magazine*, 14. (June 2006), http://www.wired.com/wired/archive/14.06/crowds.html. (June 17, 2007)

8 Youtube.com, Myspace.com and Facebook.com are the three best examples that come to mind, but eBay also relies upon the choices and content of its users to add value to its web site's offerings. See below for further discussion.

9 For an instance of on demand manufacturing for the print-industry, print on demand, see the site Lulu.com.

10 *Hackzine.com* http://hackszine.com. is as its name implies, a peer-created web-journal devoted to user-generated adaptations of existing technology or products. *Barcamp* http://barcamp.org is an "international network of unconferences—open, participatory workshop-events, whose content is provided by participants—focusing on early-stage web applications, and related open source technologies and social protocols." iPhoneDevCamp San Francisco 2007 was recently held, generating over 40 new applications for the iPhone. See "iPhoneDevCamp San Francisco 2007: Making the web a better place for iPhone." http://www.barcamp.org/iPhoneDevCampApps/ (July 17, 2007).

do great things.[11] Think Edison. Yet, Edison had assistants helping him in his work. The changes wrought in a Web 2.0 environment in which users can easily innovate dispels the myth of the individual—contained and singular, working in isolation—bringing about change. A telling example of how the Web 2.0 mindset is undermining this notion of the agent of change is crowdsourcing. As Jeff Howe wrote of crowdsourcing:

> Just as distributed computing projects like UC Berkeley's SETI@home have tapped the unused processing power of millions of individual computers, so distributed labor networks are using the Internet to exploit the spare processing power of millions of human brains. The open source software movement proved that a network of passionate, geeky volunteers could write code just as well as the highly paid developers at Microsoft or Sun Microsystems. Wikipedia showed that the model could be used to create a sprawling and surprisingly comprehensive online encyclopedia. And companies like eBay and MySpace have built profitable businesses that couldn't exist without the contributions of users.[12]

Like an inverse pyramid, users are exposed to more innovations everyday, because more people are involved in the innovation process—particularly as corporations move away from the traditional manufacturing process and "enfranchise" the user-innovators and smart mobs. In democratizing the creation and diffusion of innovation, we are now able create more, we are exposed to more, our works are increasingly being linked together, and in turn our world seems to change that much more rapidly.

As Jeff Howe notes, today's peer-created content sites such as Facebook.com, Myspace.Com, and Youtube.com derive their value not from the author/editor creating the content, but from the author/editor organizing and networking the content created by users in a manner that users find valuable. While these new practices draw attention to the assumptions inherent in our use of previous, non-digital media, celebrated instances of the digital age, such as peer-created content, find their precursors in the analog age.

The difference between today's peer-created content and its 18th and 19th century analog is that control over the content that had been created by the populace and the final form of this content had been centralized, in this instance in the author/editor. For example, in 1857 the brother's Grimm published *Grimm's Fairy Tales*.[13] Their work represents an earlier prototype of peer-created content as well as illustrates a number of our assumptions governed by our use of print media. In gathering the stories and songs of the German speaking countryside, the brothers Grimm transformed them in their act of recording them. Their stories changed from mutable objects that had found their existence in the breath of living beings, into inanimate, fixed print objects. As an insect collector collects insects and sets them with a pin to preserve them, the Grimm's act fixed and preserved the stories.

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What is it that causes us to desire this sense of fixity and closure? Why are these two fictions so resonant in western culture? Does this desire represent a deep-seated desire to escape the ephemeral confines of this world? In some ways, this closure can be seen as an understanding that the close of the "fairytale" delivers a sense of finality and completion unrealizable in life. It delivers a static end that is sustained—the happiness that is rooted in an illusory, static, rather than dynamic or ephemeral, world. We also read these fixed, static fables and come to understand not only that change has figured into our collective cultural consciousness for some time—fostering a desire for the fiction

11 For an excellent example of this notion of the great man theory of history, see Thomas Carlyle, *On Heroes and Hero Worship and the Heroic in History*, in *The Works of Thomas Carlyle in Thirty Volumes*. Vol. 5. (New York: Charles Scribner's Sons, 1903).

12 Where corporations outsource work to a large group of amateurs. Jeff Howe, "The Rise of Crowdsourcing," *Wired Magazine*, 14. (June 2006), http://www.wired.com/wired/archive/14.06/crowds.html. (June 17, 2007)

13 Brüder Grimm. *Kinder-und Hausmärchen,* Band 1. (Stuttgart: Reclam, 1987), 9.

of closure and completion found in the saying "and they lived happily ever after"—but also that the well-defined, stable print document that the Brothers Grimm created wields considerable power in our culture. The fictitious fixity implied by the closing statement ironically comments on the Grimm's own agenda of translating (or remediating)[14] the fluid, oral tales of the German-speaking countryside into a fixed form that is defined by the impulses and associations of the Gutenberg printing press.

Traditional print media (associated with the post-Gutenberg era) lends us our perception of this illusion of fixity and closure, such as through the physical sense of closure seen in the last word of the last page of a work or the border of a painting, which perhaps reinforces a preexisting desire for fixity and closure in the world.[15] Granted, traditional media affords change; publishing a work using a printing press allows for revising and substantially altering the edition upon the work's second printing. Texts can be changed, yet there usually exists an agreed upon fixed form of the work, such as a scholarly edition. This final, fixed form reinforces in audiences a sense of the form's "structural-closure," a sense of closure dependent on understanding the form of the medium used to convey information (a narrative, art, etc) rather than understanding the content of the medium.[16] The discrete quality of the work and its sense of wholeness, of completion, give rise to the expectation of closure and fixity of static objects, which is antithetical to the nature of existence—and to the qualities of digital media. The evolution of the digital world in which we all live has abandoned the expectation for fixity and closure for the acceptance of change.

But what causes this change of perception? While quoting McLuhan goes in and out of vogue, McLuhan and Walter Ong argue forcefully that media/technology influence our perceptions.[17] Technological determinism, the theory that the media we use affects how we perceive the world, has its detractors,[18] but many works illustrate and support the phenomenon. For instance, Benedict Anderson's book *Imagined Communities* theorizes that nationalism found its origins in the change of perception that resulted from the rise of the press. Anderson claims that the printing press acted as a powerful unifying force and allowed those diverse peoples who spoke the same language to conceive of themselves as somehow related to one another. Rather than solely seeing themselves as united through geography, with proximity creating a sense of community, the printing press allowed a people that spoke the same language to "imagine" a community that extended beyond their own small locale to encompass a nation that was defined by a common language. This "imagined community" represents how a society used the medium of the printing press to print news in the vernacular, which in turn influenced the thought and perception of its users.

We can better see media-inspired change in perception within the history of webpage design. Web page designers had first attempted to create pages that replicated the assumptions of print culture. When designers included the language "best viewed in 640x480" or "best viewed by browser model y, version x," they were recreating the assumption of the static text of post-Gutenberg texts. This design philosophy maintains that users should not be able to change the "look" of the web page. As the field matured, the designers came to understand that digital media had changed the rules from those of post-Gutenberg texts. Fixed design and page content result from viewing web pages and digital media as though they were previous media, like a Gutenberg print text, rather than dynamic, database driven texts. As we come to understand the

14 Bolter and Gruisin define remediation in multiple ways; the two most appropriate definitions are ""the representation of one medium in anther" and "the way in which one medium is seen by our culture as reforming or improving upon another." Jay David Bolter and Richard Gruisin, *Remediation*: *Understanding New Media* (Cambridge: MIT Press, 2000), 45 and 59.

15 Landow and Delany describe the three crucial attributes of print texts as being that they were "linear, bounded, and fixed." Of course we would see texts as fixed, as this attribute is associated with print. Landow, George P. and Paul Delany, "Hypertext, Hypermedia and Literary Studies: the State of the Art," in G. P. Landow and P. Delany, eds., *Hypermedia and Literary Studies*. Cambridge: MIT Press, 1990, 3.

16 I differentiate the idea of "structural-closure" from narrative closure, the feeling that the narrative answers all the questions/expectations of the audience. My idea of structural closure encompasses Janet Murray's more narrowly defined "electronic closure," which she defines as occurring when the audience understands the structure of the storyspace. Electronic closure occurs when a work's structure, though not necessarily its plot, is understood. This closure involves a cognitive activity at one remove from the usual pleasures of hearing a story. The story itself has not resolved. It is not judged as consistent or satisfying. Instead, the map of the story inside the head of the reader has become clear. Murray, Janet. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace.* (New York: Free Press, 1997), 174.

17 Marshal McLuhan and Lewis Lapham, *Understanding Media: The Extensions of Man* (Cambridge Mass: MIT Press, 1994); Walter Ong, *Orality and Literacy: The Technologizing of the Word* (London and New York: Routledge, 2002).

18 For instance Bolter warns of the reductive nature of technological determinism. Jay David Bolter. *The Writing Space: The Computer, Hypertext, and the History of Writing.* (New Jersey: Lawrence Erlbaum Assoc., 2001*),* 19.

possibilities of this new media—and unlearn the lessons and assumptions of the old—fixity and completion have become even more obvious as fictions.

While far more malleable than many digital "texts," wikipedia is never really in its final fixed, form (and poses all kinds of problems for citations). How can we cite an entry when the entry can change with every reader? The Modern Language Association (MLA) attempted to solve this problem by requiring authors citing web pages to include both a date published and the date accessed.[19] The MLA's strategy for citations doesn't adequately address the problem of change in content or interactivity, but it does at least acknowledge the change taking place in media. From both a formatting and content standpoint, digital media is the embodiment of change. Web sites are constantly updated, links change or "go dead," works require user interaction, and even the code and hardware used to access the information changes.

As a result, the idea of completion—of the finished work as a discrete, completed, and self-contained entity that will not change and is in its final, constant form and will deliver closure to an audience—no longer really holds. Many interactive works are not even discrete entities and depend on a connection to the internet, updates, patches, and/or the agency of the user to bring them into existence. The works present a potential; they are the instrument for creating a series of fleeting, ephemeral user experiences. While writing this introduction, I have created scores of works based on this process—simply by pressing save. All are admissions that rather than a final form or discrete, fixed, final object, instead objects exist as one of a string of instances of the work. With the internet and software published with the expectation that it will be updated—and networked computers allowing for this perpetual change—the digital age brings to the cultural landscape a degree of permanent impermanence seldom seen since before the invention of writing. In digital works such as hypertext, *Second Life* , and Massive Multi-Player Games, the ending and/or closure are forever deferred. Aside from often calling for patches and updates, interactive pieces—be they digital art, video games, or hypertext—are never really "finished" until the user interacts with them and causes a manifestation of them to shimmer momentarily into existence. These experiential works differ vastly from some works seen in the past—the painting or sculpture that could be stored in a safe place. Like Buddhist sand paintings, digital media (and its media-specific ideology) challenge previous assumptions about cultural objects and consequently require new forms of conservation and archiving.[20] For instance, the United Kingdom National Archives has 580 terabytes of information stored in digital forms that are no longer commercially available.[21] How do museums conserve or display those works that don't have a tangible existence beyond a hard drive and rely on hardware, software, and the input of audiences to bring them into being?

The problems posed by digital media mean that we as a profession must come to understand the cultural assumptions we have that are based on print media—and effectively change our pedagogical, scholarly, and creative endeavors to more closely align with the possibilities afforded by this new media. Just as our current copyright and economic institutions rely upon on the assumptions of out-of-date-media, so too are academia's processes and procedures (such as the irony of a print journal in a digital field). Institutions are conservative and slow to change. The tenure and promotion process moves slowly and reluctantly beyond the views of those technological forms of the eighteenth and nineteenth centuries.[22]

Yet, like the fairy tales of the brother's Grimm, for the sake of completion, fixity, and "authority" I edited and published these essays in this fixed form; I ran pins through the dynamic living instances of the ideas presented and discussed at the iDMAa conference in San Diego. The snippets of conversations contained herein are really neither complete nor definitive in themselves, but rather should serve as catalysts to spark further debate and discussion. That is after all one of the goals of academic discourse—to further the spread of ideas through the preservation of our discussions—either the asynchronous discussions possible through print media or through the synchronous discussions possible through digital media. T.S. Eliot once wrote in his essay "Tradition and the Individual Talent" that:

> the historical sense compels a man to write not merely with his own generation in his bones, but with a feeling that the whole of the literature of Europe from Homer and within it the whole of the literature of his own country has a simultaneous existence and composes

19 Joseph Gibaldi, *MLA Handbook for Writers of Research Papers*, 6th ed. (New York: MLA, 2003), 211.

20 For an interesting article on the conservation problems digital media poses to museums, see Terry Schwadron, "Conservation; Preserving Work That Falls Outside the Norm," *The New York Times*, March 29, 2006, Section G, 12.

21 "Warning of data ticking time bomb," *BBC*. (3 July 2007) http://news.bbc.co.uk/1/hi/technology/6265976.stm (July 6, 2007).

22 See for instance, "Guidelines for Evaluating Work with Digital Media in the Modern Languages," *Modern Language Association.* http://www.mla.org/guidelines_evaluation_digital. (June 23, 2007).

> a simultaneous order. This historical sense, which is a sense of the timeless as well as of the temporal and of the timeless and of the temporal together, is what makes a writer traditional…. No poet, no artist of any art, has his complete meaning alone. His significance, his appreciation is the appreciation of his relation to the dead poets and artists. You cannot value him alone; you must set him, for contrast and comparison, among the dead. The existing monuments form an ideal order among themselves, which is modified by the introduction of the new (the really new) work of art among them.[23]

For our works and discussions to have gravity, we must interact with what went before us and in some small way change our understanding of the past. However, with change such an integral part of digital media, how best can we preserve those digital works that have been created? In the end, that is what this organization—and journal—is about. The importance of the physical objects that we produce and preserve (objects such as articles, books, and works) lie not in themselves (or in their appeal to Tenure and Promotion committees) as much as in the dynamic interchange that takes place between these preserved instances of thought and the discussions engendered in the minds that populate the sweep of history.

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23 T.S. Eliot. "Tradition and the Individual Talent," *The Norton Anthology of English Literature*, 8th ed., vol. 2. gen ed. Stephen Greenblatt, (New York and London: WW Norton & Company, 2006), 2320.

keywords
split attention, split screen, narrative film, postmodernism

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Split Narrative Films and the Problem of Attention Engagement

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Abstract

The digital revolution's development of the hypertext and the post-modern episteme consonant with it have generated far-reaching changes in the structure of narrative films. This paper focuses upon this revolution derived cinematic strategies of de-centering and non-closure through tropes such as split screens and non-cohering narrative threads. Following cognitive constructivist theories, I claim that these strategies unintentionally lead to viewer distraction, frustration, and alienation resulting from the wrong assumption that viewers are capable of being attentive while splitting their attention. A close analysis of the split-screen film *Time-code* (Mike Figgis, 2002) and of the narrative-split film *Adaptation* (Spike Jonze, 2002) instantiates these claims.

Film, like other art forms, addresses the cognitive faculties of their spectators and strives to allow them to build a world and a story by realizing these faculties, a process they are hardly aware of, or which is hardly satisfied in real life.

The digital revolution's development of the hypertext and the post-modern episteme consonant with it, have generated far-reaching changes in the structure of narrative films.[1] Film narrative theorists supporting this revolution envision a future form of hypertext-based film storytelling enabled by the calculative and storage power of computers and by the attending postmodern shifts in perception. They suggest viewing this emerging form as an expansion rather than a break away from the present inherent faculties of film narration (e.g., Brooks, Kinder, Manovich, and Murray).[2]

Others have noticed, however, the dire implications of this episteme and of hypertext based narratives for issues of origin, creativity, coherence, identification, affectivity, and attention. They are concerned with the characterizing postmodern textual depthlessness, loss of affectivity, and disorientation.[3]

In this paper, I would like to focus upon the post-modern and hypertext derived cinematic strategies of de-centering and non-closure through tropes such as split screens and non-cohering narrative threads and that engender viewers' distraction rather than engagement. It is my contention that the use of such strategies wrongly presumes a subject capable of being attentive while splitting his/her attention.[4] Actually, few, if any, humans are capable of effectively dealing with many of the cognitive tasks demanding split attention, due to the cognitive load that these efforts have on our limited working memory.[5]

1 As Sobchak, Wolf, and others have noted, narrative cinema, due to the computerization of its production processes, is experiencing a loss of deep engagement and is shifting its traditional narrative strategies. See Vivian Sobchack, *Screening Space* (Rutgers University Press, 1987); Mark Wolf, *Abstracting Reality, Art, Communication, and Cognition in the Digital Age* (New York: University Press of America, 2000).

2 K. Brooks, "Metalinear Cinematic Narrative: Theory, Process, and Tool," (PhD diss. MIT, 1999); Marsha Kinder, "Narrative Equivocations between Movies and Games," in *The New Media Book,* ed. Harries (London: BFI Publishing, 2002); Lev Manovich, "Old Media as New Media: Cinema," in The New Media Book, ed. D. Harries (London: BFI Publishing, 2002); Janet Murray, Hamlet on the Holodeck: *The Future of Narrative in Cyberspace* (New York: The Free Press, 1997).

3 See in particular Jameson's critique of postmodernism in Fredric Jameson, *Postmodernism or, The Cultural Logic of Late Capitalism* (Durham: Duke University Press, 2001). Jameson's apt use of the metaphor of schizophrenia to describe this episteme refers to a deep sense of alienation.

4 R. Mayer and R. Moreno, "Aids to Computer-Based Multimedia Learning," *Learning and Instruction* 12 (2002): 107-119.

5 J. Sweller, *Instructional Design in Technical Areas* (Carnberwell, Australia: ACER Press, 1999).

The widely accepted cognitive constructivist theory of psychological activity maintains that perceiving and thinking are active, goal oriented processes, and that as film viewers we strive to construct out of the flow of sound and images a cohering, intelligible, causal, and goal-oriented trajectory that starts at some point and reaches somewhere. David Bordwell delineated the strategies and procedures that allow active and aware spectators to reconstruct the film's narrative in their mind by constantly forwarding perceptual and cognitive hypotheses and trying to fit the film data into them. Film art resides in this construction process. The filmmaker presupposes it and construes within the film surprises, distractions, diversions, and postponements that enhance the process of hypothesis arousal, verification, or refutation. From this derives the film's appeal to spectators. Film, like other art forms, addresses the cognitive faculties of their spectators and strives to allow them to build a world and a story by realizing these faculties, a process they are hardly aware of, or which is hardly satisfied in real life. Hence, narrative films can deeply engage and sustain the attention of viewers/listeners if they allow them to construct coherent narratives and audiovisual formations out of the flow of shifting sounds and images.[6] Therefore an overall continuous editing style, synchronized or otherwise cohering audiovisual formations, and narrative re-centering and closure, have become tropes of popular mass film artifacts. Following Noel Carroll, it can be said that narrative cinema is popular not because it consists of a set of arbitrary cultural conventions, but rather because it is a cultural *invention*, easily fitting our cognitive, perceptive, affective, and sensual faculties.[7] It should be noted however, that the evolution of the language of cinema and of television has devised complex narrative structures based upon such principles, which are not confined to the unilinear development identified by many with Hollywood productions.[8] Hence, the reason for narrative cinema's complex engagement is not due to its simple linearity, but to the fact that simple or complex films rewardingly play with, rather than frustrate, the spectator's inherent cognitive striving for coherence by offering a constantly re-established, cohering, audiovisual, spatial, temporal, and narrative formation.

6 On the constructivist, active viewer, see David Bordwell, *Narration in the Fiction Film* (Madison: University of Wisconsin Press, 1985). See also Edward Brannigan, *Narrative Comprehension and Film* (London: Routledge, 1992).

7 Noel Carroll, *Mystifying Movies: Fads and Fallacies in Contemporary Film Theory* (Princeton: Princeton University Press, 1988): 138–47.

8 Witness for example Robert Altman's film *Short Cuts* (USA, 1993) which consists of several coincidentally interlacing narrative trajectories that nevertheless cohere within and in-between themselves.

Post-modern films predicated on split attention, however, frustrate the spectator's striving for coherence.

Post-modern film narrative theorists seem to overlook this problem or presume that splitting the viewer's attention is the characterizing and desired form of perception in our age. Kinder, for example, entertains a confounded belief that the rewarding narrative and audio-visual coherence of the popular cinematic "end product" may not be lost in what she sees as a necessary or desirable decentred, closure-less, process-oriented hypertext film narrative (what she describes as interactive narratives). Her notion is confounded in my view because closure and cohering strategies are the *sine qua non* component that enables the deep, cognitive, affective, and sensually rewarding engagement of spectators in narrative cinema. Conversely, non-closure and de-centeredness, when being the basic premise of a text as maintained by her and other post-modern textual theorists,[9] frustrate the reader's striving for coherence and often lead to distraction and loss of interest. In a sense, the whole notion of narration is meaningless if the aspiration for closure is frustrated at the start.[10] It is only because texts offer you a notion that they are going somewhere that you are willing to follow.[11] Kinder's comprehension of hypertext based narratives implies this distracting and frustrating result. Thus, at the core of her argument on narrative she claims that "Openness lies at the centre of the narrative illusion."[12] This claim is preceded by her mentioning the notion of "text poaching," whereby text readers, rather than following a text's intended meanings, actively appropriate the text for their own interests.[13] However, what Kinder overlooks is that the resulting approach to such texts is reduced to gaming rather than elevated to deep, complex engagement. She herself inadvertently exposes the probable results of open interactive-process textual configurations when she writes that hypertext narratives "reveal the arbitrariness of the particular choices made, and the possibility of making other combinations, which would create alternative stories."[14] It is this notion of arbitrariness that engenders the gaming attitude assumed by viewers in face of open-ended hypertext narratives.[15]

The films *Timecode* (Mike Figgis, 2000) and *Adaptation* (Spike Jonze, 2002) stand out as emblematic of formal and narrative hypertext oriented post-modern textual strategies. They offer non-cohering, de-centered audio-visual formations and narratives that distract or frustrate the viewers. In *Timecode* four simultaneously evolving occurrences are presented on a screen split into four. Whether the spectators see the same occurrence shot from different positions or different occurrences, it is impossible for them to follow what's going on because their attention is split between the different screens. The only reason viewers can somehow follow Figgis' film is because he manages to draw attention away from the disturbing parallel occurrences through different strategies that accentuate one frame over the others such as his use of voice enhancement coming from one of the screens, or the reduction to minimal, recurring, and non-interesting movement and action in the non-emphasized screens; by using a sporadically appearing earthquake that affects all the happenings in the four screens; or, towards the end, the use of a melodramatic shootout of a betrayed lover that correlates and clarifies in a simple manner the interrelation between the four screens. There is, however, one interesting use of the split screen, in which we see on one screen the betrayed lover, who has planted a microphone in her lover's bag, listening to her lover in another screen as she makes love to a man the betrayed lover does not know. Then, within her screen we see her get out of the car she's in while the man with whom her lover was making love is seen in the other screen leaving the building he was at, and they bump into each other in their respective screens without knowing each other (this is the man she eventually shoots by the end of the film), so that we see simultaneously the same occurrence from different angles. This scene is interesting because it makes

9 See Jacques Derrida, *On Grammatology* (Baltimore: Johns Hopkins University Press, 1976).

10 This premise is quite different from "open-ended" or multi-threaded narratives that are premised on inward, structurally coherent narratives that do offer cohering trajectories. The film *Run Lola Run* (Tom Tykwer, Germany, 1999) offers an exemplary case of such structural coherence.

11 This notion concerns the narrative aspect of moving audio-visual texts. These texts can also engage through affective or sensual attachments, but these are usually short-lived attractions if unsupported by narrative. Manovich, who refuses to consider computer-based narratives in the sense outlined here, is therefore led to predict short attachment/attraction-based works. See also a sensation aesthetic model for new media in Andrew Darley, *Visual Digital Culture: Surface Play and Spectacle in New Media Genres* (London: Routledge, 2000).

12 Marsha Kinder, "Narrative Equivocations between Movies and Games," p. 126.

13 Kinder bases her comprehension of narrative on de Lauretis's postmodern notion of narrative. On textual poaching see also Henry Jenkins, *Textual Poachers* (New York: Routledge, 1992).

14 Marsha Kinder, "Narrative Equivocations between Movies and Games," p. 127.

15 For a more thorough critique of Kinder's position (as well as of Manovich's position), see Nitzan Ben Shaul, "Can Narrative Films Go Interactive?" *New Cinemas Journal* 2, no. 3 (2004): 149-162.

cohering rather than distracting use of the split screen, in that it literalizes through the formal means the implications of betrayal.[16] Excluding this cohering use of the split screen (which still materializes only two of the four screens), the question arises as to what is the added value of this film being split-into- four screens? It only actually manages to somehow and poorly engage our attention because it in fact contradicts its formation. In any case, the only available response for viewers in this film is distraction coupled with shallow engagement, which approximates a gaming attitude towards the film rather than deep engagement. Whereas *Time Code* instantiates the split attention generated by the post-modern use of multi-screens, *Adaptation* exemplifies the post-modern split narrative. The film starts as a deeply engaging and complex work. It tells the story of Charlie Kaufman (Nicolas Cage), a screenwriter who is repelled by the way he looks and is extremely unsure of himself both in respect of his writing and of women. He has a twin brother, Donald, who is in many ways his opposite. Donald, as presented from his brother's point of view, is ridiculously self assured but to his brother's surprise, has success with women and when he decides to also become a screen writer like his brother, he comes out with a script loved by Charlie's film agent. Whereas insecure, repelling Charlie is interested in a non-eventful film, Donald, ridiculed by his brother, is interested in the generic, causal, conventional development of a story with protagonists who evolve and change throughout the film following their overcoming a difficult task involving action, drama, and tension. As the film develops Charlie is contracted to adapt into film a book on orchids written by a magazine journalist (Merrill Streep) from New York who lives with a boring husband and longs to be in a state of fascination with something (be it a flower or a man). She henceforth inquires into the mentality of orchid flower collectors and starts following a mysterious orchid hunter and collector searching for the rare "ghost orchid." Charlie decides to adapt the book into film so that it maintains the book's unique, non-eventful, "life-like" and original stream of conscience style. At one point however, Charlie gets lost in the labyrinth demanded by his type of film and asks Donald to rescue his script. What the film cleverly causes the spectator to be aware of is that the script being written within the film by Charlie is also the actual film the spectators are watching (a film about a scriptwriter trying to write the film the spectators are watching). True to form, once Charlie asks his brother to help him with the script he is writing (a script that the spectators are watching) and Donald starts taking things into his perspective, the film watched suddenly turns into a Donald action film, filled with drugs, chases, and murders. Hence, once the film shifts to Donald's perspective we become aware that the orchid hunter has an affair with the reporter and that he is actually a drug dealer extracting drugs from the orchids he collects. We then see Donald and Charlie follow the reporter to the orchid hunter's house, where Charlie, peeping through their window finds out about their drug dealings. He is spotted by the couple, caught by them, and once they realize he knows about their drug dealings and love affair they decide to kill him. Eventually they chase both brothers and end up killing Donald while Charlie manages to escape, finishes his script and even finds love. As can be noticed, *Adaptation* is split into not only twin protagonists, but also two respective thematic and stylistic developments. However, when this clever film shifts from Charlie's stream of consciousness film to his brother's action film, the result is frustrating because its spectators are pulled out from the depth and involvement they were in when following the stream of consciousness film, and pushed towards an action film that starts suddenly without serious earlier development and out of materials that have been differently contextualized and are alien to the action film (e.g., the hunter's search for the unique, rarely found fascinating orchid suddenly turns into a factory for drugs filled with such orchids). This perspective shift, which if coherently construed could have deeply involved the audience in the textual or life and death implications that are at stake in the film's relative perspectives (as Kurosawa did with the notion of truth-searching in *Rashumon* or Coppola with the consequences of wrongly held presumptions in *The Conversation*), ends up neutralizing the impact of both views due to its split narrative construction, engendering a gaming distraction and frustration rather than deep emotional-cognitive engagement.

In a way these post-modern films seem to reference the modernist avant-garde films of the sixties as their precursors. However, whereas some of those films were predicated on de-centering and non-closure (e.g., Godard, Antonioni), they were in their time aesthetic and ideological (often obscure) searches for truth through challenges to established perceptions, challenges to which committed viewers were expected to respond by reflection upon their lives or by attempts at re-assessment and re-construction.

16 This is evidence that split screens, as a peculiar formal strategy enhanced by the digital revolution, in themselves do not need engender split attention. Further cohering split-screen strategies can be found in the experiments conducted by the Russian revolutionary avant-garde filmmakers, particularly in the films of Vertov and Eisenstein. See Annette Michelson, ed., *Kino Eye, the Writings of Dziga Vertov* (Berkeley: University of California Press, 1984); Sergei Eisenstein, "A Dialectic Approach to Film Form," in *Film Form*, ed. Jay Leida (New York: HBJ Books, 1949).

Hence, Antonioni in *The Red Desert* used alienating strategies such as long, inconsequential shots and de-centering of protagonists, to deflate and deconstruct dramatic meaningful moments such as the love for a child or extramarital affairs. Through these strategies, he projected his explicit existentialist alienated vision of the world,[17] lamented alienation, and strived for truth. Antonioni's *Red Dessert* insinuated that while alienation may be a natural condition of the human being it is also the result of the capitalist mode of production that generated the alienated mentality of the North Italian bourgeoisie he depicted in the film.

Post-modernists, however, seem to presume that split attentiveness is the favored culturally determined state of cognition and reception of their viewers. The resulting subjectification of truth and its relativity are considered non-problematic and even blissful. In other words, avant-garde modernists presumed a centered self whose confidence they wished to reassess through alienating worldviews and respective textual strategies, whereas post-modernists often presume a computer determined de-centered and split self, whose non-confidence, distraction, and alienation they reassure through split worldviews and textual strategies.

Contrary to such post-modern and media determinist arguments, I claim that the computer serves us so well only because we can cognitively and perceptually manipulate its generated textual signs in order to forge comprehensible non-arbitrary articulations.[18] Therefore, fashionable claims such as that of Lev Manovich in *The Language of New Media*, according to which the nature and ability of computers to contain a large and easily accessible database will lead computer-based artworks to resist narrative tendencies, or the related implication that computers will forge users' modes of perception and cognition, is fallacious.[19] Neither the arbitrary nature of abstract cultural sign systems (e.g., language or computer data-base), nor its sign's material qualities are in and of themselves determinant of the manner of their reception, as is often claimed by media determinists. Rather, it is the other way around. It is only because we can cognitively and perceptually manipulate signs in order to forge conventions that will render non-arbitrary articulations comprehensible that sign systems serve us so well.[20] This is because people exploit those potentialities that best reward their ingrained cognitive, affective, or sensual faculties. Computers, despite their database characteristic, also allow the tracing of narrative trajectories. Hence, as long as narratives are cognitively, affectively, or sensually engaging, this computer potentiality will be exploited.

This does not mean, however, that the "nature" of computers has no bearing upon the artworks it allows to be produced, or that computer-based narrative audio-visual texts must replicate traditional narrative cinema in order to achieve the latter's engaging attention. A similar process occurred with television. Witness the failure of television to deeply engage attention when screening uninterrupted feature films. This is probably due to the television's screen size, its conditions of reception (at home), and its multi-channel transmission. This did not lead however to television's failure to deeply engage attention through narrative and the use of cinematic strategies. It means that its narrative strategies had to change in order to adapt to television's peculiar faculties. Thus, television has devised 20- to 40-minute programs with multi-threaded, interlacing narratives such as *ER*, *Seinfeld*, or *24*,[21] more fitting its "nature" yet consonant with the cognitive faculties of its audience.

17 Nurith Gertz, *Motion Fiction* (Tel Aviv: Open University, 1993): 159-163.

18 For a good critical discussion of media determinism, see Raymond Williams, T*elevision: Technology and Cultural Form* (New York: Schocken Books, 1974).

19 Hence he writes that narrative "is only one aspect of cinema that is neither unique nor, as many will argue, essential to it." Further on he suggests that "the distinct logic of a digital moving image … subordinates the photographic and the cinematic to the painterly and the graphic," representing a return "to pro-cinematic practices." Lev Manovich, *The Language of New Media* (Cambridge MA: MIT Press, 2001): 293–96. See also a sensation aesthetic model for new media in Andrew Darley, *Visual Digital Culture: Surface Play and Spectacle in New Media Genres* (London: Routledge, 2000). It should be pointed out however, that while films also engage through affective or sensual attachments, these are usually short-lived if unsupported by narrative. Hence Manovich, in dismissing narrative, is led to predict a cinema consisting of short attachment/attraction-based works.

20 On our cognitive ability to manipulate arbitrary material signs, see Jean Piaget, *The Psychology of the Child* (New York: Basic Books, 1969).

21 ER (NBC, 1994–), *Seinfeld* (Sony Pictures TV, 1990–99), 24 (Twentieth-Century Fox Home Entertainment, 2002–).

Just like television, the digital revolution can be taken to use cohering narrative strategies to engage the audience's attention while adapting these to the computer's peculiar nature, so long as its peculiar nature is used in ways that correspond to human cognitive faculties. For digital based films to generate deep cognitive, affective, and sensual engagement rather than shallow distraction, the human cognitive strive for coherence must be taken into account.

An intimation of the fruitful evolution of hyper-narratives which the nature of computers encourages can be seen in the production of the films *Run Lola Run* (Tom Tykwer, 1998) or *Sliding Doors* (Peter Howitt, 1998). These films offer different and optional futures for their protagonists. As noticed by David Bordwell however, these deeply engaging hyper-narrative films offer only two or three options and are carefully designed so that coherence, dramatic succession, and a sense of closure are maintained.[22] Hence, while the offering of many or unlimited narrative options as suggested by postmodern hyper-narrative theorists is a great philosophical idea, devising such films, while computationally possible, is bound to generate at best a gaming puzzle-solving activity and at worse disengaging incoherence and cognitive confusion due to the short memory overload imposed by such films upon their viewers.

Post-modern films, however, are predicated on split attention and are unaware of the incompatibility between their viewers' striving for coherence and the arbitrary requirement for a split-typed cinematic reception. They position a split subject that is distracted and frustrated.

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22 David Bordwell, "Film Futures," *SubStance* 97, 31 no. 1 (2002): 88-104.

keywords
Web journalism, online journalism, digital journalism, inverted pyramid, tumbled pyramid

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Faculdade de Medicina destacada pela HP

A Hewlett-Packard (HP), empresa líder no ramo dos componentes informáticos, está a destacar, como um caso de estudo, a plataforma instalada na Faculdade de Ciências da Saúde da UBI. A rede informática e todo o sistema associado à auto-aprendizagem dos alunos de Medicina é visto pela HP como um caso exemplar. >>

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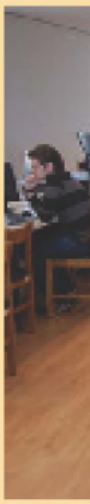

Administradores das universidades reúnem na Covilhã

ersidade da Beira Interior foi a anfitriã de uma de trabalho dos administradores das dades públicas portuguesas. Um encontro que para analisar os próximos passos a serem dados no âmbito do RJIES. >>

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Web Journalism: From the Inverted Pyramid to the Tumbled Pyramid

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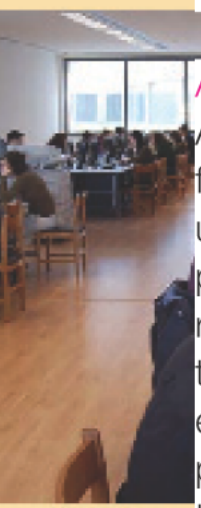

Abstract

As the main news writing technique (though one still at issue in professional and academic contexts), the inverted pyramid is the model usually implied when we discuss journalism. By using the inverted pyramid technique, journalists organize information from the most relevant in the lead, to the least relevant at the bottom, following their own personal criteria regarding the degree of relevance. However, how will readers react when faced with several optional reading paths? Do they follow a reading pattern or does each individual have their own way of reading?

For the analysis of reading paths on the web, a group of users was asked to read a specific web-based news model containing several links to different information levels. Analysis of the emerging data affords the conclusion that there are several reading patterns, highlighting the need to adopt a new paradigm in which the information scheme does not reflect the inverted pyramid technique.

Introduction

Media development is quick to register improvements in the distribution channels. The American press, for instance, grew considerably along with the railway system as the latter began to expand, since newspapers could now reach farther. In radio and television, dramatic changes were equally brought on by technical developments in signal distribution, which generated larger audiences and higher profits. These in turn allowed new types of content and further technical improvements.

As with the traditional media, the development of web journalism is closely linked to the spread of the Internet. According to Internet World Stats,[1] between 2000 and 2005 the number of users had risen 186% and in June of 2006 there were already 1.043 billion Internet users worldwide. Regrettably, a good part of these users still do not have broadband access, which conditions the types of contents conveyed by web journalism.[2] According to the World Broadband Statistics, in the third quarter of 2006, North America and Western Europe had the highest broadband penetration rates, only 19.3% and 18.3% respectively. This low level is one of the reasons why text remains the most widely used element of journalism on the web, since even with low speed access downloading this type of page is relatively fast.

The type of access is important, but it is not the sole reason for online newspapers to have thus privileged the written text. Towards the late 80s, electronic publishing had already spread within the sphere of the written press. Across the world, newspapers began to invest in IT equipment and publishing software, which allowed them to work faster and to close editions later. As a result, when the Internet boom happened, newspapers had already digitized their news organizations, moving on to online editions at virtually no extra cost[3] and making available the same news as in the printed versions. Indeed, web journalism developed spontaneously in a fashion quite similar to that of written journalism, using the same news writing techniques as those of its printed counterpart. However, web journalism can benefit from an emerging element, hypertext, which does not require larger bandwidth and allows the reader a more personalized reading experience, moving from text to text using the links created by the journalist. A discussion of hypertext news writing techniques is clearly in order.

1 *Internet Word Stats* http://www.internetworldstats.com/stats.htm (accessed February 3, 2007).

2 "World Broadband Statistics: Q3 2006", Point Topic Ltd, (accessed December 2006).

3 Concha Edo, *Del papel a la pantalla: la prensa en Internet* (Sevilla: Comunicación Social Ediciones y Publicaciones, 2002), 103.

Literature Review

In the teaching of journalism at university level, news writing techniques are paramount. Since the second half of the 20th century, American university degrees in journalism have emphasized the importance of written practice and pagination.[4] Today, the news writing techniques course remains one of the few core courses in media studies degrees and is described as a theoretical-practical introduction to news writing and to journalistic styles and genres. The "inverted pyramid" technique is one of the cornerstones of this discipline. Briefly, it consists of writing the news by beginning with the most relevant information. The answer to the interrogatives What, Who, Where, How, When, and Why is followed by supplementary information organized in blocks of decreasing relevance (Figure 1 Inverted Pyramid).

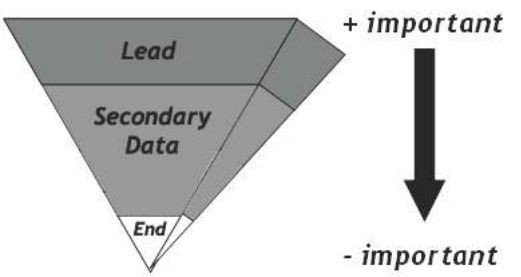

Figure 1 Inverted pyramid

This news writing architecture emerged during the US Civil War. A groundbreaking technical invention of the time, the telegraph allowed journalists to send their war reports daily. However, the technology was not wholly reliable, and to make matters worse telegraph posts were the favorite targets of troops, a tactic that frequently rendered the system inoperable. In order to ensure equitable transmission conditions, journalists and telegraph operators agreed on a rule that protected the work of the professionals: each journalist would transmit the first paragraph of their text, then following a second round of transmissions when each journalist would telegraph

4 Nelson Traquina, *Jornalismo* (Lisboa: Quimera, 2002), 64-69.

their second paragraph, and successively.[5] This rule forced journalists to change what had hitherto been the main news writing technique. Instead of the conventional chronological report of events, journalists began to organize facts according to their perception of the worth of the news. They began to relate the most important facts at the beginning of the text, thus ensuring that their newspapers would receive the most essential information. Later labeled the "inverted pyramid" technique by Edwin L. Shuman in his book *Practical Journalism*[6], this practice went on to become one of the better known rules in the field. However, despite efficiency in fast and concise news transmission, the use of this technique can turn news work into a routine. Allowing little room for creativity, it can make reading less appealing, which might help to explain why it has so long been the object of controversy.

The emergence of web journalism has intensified the debate. Authors like Jacob Nielsen,[7] Rosental Alves,[8] or José Álvarez Marcos[9] underscore the importance of the inverted pyramid on the web. Others, like Ramón Salaverria,[10] while acknowledging the importance of this technique in breaking news, hold that it can become a hindrance to other journalistic genres, which may benefit from the possibilities of hypertext.

I second the latter opinion, considering that this technique is associated with a kind of journalism severely restricted by the characteristics of its physical support: paper. To use the inverted pyramid technique on-line is to divest web journalism of one of its most interesting potentials: the implementation of an open news writing architecture, enabling unrestricted online navigation. Further, to have a new medium other than the printed press, but not to take benefit from its features, is to condemn its contents to failure. Because every medium has its own characteristics, success is directly connected with the exploration of this potential.[11] Doing journalism on the Internet requires exploring the characteristics of hypertexts, multimedia, and interactivity, characteristics that cannot be found in the printed press.

In hypertext news writing, the author must manage a complex network of texts and links, but the number of combinations is virtually infinite.

Given space limitations in paper editions, the organization of information follows a model that aims to optimize the space available. Journalists use techniques that seek a perfect balance between what they mean to say and the available space in which to say it. For obvious reasons, the inverted pyramid technique is fitting in this context. The editor may always cut one of the final paragraphs without compromising the meaning of the news article.

By contrast, space in online editions is virtually unlimited. Cuts may happen for stylistic reasons, but not for space-saving reasons. Instead of news framed by four page margins, journalists are able to provide new and immediate reading horizons by creating links between short texts and other multimedia components that can be organized into layers of information.

In hypertext news writing, the author must manage a complex network of texts and links, but the number of combinations is virtually infinite.[12] One of the major obstacles to the use of hypertext in online news is a tradition of linear reading dating back four thousand years. According to Sperber and Wilson, reading a text is a comprehension

5 Mar de Fontcuberta, *A Notícia: pistas para compreender o mundo*. (Lisboa: Editorial Notícias, 1999), 58 and following pages.

6 Ramón Salaverria, *Redacción Periodística en Internet* (Pamplona: EUNSA, 2005), 109.

7 Jakob Nielsen, "Inverted Pyramids in Cyberspace." *Alertbox* (1996), http://www.useit.com/alertbox/9606.html. (August 24, 2006).

8 See interview by Carlos Castilho "Uma linguagem em construção" (Interview to Rosental Calmon Alves). no 311, (January, 2005) http://observatorio.ultimosegundo.ig.com.br/artigos.asp?cod=311ENO002 (June 30, 2006).

9 José Alvarez Marcos"El periodismo ante la tecnología hipertextual," in *Manual de Redacción Ciberperiodística. Edited by* Noci, Javier Díaz and Salaverria, Ramón, (Barcelona: Ariel Comunicación, 2003), 246-248.

10 Ramón Salaverria, *Redacción Periodística en Internet* (Pamplona: EUNSA, 2005), 112-113.

11 Francis Pisan, ¿Y ahora qué? (México: CECSA, 2002).

12 Y.L. Theng, et al, "Improved Conceptual Design for Better Hypertext." Paper presented at *HCI'96–Human Computer Interaction Conference*, London, England, August 20-23, 1996. http://citeseer.ist.psu.edu/326566.html. (accessed February 3, 2007)

exercise in which readers continually seek the connection between what they are reading and what they have previously read.[13] They try to assess the relevance of a given fragment of the text by contrast with linearly previous parts. In the case of hypertext, Landow maintains that the information "appears to break up or atomize its components and these reading units take on a life of their own and become more autonomous, since they are less dependent on what precedes or follows them."[14] We will likely be faced, then, with a problem of coherence, here understood by Engebretsen as the "the total of the mechanisms which make a text a *logical unit*."[15] The structuring of the text in decreasingly relevant paragraphs, for instance, is in itself

Is there a reading pattern in hypertext news or do readers choose individual reading paths?

understood by the reader as a rule of coherence. Coherence may be *local*, where there is a direct relation between the current text and the immediately preceding paragraphs; or *global*, where the relation between the paragraphs is granted either by the overall theme of the news or by its global nature.[16]

In the case of web journalism, coherence exists on a global level, as the existence of external links may lead users to pages that are external to the news. Stylistic elements that confer such coherence must therefore be considered, especially concerning titles and the ordering of related links, i.e., the way that the user becomes aware of the existence of additional information on the theme of the news article.

Another challenge posed to hypertext news writing is the possibility of users drifting in the course of reading.[17] In other words, by moving from text to text, readers tend to wander and quit reading. Nonetheless, an opportunity may actually lurk behind this apparent liability. As Ko and Rubin note,[18] readers are ostensibly drawn to texts where they are afforded the possibility of exploring the news. This would imply that a news article composed of different texts connected by links would originate different reading paths. This in fact is the assessment underlying the research query of this paper:

Is there a reading pattern in hypertext news or do readers choose individual reading paths?

For the purpose of this research, a news article was written following Robert Darnton's suggestion, which underscores the potentials of the online environment as an alternative for publications that cannot find their way into print. Darnton's view is that online publishing implies a new architecture, and he proposes a layered, pyramid structure. The architecture he recommends builds into six layers of information. The first layer consists of a summary of the subject; the second layer includes extended versions of the main elements, but which are organized as autonomous components; a third information level contains further documentation on the different issues at stake; a fourth level provides a frame, including additional insights from the research field; a fifth pedagogical level comprises proposals for debates in the classroom; and the sixth and final layer consists of readers' responses to and discussions with the author. "A new book of this kind would elicit a new kind of reading. Some readers might be satisfied with a study of the upper narrative. Others might also want to read vertically, pursuing certain themes deeper and deeper into the supporting essays and documentation."[19]

Although this model was originally suggested for academic papers, its adjustment to journalistic ends is entirely apt. Accordingly, a news article with this type of architecture was written for analysis.

13 D. Sperber and D. Wilson, *Relevance. Communication and Cognition* (Oxford: Blackwell, 1986).
14 George P. Landow, Hipertexto. *La convergencia de la teoría crítica contemporánea*,(Barcelona: Ediciones Paidós, 1995), 73.
15 Martin Engebretsen, "Hypernews and Coherence." *Journal of Digital Information*. 1, no. 7 (2000) , http://jodi.tamu.edu/Articles/v01/i07/Engebretsen/. (September 12 2006).
16 Angelika Storrer, "Coherence in text and hypertext," In *Document Design* 3 (2002):, 156 – 168.
17 S. Batra, R.R. Bishu, and B. Donohue, "Effect of Hypertext Topology on Navigation Performance." *Advances in Human Factors and Ergonomics* 19 (1993); N. Hammond, "Hypermedia and Learning: Who Guides Whom." En Maurer, H. (eds) *Computer Assisted Learning. Lecture Notes in Computer Science*, 360 (1989): 167-181.
18 Hanjun Ko, "A Structural Equation Model of the Uses and Gratifications Theory: Ritualized and Instrumental Internet Usage." *Association for Education in Journalism and Mass Communication Conference Papers*. no. 151 (2002). https://listserv.cmich.edu/cgi-bin/wa.exe?A2=ind0209&L=aejmc&T=0&O=D&P=22182. (August 27, 2006)., 67-77.
19 Robert Darnton, "The New Age of the Book." *New York Times Review of Books*. 46, no. 5 (March 18, 1999). http://www.nybooks.com/articles/546. (August 19, 2006).

Methodology

A news article was prepared consisting of ten web pages linked up by both menu links and in-text links.[20] The organization of the news was based on an architecture of layered information (Fig. 2).

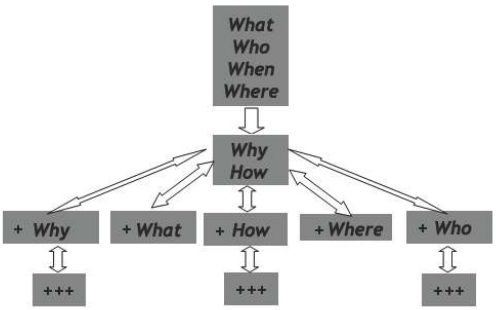

Figure 2 Architecture of layered information

In the opening text,[21] five in-text links led to a second information level. Three out of five second-level texts included an in-text link leading to a third level, and a navigation menu with links to all remaining texts of the same or previous level. In-text links invariably led to the following information level. (Figure 3)

The subjects (thirty nine students from the University of Beira Interior) were told to read the news as they would ordinarily, and no time limit was set. *Camtasia Software* was used to record every mouse movement, thus tracking reading paths.

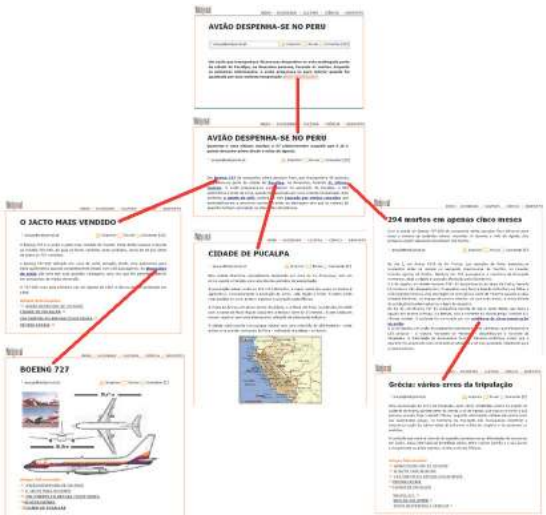

Figure 3 News Architecture

Results

From the data analysis the following conclusions are drawn:

Users who clicked onto the second level, following the first in-text link in the text amounted to 76.5%. From this group, 57.7% went on to the third level of the news, following the only in-text link in this second text. On the other second-level text with an in-text link, used the link to proceed to a third level.

23% of readers follow a routine of reading by levels: they click on the in-text link and afterwards return to the initial text.

77% follow an individual reading path.

The first time readers were faced with several links (five), five different paths were identified; on the following step, the variety of paths rose to eleven; on the third stage, twenty two reading paths were followed, out of a possible fifty five.

11.1% of readers followed a similar reading path, taking eleven equal steps.

20 "In-text links" are links created within the body of text.

21 The text here referred to as "first one" was in fact the second. However, having only one link for "more information," it was disregarded in this study and used solely to assess whether users were familiar with the workings of hypertext or not. This strategy excluded five users who did not take any action beyond reading this text.

Discussion and Results

News writing entails considering two variables: “dimension” (data amount: such as how many texts, pictures, or videos) and “structure” (news architecture: the way these elements are organized). A correct management of the variables forces journalists to choose the writing techniques best applicable to the features of the medium, necessarily privileging one of the two variables. It is therefore understood that the priorities of the printed press journalist are distinct from those of the web journalist: while the former must bear in mind the length of the text, resorting to stylistic devices that help them make the text “fit” the allotted space, the latter, space being virtually unlimited, tends to focus on the structure of the news.

a) Web news structure

The structuring of online news implies the creation of a script that allows users to grasp its architecture, and specifically the hierarchical organization of the multimedia elements and their external links. “Flexibility in online media allows the organisation of information according to hypertext structures. Each news article requires its own structure, according to its specificities and to the multimedia elements available.”[22]

These structures can be linear, reticular, or mixed.[23] In the case of a linear structure, the simplest one, blocks of text are linked by one or more axes. The level of navigability is restricted, since the reader cannot shift from one axis to the other.

Where only one axis is found, the structure is unilinear. (Figure 4)

Figure 4 Unilinear Hypertext Structure

Where there are several axes, the structure is multilinear, with different stories told across different, unrelated axes. (Figure 5)

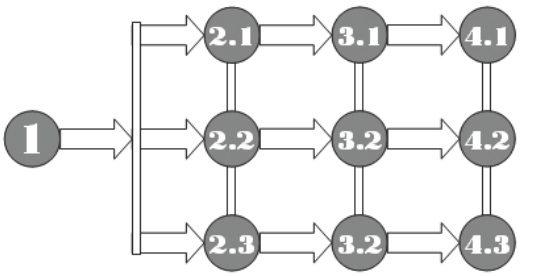

Figure 5 Multilinear Hypertext Structure

As the name implies, a reticular (Figure 6) structure has no predefined development axes. Rather it consists of a network of freely navigable texts, opening up several possible reading paths. Finally, mixed structures present both linear and reticular type levels. Reading possibilities are somewhat restricted in comparison to the previous model, but this one offers the advantage of well-defined “reading clues.”

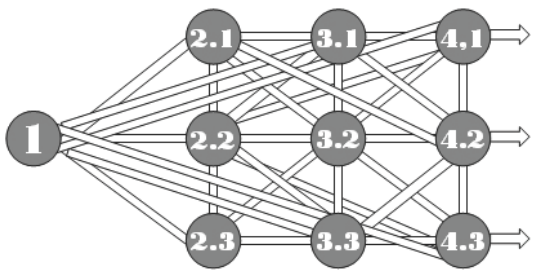

Figure 6 Reticular Hypertext Structure

Regardless of the type of hypertext structure, these data architectures imply moving away from the inverted pyramid model. This move is where researchers disagree. Indeed, despite championing a new language for web journalism, many insist it make use of the inverted pyramid model, reinforcing an organizing configuration whereby the most relevant data appear at the beginning and the less relevant at the bottom of the news.

The data collected in this research suggest otherwise. Despite the news having been composed by hierarchically organized layers of information, defined by a level of relevance, readers chose to follow certain topics through to the limit of available information, by clicking on the in-text links and accessing other information levels (Figure 7). From

22 Ramón Salaverria, *Redacción Periodística en Internet* (Pamplona: EUNSA, 2005), 108.

23 Javier Díaz Noci, and Ramón Salaverria, coord., *Manual de Redacción Ciberperiodística* (Barcelona: Ariel Comunicación, 2003), 125 -132.

the group of 76.5% that clicked onto the second level, 57.7% jumped to the third, and final, level, and only 23.5% returned to the previous level to make a level reading, following all the links on this second level.

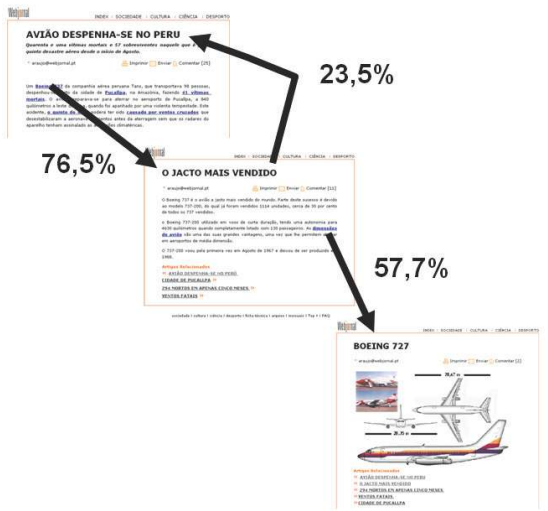

Figure 7 Readers' Choice

This behavior suggests that web news writing elicits a shift from the paradigm of printed press techniques. While data organization in print progresses towards contents deemed the least relevant by the journalist, on-line the readers define their own reading paths. The inverted pyramid technique, while appropriate for breaking news, proves less efficient when it comes to more elaborate web news, since it conditions readers to reading routines similar to those of the printed press.

b) An emerging paradigm

The identification of twenty two reading paths as early as the third stage of interaction raises an important question: is the use of a technique whereby input is arranged according to estimated relevance advisable for a kind of journalism pertaining to an active medium? I am convinced otherwise. The data collected throughout this study advise that web journalism embrace a paradigm different to the one underlying the inverted pyramid technique.

To an organizing logic based on the relevance of facts, another must follow based now on the amount of information available to the readers. If the vertical axis ranging from the vertex to the base means that the top is more important than the base, then the pyramid must shift its position, to avoid a hierarchization of news based on the relevance of related facts. Research data further indicate that the journalist's criteria in arranging information did not necessarily match those of readers, which may suggest that the use of the inverted pyramid technique in web journalism might actually result in a loss of readers.

In web journalism the amount (and variety) of available information is the reference variable. The news builds from a level of less information to increasingly deeper and varied information levels on the theme (Figure 8).

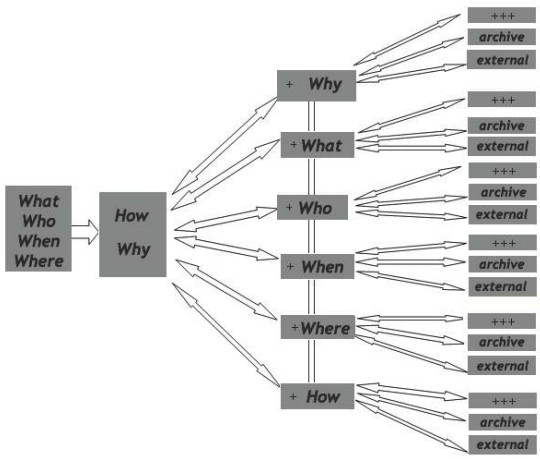

Figure 8 Web News Architecture

Though information levels are clearly defined, texts are not organized according to relevance. Instead, there is an attempt to highlight reading clues. Usually, readers follow a link and afterwards return to the previous webpage. In this case, it was found that the readers jump linearly from level to level, finding more information about a topic that they consider interesting.

By contrast with the inverted pyramid model, a graphical representation of this architecture (Figure 8) seems to suggest a tumbled pyramid (Figure 9). As in the case of the inverted pyramid, readers may abandon reading at any point without missing the meaning of the story. However, this model offers the possibility either of following through only one of the available reading axes or of freely navigating the news.

The results from this research lead us to propose the following four-leveled, tumbled-pyramid structure

Base Unit (lead): Here the key questions are answered:

What, When, Who, and Where. This first text may be breaking news, which depending on developments may or may not develop into a more elaborate format.

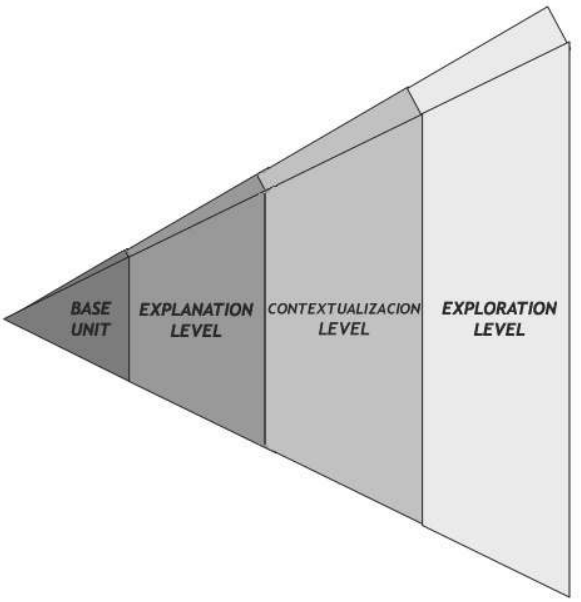

Figure 9 Tumbled Pyramid

Explanation Level: This level answers Why and How, completing the essentials on the event.

Contextualization Level: Further information is provided on each of the previous key questions, whether in text format, video, sound, or animated infography.

Exploration Level: At this level, the news is linked to the publication's archives or to external ones.

As Marcos Palácios and Elias Machado state, "The same way that the web's 'rupture from physical constraints' allows use of virtually unlimited space to make available news matter in a variety of (multi-)media formats, it is now possible to make available all the information previously generated and stored, using digital archives with sophisticated data indexing and retrieval systems."[24] This architecture implies "a new kind of journalist–a professional in this type of work must be capable of handling vast amounts of documentation, and of effectively presenting the events and commentary which stem from the different kinds of supports available behind a computer screen."[25]

In short, the tumbled pyramid is a liberating technique for users as well as journalists. If users can navigate the news, following their own reading paths, journalists should in turn rely on a set of stylistic devices, which combined with new multimedia contents allow a reinvention of web journalism.

Recommendations for future research

The fact that in-text links and menu links were used may have conditioned the readings. In future research it is recommended that analysis of reading-paths uses news that include only one type of link, since a tendency to immediately follow the first link of the text was noted.

24 Marcos Palácios and Elias Machado, *Modelos de Jornalismo Digital* (S. Salvador: ed. GJOL, 2003), 25.

25 Concha Edo, *Del papel a la pantalla: la prensa en Internet* (Sevilla: Comunicación Social Ediciones y Publicaciones, 2002), 70.

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keywords

creativity, teams, collaboration, teaching, advertising, writing, design

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John S. Dahlberg, PhD (SUNY at Buffalo), spent eighteen years at several advertising agencies in various creative and supervisory roles, from copywriter to creative director. His work has included everything from local retail radio advertising to Fortune 500 multi-media campaigns, for allergy medications, blood testing equipment, school lunch boxes, children's toys, major league baseball, and more. He conducted all of his professional work in a creative team setting, either as part of a creative team or as supervisor/creative director of creative teams. For the last ten years, he has been teaching advertising at Canisius College in Buffalo, NY.

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Teaching Creative Collaboration through Teams: Concept, Communication, and Conflict in Team Instruction

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Abstract

This study reviews research that suggests creative ability and production can be enhanced by certain kinds of teamwork and creative collaboration. Unfortunately, little research and few pedagogical experiments explore the concept of combining related creative skills (writing and design) into a classroom curriculum. This article outlines research into the collaborative creative phenomenon and reviews the results of an undergraduate classroom experiment that integrated two advertising writing classes with two digital media arts design classes. Creative assignments, results, and suggested changes are also explored in the paper as a model for future integrated skills instruction.

This study(with a sample size of 58) and follow-up student surveys confirm both the value and the problems involved in this kind of learning environment. Self-reported survey results indicate that students saw clear differences between contributions of writers and designers. Their interaction allowed them to perceive new creative alternatives. They strongly agreed that this collaboration improved the quality and originality of the project. Each also felt comfortable voicing disagreements with the team; this conflict produced a positive impact during the creative team process.

Students and practitioners of the creative process demonstrate Guilford's assertion that we all have creative potential;[1] however we develop that potential in very different ways. Artists, poets, and composers variously create. Yet, their creations are not always accessible or understandable. For instance, in February 2005, Central Park in New York City was adorned or cluttered (depending on your perspective) with hundreds of gates wrapped in saffron colored fabric and bearing flowing saffron panels. Some found these bright and beautiful, while others found them an eyesore. The artist Christo, who created the panels, was unapologetic. He was satisfied with his work and that was reward enough. Were these gates artistic? Were they creative? Maybe.

Creativity has been described as both novelty and usefulness;[2] effective surprise;[3] as recognized and endorsed by society,[4] and simultaneously original and appropriate.[5] It seems that one of the goals of any creator is to make known a surprising and original concept that is meaningful not only to the creator but also to a targeted group of others. Clearly, that creative process involves effective communication between the creator and an audience.

However, of greater interest to the authors of this paper is the communication between creators working together in collaboration. How do individuals combine to create effective communication through their conjoined and creative efforts? Some research has suggested that varying cognitive processes and associative, divergent thinking foster creativity.[6] Others have found a multidimensional aspect to the development of creativity fostered by cognitive, social, family, societal, and historical factors that can affect both individuals and individuals in a group context.[7] Smith and Amnér recognized the impact of one sense or media on another; e.g., a poem might inspire a painting.[8] Jock Abra wrote about "horizontal" vs. "hierarchical" manifestations of collaboration.[9] Collaboration between writers and designers may be a manifestation of these kinds of phenomena, with each team member representing a critical element in a

1 Joy Paul Guilford, "Creativity," *American Psychologist* 5 no. 9 (1950): 444-54.

2 Raymond S. Nickerson, "Enhancing Creativity." In *Handbook of Creativity,* ed. Robert J. Steinberg, 392-430 (New York: Cambridge University Press, 1999).

3 Edward Necka, "Creative Interaction: A Conceptual Schema for the Process of Producing Ideas and Judging the Outcomes." In *Critical Creative Processes*, ed. Mark A. Runco (Cresskill, NJ: Hampton Press, 2003).

4 Jerome Bruner, *On Knowing: Essays for the Left Hand,* (Cambridge: Harvard University Press, 1962).

5 Mihaly Csikszentmihalyi, "Society, Culture, Person: A Systems View of Creativity." In *The Nature of Creativity*, ed. Robert J. Sternberg. 325-339 (New York: Cambridge University Press, 1988); Arthur J.Cropley, "Fostering Creativity in the Classroom: General Principles." In *The Creativity Research Handbook,* ed. Mark A. Runco. 83 - 114 (Cresskill, N.J.: Hampton Press,1997).

6 Robert J. Sternberg & Todd I. Lubart, "Investing in Creativity," *Psychological Inquiry* 4, no. 3 (1993): 229-232.

7 David Henry Feldman, "The Development of Creativity," In *Handbook of Creativity*, ed. Robert J. Steinberg, 169-186 (New York: Cambridge University Press, 1999); Mihaly Csikszentmihalyi, "Society, Culture, Person: A Systems View of Creativity." In *Nature of Creativity,* 325-339.

8 Gudmund J.W. Smith and Gunilla Amner, "Creativity and Perception." In *Creativity Research Handbook.* Edited by Mark A. Runco. (Cresskill, New Jersey: Hampton Press, 1997): 62-82.

9 Jock Abra, "Collaboration in Creative Work: An Initiative for Investigation," *Creativity Research Journal* 7, no. 1 (1994): 1-20.

dynamic relationship. These seeming conflicts and diverse perspectives may enhance the creative product, providing new associations and multiple ideas and concepts that lead to more original ideas.[10]

Today, organizations often look beyond the individual for a creative result and research has affirmed the value of working in creative teams[11] and supports the notion that creative ability and production can be and have been enhanced by certain kinds of teamwork and creative collaboration.[12]

Beyond the research validating creative productivity through teamwork, there is a longstanding precedent for creative collaboration based on the team approach embraced by advertising and marketing communication companies around the world. Advertising agencies assign work to a team of creative people because communication end products (such as ads, commercials, brochures, web pages, etc.) require both a written component and a design component. Since the early days of advertising, those components and concomitant roles have always been considered separate yet interdependent.[13] The model of a team consisting of a writer and an art director/designer was initiated by advertising legend Bill Bernbach, back in the early 1960's and has been an industry standard ever since.[14] In fact, the contemporary trend in Europe is to hire only creative teams, rather than creative individuals. These teams consist of an art director and a writer. Industry watchers have noted, for example, that 90% of the creative staffs of London agencies have been hired as teams.[15]

Despite this reliance on creative teamwork, Abra found that with only a few exceptions and anecdotal mentions, creative collaboration, including creative collaboration in the advertising field, has received little scholarly attention.[16] Additional research needs to be completed to understand better the differences in the creative thought process between copywriters and designers. The fact that this model is so common in the advertising workplace, coupled with the apparent lack of curriculum addressing this dynamic, demonstrates a clear need for an emergent genre of course offerings. This genre should extend beyond simply organizing students into teams, into actively pairing student writers and student designers. Furthermore, there may be additional dimensions or factors that may work better than others in determining the best way to assign team members. With this in mind, the authors created an experimental classroom situation that allowed for advanced design students and advertising writing students to work together to complete two major projects. Writers would be exposed to the visual insights of designers. They would see, first-hand, how graphics can enhance and control a message. Designers would experience some of the thought processes of writers. Writers generally help craft the creative platform and meld it into positioning statements, concepts, headlines, and copy. Here, in this classroom, the designers would be able to watch that process evolve. This purpose led to our first hypothesis:

Hypothesis 1 (H1): Students will come to understand the different contributions of the writer and designer in a collaborative creative project.

This study was an opportunity to convene a series of teams that might not always avoid conflict, but would come away with a more original creative product. On a practical level, these teams would replicate the creative and collaborative process found in marketing communication companies around the world, one that many of them will need to deal with as they begin their careers. We wondered if the creative interaction and ultimate product would be perceived as better because of the team involvement. Hence:

Hypothesis 2 (H2): Students will find the creative collaborative process will positively affect a creative effort/product.

10 Terri R. Kurtzberg, and Teresa M. Amabile, "From Guilford to Creative Synergy: Opening the Black Box of Team-Level Creativity," *Creativity Research Journal* 13, no. 3/4 (2000): 285-294.

11 Gita V. Johar, Morris B. Holbrook & Barbara B. Stern, "The Role of Myth in Creative Advertising Design: Theory, Process and Outcome," *Journal of Advertising* 30, no. 2 (2001): 1-25; Cele Otnes, Arlo A. Oviatt and Deborah M. Treise, "Views on Advertising Curricula from Experienced 'Creatives.'" *Journalism Educator* (2005): 21-30.

12 Howard E. Gruber and Doris B. Wallace, "The Case Study Method and Evolving Systems Approach for Understanding Unique Creative People at Work." In *Handbook*, 93-115; Paul B. Paulus, "Teams, Groups and Creativity: The Creative Potential of Idea-Generating Groups," *Applied Psychology: An International Review* 49, no. 2 (2000): 237-262.

13 Bruce Bendinger, *Advertising and the Business of Brands.* (Chicago: The Copy Workshop, 2004).

14 Jerry Della Famina, *From Those Wonderful Folks Who Brought You Pearl Harbor*. (New York: Simon & Schuster, 1988); Charles E. Young, "Creative Differences Between Copywriters and Art Directors," *Journal of Advertising Research* 40, no. 3 (2000):19-26.

15 Edward White, "To Make Your Pitch at U.K. Ad Agencies, You'll Need a Partner." *The Wall Street Journa*l, September 3, 2004.

16 Abra, "Collaboration."

Much in the authors' previous experience, as well as reports in the literature (above) suggested that creative minds may collide and disagree. The authors wanted to learn how team members might interact, in the midst of disagreement. Would this atmosphere affect the level of communication and would it have a positive or negative effect? Therefore:

Hypothesis 3 (H3): The communication between and among team members, although occasionally bumpy, will lead toward an improved collaborative environment.

Method

The authors began the process of developing a model for this curriculum. Based on the typical advertising agency paradigm of collaborative creative teams constructed of a writer and a designer/art director, two undergraduate creative classes, offered at a small Northeastern college, were offered at the same time and on the same days. One class was an advertising writing/copywriting class; the other was an advanced digital design class. This model was repeated so that two sections of the writing course were offered and paired with two sections of the design course. An overwhelming number of the students in each of the classes came to these projects with previous coursework and background in the advertising/design process. Nonetheless, both courses reinforced foundational instruction in the advertising and creative conceptual process. Both instructors had previous significant practical experience in the collaborative creative process and brought their own previous creative, conceptual, and agency experience to the courses.

This pedagogical model allowed instructors to spend separate instructional time on either writing or design skills, with subsequent related work on advertising concept and collaboration. In addition, this model provided the opportunity for collaborative sessions and joint creative projects. Formal skills instruction composed nearly 60% of the classes, with about 40% of the time devoted to group and collaborative work. Students worked outside the class as needed. Enrollment in the classes varied. The total number of students in writing section A consisted of 22 students; the accompanying design section A had an enrollment of 11, allowing for creative teams of three (one designer and two writers). For the second pair of classes, enrollment for the writing section B numbered 18 and the accompanying design section B numbered 12. In all cases, each student had an opportunity to work in a team of three at least once.

It should be noted that throughout each of these teamed courses, there were more writers than designers. That brought about a theoretical and practical dilemma: Who does what? Can two writers overwhelm a designer? Should only two be on the team? Kirton stressed the role of the "bridger" in teamwork; this is a person who might fall in the middle of any team's range of creative styles. Kirton[17] suggested this person could "translate" the ideas of team members with different styles.[18] During this study, the instructors had one member would act as a "bridger" to help facilitate a three-person team.

There were two major collaborative projects assigned during the semester. Students were assigned to a team for the first project and then were shuffled into different teams for the second assignment. The instructors set up teams based on their knowledge of student skill levels, attitude, aptitude, and projected productivity. Broadly speaking, teams were constructed with the hope for optimal success within teams and across the classes. This process was done much as teams in agencies are developed, from an admittedly subjective yet experienced creative management viewpoint. Instructors offered personal insights into the collaborative process and specific expectations for each project.

The first assignment was a print and point-of-purchase campaign for a fictitious snack or dessert food company. The second was an electronic web/email campaign for a cellular phone service. Teams were asked to collaborate on the marketing/creative strategy, creative concepts, and finished executions, based on real-world situations where the creative team is often largely responsible for creative platform, concepts, and executions. The writers were then responsible for finished copy platform, headlines, and full body copy. Designers were responsible for design and finished print layouts, web-based banner ads, and rich e-mails. Throughout the group sessions, both instructors floated and worked directly with teams to facilitate the collaborative effort, operating as creative directors would function in the advertising agency environment. At the conclusion of each project, teams presented their creative solutions to the class. Although the process encouraged a collaborative environment, the majority of the grade emphasis was on the contributions of the individual. The team received a grade that was equal to about a third of the individual student's total grade. This was one deviation from the traditional team model found in advertising agencies, where you succeed or fail as a team.

17 Michael Kirton, *Adaptors and Innovators: Styles of Creativity and Problem-Solving*. (New York: Routledge:1989).
18 Kurzberg and Amabile, "From Guilford."

Statement	Mean	Standard Deviation
I saw a clear difference between the contributions of the writer and the designer.	2.28	1.30
Working in a creative team changed the way I plan and complete an assignment.	2.31	1.27
Our final project was better and more original because of the teamwork.	2.13	1.21
Each team member participated equally in the completion of the project	2.93	1.27
I contributed more than my fair share of effort.	2.24	1.23
Working together and communicating made a big difference in the completed project.	2.07	1.09
My partner(s) helped me see different, alternative solutions.	2.24	1.17
I felt that my greatest contribution was in the production, rather than the planning, of the project.	2.76	0.97
I felt comfortable voicing my opinion, even when it went against the opinions of my teammates.	1.97	0.94
As the project progressed, communication with my team members stayed consistent.	2.52	1.31
Our initial concept changed during the course of the project.	2.90	1.10
I thought working in a creative team was a positive experience.	2.07	1.24

Table 1 Responses to Creative Team Interactions Note: 1=Strongly agree and 5=Strongly disagree

During presentations, students were asked to describe their concept and present their finished work (in PDF or html format on screen, or on mounted boards for print). Teams generally shared the presentation of explaining the process and approach, including discussion of conceptual issues. Only when there were specific questions about word choice or production or layout issues, did one's role as writer or designer become apparent. Critiques ensued, with team members answering questions and responding to observations from their instructors and classmates.

A series of survey questions was generated and administered after the classes had ended. The survey consisted of 12 questions, employing a 5-point Likert scale (1 being strongly agree to 5 strongly disagree). The intent of the survey was to gather data about the students' perceptions of the collaboration, the quality of the subsequent work, and their communication and contributions during the project.

Results

Both classes were asked to volunteer responses to surveys for each of the projects. Results were gathered from 29 students completing surveys for both of their different project teams, yielding a sample response of 58 (N=58, four surveys were not returned).

As far as the process and their perceptions of the collaboration, data indicated that students did perceive a difference between the contributions of the writer and designer with a mean of 2.28 (M = 2.28), felt their partner(s) helped them see alternative solutions (M = 2.24), and the experience changed the way individual members plan and complete an assignment (M =2.31). Respondents disagreed that they just executed/produced the work (M = 2.76), lending credibility to the idea that the team was involved in the planning and concept, throughout. These responses led us to accept H1.

According to survey results, students felt the work was better and more original (M = 2.13), working together and communicating made a difference in the completed project (M = 2.07); however, respondents slightly disagreed that the concept changed during the process (M = 2.90). This last result didn't affect the conclusion that students found their ideas were better for the process, and H2 was accepted.

Finally, the communication wasn't always smooth. Conflict did arise, but respondents strongly agreed that they were comfortable voicing an opinion, even if it went against the opinions of the team (M = 1.97). Respondents were neutral on the issue of whether communication stayed consistent throughout the project (M = 2.52). Those surveyed felt that working in a creative team was a positive experience (M = 2.07). With that in mind, H3 was accepted.

In an effort to assess work contributions, two additional questions asked about individual effort, within the team. Responses were slightly negative about whether all members participated equally (M =2.93), and individuals agreed that he or she contributed more than their fair share to the project (M = 2.24).

Discussion

The sample for this study is admittedly small, but large enough to offer useful results. From this limited data, individuals participating in this study reported (in survey question #1) that they found clear differences between the contributions of writers and designers, and that experience affected the way they would plan and implement a project(survey questions #2 and #3). Clearly, then, the varied perspectives altered the dynamic in these teams, and team members saw new alternatives through the interaction of the team. Creativity often results when initially intended processes go awry and unpredictable results are achieved.[19] The survey asked, "Did the initial concept change during the course of the project?" The answers were mixed in addressing this phenomenon and showed that there was slight disagreement that the creative concept changed during the interaction, but little doubt other team members brought forth good alternative ideas and that the process resulted in a better and more original product. That result also addresses the importance for the ability to recognize superior ideas in team members as a basis for effective creativity.[20]

The majority of the teams indicated that they found value in the collaborative process. Conflict did arise, but it didn't seem to collapse the process. As was suggested by Kurtzberg and Amabile, conflict is not necessarily a negative factor in the process.[21] Some personality issues arose, and that is unfortunately not always avoidable in any team process. Still, students felt comfortable voicing contrary opinions, and that may have contributed to a better and more original product. Part of the disparity may come simply because the skills training for writing for advertising doesn't always involve a design element and design skills training doesn't directly involve a writing component. Radio scripts and logo design are perfect examples. Second, although students were encouraged to collaborate, more direct instruction on the value and the process of creative collaboration should be incorporated, not only at the beginning of the courses, but throughout. Much of this was done on an informal basis, with interaction between one or both of the instructors and individual teams. Finally, since students from one class were not penalized for a lack of effort or skill in the other, there was a possibility that some team members simply felt obliged to ignore the contributions of others. A student's grade was contingent largely on what he or she developed, so some might not have felt they had to accept the input of others. Future classes may have more of the grade determined by the collaborative product.

Conclusion

Much can be learned by further investigating relationships between professional writers and designers. Understanding why certain kinds of writers work best with certain kinds of designers will prove valuable in assigning teams. Common work habits and behavior patterns that become evident upon further research can be implemented in the classroom. Previous studies on team creativity may offer other suggestions for assigning teams. For example, teams consisting of students with divergent backgrounds may produce better work.[22] The presence and defense of multiple viewpoints among group members serves to make conflict

19 Necka, "Creative Interaction."

20 Abra, "Collaboration."
21 Kurtzberg and Amabile, "From Guilford."
22 Charlan J.Nemeth, "Dissent as Driving Cognition, Attitudes, and Judgments," *Social Cognition* 13 (1995): 273–291.

productive for creative outcomes.[23] An application of these hypotheses to this team learning approach could include an early-semester survey asking students to describe their backgrounds, skills, and interests; team assignments could be based on those results.

This study and preliminary model will certainly improve and evolve as the classes are conjoined in the future. At the very least, students left this experience with a clearer idea of the contributions of others in the process. They showed an appreciation of the value of others' skills in the preparation of commercial communication pieces. Though some reported that the team creative process, with divergent personalities, led to conflict they found harmful to the project, most left this having had a positive experience. Future studies may want also to compare responses between writers and designers. Our goal will be to follow this study with subsequent collaborative classroom replications, and larger sample sizes, in order to better understand and improve this model.

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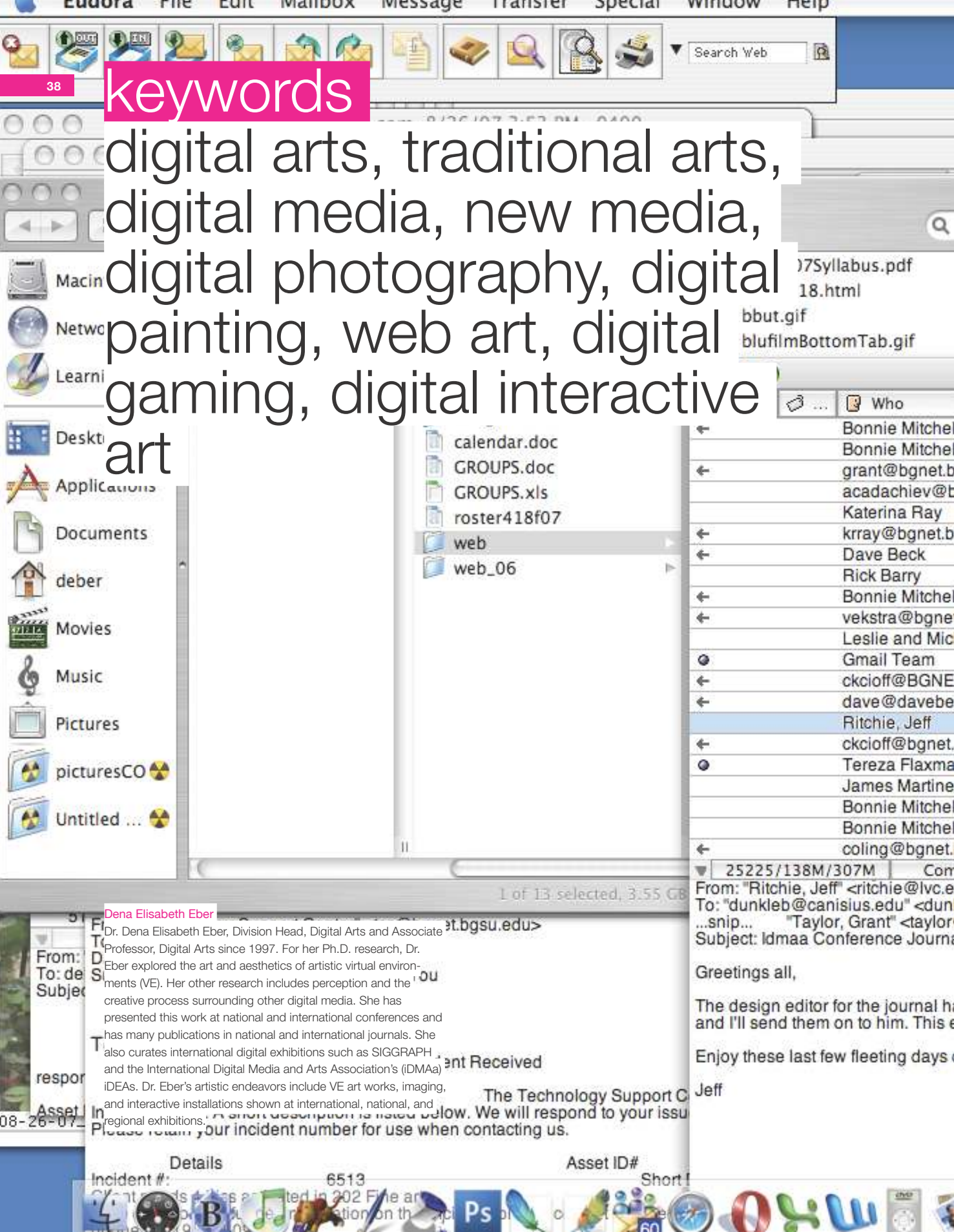
23 Kurtzberg and Amabile, "From Guilford."

keywords

digital arts, traditional arts, digital media, new media, digital photography, digital painting, web art, digital gaming, digital interactive art



The State of the Arts of Digital

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Abstract

The discipline of digital arts is currently establishing an identity on the art continuum, however, given the nature of the field, it is not so easily outlined. Defining the characteristics of a discipline is especially important to digital artists so they may grasp the implications of their ever-shifting artistic "language." This elicits an understanding that in turn allows artists to capitalize fully on works that exist in new formats for new audiences in ever changing settings. This essay explores where the disciplinary borders might exist and how the field is now, and will continue to be, part of the art continuum.

We are presently experiencing a cultural shift in the evolution of how we use digital tools in all art forms, one that I believe the art world is still struggling to understand. In 1995, when an artist used a computer in any way, she was known as a computer artist, which then meant that the artist used a computer. This held even if she was ultimately creating photographs, fabric designs, or paintings, but happened to incorporate a computer in her process. Today, using a computer in traditional art making is mainstream practice. By traditional I mean those art practices that were established during the pre-digital era. Although I do not like to categorize art as I believe it can exist free from predefined boundaries, I find it necessary in this case in order to explain digital aesthetics, or a digital artistic language. As explained by Lev Manovich,[1] the mid 1990's signified a number of changes that impacted how the art world embraced the computer as an art tool. Among them, the World Wide Web (WWW) became a vehicle for a type of artwork unique to the medium. Artists such as Olia Lialina (*My Boyfriend Came Back From the War*)[2] and collaborators such as Jon Ippolito, Keith Frank, and Janet Cohen (*The Unreliable Archivist*)[3] were making works that relied on the WWW and how it functioned as a networked interface for immediate transfer, gathering, and sharing of information. Thus, for artists the computer became a "universal media machine"[4] that looked more like a multi-media art studio than a computer. The unique art forms such as net art were now considered digitally based, extending beyond the preconceived idea of computer art. Labels abound. The *computer artist* of yesterday is today's *digital artist*; yet I am not sure we really know what constitutes digital art, be it visual, time based, aural, or any combination of the above. Given this framework, I will define and examine the state of digital arts inside the larger art continuum.

Within the broader culture, we are still developing the appropriate language to describe digital media. Indeed, the entire impetus behind Lev Manovich's *Language of New Media* is to attempt to create "both a record, and a theory, of the present."[5] That is, the book serves to capture what new media means to society for a given point in time. Likewise, the role of digital media in the arts changes with time and with cultural acceptance. Manovich further states that he aims "to describe and understand the logic driving the development of the language of new media."[6] In Manovich's examination of new media language, he seeks to describe it and thus define its cultural role in contemporary society with the understanding that it will change in the future.

Lev Manovich's reading of new media is relevant to understanding where we situate digital arts within the art realm.

How does the artist consider this variation in consumption? What kind of work does an artist make for a small portable screen? What kind of commentary makes sense for this new facet of our culture?

In particular, where digital arts are today is an understanding of it in this moment, with the assumption that it will transform with newer technology in the future. Because digital arts includes new media and what is new today will not be new tomorrow, it follows that the nature of digital arts has been, is now, and will continue to be, in constant flux.

Perhaps these definitions and labels seem insignificant at first, however, defining the characteristics of a discipline is especially important to digital artists so they may grasp the implications of their ever-shifting artistic "language," which includes the cultural aesthetics surrounding new technologies such as podcasting, gaming, and digital interactivity. Comprehension of how digital media becomes part of the cultural landscape elicits an understanding that in turn allows artists to fully capitalize on works that exist in new formats for new audiences in ever-changing settings. For

1 Lev Manovich, *The Language of New Media* (Cambridge: MIT Press, 2001), 31.
2 For documentation of this work, see Olia Lialina, "Last Real Net Art Museum" http://myboyfriendcamebackfromth.ewar.ru/ (accessed April 6, 2007).
3 For documentation of this work, see Jon Ippolito, "ZKM online, Net_Connection" http://on1.zkm.de/netcondition/projects/project12/bio_e (accessed April 6, 2007).
4 Manovich, 31.
5 Ibid., 33.
6 Ibid., 34.

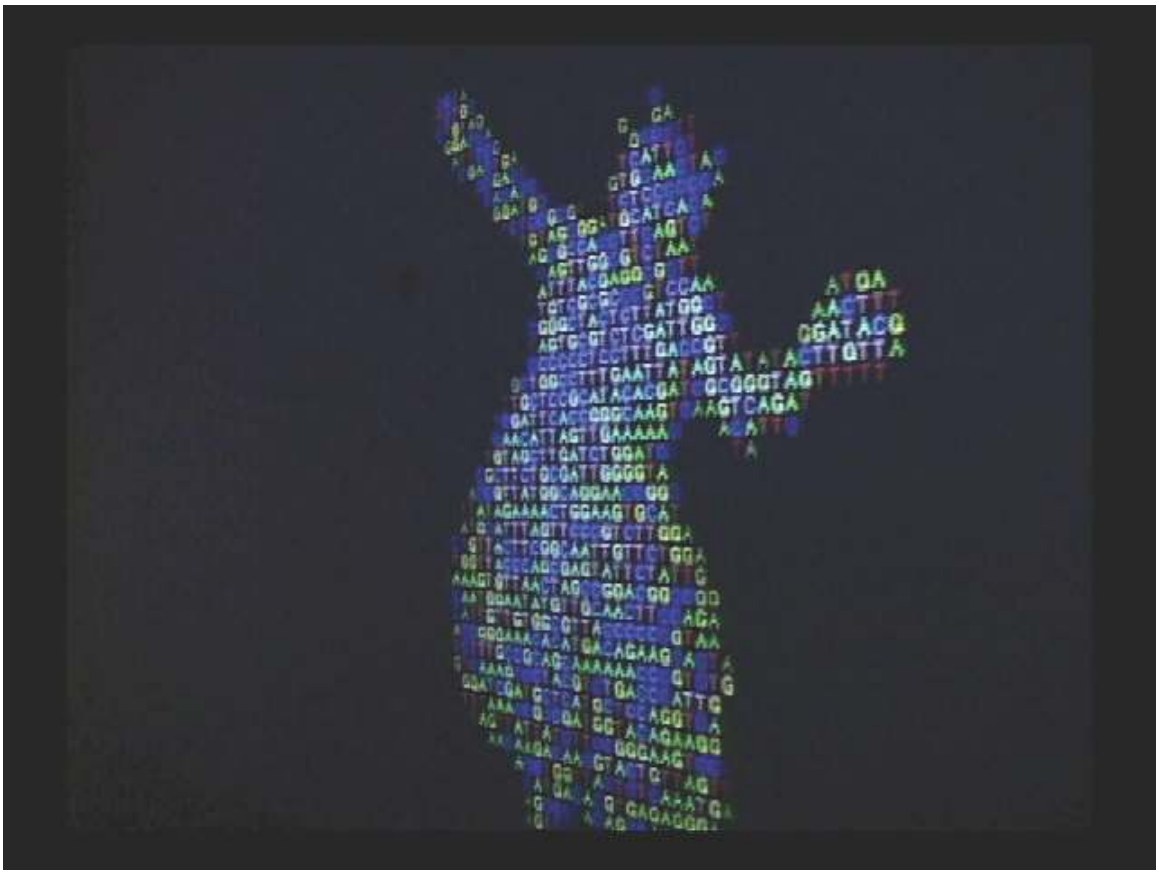

Figure 1 Text Rain, by Camille Utterback

example, artists can create artistic podcasts that viewers can listen to and watch on demand in differing locations and situations, which presents a new set of problems to solve. How does the artist consider this variation in consumption? What kind of work does an artist make for a small portable screen? What kind of commentary makes sense for this new facet of our culture? It is true that digital media makes things such as image manipulation, video editing, and word processing easier and thus more accessible, but digital tools also create new aesthetics that forge paths to unique ways of thinking.

Digital gaming is another case in point. Gaming is not new, but using digital media to make and play games is. The characteristics of such game play are addressed fully in *First Person: New Media as Story, Performance and Game.*[7] The editors explain that game play is, in some cases, central to the experience over the embedded story.[8]

However, this is not always the case and the book investigates qualities that could be related to the media. In her essay, Camille Utterback examines a number of interactive digital works, including her own, to make an argument for embodiment, or the presence of the physical self, in artistic digital games. At times artists do not capitalize on the digital opportunities for such embodiment, but Utterback's works such as Text Rain[9] (See Figure 1 Text Rain, by Camille Utterback). and Drawing from Life[10] (Figure 2 Drawing from Life, by Camille Utterback) show how this can be done.[11] In both cases, the participant uses his body to interact with a work whose interface is invisible,

7 Noah Wardrip-Fruin and Pat Harrigan, eds. *First Person : New Media as Story, Performance, and Game* (Cambridge: MIT Press, 2004).

8 Ibid., xi.

9 For documentation of this work, see Cammille Utterback. "Camille Utterback," http://www.camilleutterback.com/textrain.html (accessed April 4, 2007).

10 For documentation of this work, see Cammille Utterback, *Camille Utterback*, http://www.camilleutterback.com/textrain.html (accessed April 4, 2007).

11 Camille Utterback, "Unusual Positions-Embodied Interaction with Symbolic Spaces," in *First Person: New Media as Story, Performance, and Game,* eds. Noah Wardrip-Fruin and Pat Harrigan (Cambridge: MIT Press, 2004), 218-226.

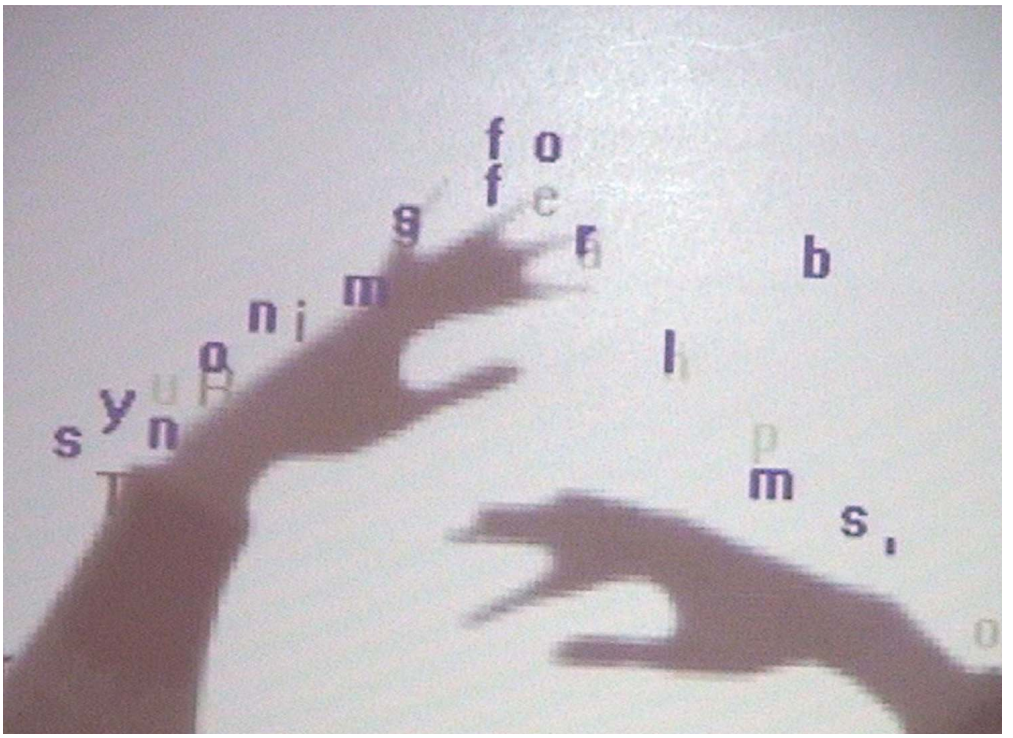

Figure 2 Drawing from Life, by Camille Utterback

made possible by digital means. These examples undoubtedly characterize one unique facet of digital media art and serve as a glimpse of the state of the contemporary digital arts genre.

The Rate of Change Factor

What comprises the rest of digital arts is certainly influenced by the tools available at the moment. The speed of innovation in digital media puts an interesting "in the rough" twist on digital art, which suggests that the work is never really complete. Much like Utterback's works, the newest technologies and ways of using them not only extend the artistic continuum, but they afford new ways of thinking and delivering creative content and art. Thus, even work that is finished is still work in progress as new technologies extend the implications of digital artworks.

New applications of existing technologies such as Blogs, iPods, picture phones, and MySpace are examples of how changes in digital media applications can qualitatively change how and what information we create, transmit, and receive. Suggestions of consumer power and knowledge are embedded in these media shifts, thus art works that incorporate newer technologies often reflect these changes. In an interview with Andrew Hershberger, the photography historian Gretchen Garner alludes to this impact and how imaging technology has changed a broad range of cultural ideals and practices from personal identity to the conduct of war.

> **GARNER:** With the boom in digital imaging devices, a camera in the hands of everyone (even if it is a phone), a new age of photography seems to be dawning. From daily self-portrait postings by young bloggers to digital photos that revealed torture at the Abu Ghraib Prison in Iraq, the new digital images are proliferating and having a powerful effect on public life. Specifically aesthetic, academic, or art-world photography will continue to interest a group of connoisseurs, and some historians will prefer to place their emphasis there, but those who want to write the broad-stroke histories will take much more into account such as how the technology of imaging has affected commerce, medicine, science, personal identity, and even the conduct of war.[12]

Garner's ideas about how changes in technology influence our thinking is exactly how it affects art making. What I suggest is that because of the fast and constant change in

12 Andrew E. Hershberger, "The Past, Present and Future of the History of Photography: Interviews with Peter C. Bunnell, Gretchen Garner, and Britt Salvesen," *History of Photography* 30, no. 3 (Autumn 2006), 205.

technology, we are now, and will always be, struggling with how to understand where digital arts sit on the art continuum. This, I believe, is a function of the rate of change in digital media. The new media of today will be old tomorrow, and tomorrow's new media will be novel fodder for digital artists. Artists and educators are constantly challenged to be creative with an ever-changing paintbrush. What to do with that paintbrush and where to situate it within the art and academic world will therefore constantly be transformed.

The Academic Factor

It is clear that insight into the current state of digital arts is important for artists, but it is also important in the academy. Whether it is ideal or not, schools, departments, and areas have ideas about what they teach and what equipment and space belong to them. Where a discipline sits on the art continuum in the eyes of a given school determines who teaches it, in what way, and with what equipment. When a discipline keeps shifting, the academic classification can get muddy. For example, a digital media arts professor who has taught digital painting since the 1990's is now challenged by other faculty to continue that course within the digital media offerings. As digital painting becomes a common component of traditional painting, the area that offers the course comes into question. Further, those who want to teach the same course offerings in their traditional media classes might now challenge the three-year replacement cycle for the computers in the digital arts area and ask that the same practice be applied to them. Certain forms of digital media are now a component in many traditional media practices.

This forces one to question if topics such as digital photography or digital painting are any longer digital arts. Conceivably, many in the art world see disciplines such as these as newer branches of traditional practices. It is possible that within this context, digital media that are used in traditional areas will become invisible as a distinct practice. As practitioners of a discipline adapt new practices, it becomes part of the identity of the discipline and no longer resides outside as a foreign practice. This possibility might exist in some instances, but only in the form of select practices. It is also possible that it will force digital arts to specialize in the unique art forms that fit only within its own genre. Ideally, there would be a seamless blend where labels, disciplines, and areas do not matter, but I do not see that happening. Although there are people and select programs that claim to be interdisciplinary, most artists and art programs maintain identities in one or maybe two disciplines. This identity helps define aesthetics and methods acceptable to a given group of people. We are then ultimately forced to question if there will be a digital arts programs in ten or twenty years.

The State of Digital Arts

Because historically, digital arts has embraced the new technologies of the time while perfecting those of the past, I believe that digital arts as a genre will be alive and thriving in ten years, in twenty years, and into the future and will include all that is digital. I see it as having two distinct functions that are currently, and will continue to be, characterized by flux and defined by the rate of change of technology. The first will exist on the fringe of the art world, embracing, exploring, incorporating, and translating the newest digital media for the given time. Those on this edge today are making art using sites like *Second Life*[13] or using technologies associated with iPods and picture phones as art forms. Although the aesthetics for this type of art are not yet fully defined, artists with screen names such as Starax Statosky, Cheen Pitney, and Stella Costello are already using *Second Life* to create and display art. In the recent past this edge included artistic video gaming and before that, three-dimensional animation. Web art, desktop interactive, digital painting, and digital photography by artists such as Nancy Burson, Lillian Schwartz, and James Whitney are examples of what defined that edge in the distant past. Based on this list, those who adopt what is temporarily new disseminate to the rest of the digital public the language or the implications of the technologies as an art practice. Once dispersed, these applications are still within the realm of digital arts, but they are also part of traditional media. As with any "quality" work of art, time renders maturity and sophistication, and artists are still defining aesthetics, even with the "older" digital technologies. It then becomes the task of the second function to embrace this uncertainty and flux.

Once the new media are no longer new, I hope that we have learned not only how they are used, but also what they imply. Over time, other digital artists perfect tech-

13 *Second Life* is a 3-D virtual world that is created by those who "inhabit" the space. Members create characters, spaces, buildings and objects with items they buy, sell, and trade using real financial transactions. See Linden Research, Inc. "Second Life," http://secondlife.com/ (accessed April 4, 2007).

nique and language that translates to other artists and a larger audience. This second facet of digital arts often acts as the bridge to incorporate the media into traditional art forms. In some cases, the practice will disappear from digital arts and reside as common practice within the arts. Other times, it will remain the bridge, holding its own flavor of aesthetics and practices that bend in a slightly different direction than the traditional practice. This bridge is important because digital arts will continue to fluctuate, as many facets of it are not secure within its own genre. Meanwhile, traditional areas will adapt portions of digital arts without fully embracing them.

This dynamic of the cutting edge becoming traditional is best illustrated by examining the role of digital photography in the photographic community through two artists, Maggie Taylor (Figure 3) and Loretta Lux (Figure 4).

Figure 3 Abdullah's Prayer, Maggie Taylor, 2003

Both artists use digital media to produce photographic images and both have received recognition within the art world, albeit different segments of that world. Maggie Taylor acquires old images and photographs new ones, making seamless montages that result in revealing portraits. Her works are highly manipulated and constructed, but follow aesthetics for portraiture (Figure 3 Abdullah's Prayer). Her art is highly acclaimed among those who appreciate digital images, but not embraced by the photographic community and is not widely known among those who work in "purer" digital art forms such as gaming or animation. Perhaps her methods challenge traditional photographic practices that question the identity of the medium.[14]

Loretta Lux (Figure 4 The Rose Garden), on the other hand, also uses digital means to create poignant portraits that have won her numerous awards and publications, but her methods adhere more closely to traditional photographic practice.

Figure 4 The Rose Garden, by Loretta Lux, 2001

Her portraits are just as telling as Taylor's; however, the children depicted appear to be actual people as opposed to Taylor's seemingly constructed characters. Her manipulations are not so obvious and her works include nothing acquired. This methodological approach has not kept from her recognition in the field of photography, as evidenced by her Aperture publication and her International Center for Photography's "Infinity Award" for 2005.

In the contrast between these two photographers we see the push and pull of photography in the academic setting. In a 2004 survey conducted at the Midwest region of the Society for Photographic Education, Gretchen Garner asked how the members and institutions were changing curriculum given the impact of digital media. Most felt that basic black-and-white darkroom techniques were necessary at the beginning level, but chemistry based practices

14 The photography historian Andrew Hershberger shared this speculation with me in January of 2007.

were not necessary at the advanced level.[15] It is clear from this that photographic educators are embracing digital media, but given Taylor's reception, only with a certain aesthetic approach. Taylor's work thus resides on that bridge between the purely digital and photographic practices, the very bridge that characterizes the second facet of digital arts. The scenario in photography is mimicked throughout traditional art areas, thus perpetuating the need for the "digital bridge" within digital arts as paramount.

Regardless of whether the art incorporates older or newer digital technologies or applications, it has now and will have in the future, a place in digital arts. The medium will be the lightning rod for new media and act as a disseminator of language and implications connected with it. Digital arts will also embrace the digital edge of yesterday and continue to evaluate and define aesthetics as they redefine themselves in light of a shifting technological landscape. Digital arts will bridge the difference between traditional practices and newer ways of art making while practitioners come to terms with technological and aesthetic challenges to their medium's identity. The state of digital arts is now and will continue to be about flux and rapid change while framing success in grounded artistic practice and expression.

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keywords

semiotics, non-linear narrative, achronology, visual literacy, superimposition, split screen, film language, visual dialectic, jump cuts, vertical layers, AfterEffects, Final Cut Pro

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Visual Literacy in the Vertical Age: The semiotic implications of nonlinear and vertical structures in contemporary narratives

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Abstract

Lev Kuleshov's experiments in montage in the early twentieth century led to the acceptance and integration of editing as the grammar of film language in narrative and non-narrative filmmaking. In the late 20th century, digital software developments such as After Effects and Final Cut Pro reduced the extensive time requirements, replaced traditional optical printing to quickly create superimpositions, and allowed for easy nonlinear time manipulation. As a result, previously traditional avant-garde techniques have exploded into the contemporary narrative environment. The paper, "Visual Literacy in the Vertical Age" explores how audiences are now actively exposed to a new evolution in our understanding of film language.

Introduction

In recent years the shift and embracement of 'achronological' or nonlinear narratives has become pervasive within mainstream television and cinema. Televisions shows such as *Lost* play with the narrative's chronology by jumping back and forth in time through flashbacks. *24*, a drama set in real time, uses 'vertical layering' or the use of layered superimposition. The show mirrors real time and uses multiple images on the screen at the same time to show where all the characters are in that moment. In this examination, I will explore the implications of the nonlinear style and use of superimpositions in the past and present, how early film theorists examined this innovation in film language, and draw a correlation between the two techniques. This article is the first of five articles planned on the subject matter. The second will be an introduction to the origins of the visual dialect, the third and fourth address the two narrative strategies with more depth, and the fifth will demonstrate how these techniques will change 21st century moving image making.

My original interest in the use of superimposition, or what I will refer to as vertical montage and nonlinear narratives, stems from teaching a variety of different editing courses over the past several years. My thesis in many of my editing classes is that editing is the grammar of film language and, much like in writing, visual editing requires a logical structure. However, as Christian Metz states, the variations of visual syntax are "indefinite"[1] and therefore so are the possibilities of understanding. And this is where visual language diverts from aural or written language. To understand how to make editing choices, an editor must understand the semiotic implications of the visual dialectic.

The editing of film language itself could be used to reflect one's personal experience or cultural experience. Visual attempts are reflected in seminal works such as Marlon Rigg's *Tongues Untied* and Trinh Minh Ha's varied work such as *Sur Name Viet Given Name Nam* or *Reassemblage*. In *Reassemblage*, Min Ha specifically uses jump cuts—spatial and temporal discontinuity to break the traditional documentary form of "talking about" a subject—and what she refers to as "talking near by," meaning she is sharing the experiences of the people she's filming rather than describing the people with authority. Discontinuity, or what I specifically refer to as *achronological* narratives, as well as the pervasiveness of split screen, now produce the possibility of such devices existing beyond the art or intellectual film and seep into the realm of mainstream understanding. Now the possibility exists for mainstream American audiences to be exposed to more complex messages and narratives than in any other time in film and video history.

I will outline in this article a variety of ideas that appear unrelated (reflecting the dialectic nature of my content), but when examined closely have an apparent logic or at least connection to one another. Some of the questions or issues that I will raise do not have clear or obvious answers, as the language of cinema remains a work-in-progress and its syntax continues to expand.

Use of Nonlinear and Superimposition in Contemporary Narratives

Before examining the roots of the techniques and motivations for nonlinearity and superimpositions within cinematic narratives, the question of why to address both techniques within the context of this paper must be addressed. The rapid adaptation of both techniques derives from digital software developments in recent years. Desktop software such as Adobe After Effects and Final Cut Pro replaced traditional analog techniques, such as the optical printing process, which required a significant amount of time in shooting and reshooting the negative to manually create a composite. Layered images, which used to take weeks, are now created in a matter of seconds. Techniques that used to take a filmmaker several weeks to produce can now be produced in a matter of minutes. As a result, previously traditional avant-garde techniques have exploded into the narrative environment and the most pervasive of the techniques is the experimentation with the effects of time manipulation, such as, time key-framed "time remapping" where the editor can intricately increase or decrease the speed of the footage. Whether narratives are constructed to exist simultaneously within a single moment through the use of split screen or superimposition, or to break the traditional rules of continuity to reflect a nonlinear structure, these techniques have to be addressed simultaneously as they are further adapted within the mainstream consciousness of an everyday visual spectator.

1 Christian Metz, "Some Points in the Semiotics of Cinema," in Film Language: *A Semiotics of the Cinema*, 3rd ed., ed. Michael Taylor, (Chicago: Oxford University Press Inc, 1991), 100.

Vertical (Spatial) Montage

Editor and author Walter Murch in his critical educational book, *In the Blink of an Eye: A Perspective on Film Editing*, discusses how to approach editing a narrative from the point of view of an editor. Specifically, he states that prior to digital editing tools, the picture editor worked primarily in the horizontal direction–or one cut after another.[2] This assumption reflects earlier examinations of montage dating to D. W. Griffith and the Soviet Montage filmmakers.

Murch asserts that in the future editors will need to think vertically, or "What can I edit within the frame?" This question informs the discussion regarding the future of narrative and the use of this technique as editors shift from their concerns with traditional montage to the semiotic implications of multiple images on the screen at the same time.

Spatial montage can also be seen as an aesthetic appropriate to the user experience of multitasking and multiple windows of GUI.

New Media theorist Lev Manovich addresses vertical montage or as he says "spatial montage" in *The Language of New Media.* He sees the technological possibility of spatial montage in contemporary media making as a new alternative to mainstream cinema and an event pushed by the graphic user interface (GUI). "[S]patial montage can also be seen as an aesthetic appropriate to the user experience of multitasking and multiple windows of GUI."[3] He states that as vertical/spatial montage worked against technology, it was therefore rarely explored until now. I agree that technology has freed this vertical montage to evolve in to its full form, however assert that its roots lie in the semiotic study of the original montage experimentation of the early 20th century, prior to the invention of the GUI, which perhaps facilitates the semiotic understanding of the vertical montage by audiences.

2 Walter Murch, *In the Blink of an Eye: A Perspective on Film Editing,* 1st ed., (Los Angeles: Silman-James Press, 1995), 130.

3 Lev Manovich, *The Language of New Media*, 1st ed., (Cambridge: MIT Press, 2001), 325.

It must also be noted that in two articles he released this year on motion graphics and After Effects, Lev Manovich also provides a unique discussion of the recent development of new software tools and possible implications regarding the change in the medium. His articles so far (although many more are planned as they will be part of his book *Info-Aesthetics*) are focused on these language implications on the hybrid of mixed media. I am currently concerned with how spatial and temporal relationships within the context of narratives further evolve with this technology and how it pushes and at the same time reflects earlier theories in film language.

Roots of Vertical Montage

Andre Bazin examined Kuleshov and early montage closely as a way of explaining his embracement of "invisible" montage.[4] He clearly enunciates that Kuleshov, Eisenstein, and Gance alluded to events rather than providing us with the literal moments. This is particularly appropriate when we later examine the use of split screen in Gance's *Napoleon.* Kuleshov took a single shot of the famous actor *Mozhukin*, whose smile seemed to change meaning according to viewers based upon the following shot—be it soup, a coffin, or a young girl. The details of Kuleshov's experiments illustrated to filmmakers then and now the ability to manipulate spatial relationships through films. Viewers can make an association between two pieces of footage even if they do not share the same time and space—known as the Kuleshov effect. Bazin's assertion however, is that the experiments went beyond the traditional understanding of spatial relationships bridged through two consecutive shots, to suggest that "[t]he meaning is not in the image, it is in the shadow of the image projected by montage onto the field of consciousness of the spectator."[5] Ultimately, applying this idea within a narrative can translate an emotion.

Influenced by Griffith's success in parallel editing and Kuleshov's experiments, Eisenstein saw montage as a dialectic, which could serve not just a narrative purpose but as a wider Marxist dialect. For the purposes of this discussion, the analysis of Eisenstein's thought regarding syntax will focus specifically on his discussion of the Chinese characters as ideogram. In *Film Form*, Eisenstein draws

4 Andre Bazin, "The Evolution of the Language of Cinema," in *What Is Cinema?* 5th ed., ed. Hughes Gray, (Berkley Los Angeles and London: University of California press, 1967), 24.

5 Andre Bazin, "The Evolution of the Language of Cinema," in *What is Cinema?* 5th ed., ed. Hughes Gray, (Berkley Los Angeles and London: University of California press, 1967), 26.

a parallel between montage and Japanese (or Chinese) ideograms. He discusses how hieroglyphs were fused and read together as a product, "the picture for water and the picture of an eye signify 'to weep'."[6] He states that this is montage:

> Is this not exactly what we of the cinema do temporally, just as Sharaku in simultaneity, when we cause a monstrous disproportion of the parts of a normally flowering event, and suddenly dismember the event into "close-up" of the clutching hands, "medium shots of the struggle," and "extreme close-up of bulging eyes," in making a montage disintegration of the event in various planes? In making an eye twice as large as a man's full figure?! By combining his monstrous incongruities we newly collect the disintegrated event into one whole, but in our aspect. According to the treatment of our relation to the event.[7]

But, this is where we are now, creating ideograms through the simultaneous events of the multiplicity of images. Although superimposition has existed since Méliès first optically experimented with visual effects, the ease by which we can make these manipulations will permanently alter our reading of visual language as more information can be introduced and understood by the viewer, creating a more sophisticated film language.

Gance's Napoleon

In examining the notion of simultaneous ideograms, it seems appropriate to re-examine Abel Gance's epic, Napoleon. Gance directed *Napoleon* in 1927 and was interested in similar issues in montage as Eisenstein. In fact, he saw the use of quick cutting, handheld camerawork, and superimposition as a means to demonstrate the significance of Napoleon's impact on France. He also utilized the "triptych," where the film utilized three simultaneous projector's running for the last twenty-five minutes of the film. The varied screen sizes and aspect ratios helped to generate a psychologically and physiologically dramatic experience for the viewer.

Napoleon was the first extensive use of split screen in cinema. One prominent example in the film is when Napoleon is young. He becomes irate when he discovers possible betrayal by a peer and confronts students bed by bed before exclaiming, "Then, you're all guilty" and engaging in a pillow fight.

Image 1 *Napoleon*

Following the break up of the fight, one of his teachers insists that "[Napoleon] will go far. He is made of granite heated in a volcano." The entire scene of the fight is tinted in red and the image splits from one image to four then to twelve before the fight is broken up. Gance's use of multiple images creates an allusion to Napoleon's greatness in the future as a leader and a man without compromise.

This use of multiple images reaches its climax in the last twenty minutes of the film, where it was originally screened as an optical *triptych* during the final battle, symbolically demonstrating his superior leadership and rise to power.

Image 2 *Napoleon*

Gance's use of split screen to imply a future prediction plays upon Eisenstein's analysis of the *ideogram*. Gance

6 Sergei Eisenstein, "The Cinematographic Principle and the Ideogram," in *Film Form*, 1st ed., ed. Jay Leda, (New York: Harcourt, Brace & World, Inc, 1949), 29.

7 Ibid., 34.

Image 3 At Land

essentially attempts to create a future prediction within the narrative predicated on the audience's ability to understand the context, and to imply that Napoleon's rise can be *predicted* through his actions in youth and as a young officer. What we cannot forget with this initial example is Gance's attempt to create a spatial relationship between the multiple images on the screen—a vertical Kuleshov experiment if you will.

Manipulation of Space and Time: *At Land*

Kuleshov's experiments also presented filmmakers, and in particular editors, with the literacy to create apparent spatial relationships. Beyond the "allusion" to a relationship between two shots, two shots also could share a spatial relationship. This notion not only became a foundation for continuity editing with the advent of sound, but also remained a tenet to experiment with when understanding the assumption that viewers will always seek a spatial relationship between two images. Whether it's as simple as an eye-line match, a cut from a shot of people looking to what they are looking at even if the next shot exists in a different time and space, to more blatant manipulations of time and space such as seen in Maya Deren's film *At Land*.

Maya Deren's work reflects an understanding of how cinematography and editing can manipulate the visual dialectic. She states:

> One can film different people at different times and even in different places performing approximately the same gesture or movement, and by a judicious joining of the shots in such a manner as to preserve the continuity of the movement, the action itself becomes the dominant dynamic, which unifies all separateness.[8]

Deren relied on spatial relationships and continuity to break linear progression in *At Land*. Her character washes ashore and as she climbs up driftwood, she finds herself at the edge of a table and begins to climb across the table, passing seemingly unaware attendees of a dinner party.

As she treks across the table, the film then cuts to her moving through a jungle or forest of sorts, creating a metaphor and commentary on the position of the feminine self. For this discussion, what is notable is that the Kuleshov effect is used to guide both vertical and nonlinear constructions.

Implications of Accidental Vertical Montage

We cannot forget the dialectical aspects of montage that Eisenstein brings up as conflict. Jan Uhde, in his article "Film's Illusions: Kuleshov Revisited," discusses the implication of accidental conflicts of montage when examining television and print.[9] Uhde discusses that the Kuleshov effect, while usually used to explain a creative intention, can also occur without premeditation. One of the examples that

8 Maya Deren, "Cinematography: The Creative Use of Reality," in *The Art of Cinema*, 2nd ed., ed George Amberg, (New York: Arno Press & the New York Times, 1972), 169.

9 Jan Uhde, *Film's Illusions: Kuleshov Revisted, Kinema*, Fall 1995. http://www.kinema.uwaterloo.ca/ju-952.htm. (February 3, 2007)

he cites is a broadcast in the late 1970s of a popular serial, *Holocaust*. During a commercial break, viewers watched as the segment cut to an oven cleaner commercial with a housewife complaining about the foul smell in her oven. If audiences create a dialectical connection between oven cleaner and that of the holocaust, Uhde concludes that the contextual associations can exist everywhere whether in motion pictures or in static advertisements.

As a media-maker, I became concerned with the contemporary implications of split screen use in both narratives and news reporting. Viewers can now be exposed to a barrage of information from the news anchor, the lower third headlines and symbols as well as through experts or "in the field reporters" all sharing the same temporal and visual space. In developing the installation, *Katrina Deconstructed*, I examined the apparent narratives weaved by both news anchors and reporters during the aftermath of the disaster and attempted to push the vertical arrangement further through the medium of an installation. Multiple screens pushed multiple images to further push audiences' recognition of possible ironic connections in the multiple images. And, like Uhde's observations, I also became aware of "accidental" Kuleshov effects. For instance, during a report on Fox news about the devastation in New Orleans, a stock market symbol in the lower-third of the screen[10] indicated that the stock market is up. Whether audiences noticed the ironic imagery of the improved stock market amidst devastation is difficult to determine, however the possibilities were obvious and 'indefinite.'

Image 4 Fox News

Revisiting Eisenstein's objective for examining ideograms was to provide a foundation and context for the visual dialectic.[11] For as he states in *A Dialectic Approach to Film Form*, "art is always in conflict."[12] For Eisenstein, the accidental Kuleshov effect in the Katrina footage could just as easily serve as an ironic commentary on the disaster itself, yet with the contemporary twists of a moving dialectic existing simultaneously in the same time and space.

Contemporary Examples Of Vertical Montage

The use of vertical images is now an accepted technique used in both cinema and television. *Pillow Book* by Peter Greenaway was one of the earlier recent examples of vertical imagery, followed by Vincent Gallo's *Buffalo 66*. For this discussion, I will focus on how the use of vertical imagery helps to push and condense the narratives in the films *Buffalo 66, Time Code*, and *24*.

Buffalo 66

Vincent Gallo's *Buffalo 66* (1998) harks back to older genres, such as the French New Wave, yet creates a critically important example of a contemporary vertical dialectic. He uses multiple images on the screen at the same time to create an overall narrative meaning. After the main character, Billy Brown, is released from jail within the first few minutes of the film, we see his life flash before us through a series of layered images that break traditional cinematic aspect ratios and provide the audience with a barrage of narrative information within the same time and space. The audience quickly understands Billy Brown's emotional state upon his release from jail and are further provided with a short visual summary of his experiences in jail. This method firmly establishes the context for the

Image 5 *Buffalo 66*

10 A lower third graphic or symbol is placed at the bottom of the television screen and is typically used in newscast to provide the viewer with up to the second news and information.

11 Visual dialectic can be defined as two images or shot, which appear unrelated until edited together.

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

Audiences are now actively exposed to a new evolution in our understanding of film language. The use of achronology and simultaneous dialectics formed through vertical or spatial montage push the ‘indefinite’ syntax of film language.

narrative conflict, which will enfold through the rest of the narrative. Although this example is eight years old, it demonstrates a more sophisticated contemporary example of superimposition.

Time Code

Mike Figgis in 2000 released *Time Code*, which was shot using digital video cameras and in seemingly real time provided an example of parallel storytelling through the use of parallel split screens. Mike Figgis, similar to silent filmmakers of the past, would mix the audio live during screenings and the audio itself dictated on which quadrant the viewer must focus.

Image 6 *Time Code*

24

The most mainstream example of split-screen is in the television show *24*. Similar to Timecode the show functions in real time and uses the split screen as a device to show simultaneous narrative action.

In fact, the visual style of the typography is almost identical to that of Timecode. However similar to *Buffalo 66*, the show breaks traditional cinematic aspect ratios through its use of split screen.

Contemporary Nonlinear Storytelling

In looking at previous examples of 'achronological' narratives such as Christopher Nolan's *Memento* (2000), which used the structure to mirror a the protagonist's disability and, in a sense, the struggle this character faced in hunting down his wife's killer despite his inability to store new memories. Christopher Nolan uses shifts from black and white to color to lead the audience between the breaks in chronology. What is interesting is that the film demonstrates that the challenges of editing shifts in chronology versus traditional 'cross cutting'[13] are similar. The editor cannot cut to an image too visually similar when moving to the next scene or the viewer will quickly become confused or disengaged. Nolan globally addresses this problem through his shifts between color and black and white.

In the television series *Lost,* the entire concept is based on an *achronological* structure. A plane crashes on a deserted island and we find out about the characters through flashbacks from their lives before the crash. Now, in its third season, the chronological shifts have moved from flashbacks to before the crash, to flashbacks within the days,

Image 7 *24*

weeks, and months spent on the island(s) and parallel cuts to different characters' stories. Although such an extensive use of nonlinear structure was groundbreaking for television, *Lost* still depends on traditional transitions to direct the viewers through the breaks temporal continuity. Heavy sound effects cue the transition from one point of time to another as well as utilizing the commercial breaks. Yet the 'achronological' structure enables the narrative to continue to expand and rewrite itself from episode to episode through providing the viewer with additional information.

I wrote the short film *AWOL*, about an African American soldier who for inexplicable reasons deserts her company in the desert and finds herself saved by a Bedouin family. In *AWOL*, I wanted to use an achronological structure to mirror the psychological state of Keisha, an American soldier who is dehydrated, confused, and lost. We are unclear when her experiences have occurred or whether they have occurred at all. The structure intimately reflects her

13 Also known as parallel editing.

psychological state and breaks traditional objective narrative storytelling. The film breaks time and space to become closer to the character's experience within the constructs of a fictional narrative. The approach however remains rooted in traditional working methods. The transitions in achronology serve as narrative dialectics and the clash creates an emotional and political message, which enables the personal experience of a soldier to become a subtle political message and further demonstrates the indefinite possibilities of syntax.

Conclusion

Audiences are now actively exposed to a new evolution in our understanding of film language. The use of achronology and simultaneous dialectics formed through vertical or spatial montage push the 'indefinite' syntax of film language. At this moment in time, conventional devices still drive or serve to motivate the vertical and nonlinear structures. However, like the transformation into the digital age, which Manovich compares to the *Velvet Revolution*, we are at a precipice of sorts. We are at a new phase in a dialectical transformation for media-makers to further exploit whether through interactive storytelling made possible through mobile phones, web, and multiple running streams in Blu-Ray DVDs, or through more traditional media such as television and cinema.

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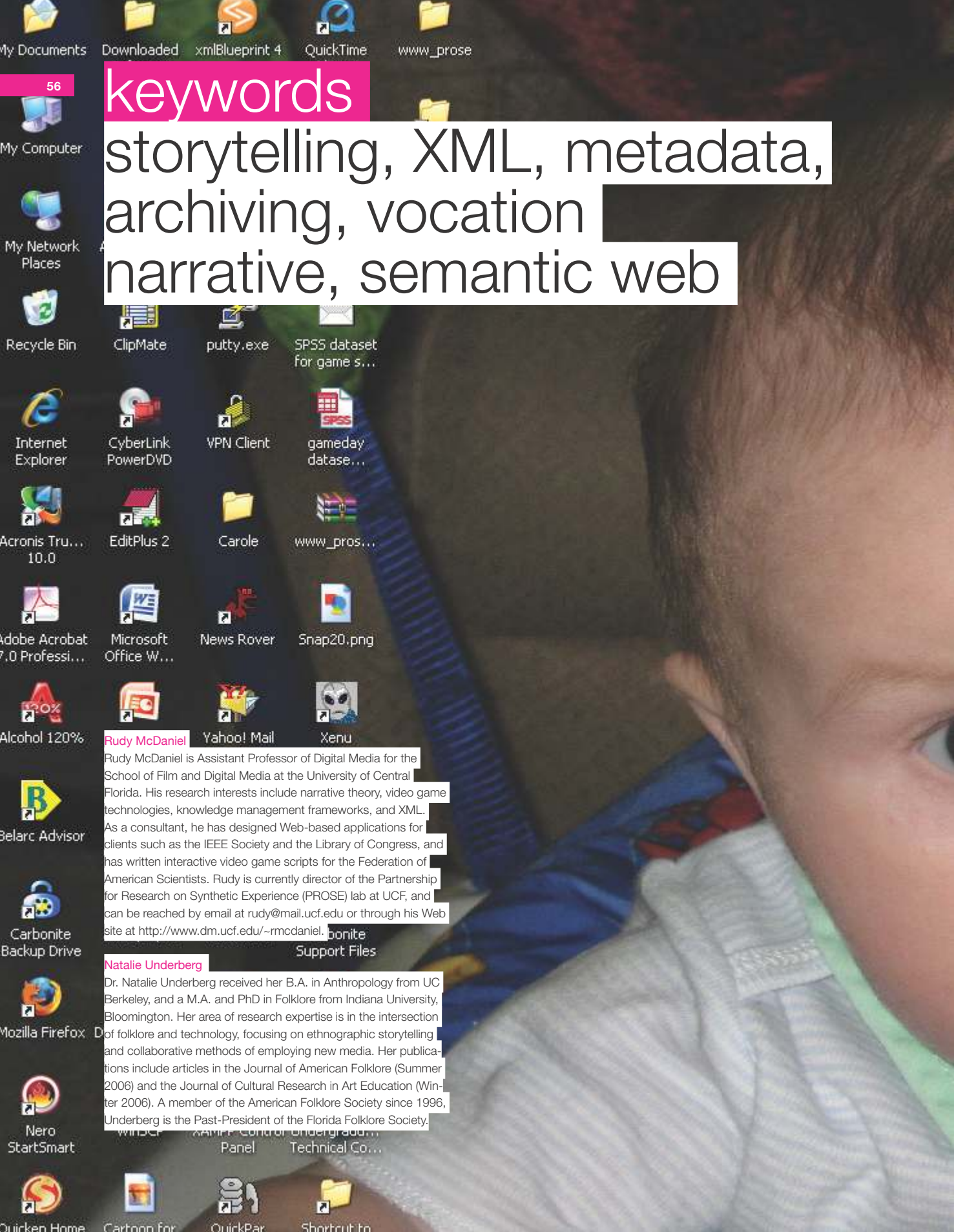
keywords
storytelling, XML, metadata, archiving, vocation narrative, semantic web



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Exembellishment: Using the eXtensible Markup Language as a Tool for Storytelling

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Abstract

In this paper, we present the idea of *exembellishment*, or of leveraging the power of the eXtensible Markup Language (XML) in order to assign meaningful and transcendental metadata to digital stories. We begin this paper by discussing the history of XML and by providing a brief example of this markup language in use. Next, we propose that a common library of storytelling "metatags" will enable digital storytellers and archivists to better share research and solicit new stories from discourse communities. One advantage of an XML model is that it can encourage the solicitation of new community stories by patterning story scripts based on XML document type definitions (DTDs); another is that once stories are collected, it can represent such collected stories in a fashion better suited for the next generation of semantic search

engines. Using a sample vocation narrative extracted from a unique collection of stories gathered from nuns over a period of several years, we suggest one such XML framework for encoding and representing specialized narratives in a digitized environment. Such analysis generates several questions that we propose for the digital media community.

Background: XML and DTDs

Metadata is data about data, or descriptive data that is intended to describe or represent preexisting data from another source. Such data does not need to be visible to the user; in fact, metadata is often invisible and works behind the scenes in much the same fashion as hypertext markup language, or HTML. XML is one such metadata classification system that is derived from SGML (the same parent language of HTML) and is intended to eventually replace the HTML 4+ specification as XHTML 1.0. It is no surprise that the next generation Semantic Web is being created based on the foundational elements of XML.[1] Using XML as a metadata system on the Internet can lead to more relevant searches and substantially improved online experiences for a user.

For example, an online recipe database can be annotated with metadata in order to differentiate between text describing ingredients (e.g., apples, cinnamon, and butter) and text describing necessary preparatory procedures (e.g., mixing the ingredients and preheating the oven). Such differentiation allows for a more meaningful interaction between a computer and a human; for instance, a person searching for an apple pie recipe on the Internet can fine-tune their search query based on their reason for searching. If this person were heading to the grocery store to buy necessary food items, they could use metadata to determine which ingredients to purchase. If this person were actually baking the pie, they might instead choose to access additional information that reveals different methods for creating the latticework for the crust. Rather than simply performing a search for matching keywords, a search engine would be able to perform the additional task of seeking out content based on semantic anchors. This process involves looking for examples of the usage of the words in the context in which they were originally intended.

An example recipe can be represented using XML in the following fashion (though the authors take no responsibility for the inedibility of any product produced using this recipe) (See figure 1).

While using XML to create organized recipes to store on the Internet is already more useful than simply marking up the recipes in HTML, an additional level of usefulness can

```
<?xml version="1.0"?>
<recipe>
        <name>Apple Pie</name>
        <author>Rudy and Natalie</author>
        <ingredient>2 Cups Chopped Apples with Skin</ingredient>
        <ingredient>1 Store bought crust</ingredient>
        <ingredient>1 Cup Sugar</ingredient>
        <ingredient>1 Cup Flour</ingredient>
        <step>Preheat oven to 350 degrees Fahrenheit.</step>
        <step>Combine all ingredients into a big bowl.
        Mix well.</step>
        <step>Pour mixture into store bought crust. </step>
</recipe>
```

Figure 1 Recipe

1 Tim Berners-Lee et al., "The Semantic Web." *Scientific American* May (2001): 35-43.

be attained by enforcing the structure of the XML recipes using a document type definition (DTD). XML is generally assessed based on two metrics: well-formedness and validity. Well-formedness refers to the syntactical correctness of the XML code (e.g., the proper XML syntax for a nonpaired, empty tag such as the break tag would be
 rather than the HTML version of
). DTDs allow a developer of markup content to ensure that future information patterned on the developer's template is also valid, or that it adheres to the original specifications of the author's template. In other words, if an online recipe administrator determines that all recipes should include at least three ingredients and at least three steps, this information can be included within a DTD that specifies how any new recipes seeking inclusion in the collection should be constructed.

Constructing a document type definition for our XML recipe above might add the following information to the header of our XML document:

```
<!DOCTYPE recipe [
        <!ELEMENT recipe (name, author,
        ingredient+, step+)>
        <!ELEMENT name (#PCDATA2)>
        <!ELEMENT author (#PCDATA)>
        <!ELEMENT ingredient (#PCDATA)>
        <!ELEMENT step (#PCDATA)>
]>
```

Figure 2 Header

Using this particular document type definition, then, would enforce a recipe model in which all recipes must include one name and one author. In addition, the plus symbol appended to the ingredient and step elements ensures that each recipe contains one or more ingredients and one or more steps, which reflect actions required by the user in order to prepare the food. Additional conditions can be used to enforce a variety of flexible XML patterns; these pattern-building symbols are available within the syntax of the language.[3]

Why Use Metadata for Stories?

In addition to baking apple pies, many humans also enjoy telling stories. In fact, storytelling is often a critical tool for an individual who hopes to build new knowledge in an unfamiliar field or who has a desire to share unfamiliar experiences with audiences from different backgrounds and with different life experiences. One of the lovely things about stories is their somewhat predictable structure;[4] stories from the fairy tales told to children to the occupational "war-stories" traded by Xerox technicians have all been found to have predictable elements and story structures.[5] Indeed, literary theorists such as Mieke Bal wrote entire books defining the essential components of narrative and discussing the various aspects and elements of different types of stories.[6] Others compiled similar types of narratives into databases such as Aarne's tale-type index, developed in 1910, which was later extended by folk-tale scholar Stith Thompson and recreated as the Aarne-Thompson system of classification.[7]

While the precise definition of story itself can be debated, for the purposes of this paper we define a story to be an expression (whether written, oral, or multimodal)[8] of a central character's experiences. These experiences recount the overcoming of some obstacle within some environment during some period of time, along with the causal experiences and relationships associated with this struggle. Such a definition is more precise than the Aristotelian notion of all stories having a beginning, middle, and end, but is not so precise that it excludes certain forms of expression that do not meet certain criteria (e.g., a given number of characters must be present, or a specific type of event-chain must be observable). In this paper, we use the terms "narrative" and "story" interchangeably, though we recognize such a distinction could be problematic in more precise instances of literary classification.

Combining XML with the narrative form can yield interesting and useful applications of different varieties. For example, a system for storing and disseminating forms of tacit knowledge collected from distributed organizations has been prototyped using the Hypertext Preprocessing

2 #PCDATA stands for "parsed character data."
3 See http://www.w3schools.com/dtd/dtd_elements.asp for a listing of DTD elements.

4 Robert A. Georges and Michael Owen Jones. *Folkloristics: An Introduction.* (Bloomington: Indiana University Press, 1995).
5 Julian E. Orr. Talking About Machines: *An Ethnography of a Modern Job, Collection on Technology and Work.* (Ithaca, NY: ILR Press, 1996).
6 Mieke Bal. *Narratology: Introduction to the Theory of Narrative.* 2nd ed. (Toronto: University of Toronto Press, 1997).
7 Robert A. Georges and Michael Owen Jones. *Folkloristics: An Introduction.*
8 Multimodal refers to the practice of using combined modes of sound, imagery, or text.

Narrative's predictability is what makes this form of expression so well-suited for a metadata framework. Much information about the possible types of stories and their repeating structures can be obtained from the field of folkloristics.

(PHP) scripting language and XML.[9] In addition, XML has been combined with storytelling in distributed team training environments in order to facilitate the access and retrieval of debriefing information.[10] Further questions for considering the juxtaposition of team training and narrative are also being discussed in various interdisciplinary contexts.[11]

Our goal then, in combining XML with story, is to create a system capable of fostering more unique and innovative interactions between human and computer agents. Using the formulaic and predictable elements of plot structure and traditional story arcs, we can both suggest XML and DTD based scripts for soliciting stories from audiences who may be unfamiliar with narrative theory (thereby gaining *usable* stories on any given subject) and we can compare and contrast new stories to any set of preexisting stories that are stored in an online database.

9 Thomas Rudy McDaniel. "A Software-Based Knowledge Management System Using Narrative Texts." (PhD diss., University of Central Florida, 2004).

10 Steven M. Fiore, Joan Johnston, and Rudy McDaniel. "Applying the Narrative Form and XML Metadata to Debriefing Distributed Simulation-Based Exercises." (paper presented at the 49th Annual Meeting of the Human Factors and Ergonomics Society, Santa Monica, CA 2005).

11 Steven M. Fiore and Rudy McDaniel. "Building Bridges: Using the Narrative Form to Better Connect Humans and Human-Systems." *THEN: Technology, Humanities, Education, & Narrative* 3, no. 1 (2006), http://thenjournal.org/commentary/95/. (June 27, 2006).

Disambiguated text is another central benefit of using XML with story. Phrases with semantic ambiguity, such as the famous sentence "No fruit flies like a banana," can be clarified if wrapped with appropriate XML tags. For instance, if we were to devise a `<protagonist>` XML tag, and if that tag were to be used in a story about heroic fruit flies and their inherent dislike for the yellow fruit, it is clear that the text is referring to the appetite of flies rather than the aerodynamics of fruit. While this is a simplistic example, the disambiguity factor of XML is another useful characteristic of the language for dealing with stories of greater logical complexity. In this sense, XML is useful as a secondary grammar of sorts for content stored on the Internet.

If nothing else, a narrative XML system allows a user to execute a more precise search over records containing narrative data. For example, a user navigating stories in plaintext might want to search for all stories containing the words "apple pie" somewhere within the text. With an XML-encoded story, though, a user would not only be able to query for a keyword match, but they could also access stories that were written only about baking apple pies, about selling apple pies, or about eating apple pies. In this context, a carefully devised set of XML tags could do much to assist users with specialized searches. Even a simple `<event>` XML tag might be used to relate important events within a story of this type; it is easy for a digital media system to perform smart searches when `<event>character bakes an apple pie</event>`, `<event>character sells an apple pie</event>`, and `<event>character eats an apple pie</event>` are all stored as encapsulated units. Additional tags can also be used to store meaningful associated labels that provide additional contextual information related to these words.

We propose the term "exembellishment," then, in order to describe an evocative use of XML to describe digitized story content in a *meaningful* fashion. Note that this description must be done in a meaningful fashion; a simple use of XML to describe proprietary or functional software requirements like preferred resolution and browser compatibility would not necessarily constitute exembellished content.

What We Can Learn from Folkloristics

Narrative's predictability is what makes this form of expression so well-suited for a metadata framework. Much information about the possible types of stories and their

repeating structures can be obtained from the field of folkloristics. Fieldworkers in this discipline use the term *normalform* to describe the essential framework for a given type of folklore artifact.[12] For example, a typical fairy tale from Eastern Germany would have a different normalform than a Native American tale about the trickster archetype.[13]

For many years, folklorists focused primarily on traditional narratives such as the European magic (or fairy) tale, but in recent decades, they have turned more attention to the personal narrative.[14] Folklorists, trained as they are in identifying patterns and formulaic elements in traditional stories, have found these same repeated elements in seemingly structure-less or loosely structured genres such as the personal narrative.

In order to apply our prototype system of XML tags to a narrative collection, we chose to work with a series of vocation narratives (stories of a calling to the religious life) collected over a period of several years from communities of Benedictine nuns in Indiana and Peru.[15] We chose these stories to work with for two reasons: for one, they represent unique stories told from a particularly interesting discourse community; for another, they are surprisingly formulaic in structure (if controlled for the time period during which the nun began her spiritual service). For instance, nun stories that take place after the 1980s were quite different than nun stories that take place before the 1960s; in both cases, however, the stories were remarkably similar to other stories that occurred in the same period of time.

For the most part, the vocation narratives of those who entered the community before the 1960s are markedly shorter than those of women who entered in the last decade or two. The vocation stories of entrants from the past two or so decades exhibit much more elaboration on the actual process of deciding to enter religious life. They also, in general, can be described as more conflict-oriented than the vocation stories of elder sisters in the community, whose narratives often highlight the seeming naturalness of following a vocation to the religious life.

12 Robert A. Georges and Michael Owen Jones. *Folkloristics: An Introduction*. (Bloomington: Indiana University Press, 1995).

13 The trickster is a cunning character in a tale who disregards rules and behavioral norms in order to play pranks or to behave in a mischievous or unconventional fashion. Often the actions of this character have a positive influence on others in the story.

14 Sandra Dolby. *Folkloristics and the Personal Narrative.* (Bloomington: Indiana University Press, 1983).

15 Natalie Underberg. "Holy Listening: Narrative, Identity, and Tradition among Contemporary Benedictine Sisters." (PhD diss., Indiana University, 2001).

While women (or often girls) in past decades needed to demonstrate a general willingness to give religious life a try (with the understanding that they could leave if they found themselves truly unhappy), women today must show the community (especially the vocation director and admissions committee) that they have given a good deal of thought and prayer to the idea of their religious vocation. In terms of the vocation narratives themselves, this translates into older sisters largely describing a "call" as a desire to serve God and others by imitating the example of sisters they had known as children, while today's entrants narrate a "call" in terms of a more direct experience of the divine that they have tried to interpret as a process of remaining alert to messages and signs. Whereas potential entrants in the past were expected to show a willingness to learn by doing and to do as they were told, women today are required to demonstrate a capacity for determining the will of the divine in their personal lives.

The differences between these two cohorts illustrate how historical and social change affects a community's relationship to stories and storytelling. The Second Vatican Council of the 1960s was perhaps the major event in the modern history of the Roman Catholic Church, resulting in wide-reaching reforms and updates. In addition to the more externally obvious reforms such as habit changes, the Second Vatican Council directed religious communities to rediscover the spirit of their founders. For Benedictine women, this rediscovery of the roots of a monastic identity revealed a certain mismatch between monastic life as lived by the sixth-century St. Benedict and his (male) monks and the contemporary American landscape for Benedictine women. It has been only rather recently, then, that monastic women have been encouraged (or allowed) to study the origins of their Order and attempt to determine how best to live out the spirit of their founder, St. Benedict. These women are faced with the challenging task of simultaneously laying claim to a continuous 1,500 year-old monastic tradition while coming to terms with the fact that it has only been in recent years that they have really been able to participate in it. Such a situation creates enormous consequences for the way these communities perform their identities as monastic women. The move toward discernment, made possible by using their "ancient monastic tradition" as a resource, is the major way that these sisters have found to reconcile their past with their present. This turn to the origins of their Order came to be reflected in the image the community both had of itself and thus the image it reflected to the outside—including those potentially interested in entering. Through *traditionalization* (constructing a connection to a meaningful past), these women were able to deal effectively with the very real crisis of declining

membership. Seeing the "call" to religious life in terms of a process of "holy listening" or discernment—and seeking women who did the same—came to be the element of continuity that permitted them to do this.

In considering the genre of the vocation narrative (stories of a religious "calling") of a community experiencing a serious vocational crisis, we have the opportunity to understand how and why a particular tradition of storytelling emerges. Before the Second Vatican Council, a well-formed and rehearsed story was not really needed to gain admission to the convents under study and therefore these stories tended to be short, foreground the "naturalness" of following a call to the religious life, and were kept largely private. Today, particularly since the 1980s as the result of serious efforts to recruit new religious, these stories are needed because an extended audience exists for them–the vocation director and the admissions committee. The form has evolved into a much longer and more conflict-oriented tale that often highlights the supernatural nature of a religious calling and the centrality of "holy listening" or discernment to their spiritual worldview.

In response to this vocational crisis, then, the vocation narrative took on a new function: it basically served as a way for a woman to demonstrate convincingly to a community that she had a real religious calling. As a result of this changing function, the form of the stories evolved: a woman internalizes a kind of template or model for how to tell a socially acceptable story about herself.

Young women in the earlier cohort were observed for evidence of outward demonstrations of religiosity, and had their fitness for religious life evaluated by the Mother Superior in an informal meeting. These recollections, or perhaps more to the point, the relative lack thereof by women who entered before the 1960s, suggest that having as well-formed and developed a vocation narrative as the current entrants exhibit today was not an integral part of demonstrating a religious vocation at that time. Sr. Mary Victor, for example, recalls:

> "It was during my senior year that I spoke to the prioress, Mother Seraphine. And we sat in this big parlor right out here. And we talked, how old I was, something about my family and when did I start thinking about this. It was kind of just a very informal conversation. And she finally said to me, 'Well, what do you think you can do for the community, if you come to the community?' Don't laugh but I said to her, 'Well I thought I could repair the sisters' shoes.' She kind of smiled, she said, 'Well, we'll see.' So, that was the end of the interview and that was wartime 1943."

In terms of content, sisters who entered from approximately the 1920s through the 1960s tell of having been educated by sisters, especially Benedictines, and most can recall one or two sisters in particular who made a strong impression on them as children. The convent-school tie was reinforced over time because it was largely those who liked their sister-teachers who would becomes sisters—and teachers—themselves. Because the Ferdinand Benedictines had been, from their very beginnings, identified with the teaching apostolate (to the peril of their unique monastic identity), sister-teachers modeled "sisterhood" for the girls. In addition, many sisters make reference to having been raised in the near vicinity of Ferdinand, Indiana, by strongly Catholic German-American parents. Sisters tell, for example, of praying together as a family at certain points in the day. Young women who became sisters in the past invoke in their narratives a shared German-American Catholic identity that grounds a collective experience of growing up in a particular area of southern Indiana. Mentioning parents' religiosity and one's proximity to and familiarity with the sisters expresses this sense of self and place to others. This resonates with Harold Garfinkel's notion of "indexicality," whereby background assumptions are signaled through a select choice of words.[16] It serves as a kind of shorthand for saying "I have the right background for becoming a religious." Given that the main criteria for entrants to the convent in those days was their character—a good family and personal reputation—this reference in vocation narratives to their background makes sense.

As the Ferdinand Benedictines moved from being considered a kind of teaching Order, young women less and less had sister-teachers to serve as examples of religious for them. At the same time, the Ferdinand community itself no longer shared a kind of shorthand with aspiring members. New members did not, and could not, make reference to a known ethnic and religious background that would establish their credentials. More work, then, would have to be accomplished prior to seeking admission in terms of establishing—and learning to express—a convincing portrait of oneself and one's personal experience sufficient to assure a religious community that one had a genuine vocation.

Although the culture of observation that had earlier permitted young women to demonstrate their likely ability to become sisters had largely faded away, these most recent entrants were not without models to help them develop

16 Harold Garfinkel. *Studies in Ethnomethodology*. (Cambridge, UK: Polity Press, 1984).

and communicate a sense of their own "calling" to religious communities. Instead of actions and attitudes that could be seen, they would legitimate their "call" through words. Before applying to a religious Order, women today undergo a process of adult socialization into "ways of speaking."[17] They internalize a specific ideology, and most importantly, learn to tell a convincing narrative about their personal encounter with God that demonstrates their commitment to an ethic of "holy listening." Women today learn to compose their own stories about a "calling" through a complex process of rehearsal, as Allen Grimshaw and Leah Holden use the term.[18] Both before and after entering religious life, when women listen to, read, or eventually tell or write about their vocations, they are engaged in rehearsal. This process is necessary because these women will need to present a convincing portrait of their own vocational journeys to a religious community before being permitted to enter.

These stories, in particular those from the most recent cohort, show evidence of "routinization" (in the Weberian sense of "routinization of charisma"),[19] as well as of "coaching." In other words, women today are given cues as to what constitutes an appropriate demonstration of a legitimate calling to the Benedictine Order. Newer entrants demonstrate their calling more through their vocation narratives than through being silently observed by sisters in a school or parish setting, as was the case in the past. Simply put, these women now have an audience, and therefore need a narrative. In a sense, their stories make their case for them. As Deborah Schiffrin writes,[20] drawing from Goffman:[21] "stories create a testimony for the position."

These recent vocation stories share a similar structure. Vocation narratives possess a relatively stable outline, incorporating the following syntagmatic or linear surface structure:[22]

1. receipt of a call and its resistance
2. surrender to call as account of first successful listening to God
3. determining validity of their call to religious life in general
4. narrowing a general call to a particular sub-type of religious life
5. realization of call to the Ferdinand/Morropon Benedictines
6. facing and overcoming obstacles to following the call to their future community
7. establishing when they entered and affirming contentment with call

This series can then be used as a kind of master outline that reveals how to legitimate a calling to the Indiana or Peruvian Benedictine communities under study. The part played by discernment (or determining the will of God through prayer and silence)—a key component of their worldview—is central and indicates an aspect of these narratives' paradigmatic structure.[23] At the core of these stories is really a polar opposition between willingness and unwillingness to listen as a kind of litmus test for inclusion into the community. Both kinds of structure can be identified in narratives from a particular discourse community, and helping researchers better identify, elicit, and display this narrative structure is a goal of our research with this XML framework.

Example Vocation Narrative

The following story was collected from Sister Becky in 1999. For the sake of illustration, we have devised our own XML tags for this particular story; in an actual framework, there would likely be additional descriptive tags as well as a validating document type definition. The story below is reproduced as spoken to the interviewer; repeated words, slang, and other conversational artifacts were not removed and were instead reproduced according to the original recorded transcripts.

17 John Gumperz and Dell Hymes (eds.), *Directions in Sociolinguistics: The Ethnography of Communication.* (Chicago: Holt Rhinhart and Winston, 1972).

18 Allen Grimshaw and Leah Holden, "Post Childhood Modifications of Linguistic and Social Competence." In *Language as Social Resource,* Edited by Allen Grimshaw, 105-127. Stanford, CA: Stanford University Press, 1981.

19 Max Weber, *Economy and Society.* (New York: New York University Press, 1968).

20 Deborah Schiffrin, "The Management of a Co-Operative Self During Argument: The Role of Opinions and Stories." In *Conflict Talk: Sociolinguistic Investigations of Arguments in Conversations,* Edited by Allen Grimshaw, 241-58. Cambridge, NY: Cambridge University Press, 1990.

21 Erving Goffman, *Forms of Talk*. (Philadelphia: University of Pennsylvania Press, 1981).

22 Vladimir Propp, *Morphology of the Folktale.* 2d ed, Publications of the American Folklore Society. Bibliographical and Special Series. (Austin, TX: University of Texas Press, 1968).

23 Claude Levi-Strauss, *The Raw and the Cooked*. (Chicago: University of Chicago Press, 1983).

<?xml version="1.0"?>
<story>
<type>Vocation Narrative</type>
<author>Sister Becky</author>
<protagonist>Sister Becky</protagonist>
<location>Indiana</location>
<date_collected>November 6, 1999</date_collected>
<transcript>The beginning, okay. Well I'm a cradle Catholic and I was born and raised in the church. Um my mom died when I was very young and my dad you know promised to, and he promised his mom as well as my mom, to raise us that way and I um went through the sacraments, and <call_receipt>I was going through the sacrament of confirmation uh when I was 16 which was back in '92, '92, and um I felt just a little nagging voice in the back of my head, telling me that I should become a nun</call_receipt>. <call_resistance>And I kept saying no, maybe I'll be a lay minister but I'll never become a nun. And I pushed it to the back of my mind and kind of stayed there for a while and faded away</call_resistance> and then um I started college and got involved in a mentoring program and also an internship program when I became a theology major [uh huh]. <call_surrender>And I began working with the church um a great deal doing things with young people and in the inner city, of Indianapolis and I began working with a Benedictine sister in Beech Grove. And I got to know her, she was a very good friend and I didn't have a car at the time, I was sharing rides [uh huh]. So um and my I was living with my parents and um her monastery, Kathleen's monastery was um about halfway between my parent's house and the parish. So we would meet there and I would go to work with her. And so I got to know some of the people in her community and I really like it but I couldn't figure out why [uh huh]. I mean why it was drawing me um and so you know we talked and we continued to get to know each other and I continued working in the church in various places um getting close in my relationship with Kathleen working with other people and um experiencing different things and um I <call_determining>I was dating somebody and I felt or for a long time I always wanted a boyfriend, all through high school. And you know, beginning of college I always wanted a boyfriend. And <obstacle>I finally started dating this guy and he really liked me and he was talking marriage and but something just wasn't right [uh huh]</obstacle>, you know, that wasn't enough.</call_determining> So and that's when I started looking into religious life as an option [uh huh].</call_surrender> <call_narrowing>And I didn't tell anybody at first but I just kind of started looking around and you know I was going to prayer with the Franciscans out at Marian where I went to college. And uh I liked their prayer style although uh they're more apostolic than monastic and I'm more drawn to the monastic lifestyle. </call_narrowing> <call_realization>And um I continued to look around and the more I got to know the Benedictines at Beech Grove the more I liked, I saw that I liked what I saw in their way of living and their communal prayer and meals and [uh huh] um you know, and and formation, you know, I saw the growth in different ways and in different people.</call_realization> And at the time Kathleen was still in formation and I saw a lot of you know, what she was through and we talked about a lot of it and um I really felt drawn but I wasn't sure [uh huh], um the more I the further I got into college I did I did get my own car and I had my own room, it was kind of like living in an apartment you know. I had I had it all as people would say, I had my own car I had my own, almost like an apartment [uh huh], um and I I was no longer dating the guy I was dating. I had told him that I wanted to slow down and that was kind of the end of that and um I had all this I had my job I loved what I was doing in ministry. I loved working with kids in the church um but something was still missing. And um in November of '96 which was actually 3 years ago today [oh wow], um I got I had gone to a week-

end, actually 3 years ago today was the weekend, the Benedictine Life Weekend at Beech Grove, the very first weekend I went on, although although at the time I didn't know it was a vocation weekend. But that's what it was, and I went and I you I enjoyed spending time here and I liked it and um I had emailed a friend of mine who works here at Kordes [uh huh] and told her you know, said I was doing this and you know I was just kind of looking around, but you know shh, don't tell anybody. She decided that she'd she gave my name and my address to Sr. Rose Mary uh what's the former vocation director and um 3 years ago Monday on the 18th of November I got my first letter contact letter from Rose Mary [uh huh], um, introducing herself and I got a packet in the mail with the video and stuff and then I didn't look at the video right away, kind of put it away for a weekend when when nobody was around, and my roommate was gone and I opened the packet. I watched the video and I thought that's really beautiful you know, this is interesting, and Rose Mary had written me and said if you need a ride let me know [uh huh], and um 'cause I didn't have a car, she said let me know and I'll and I'll get in con-, get you in contact with somebody. So I wrote her back and I said yeah maybe I'd be interested in coming down for a weekend and and I thought if nothing else, you know, I'll, so and um so I did and she set me up with a ride from Indianapolis and we at first played phone tag um back and forth, for almost a month before we finally got a hold of each other and a week and a half before we were supposed to come and it just kind of fell into place so I came down and the first time I came down here I just fell in love. I know um Saturday night, that night at Vespers we we walk in statzio with the community and I we were standing um facing one another and we turned to face the front and when I looked up at the altar I saw Jesus take his hand from the cross and motion to me to come to him, like it's time to come home [uh huh]. You have found your answer. And 'cause I know I know I'd been searching for something for a long time but I just couldn't figure out what it was [uh huh], um so I continued to visit and uh it fell into place that this person a few more times you know, I came back in February and um March didn't work out but I came back by myself in April I drove for the first time [uh huh]. And um I drove down here by myself and then I came for a Benedictine Life Week in June that year, in July that year. And um I met the vocation director, now the current vocation director and continued to work through the process with both she and Rose Mary um, <obstacle>and I I still had 2 years of school 2 1/2 years of school at the time</obstacle> [uh huh] so it gave me the time to look at the community and also gave the community some time to look at me and really, you know, see if this was gonna fit if it was gonna work. And at the time it was very difficult because I knew what I wanted and I wanted it now, I didn't wanna wait [uh huh] but in a way it was good because I um it was good because it forced me to take the time to really look into what I was doing and not just jump [uh huh]. Um and then get hurt, possibly get hurt later. <affirmation_of_contentment>So um I continued to discern with uh Rose Mary and Anita and continued to fall in loved the more people I met the more I got to know the place and I really liked what I saw and um I visited on an average of once a month for 2 1/2 years um up until in August [uh huh] so an that kind of brings me up to where I am now in formation.</affirmation_of_contentment>
</transcript>
</story>

As is hopefully evident with the examples above, the XML tags do much to provide semantic meaning to the plaintext version of the story. In addition, particular tags such as <obstacle> and <call_realization> enable researchers to compare and contrast new stories based solely on the *normalform* of preexisting vocation stories in the database. After this set of tags has been applied, it is relatively easy to create a simple Internet search engine script to parse and control search results based on keyword searches.[24] A user can now search for very specialized information within a story collection; for example "search all vocation stories where location = X, obstacle = Y, and the call narrowing sequence contains keyword Z" would be a perfectly valid search, and would likely return quite accurate results given a large enough set of stories to search through.

From this sample analysis, though, we might also consider some larger implications for the digital media community that can find some additional use in developing an XML library for both specialized and more general narrative collections.

Implications and Discussions for the Digital Media Community

Building an XML framework capable of supporting the entire range of narrative genres present in digital media communities is no simple task, and requires much discussion amongst the stakeholders from these varied groups. The complexity of such a task generates many preliminary questions. Below are four such questions we propose based on our experience with crafting XML tags for our sample vocation narrative collection:

Are there some XML tags that can be devised for generic stories of all types? Can structuralist theories of plot (e.g., Propp's analysis of folktales[25] or Booker's more general pop-culture analysis of the seven basic plots of all stories)[26] be useful here?

How can XML-encoded stories use feedback to improve self-representation?

How might standardized tags be devised to encourage the sharing and swapping of online stories?

How can tags be adapted to fit multimodal or alternative forms of narrative discourse (e.g., stories collected as audio or video texts rather than as written or transcribed texts)?

It is the intent of this paper to briefly address these questions and perhaps provide a starting point for a more exhaustive discussion within the digital media discourse community.

Question 1: Are there some XML tags that can be devised for generic stories of all types?

The quest to uncover a universal story structure has been attempted on both microscopic (e.g., Propp's focus on fairy tale plots) and macroscopic (e.g., Booker's formulation of seven plots for *all* stories) scales. An even simpler and more tolerant framework for narrative could be devised based on the Aristotelian notion of all stories simply having a beginning, middle, and end. As literary theorists have long since discovered, though, the essential elements of narrative such as plot, character, and environment can be measured, although the results of such measurement are not always consistent.[27] Aside from subjective interpretations of character motivation and other non-obvious characteristics generally left up to the reader's or listener's imagination, there are certain distinguishing features of stories that can be used to classify one narrative or to differentiate it from another.

Cognitive models can also provide useful ideas for crafting story-specific metadata tags. Marvin Minksy's concept of frames, which are generic and abstract representations of items that we commonly experience in the real world (that can be further customized to account for new variations of these items), has also been extended to account for narrative information[28]. His story frame, for example, is a type of template with placeholders (he calls them "terminals") for the protagonist, the antagonist, the central concern or theme, the location in which the story takes place, and the time during which it occurs. With this model, then, a set of

24 Thomas Rudy McDaniel. "A Software-Based Knowledge Management System Using Narrative Texts." (PhD diss., University of Central Florida, 2004).

25 Vladimir Propp. *Morphology of the Folktale*. 2d ed, Publications of the American Folklore Society. Bibliographical and Special Series. (Austin, TX: University of Texas Press, 1968).

26 Christopher Booker. *The Seven Basic Plots: Why We Tell Stories*. (London: Continuum International Publishing Group, 2005).

27 Susana Onega and Jose Angel Garcia Landa, eds. *Narratology: An Introduction.* (London: Longman, 1996); Gerard Genette. *Narrative Discourse.* Translated by Jane E. Lewin. (Ithaca, NY: Cornell UP, 1980); Mieke Bal. Narratology: *Introduction to the Theory of Narrative*. 2nd ed. (Toronto: University of Toronto Press, 1997).

28 Marvin Minsky. *The Society of Mind.* (New York: Simon & Schuster, 1985).

basic tags would include <protagonist>, <antagonist>, <central_concern>, <time>, and <place>. Indeed, even such a general and limited XML metadata system has shown to be effective in representing certain types of organizational stories.[29]

Additional structuralist theories of narrative structure will likely yield even more interesting ideas for creating appropriate tags and crafting an intersubjective[30] semantic space for story based on the manipulation of normalform templates and scripts. Post-structuralist and deconstructionist approaches to metadata classification are also possible here, though the inclusion of multiple or layered taxononomies of meaning does introduce additional complexity into the process. Multiple interpretations or critical analyses of text fragments can easily be implemented, though, simply by adding specialized tags to handle these interpretations. While the purely organic notion of a story being constantly negotiated in a reader's mind is obviously not very compatible with predetermined tagging procedures, an XML system can be useful for revealing popular interpretations, misconceptions, or cross-references that lie within stories collected on the Internet or even in classic literature that has been digitized and re-released online.[31] Granularity here can also be an issue, though, in that one must decide if tags should be implemented at the chapter, paragraph, sentence, or word level.

Question 2: How can XML-encoded stories use feedback to improve self-representation?

Feedback, or the redirection and translation of output information into usable input information, has long been noted as essential to self-repairing or self-improving information systems. As early as 1965, McLuhan writes of the importance of feedback in self-regulating forms of automated information processing.[32] With XML-encoded stories, we have the potential to embed dynamic data into static XML tags in order to improve the structuring system used to represent a particular story. For instance, if a given story has a set of <comment> XML tags that allow users to suggest comments for a particular story, it becomes possible to incorporate those comments into an addendum or a footnote and to provide a sense of community for any series of stories. An administrator can then browse through these comments, delete or remove any appropriate comments, and enable any comments that extend the usefulness or thematic richness of the story. In this sense, then, an exembellished story would exhibit a form of regulated feedback in order to ensure quality control and to empower communities of storytelling visitors and researchers by providing shared access and distributed review of narrative collections.

It is worth considering, though, how other forms of feedback might be used with XML and the narrative form. Might new types of normalforms be discovered or discussed using Web forms and feedback mechanisms? Could innovative teaching or research methods be shared, critiqued, and discussed using this method? Such questions are useful to consider when thinking about the intersections between narrative structure and XML technology.

Question 3: How might standardized tags be devised to encourage the sharing and swapping of online stories?

While vocation stories are useful for research and reference purposes for certain types of folklore and cultural studies, there are may other communities of users who may be looking to share and trade stories for their own types of informational use or even for *entertainment* purposes. For instance, many technically inclined individuals enjoy posting Web sites that detail how to construct or build innovative devices such as homemade antennas used to pick up remote Wi-Fi access points.[33] Included on some of these sites are blogs or other interactive areas in which users can comment on the devices and even provide stories of their own experiences in building the devices or using them for other types of uses. By devising XML tags to wrap around these short stories, it would be possible for these stories to cross-pollinate other Web sites and provide links to other types of experiences that users encountered with similar devices.

Of course the problem with narrative interpretability and XML lies in the formulation of standards. Much like the recipe example provided in the beginning of this article would be useless to aspiring cooks without a standard for measurement (e.g., 1 cup) so will XML tags be useless for sharing unless a standard code for narrative representation is concocted. And who better to create such a system than

29 Thomas Rudy McDaniel. "A Software-Based Knowledge Management System Using Narrative Texts." (PhD diss., University of Central Florida, 2004).

30 Intersubjectivity refers to a space of shared understanding.

31 See the Text Encoding Initiative for one such example of metadata standards for literature: http://www.tei-c.org/.

32 Marshall McLuhan. *Understanding Media: The Extensions of Man.* (New York: McGraw-Hill, 1965).

33 The web site engadget.com, for example, has one such article on constructing a Wi-Fi biquad dish antenna using an old DirecTV satellite dish. See http://www.engadget.com/2005/11/15/how-to-build-a-wifi-biquad-dish-antenna/.

the digital media community? Without standards, one user might choose to use the <hero> tag to represent the central character in their story; another might instead choose the more formal <protagonist> or even a <main_character> element to represent that character in their own set of stories. XML standards have already proven successful for industries with more mature information technology networks; the financial industry, for example, uses systems such as the Society for Worldwide Interbank Financial Telecommunication (SWIFT) standard in order to allow communication between various banking and financial entities.[34] XML is therefore expected to be essential for the evolution of B2B (business to business) communication on the Internet.

Question 4: How can tags be adapted to fit multimodal forms of narrative discourse (e.g., stories collected as audio or video texts rather than as written or transcribed texts)?

While an XML-based representation of textual stories is an interesting exercise, a much more exciting set of prospects for narrative analysis and exploration can be found in more multimedia intensive applications. A searchable archive of the narratives used in film or video games would not only be academically interesting, but also potentially highly profitable for industry. For example, one study shows the critical impact of story on the success of feature film projects; Simonton's 2004 analysis of 1,327 English-language feature films found that in award-winning and popular films, "a film's impact was a positive additive function of the dramatic and visual clusters, with the dramatic having the primary role" (emphasis ours),[35] An XML database of film narratives with searchable options for storylines, characters, and environments, then, might be useful for both film production teams and screenwriters during formative stages as well as for the critics and audiences assessing and enjoying the films during a particular film's run in theatres (note the popularity of the Internet Movie Database Web site's public forums).[36] Adapting XML tags to multimodal narratives would not be very difficult, although new tags would need to be constructed in order to reveal the additional members of production staff as well as other types of visual and special effects and music present in these types of stories.

34 XML.Com, "Xml Standards for Financial Services." (2003), http://www.xml.com/pub/a/2003/03/26/financial.html. (November 29, 2005).

35 Dean Keith Simonton, "Group Artistic Creativity: Creative Clusters and Cinematic Success in Feature Films." *Journal of Applied Social Psychology* 34, no. 7 (2004): 1949-1520.

36 See http://www.imdb.com/.

Conclusion

In this paper, we suggest that the same XML metadata framework that is routinely used in other industries such as business and finance should also be considered for use in the story-driven world of digital media. By discussing one such XML-encoded "nun story" that allows for better searching and classification of the types of stories of interest to vocation story researchers, we demonstrated that such a semantic framework is relatively easy to devise and incorporate for existing stories that have been collected and transcribed from specialized discourse communities. Finally, by prompting some questions of interest to the digital media community, we hope to have enabled a public conversation in which digital media academic and industry professionals can discuss and debate questions of critical interest to the intersecting space formed by XML and storytelling forms. The most pressing question is perhaps this: Is a clean and precise compatibility really possible given the imaginative potential of storytelling? We say it is, but if so, we need to determine how this merger should be situated and controlled in order to improve our knowledge and understanding of the narrative form. Stories are, after all, one of the digital media community's most valuable forms of expression.

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keywords
principles, learning, meta-learning, teaching, selling, commonality, sustainability, diversity, journalism.

Getting Started Latest Headlines

This document was last updated on 1 Octo

GRADES are ranked here

The Syllabus

The Schedule

Labs 1 and 2

Presentation Guideline

Date	Item
20 Aug	Introduction
22 Aug	PHP begins
27 Aug	PHP arrays
29 Aug	Arrays with String Indices
5 Sep	Functions; Regular Expressions

Done

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Norton_Re...
PC Tools AntiVirus
ActiveHome Pro
PayflowPro...
Boating 032.jpg
CanoScan Toolbox 4.9
Copy of DSCF0036...
Manual CanoScan Li...
Google Desktop
QuickTimeI...
Maj Huynh's receipt.jpg
QuickTime Player
Active Worlds
Adobe Acrobat ...
lecture3.da...
AMPP Control Panel
teleport.cgi
FSACLAIMF...
VPN Client (2)

The Core Principles of Digital Media

ber 2007. **Lab 2 sample code is now posted.**

Lecture	Task List	Extra items
Starting Stuff		
Variables		
loops		
Functions etc		

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Abstract

Digital media, as an emerging academic discipline, has thus far been primarily focused on the "how" of making media–the principles of design and techniques of construction of interactive media systems and artifacts. The purpose of this paper is to present some concepts to frame our understanding of the impact of interactive media on individuals and communities. These propositions are intended to provide guidance and insight to Digital Media students, as they collect and create their personal collection of principles en route to becoming media professionals.

What is *Digital Media*, as an academic discipline?

The community of educators who say that they are working in digital media is diverse, and strongly overlaps with pre-existing academic disciplines such as art, animation, communications, computer science, film, television, and music. Somewhere close to the center of mass of this group is a shared concern with interaction. So, for purposes of this paper, we decree that Digital Media is an academic discipline concerned with the development of new interactive media, and with the production of content for them.

The archetypal interactive medium is sometimes taken to be the Internet, though its role is perhaps better viewed as being a substrate and generator of new media such as the World Wide Web, e-mail, instant messaging, blogging, IP telephony, online role-playing games, etc.

There are also those who would quibble about the word "interactive" since people interact with every medium from oral storytelling through television. For the purposes of this paper, we define an interactive medium as one in which the user's actions have some immediate and nontrivial effect on the content of the medium. Changing the channel on a TV set is a trivial degree of interaction. Calling into a talk-radio show is substantially interactive. Making a phone call, updating one's own web site, participating in instant messaging, playing a game are highly interactive activities.

Conviviality

Ivan Illich introduced the concept of *convivial tools*. "Tools foster conviviality to the extent to which they can be easily used, by anybody, as often or as seldom as desired, for the accomplishment of a purpose chosen by the user."[1]

We interpret convivial media as denoting those media whose shared contents are produced by the users. The telephone is the classic example. The opposite concept is that of *centrist media*, wherein a small and remote group of people decide what everyone sees, reads, or hears.

Not all interactive media are convivial; some systems such as single-player computer games may be highly interactive; but the content created by the player is not shared. Digital Media needs principles and meta-principles that are relevant to both convivial and private forms of interactive media.

There are three types of principles . A principle may be an explanation of how something works, as in: "Principles of the internal combustion engine." Examples include compression, ignition, heat, and power.

A principle may be a moral statement about how an honorable life is lived, as in: "She was a person of principle." Examples include honesty, compassion, self-discipline, and craftsmanship.

A principle may be a guideline or rule of thumb for successful action. For instance, "Quench the steel when it has cooled to the color of straw." or "A web site's purpose is to provide information the user needs."

A large part of a professional education consists of teaching (by both exposition and example) a substantial collection of such principles, of all three kinds. The principles discussed in this paper each contain aspects of all three types: explanation, moral statement, and guideline.

Precedents

Mature disciplines have large bodies of established principles. For instance:

Alexander's classic work in urban planning, *A Pattern Language*[2] articulates a large set of principles for the design of homes and cities such as: "People need green open spaces to go to; when they are close, they will use them. But if the greens are more than three minutes away, the distance overwhelms the need." Later in this paper, we will examine in some detail the principles of journalism, another mature discipline.

A number of authors, writing in fields as diverse as biology and economics, have suggested principles relevant to the cybernetic age and by extension to digital media. We will cite examples from the works of Bateson, Barlow, Brand, Dawkins, and others.

These principles are embedded in a larger pool of general guidelines for success in academia and the world. For

1 Ivan Illich. *Tools for Conviviality*. (New York: Harper and Row, 1973), 22.

2 Christopher Alexander et al., *A Pattern Language*. (New York: Oxford University Press, 1977), 342.

Meta-Principles are the higher-level principles available for use by those who are formulating basic principles (concepts, values, and rules of thumb.)

instance, I always teach new Digital Media students about Steven Covey's *Seven Habits of Highly Effective People,*[3] exemplifying them with media-related examples.

Meta-Principles are the higher-level principles available for use by those who are formulating basic principles (concepts, values, and rules of thumb.) For instance, the Constitution of the United States establishes a set of meta-principles that are used to generate the actual principles embedded in our laws.

What are the 'constitutional issues' for interactive media? This paper proposes two groups of meta-principles to address this question.The first group is concerned with individuals. In this group there are three meta-principles. Meta-Principle one is Learning. Everyone is learning, all the time. How do I shape media to support learning?

Meta-Principle two is Meta-Learning. Each person should be aware of what they are learning, how they are learning it, and who is trying to teach them or influence their behavior. How do I shape media to support meta-learning?

Meta-Principle three is Teaching and Selling. Each person should be conscious of what they are teaching others, and of what they are trying to convince others to believe or do. As I design media, what do they teach and how do they convince?

The second group of meta-principles is concerned with Communities and Organizations. This group grew out of a statement by environmental pioneer Aldo Leopold: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."[4] Meta-Principle four is Commonality. Communities originate around a common interest shared by the

3 Steven R Covey. *Seven Habits of Highly Effective People* (New York: Simon & Schuster, 1989).

4 Aldo Leopold. "The Land Ethic". In *A Sand County Almanac*. (Oxford: Oxford University Press, 1949), 240.

members. How does this medium convene a community? Meta-Principle five is Sustainability. A viable community or organization must be based on appropriate feedback loops. How does this medium sustain its community of users? Meta-Principle six is Diversity. A community benefits from activities that promote diverse, rich, long-term trusting relationships among its members. How does this medium promote participation by people with a broad spectrum of styles, skills, and interests?

Exploring the Meta-Principles

Meta-Principle 1: Learning

Everyone is learning, all the time. How do I shape media to support learning? For instance, a user sits in front of a computer (or uses a cell phone, or any other media system) and does something...and is changed by the experience. That change is *learning*.

Learning is not primarily an intellectual activity; it is an emotional experience, sometimes supported by our intellect.

What do we teach our students about learning? Not much. Students need to know at least a few central concepts, such as the following

Information

What is it? Bateson[5] says that information is "differences that make a difference." But, what kind of difference? Information fundamentally changes the person who receives it. Future responses to inputs are forever altered by each new piece of information learned.

Emotion

Learning is not primarily an intellectual activity; it is an emotional experience, sometimes supported by our intellect. How a user feels during an interaction is crucial to the significance the user imputes to the interaction, and to whether the user will remember the information or repeat the interaction.

Habit

To build a skill, a user must move through and beyond cognitive understanding and form habits. Much is known about how to make systems understandable, and how to provide affordances that create good habits.

The Macintosh example

The Macintosh user interface, which was created by Jeff Raskin and others, inspired by work at Xerox, and emulated by Microsoft Windows,[6] is built on a deep understanding of learning and habit formation. What are we doing to equip our students with the right skills, knowledge, and understanding of learning to invent whatever comes after this 30-year old "desktop metaphor" for user interfaces?

Meta-Principle 2: Meta-Learning.

Each person should be aware of what they are learning, how they are learning it, and who is trying to teach them or influence their behavior. How do we shape media to support meta-learning?

This meta-principle has two key outcomes. First, we want our students themselves to be conscious, lifelong learners. This is essential to the avoidance of obsolescence in the fast-moving world of new media. Second, we want our students to have in their "mental tool-kit" the concept of meta-learning. We want them to help their users to understand and control from where their information comes.

The eBay example

Consider the 'reputation' feature on eBay. This system allows buyers to post feedback about the seller's quality of merchandise and service. Now, anyone who buys anything from a merchant, is always forming opinions about the quality of the service and merchandise; but it is seldom made into an explicit process by the supporting medium. The annoying little cardboard feedback forms we often are given at a sales counter are expressly for the benefit of the merchant–not for the benefit of the next customer coming in the door.

eBay's feedback system makes it totally clear to buyers that they have a reliable source of meta-information. The primary information items in the auction transaction are product identity and quality, cost, payment method, and expected arrival date. The meta-information is about this

5 Gregory Bateson. *Mind and Nature: A Necessary Unity.* (New York: Dutton.). 1979. 99.

6 Steven Levy. *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything*. (New York: Penguin, 1994).

first information. It tells how trustworthy it is, but the provision of this meta-information also affords the user with an opportunity for meta-learning! It makes explicit the fact that you, the user, have a new way to learn about people who want to sell you something.

eBay has, in effect, raised the bar for e-commerce. They have changed the way a medium works, by providing their users with an opportunity to upgrade their ability to learn useful information. We need to send our students (and ourselves) on a quest to find other blue-ribbon examples of media that support meta-learning.

Young people often have two paradoxical attributes. They want to make a mark on the world, and simultaneously believe that they make no difference to the world.

Memes are units of cultural information that are replicated through social interaction. Dawkins[7] proposed the concept by analogy to the gene, as the basic unit of information within a Darwinian evolutionary model of how societies adapt to change. Students studying meta-learning should read Dawkins' work as well as that of its critics, so as to learn and apply these concepts to their evolving understanding of where their own ideas and beliefs come from.

Meta-Principle 3: Teaching and Selling

Each person should be conscious of what he or she is teaching and trying to convince others to believe or do. As we design media, what do we teach and how do we convince?

Young people often have two paradoxical attributes. They want to make a mark on the world, and simultaneously believe that they make no difference to the world. The point of this meta-principle is to help our students understand how every encounter with an interactive medium ultimately contributes to some other human's repertoire of experiences. The individual's impact on others can be viewed as some combination of (deliberate or accidental) teaching and selling; of informing or of convincing others.

The Journalism example

For inspiration, let us consider a set of principles from the mature discipline of journalism. At the web site *journalism.org*,[8] we find these principles:

1. **Journalism's first obligation is to the truth.**
2. **Its first loyalty is to citizens.**
3. **Its essence is a discipline of verification.**
4. **Its practitioners must maintain a distance from those they cover.**
5. **It must serve as an independent monitor of power.**
6. **It must provide a forum for public criticism and compromise.**
7. **It must strive to make the significant interesting and relevant.**
8. **It must keep the news comprehensive and proportional.**
9. **Its practitioners must be allowed to exercise their personal conscience.**

Of these, principle number seven is of most interest for present purposes. It says that a journalist is obliged to "make the significant interesting and relevant." In other words, journalists should bring the public's attention to "significant" events, people, and ideas, and they should present them in ways that make them appear "interesting and relevant." The journalist should work to evoke an active desire on the part of the reader (or television viewer, or radio listener) to learn about this significant event.

Now consider this sequence of actions on the part of an imaginary Digital Media student, as he or she moves through his or her academic career.

Selecting a DVD movie to rent.

Choosing a topic and writing a term paper.

Voluntarily writing an article and posting it on an Internet forum.

Carrying out a team project in a Digital Media class.

Joining a campus environmental activism group.

Starting a small business with two friends.

In selecting the movie, students are almost entirely receiving the "sell job"; but even here, they are also providing

7 Richard Dawkins. *The Selfish Gene*. (New York: Oxford University Press, 2006) (30th Anniversary edition).

8 journalism.org. *Project for Excellence in Journalism: Understanding News in the Information Age*.

Do we practice what we preach?

Do we have systems in place to gather ideas from students, other than the end-of-semester teaching evaluation forms?

information to the film's distributors about which topics, actors, genres, and styles interest them. Their actions produce data for others to use.

When selecting topics and writing term papers, the students' task is to hone their skills at finding something significant to write about, and making it interesting and relevant to the hypothetical reader. Posting an online article represents the next step toward self-motivated creation-of-meaning. Now the student specifically wants to be heard, not just graded.

Working on team projects is perhaps the steepest part of most students' learning curve, as they move toward a professional level of creative output. The student wants and needs to "sell" their ideas, to teach their colleagues what they know, and to make a significant contribution to the group's work and product.

When the student joins an advocacy group or undertakes to start a small business, they have fully committed themselves to acquiring and using the twin skill-sets of selling and teaching. Not all go that far (I wish they did!), however, these skills and concepts should be made explicit in the curriculum, and taught to every aspiring media professional.

Information wants to be free. Stewart Brand,[9] the originator of this phrase, proposed novel approaches to intellectual property and value in a digital age. John P. Barlow expanded on these ideas and set forth a theory of how new economic models such as open source software can generate income and support careers.[10] A good understanding of both traditional economics and of novel thoughts about the service economy would contribute to our students' understanding and management of their 'output' — i.e., their productive careers in media.

GROUP 2: Communities and Organizations

Meta-Principle 4: Commonality

Communities originate around a common interest shared by the members. How does this medium convene a community?

Some media are built to support an existing community, but many communities emerge specifically because a medium makes it possible. This makes it worthwhile to ask questions, when inventing a new medium, about the corresponding community that you will create. Perhaps you didn't realize that you were creating a community at all.

To use this meta-principle, ask this question: "What is the principal attribute of the people who will use this media system?" If the answer is clear and simple, your system is more likely to succeed. eBay's simple community concept was that of a virtual garage sale: many people wanted to sell things but they needed advertising, an effective pricing and payment system, and a way of establishing trust that the merchandise would be delivered. eBay's solutions all grew out of a clear understanding of who the community was.

The Amazon Example

Amazon.com was part of the first Internet boom, and lost large amounts of money in its early years. However, its owners paid careful attention to the community of book-lovers that gathered. They steadily added features to make it possible for this community to support one another, and to meet their own needs. This constantly growing constellation of community-based features helped make Amazon profitable as it grew beyond books, extending the community-supporting feature-set into a variety of online merchandising categories.

These features include user-contributed book and product reviews, with a five-star evaluation system, a book recommendation system, based on other users' "clusters" of purchases, user-contributed "So, You'd like to..." guides, a "tell a friend about this item" service, a wedding registry, a "submit a manual" service (you provide a link to a PDF of a product manual), and the Amazon Friend program, where you can contact other reviewers.

Unlike eBay, people don't come to Amazon with money on their mind. They come for knowledge and entertainment, and they encounter a worldwide community, a well-constructed and always-changing bazaar of the mind.

Meta-Principle 5: Sustainability

A viable community or organization must be based on appropriate feedback loops. How does this medium sustain its community of users?

Stability and sustainability are very broad issues. Media play key roles and depend on stable organizations. Consider

9 Stewart Brand. *The Media Lab: Inventing the Future at MIT*, (New York: Viking Penguin), 1987, 202

10 John P. Barlow. "The Economy of Ideas." *Wired Magazine*, 2.03 - Mar. 1994.

journalism's principles five and six:

5. It [journalism] must serve as an independent monitor of power.
6. It must provide a forum for public criticism and compromise.

Organizations must nurture a culture in which the management listens to and learns from employees, customers, and competition–the entire community of practice. Students need to see this behavior modeled in our own professional lives, as we work to build and sustain academic organizations.

A media professional who is working to sustain a business or organization also needs to understand and support more mundane systems and practices such as data backup and plans for disaster recovery, security management, creation and storage of media assets in indexable and reusable fashion, and the careful maintenance of customer relationships, to assure repeat business.

A key aspect of organizational sustainability is the health and well-being of the workers. Steven Covey's seventh principle from his *Seven Habits of Highly Effective People.* states: "Sharpen the saw." This statement has two meanings: avoid burnout by balancing work and life; and plan for your own continuous education in new methods and concepts.

The Academic Example

Do we practice what we preach? Do we have systems in place to gather ideas from students, other than the end-of-semester teaching evaluation forms? In what ways do students influence the evolution of our online academic presence; our Departmental web sites, or our web-based courses? Do we have effective backup systems? Do we use any kind of version control and asset management systems in tracking the pieces of projects that we lead?

If we're not operating as sustainable academic organizations, then what are we teaching the students about the distance between words and deeds?

Meta-Principle 6: Diversity

A community benefits from activities that promote diverse, rich, long-term trusting relationships among its members.

This meta-principle is strongly influenced by Leopold's ecological ethos; in his writing, he frequently equates diversity and beauty. A diverse ecosystem has hundreds or thousands of species. When a threat damages some part of the habitat, the species-mix will shift to take advantage of the new circumstances. A monoculture (like a field of wheat) is critically vulnerable to a single disease.

The media questions to ask are "In what ways might your media system generate a monoculture?" and "What opportunities might you miss, if your users are all of the same xxx?". In the previous sentence, replace xxx with age, gender, economic status, nationality, language group, political party, operating system preference, or any other cluster of customs and beliefs.

The Computer Game Example

During its first twenty years, the computer game industry was overwhelmingly oriented toward young male game players. A few hit products like Pac-Man were popular with girls, but most games sold over 90% to boys.

The Sims, the largest selling computer game franchise to date, was referred to during development as "Home Tactics: The Experimental Domestic Simulator." It was sometimes called the 'dollhouse game'. It took seven years for Will Wright to convince skeptics that a game with no weapons, cars, levels, or a defined objective would sell. Apparently, due in part to these very attributes, women and girls represent a large share of the purchasers and players of The Sims family of games.

The next blind spot

What other kinds of monocultures are being generated by our media tools? Well, one set of "cultural blinders" to which Americans are particularly prone is the idea that everything worthwhile on the Internet is available in English. There are automatic translation systems that can, for instance, render a Japanese or Chinese web site into very broken English; but have you ever used one?

More importantly, the search engines are by and large partitioned by language. So there exist few ways for a good idea in, say, the Hindi-language online community, to make its way into the mind of an American or British teenager–except when a young Indian entrepreneur decides to put it there.

It is not likely that American students will rush out to learn the world's languages (though many Digital Media students are making earnest attempts at Chinese and Japanese). It is far more feasible to steer these students toward the creation of, and participation in, social experiences on-line with people from around the world, who are learning or already fluent in English.

The key point is that our students need to be equipped with a willingness (and experience) at identifying the advantages of working heterogeneous groups; and of mastering media tools such as language translation systems that bridge gaps of understanding.

The key message

It's not specifically about gender, age, race, or language–it's about *diversity.* Who do you know who is not like you? How do they factor into your plans for learning, working, and living? You're running blind if you aren't asking these questions.

Summary

This paper has set forth six meta-principles for the organization of Digital Media curricula. These ideas may be informally summarized as follows:

Learning: What effect does a person's **input** (from media) have on them?

Meta-Learning: Who is **selecting, shaping, and controlling** a person's input?

Teaching and Selling: What effect does a person's **output** (via media) have on others?

Commonality: What does a media system do to **form** its group of users?

Sustainability: What does a media system do to **keep** its group of users?

Diversity: What can a media system do to make its user group (and thus its business model) **robust** in an ever-changing environment?

The author welcomes comments and feedback.

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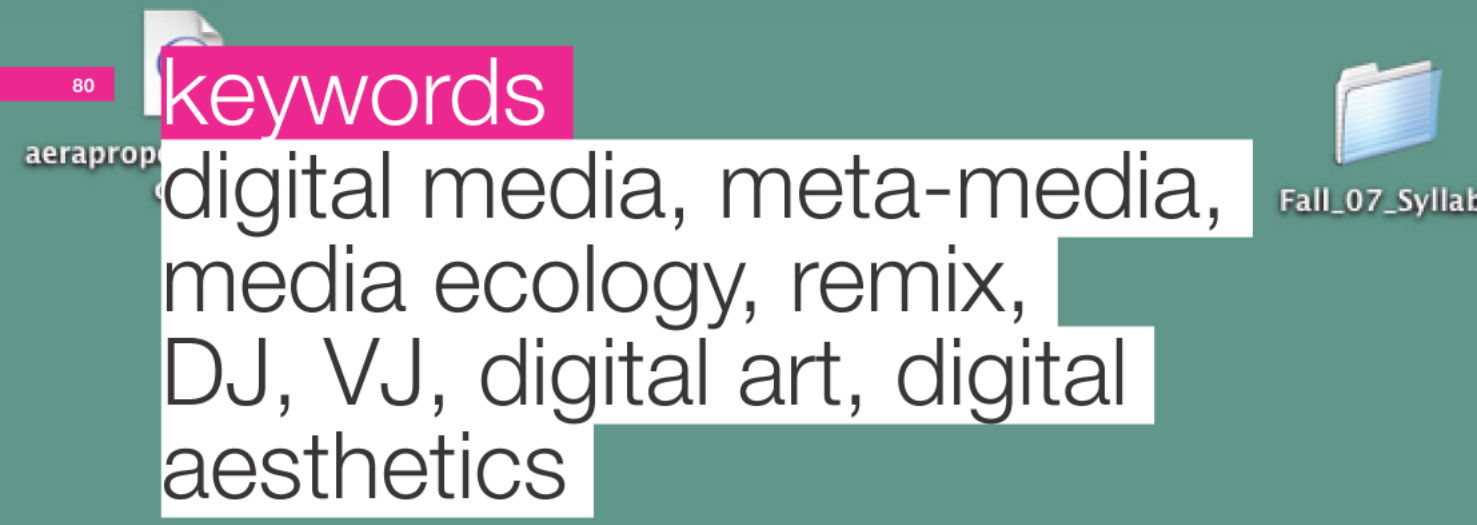

keywords

digital media, meta-media, media ecology, remix, DJ, VJ, digital art, digital aesthetics

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Mix/Remix as Epistemology: The Implications of the Metamedium, Digital Media

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Abstract

The terms *mixing* and *remixing* denote a basic process of digital media on many different levels, from the customization and convergence of different media, to the cutting, looping, editing, merging, and superimposing of multiple sources within the same media. This paper examines how the process of mixing is analogous to thinking, and how digital technology (that enables more robust combinations of media) facilitates our pursuit of knowledge. It also connects mixing/remixing to Alan Kay's notion of the *metamedium*, a concept that is critical in redefining many important theories of media in relation to emerging digital forms.

"In particular, I want to show that definitions of truth are derived, at least in part, from the character of the media of communication through which information is conveyed."
Neil Postman, *Media as Epistemology* 1985[1]

When Postman, a skeptic of media education, published these words over twenty years ago, his analysis was focused on one media at a time. With the advent of "multimedia" came a deeper consideration of the pros and cons of each media, and how mixed-media presentations combine to achieve the optimum communicative result. Today, the term "multimedia" feels quaint, recalling the bygone days of CD-ROM's. Today, instead of mixed-media, the medium is the mix.

The terms *mixing* and *remixing* denote a basic process of digital media on many different levels, from the technological convergence of different media, to the cutting, looping, editing, merging, and superimposing of multiple sources within the same media. My interest is how the process of mixing is analogous to thinking, and how digital technology (which enables more robust combinations of texts/images/sounds) facilitates our pursuit of knowledge. Yet the degree to which we "think by mixing" is a contentious topic in light of the traditional view of originality: whereas it is acceptable to "mix" from different source texts in traditional academic writing (with proper references, of course), it is problematical to remix a term paper.

Teachers, students, artists, and practitioners of digital media usually focus on an "operational" knowledge;[2] that is, the technical steps and techniques needed to make a digital object. Yet there is a cycle by which every first year class that comes to college will already command, generally, a better operational knowledge than the proceeding group. Today, all college students were born after the Macintosh, and increasingly more of them arrive on campus already knowing how to make web sites and digital videos (a few began making digital media in their pre-teen years). The effect of this cycle, which will continue, is that it pushes the college-level study of digital media into more interesting epistemological terrain than the purely "operational." In college programs, Digital Media has *mixed* well with cultural, communicational, educational, and sociological studies; not to mention fine arts, and this interdisciplinary-mixing has been Digital Media's greatest contribution to the traditional disciplines of knowledge.

Technology, "giveth and technology taketh away," as Neil Postman pointed out,[3] both enables and drastically undermines the serious pursuit of normative standards for "true" knowledge–a pursuit known as epistemology. Postman and the media-ecology movement in general were willing to take McLuhan's most serious message, seriously. This is the aspect of McLuhan that is often criticized for being too techno-deterministic; namely, that media alter what we perceive and ultimately, how we think. Beginning with his analysis of Gutenberg, McLuhan set out to uncover the thought-patterns or "effects" of media. Granted that in today's hyper-saturated media environment, a heavily deterministic theory of media is perhaps too limiting; many of McLuhan's prophetic theorizations have manifested in the students of the mix generation, and thus, he is the initial "track" in this exploration of mix/remix as epistemology.

Another major "figuration" who shaped the way we learn with digital media is Alan Kay. Both Kay and Postman can be seen as remixers of McLuhan, yet they arrive at two very different epistemological outcomes. Whereas Postman seeks a more passive approach through the ideal mix of media with reading and writing, Kay envisions a day when we will teach object oriented programming to kids (actively). In an essay co-authored with Adele Goldberg in 1977 entitled "Personal Dynamic Media,"[4] Kay posits the computer as an active "metamedium." This idea, which is found in traces of Manovich's theory,[5] considers the computer of today as a mix of media, as opposed to a single medium in itself. Kay's emphasis on the "active" metamedium translates to a new power in our ability to mix media in order to create new ones. One need only explore the current activity

1 Neil Postman, *Amusing Ourselves to Death* (New York: Viking Penguin Inc. 1985), 17.

2 By "operational" knowledge" I mean, a practical, knowing *how to do* something, as opposed to a theoretical reasoning, critical analysis, or synthesis of a knowledge process.

3 Neil Postman, "Five Things We Need to Know About Technological Change" in *Computers in Society* 2006/2007, 13th ed., ed. Paul De Palma (Dubuque: McGraw-Hill Contemporary Learning Series, 2006).

4 Alan Kay and Adele Goldberg, "Personal Dynamic Media," *Computer* 10(3):31–41. March 1977, in *The New Media Reader,* ed. Noah Wardrip-Fruin and Nick Montfort (Cambridge: MIT Press, 2003).

5 "the property that is most important from the point of view of media history is that computer metamedium is simultaneously a set of different media and a system for generating new media tools and new types of media." Lev Manovich, "Alan Kay's Universal Media Machine," *media-N* 02, no. 03(2006) Paper can be found at: *http://www.newmediacaucus.org/media-n/current_table.htm*

in domains such as physical computing[6] and VJ culture[7] to begin to fathom the proliferation of new digital media confronting us presently.

Mixing is the "active" process at work in most kinds of convergence. Used here as connotative of an implosive-force that has supplanted pure innovation, "convergence" is a scale-independent concept that applies to many levels and domains. Today the forces of thought and creativity are mixing through knowledge networks. In his study of convergence,[8] Henry Jenkins provides numerous examples, and draws upon Pierre Lévy's notion of "collective intelligence." Knowledge-convergence and the power of networked collaboration, is a kind of "hybrid-energy" (an expression devised by McLuhan, and embodied in all the famous mixes of time; from automobile-headlights to camera-phones to Deleuze-Guattari assemblages). My goal in this paper is to describe the ways in which mixing/remixing (terms that appear in nearly every discussion of convergence these days) are, in fact a "mode" of knowledge. Mixing is a concept on par with "montage" (as used in film studies). Deleuze, who hypothesized the most profound plateaus for cinematic montage (editing) as a form of thinking,[9] invoked Godard's comment; "mixing ousts montage"[10] in his chapter entitled "Thought and Cinema." Whereas the word "interval" became a key term that enabled a common aesthetic framework for early Russian filmmakers (Kuleshov, Vertov, Eisenstein, etc.),[11] "mix/remix" may someday have the same utility for digital media artists.

Teachers, students, artists, and practitioners of digital media usually focus on an "operational" knowledge, that is, the technical steps and techniques needed to make a digital object.

6 "Physical computing" is a term that refers to the activity involved in controlling computers with non-computer devices, such as sensors or analog electronic components. An example is given in this paper of a vinyl-record player hooked up to a computer. Many other examples can be found at: *http://createdigitalmusic.com/tag/physical-computing/*

7 "VJ Culture" refers to a broad range of artistic production that depends upon the mixing of streams of video in real-time scenarios, typically alongside a DJ who mixes the music, but the application of this technology has expanded into the realms of performance and installation. More info: *http://www.mappingfestival.com/mapping2006/index.html*

8 Henry Jenkins, *Convergence Culture* (New York: New York University Press, 2006).

9 "Montage is in thought 'the intellectual process' itself…" Gilles Deleuze, *Cinema 2: The Time Image.* (Minneapolis: The University of Minnesota Press, 2001), 158.

10 Ibid. 181.

11 Lev Manovich's notion of "Spatial Montage and Macrocinema" extends montage theory into the realm of the computer GUI, he is also keenly aware of the montage styles of early Russian filmmakers such as Vertov. For more info see: Lev Manovich, *The Language of New Media* (Cambridge: MIT Press, 2001).

Today it is through arrangement, combination, juxtaposition, hybridization, networking, spatial/temporal montage, and a careful attention to aesthetic levels and thresholds that the perfect mix is made, both in our minds and in our digital material. Yet as a form of thought-montage, mixing and remixing are always at risk of missing an important detail, for they potentially fade down our faculties in critical thinking and traditional, transcendental modes of "originality." The key question is whether mixing/remixing can be connected to, or how it can be used as, a means by which we come to acquire "knowledge." Mixing/remixing is a process that is intuitively understood by students and practitioners of digital media; in this paper, I will consider it as an important concept that serves as a bridge to numerous discourses relating to epistemology.

Intro: Blog-Thinking

"Imagine having your own self-contained knowledge manipulator in a portable package…"
—Alan Kay, *Personal Dynamic Media* (1977)[12]

A group of my students were working on a blog project for my "Digital Culture" course. They had identified a social network in which they felt confident that they would be accepted, and they planned, like virtual Margaret Meads, to study and report back to the class on their findings within the group. The blog itself was a large mix of links to news and information, to pictures, videos, and, of course, other blogs about the topic; and the students explained to me how this was good blog design. In fact the entire design was a remix of a web page template, and they had done barely any writing or designing (in the traditional sense) to construct it. Furthermore, although the blog itself was moderately successful, their critical analysis of it, academically speaking, was not. The students experienced difficulty transitioning their intuitive knowledge of how to build a successful blog, into a mode of critical analysis and theoretical speculation on its effect on the social network. Considering that these students were proficient remixers, could there be a connection to the difficulty they experienced in transmuting their intuitive, operational knowledge of digital media (the construction of the blog project) into an interesting critical statement?

On the opposite end of the spectrum, I worked with a student exploring the operation of a new software application, Quartz Composer. In fact, in our poking around, we gained most of our knowledge through blogs.

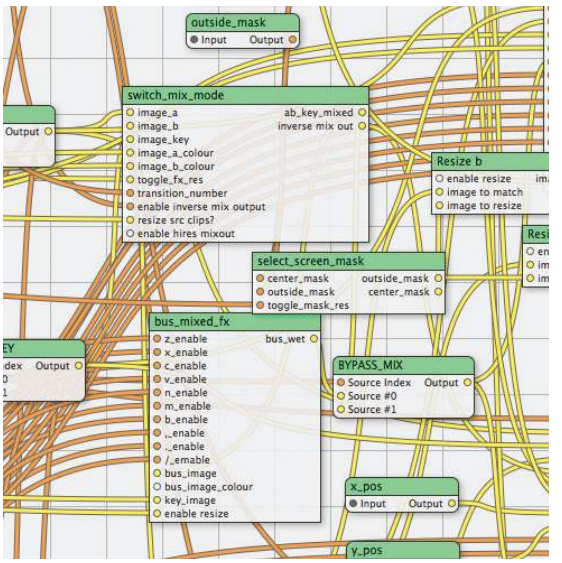

Figure 1 Screenshot of a complex mix in Quartz Composer13

Quartz Composer acts like a virtual patch-bay of sorts, allowing one to create complex interactive video environments by mixing different patches. Furthermore, this particular student had no difficulty transmuting his mixing of bits of code (that either of us understood structurally) into some very interesting critical/theoretical/artistic statements. Of course, in every group, there is a range of students, and there are many different stages of development in a student's progression, but even on the graduate and doctoral level there are certainly instances of students whose "hands-on" digital aptitude is either in or out of correlation with their academic knowledge of their medium.

While I was completing my last paper, an analysis of the remix aesthetic,[14] I was alerted to a blog posting by the director of the comparative media studies program at MIT, Henry Jenkins. The post was entitled "Learning by Remixing" and in it Jenkins begins by citing a study that leads him to conclude that over half of American teens who use

12 Alan Kay and Adele Goldberg, "Personal Dynamic Media," *Computer* 10, no. 3 (March 1977): 31–41., in *The New Media Reader,* ed. Noah Wardrip-Fruin and Nick Montfort (Cambridge: MIT Press, 2003)

13 Screenshot: Quartonian VJ Mixer by Roger Bolton. For more info: *http://www.eskatonia.net/qcblog/*

14 Jamie O'Neil, "The Remix Aesthetic: Originality Mixed and Mashed Up" *media-N* (2006 v.02, n. 03) Paper can be found at: *http://www.newmediacaucus.org/media-n/current_table.htm*

the Internet should actually be categorized as "media creators;"15 nineteen percent of this group were appropriating, repurposing, remixing, and re-posting media that they found on the web. The premise of my paper was confirmed and reiterated by Jenkins.

Despite the pervasiveness of these cultural practices, school arts and creative writing programs often remain hostile to overt signs of repurposed content, emphasizing the ideal of the autonomous artist. Yet, in emphasizing totally "original work," schools sacrifice the opportunity to help kids think more deeply about the ethical and legal implications of repurposing existing media content16

The projects Jenkins cited at MIT utilize remixing as a means for pre-college students to reflect upon the effects of media. Although these goals are fitting for critical or comparative media studies, as I examined them, they struck me as a surface-level approach to remixing, rather than an investigation of mixing/remixing as a process that is fundamental to creativity and thinking in digital media. Pondering the potential outcomes of these projects, I could only think of how they might be used in building student efficacy or interest in an otherwise boring subject. Essentially all of Jenkins' examples in "Learning by Remixing" were "edutainment."

The value of learning by remixing, especially in the college-level study of digital media, needs to be more than a way for students to "think more deeply about the ethical and legal implications of repurposing existing media content," or an introductory teaching method for hands-on digital skills, or even a step towards empowering students to become critics of the mass media that is manipulating them. In my experience with the blog project in my Digital Culture course, I felt that for my students, it needed to be more than an easy way out of writing another term paper. Yet on the other hand, I have seen many positive moments of mixing/remixing as well (as with the abovementioned Quartz Composer project) where a student was able to transmute an operational knowledge into an interesting critical statement. The potential for mixing/remixing is in line with an ideal like Jean Luc Godard's concept of the "video-essay" in "Histoire(s) du Cinema" (Figure 2 below).

What are the formalities involved in separating the introductory or nascent levels of mixing/remixing (e.g., "blog-thinking" or "edutainment") from the kind of thought that, in the tradition of art, transmutes, through a manipulation of form and content, a static representation into a thought-invention? Remixing is an act of "processualizing" media. It transforms the passive-distribution media into an active-creative media. A. N. Whitehead, who is often cited by McLuhan when he confronts epistemological issues, promoted a model of knowledge that allowed for dynamic processes, growth and development of systems, and constant movement of thought in the act of discovery. In my own undergraduate studies, my teachers of theater "shaped" my physical body and voice through a process of exercises based on the methods of Stanislavski and Grotowski. I mention this anecdote as an image for Whitehead's idea of "education" which he postulated as an interface of imagination and knowledge, a relation between a body of imagination (in the students) and a body of knowledge (in the educational establishment). In order for this action-reaction to take place, an arrangement of concepts are introduced in time, in such a way that the student and teacher mutually move from familiar to unfamiliar ground, and instead of reciting something by rote, we discover something new through this interface. The "new" is thinking itself. The body of knowledge that is familiar to students of digital media is mixing/remixing—how we create a reaction that leads to higher plateaus of thought is our challenge as teachers of digital media.

Figure 2 Still from Godard's "Histoire(s) du Cinema" 17

15 Henry Jenkins, "Learning by Remixing." *http://www.pbs.org/mediashift/2006/07/learning_by_remixing.html*

16 Ibid.

17 Image source: *http://www.singularpress.com/blog/books/5277.html*

in the electronic age, data classification yields to pattern recognition…classification is too fragmentary…in typical situations of "information overload," men resort to the study of configurations…"
–Marshall McLuhan, Understanding Media, 1964[18]

In re-reading Marshall McLuhan in the context of my current situation (as a teacher of digital media), I have noticed in his writing, his deep concern with how we think and learn; and whether or not the future of the educational establishment will or will not be a force that contributes to "knowledge" in society. McLuhan communicated in a style that was revolutionary for his time, long before the creative neologisms of Deleuze and Guattari or the modern day musical-neurological studies of Daniel Levitin (all of whom I will invoke later in this paper). The abovementioned famous quotation of McLuhan's sets the stage for an environment of great speed and transformation. I see in my students a fascination and high-aptitude for "pattern-recognition."

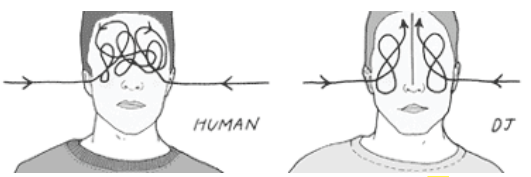

Figure 3 Image of Human vs. DJ pattern recognition[19]

Figure 3 illustrates the mindset of the student of the mix generation.[20] The cacophonous, often overwhelming, barrage of channels, leading to the state of information-overload; is re-organized into a harmonious, symmetrical pattern.

McLuhan asserts that only through a heightened ability to "see" the pattern will we survive. He posits the artist and, in a less justified way, the "student of media" as the hero who develops the needed perception and knowledge to see patterns. "The artist," writes McLuhan, "is the man in any field, scientific or humanistic, who grasps the implications of his actions and of new knowledge in his own time."[21] In this passage, it is important to not misinterpret McLuhan's use of the term "artist;" McLuhan does not endeavor to understand the consequences of art in the same way as postmodern-contemporaries do (as a force in politics, identity, relationships, economics etc.). To poke holes in McLuhan's theory of the artist is to place him out of his own time and not to read him carefully enough (for his first example of an artist in *Understanding Media* is a scientist, Werner Heisenberg). The key point being that McLuhan is telling us that there is a strong connection between the way we use our five-senses and our aptitude for acquiring knowledge. "The artist can correct the sense ratios before the blow of new technology has numbed conscious procedures."[22] This heavily deterministic theory, which was considered very suspicious by his critics[23] (much of the criticism was coming from the domains of cognitive and social science), is the most viable cause that one can find in his writing that led to his being unfairly shunned by his academic community.[24]

The student of the mix generation is the child of McLuhan's prophecy. Support of this can be found in the imaginative theories of Deleuze and Guattari (that followed, but did not specifically reference McLuhan) and present day neurological research into the human senses; but before I proceed to make these connections, I will describe the image of the child McLuhan prophesied.

Working with digital media requires a mix of many perceptual faculties; the most fundamental are the cinematic and musical thought-processes. Mixing/Remixing can be simply understood as a hybrid-process of film editing and playing music. With mixing/remixing, there is a simultaneous activity in the acts of databasing/editing, arranging/composing, performing/recording, and a co-joining of temporal/spatial montage. There is also a rapid increase in the speed, and even a total bypassing of the stages, by which the Mixer/Remixer moves from the model (or map) to the final product. Furthermore, the "final" may be inherently processual/emergent, an example being how the DJ uses dual-turntables to create different combinations of musical elements in every performance. All of these conceptualities can be set aside, however, if one endeavors to observe

18 Marshall McLuhan, *Understanding Media* (New York: McGraw-Hill, 1965), vii.
19 Image source: *DJhistory.com*. *http://www.djhistory.com/*. (February 3, 2007).
20 Although generational labels are dubious, I use this term to describe the current generation of college students, sometimes called the "MTV generation" or "Generation Y."
21 Marshall McLuhan, *Understanding Media* (New York: McGraw-Hill, 1965), 65.
22 Ibid.
23 In 1965 Tom Wolfe asserted that the place where McLuhan was most vulnerable was in his dependency on a theory of a balance of the senses, he wrote; "As yet there is no apparatus for measuring just how intensely the human mind is attuned to this or that sense." Tom Wolf, "The New Life Out There", in *McLuhan Hot and Cool* (New York: The Dial Press, 1967) Presently, it may be worth reconsidering this debate in light of present-day neurological studies.
24 More information on this topic can be found in the documentary *McLuhan's Wake* (Montreal: Primitive Entertainment/National Film Board of Canada, 2003).

the empirical fact of a crowded college digital media lab, full of students working on their digital projects. With white headphones inserted into their ears, there is a creative trance that the students of the mix generation enter into via the computer medium/environment. This realm echoes the space of "happenings" that McLuhan encouraged in his own time in a search for a sensory path to knowledge, not to mention his lesser-known experiments with audio-montage.[25] The GUI/spatial montage formalism of this environment[26] is the "familiar" ground of the student of digital media. The sensory-info-aesthetics have a flow, a co-presence/convergence between creative and communicational windows, a material of flickering plasma, a movement of mouse and bits, etc.. This is the starting place for an "interface of knowledge" that is formed through the interaction of students and teachers of digital media.

Young people often have two paradoxical attributes. They want to make a mark on the world, and simultaneously believe that they make no difference to the world.

Long after the McLuhan explosion, Félix Guattari, who was a sharp critic of the classic psychoanalitic and social scientific methods (and lesser known for his interest in theater and media),[27] wrote an essay called "The Production of Subjectivity."[28] Guattari constructs a very McLuhanesque picture of the human psyche as determined and programmed by the dominant ethical and social forces in the surrounding medium/environment. Yet, instead of calling for more scientific proof of this occurrence, Guattari said: "My perspective involves shifting the human and social sciences from scientific paradigms towards ethico-aesthetic paradigms."[29] Considering our present day scientific battles with the media, the President, tribal/religious factions, etc., one can see how an epistemology based on scientific "proof" has clearly been undermined by the mix of increasingly polarized, mediated viewpoints. Guattari echoes McLuhan in describing the epistemological context of our present-day digital media students; it is an ethico-aesthetic paradigm,[30] in which samplings of digital bytes are mixed/remixed and networked into aesthetic agglomerations aimed at overcoming the confines of a personal, subjective mode of thought.

Guattari's idea was probably inspired by the theories of his collaborator, Gilles Deleuze who wrote a pair of very well known books on cinema released in 1983[31] and 85[32]. But these books were not about cinema per se. Deleuze, the philosopher, expressed via his study of cinema, "a new line of approach to a number of important problems of modern thought: the undecidability of truth and falsity…the relation between brain and body,"[33] i.e., a range of epistemological issues. Without delving into the details, phraseology, and complex reasoning of the books, I would like to draw upon one of their most elementary points, derived from a quotation of Deleuze's chapter entitled "Thought and Cinema."

> It's as if the cinema were telling us…you can't escape the shock which arouses the thinker in you…Worse still, the spiritual automaton was becoming the dummy of every kind of propaganda: the art of the masses was already showing its disquieting face.[34]

25 In the late 1960's McLuhan released an audio LP version of *The Medium is the Massage* which used a pastiche of voices, sound effects and multi-track overlays of McLuhan's own recitations of famous aphorisms from his books.
26 Here I am alluding to Lev Manovich's theories in *The Language of New Media* (Cambridge: MIT Press, 2001).
27 Guattari's notion of the "post-media era" is one in which mass media "disconnect themselves from segrative capitalist values and give free reign to…a revolution in intelligence, sensitivity and creativity…" Félix Guatarri, *Soft Subversions*, (New York: Semiotext(e), 1996) 124.
28 Félix Guattari, *Chaosmosis*, trans. Paul Bains and Julian Pefanis, (Indiana: Indiana University Press, 1995).
29 Ibid.
30 In the 1990's Guattari noticed a new societal emphasis on ethical or aesthetic justifications of knowledge (as opposed to philosophical, scientific or political modes).
31 Gilles Deleuze, *Cinema 1: The Movement Image* trans. Hugh Tomlinson and Barbara Habberjam (The University of Minnesota Press, 2001).
32 Gilles Deleuze, *Cinema 2: The Time Image* trans. Hugh Tomlinson and Robert Galeta (Minneapolis: The University of Minnesota Press, 2001).
33 This quotation is from the translators' introduction. Gilles Deleuze, *Cinema 2: the time image,* trans. Hugh Tomlinson and Robert Galeta (Minneapolis: University of Minnesota Press, 1989)
34 Ibid., 156.

When Edison invented the phonograph he envisioned it as a machine for storing data. It became the first medium for distributing recordings of music.

Deleuze envisions cinema as a medium/machine that writes directly onto the viewer's mind and thus leads to two opposing consequences. The cinema as "spiritual automaton" is the power it has to create a movement-image that sets off a chain reaction of new thoughts, concepts, affects, sensations, etc.. In the above quotation, he includes, with his description of the spiritual automaton, an important precaution; cinema can also be used to turn the viewer into a robot that has been programmed by the forces of propaganda. In this sense, the cinema facilitates the production of subjectivity, and thus when the student Mixer/Remixer says, "I think…," the teacher must eventually lead them to consider, "Who is really thinking?" Yet in Deleuze and Guattari, the emancipation from this medium-matrix (the postmodern, mediated world) is through an active use of media. This is also what McLuhan was getting at in his preoccupation with the artist as the person who sees patterns, applies new knowledge, and in using media, creates a way out of the matrix-matrix.

The last media epistemologist I would like to consider is a present day neurologist, whose recent book *This Is Your Brain on Music* is the next logical step in a mix/remix epistemology that proceeds from McLuhan, Deleuze, and Guattari. Mixing and remixing are of course terms that originated in the domain of music, and Daniel J. Levitin's writing contains many striking "scientific" examples of how materially the sensation of hearing music is dependent upon knowledge of patterns in the brain. Levitin gives some very deterministic examples, such as pitch, which is experienced as something absolute. There is activity in locations of the brain that correspond so exactly to pitches, that a neurologist can tell what pitch has been heard by merely looking at a bran scan of the listener. Other experiences of music are not so deterministic, such as tonal scales, which are learned more like a language, so that a child of six years can recognize illegal notes (notes out of scale) in the same way one recognizes if the syntax of a sentence is incorrect.[35] Levitin posits a system in which absolute and relative rules are mixed, cognitive and culturally determined knowledge is mixed, and thinking and sensation are mixed. Levitin's study is noteworthy in how it exceeds the clichés of McLuhan's, modern purposive-scientific-reason and Deleuze and Guattari's postmodern, criticism-of-science. It is fitting that Levitin embodies the hybrid-form of scientist/musician[36] as this is the scientist/artist archetype of the mix/remix epistemology. Digital media's power as a tool of knowledge is its value as a metamedium, a sensory machine/environment where one mixes within and between media; and at times, even ventures to create new media in the automatic activity of desiring to think the new.

Chorus: Grasping the Implications of the Metamedium

"Although thinking goes on in one's head, external media serve to materialize thoughts and through feedback, to augment the actual paths the thinking follows."
—Alan Kay, *Personal Dynamic Media*, 1977[37]

Extending McLuhan leads one to consider—what is entailed in "grasping the implications" or "recognizing the patterns" of our present day, digital medium/environment? In order to do this, I will need to make two important updates to the McLuhan software. First, today, "the medium is the mix." Second, the medium is the metamedium. What do I mean by this McLuhan Remix?

Convergence is a force stronger than innovation. When Edison invented the phonograph he envisioned it as a

35 Daniel, J. Levitin, *This Is Your Brain on Music*, (New York: Penguin Group, 2006), 20-29.

36 In his introduction, entitled "I Love Music and I Love Science—Why Would I Want to Mix the Two?" Levitin details his career as a professional musician, producer and sound engineer. Daniel, J. Levitin, *This Is Your Brain on Music*, (New York: Penguin Group, 2006).

37 Alan Kay and Adele Goldberg, "Personal Dynamic Media," Computer 10, no. 3 (March 1977): 31–41, in *The New Media Reader,* ed. Noah Wardrip-Fruin and Nick Montfort (Cambridge: MIT Press, 2003).

machine for storing data.[38] It became the first medium for distributing recordings of music. When its role was usurped by the Audio CD, it became the primary medium for mixing music (as a dual turntable), but digital home recording equipment acted as a catalytic force in this transition of the phonograph into a medium of the mix.[39] This transformation of the phonograph was also affected by the advent of new distribution methods for music—such as MP3 and Napster.

Figure 4 Image of time-coded vinyl disc as control interface for digital audio[40]

Today the "feel" of vinyl records is employed as a control interface for manipulating digital audio (Figure 4). Nicholas Negroponte told a similar story of the inventor of television, who was introduced to John F. Kennedy as "the man who got you elected."[41] Vladimir Zworykin's hopes and dreams of the TV medium were never considered once his technology began to mix with American consumer culture.

Beginning with the Sony Portapak as an important medium for the artists of the 1970's, and then the widespread growth of the home video market, the lens of mass media began to be turned upon itself; with cable television and now YouTube, we have witnessed TV evolve from a mass distribution medium, to a creative medium, to a micro-distribution medium. When McLuhan said "The moment of the meeting of media is a moment of freedom and release from the ordinary trance and numbness imposed by them on our senses,"[42] he was aware of the energy of hybrid-media, but today with our proliferation of new hybrids-of-hybrid media, it is not necessary to follow the McLuhanesque teleological development of new hardware. Today it suffices to say that the medium is the mix; i.e., what it is that we mix together and how it is that we mix digital material together in new ways comprise the medium/environment of our time.

We mix on three basic levels; we mix media (convergence), we mix within media (the playlist), and we mix media specifically to create new media (the metamedium). The above examples of the phonograph and TV followed the classic McLuhan-method to understand media as they implode/converge, but today there is a subversive force in the way we mix within media, which can be understood through the phenomenon of the "playlist." For as an advertisement once declared, "you are your playlist."[43]

The playlist is symbolic of the force of the digital database in constructing personal identity. Its effect is influential in promoting the mix/remix epistemology. MySpace, one of the world's most popular web sites, is a collection of people's playlists. I am using the term "playlist" in the broader sense than its colloquial (iTunes) usage, because, in my perusal of MySpace profiles, I am struck by how each person's "space" is really a mix of songs, videos, pictures, and lists of their interests. This "space" is teaching them how to categorize themselves by their combinations; i.e., the page arrangement of their "content." Their thinking goes like this: when my mix matches yours, there is a probability that we will become "friends." Social networking studies[44] confirm that when age and location correlate with the playlist, there

38 McLuhan includes provides a very interesting account of Edison's plans for the phonograph, as an audio database that people could call into via telephone, and as a medical device for recording the screams of sufferers of mental illness. See: Marshall McLuhan, *Understanding Media*, (New York: McGraw-Hill, 1964)

39 Erik Hawkins, *The Complete Guide To Remixing*, (Boston: Berklee Press, 2004) 3-5.

40 This is an example of "physical computing," albeit from the commercial rather than artistic domain. The vinyl record contains time-code data that controls audio files inside the computer. The manufacturer, Stanton declares "Get the feel of vinyl with the convenience of digital technology." Source: "What Is FinalScratch" http://www.stantondj.com/v2/fs/what-isfs.asp (February 3, 2007)

41 Nicholas Negroponte, *Being Digital* (New York: Alfred A . Knopf, Inc. 1995), 9.

42 Marshall McLuhan, *Understanding Media* (New York: McGraw-Hill, 1965), 55.

43 See E. Benson, "You Are What You Listen To." *American Psychological Association Journal Online*, 34, no. 7 (July/August 2003), http://www.apa.org/monitor/julaug03/listen.html (February 3, 2007) for relevant information on this topic.

44 Ravi Kumar, et al., "Structure and Evolution of Blogspace" in *Computers in Society 2006/2007*, 13th ed., ed. Paul De Palma (Dubuque: McGraw-Hill Contemporary Learning Series, 2006).

is an even higher probability that MySpacers will become "friends" because "friends," after all, are people with the same mix.

This 'blog-thinking' is the nascent phase of our first-year students. Through "blog-thinking" a student can compare and contrast, group together, and appropriately categorize sets from the playlist. The next step is to begin to transmute this functional knowledge via the habit-learned processes of digital media, into a type of thinking that can analyze and synthesize a playlist into a multiplicity of possible outcomes. This is precisely the great boon of digital media—a technology that enables more robust, complex and intricate combinations of media.

In 1977 Alan Kay (another scientist/musician hybrid) envisioned a future for the computer that was very different from the equation-running information systems of his era. We can hear McLuhan[45] echoed in this passage by Kay:

> the computer, viewed as a medium itself, can be all other media if the embedding and viewing methods are sufficiently well provided. Moreover, this new "metamedium" is active—it can respond to queries and experiments—so that the messages may involve the learner in a two-way conversation.[46]

Inside the spatial-montage of our Graphic User Interface, there is a co-presence of multiple media.[47] Right now, I'm sitting in a library typing into my little dynamic-book, but all I need to do is move my mouse down below this white window and click on a button to begin editing video (in Final Cut Pro), or playing music (by typing my computer keys in Ableton Live), or distributing my video and audio via networks, or finally I could begin creating a new hybrid medium/environment using tools such as Quartz Composer or Modul8. This Dyna-turned-Powerbook[48] is no longer a single medium, but rather, through digitization, it is capable of "simulating" many media.

Nicolas Negroponte's phrase "bits are bits" means that there is an equivalence between bits that ignores the quality of their content.[49] Bits are the generic building blocks of anything digital, thus bits of audio are the same as bits of video, text, imagery, etc.,—and bits of course can be shared through networks. Due to the mutability and movement of bits, the metamedium is an environment where information is shared, altered, and then re-shared. Bits have also allowed for both the machinery and the content of old media to become simulated in the metamedium.[50] Yet for Kay, the ultimate medium is object-oriented programming languages,[51] although even programming has become drastically changed by the mix/remix epistemology. Today it is common for a student (or professional) to cut and paste HTML, CSS, and Java while constructing a web page, and this can be accomplished without much understanding of the overarching programming principles at play (tags, variables, etc.), yet this lack of structural knowledge does not inhibit the creation of an "original" page made up from the source code of previous pages. Thus, we can portray object-oriented programming as a process of mixing/remixing akin to mixing images or sounds.[52]

Considering mixing/remixing as epistemology leads to a completely new conception of what it means to "know" something, both as an original-subjective-belief and/or as a factual object. In a previous paper, I explored how the aesthetic of remixing has seriously altered the conventional view that creativity is always correlated with originality.[53] As with the present paper, there are two sides to this spectrum, the "myspace" of the incoming college student who intuitively mixes and mashes aesthetic elements and, dialectically, the tradition of appropriation that raises remix to the level of fine art. In this paper I have tried to broaden my theorizing from the domain of aesthetics to epistemology to show the possibility that exists in using the processes

45 Kay is explicit about the influence of McLuhan in: Alan Kay, "User Interface: A Personal View", in *Multimedia: From Wagner to Virtual Reality*, ed. Randall Packer and Ken Jordan (New York: W.W. Norton, 2001).

46 Alan Kay and Adele Goldberg, "Personal Dynamic Media," *Computer* 10, no. 3 (March 1977):31–41, in *The New Media Reader*, ed. Noah Wardrip-Fruin and Nick Montfort (Cambridge: MIT Press, 2003).

47 For more information see: Lev Manovich, "Alan Kay's Universal Media Machine," *media-N* 2, no. 3 (2006) http://www.newmediacaucus.org/media-n/current_table.htm. (February 3, 2007).

48 In *Personal Dynamic Media*, Kay and Goldberg also posit a future for small, portable computers (what would become laptops) and they are referred to "dynabooks."

49 Nicholas Negroponte, *Being Digital* (New York: Alfred A . Knopf, Inc. 1995), 9.

50 Kay talks of "simulation" and his usage should not be confused with Baudrillard's use of the same term, which is very different. Kay simply means how the physicality of video editing gear becomes virtual inside a computer. We commonly use the term "B-roll" even though the association with a physical roll of tape has long been lost.

51 Kay's has continued to pursue this goal via the "Squeak" language. See: http://squeakland.org/

52 For more information, please see: [iDC] *Remix Culture vs. Object-Oriented Culture: A conversation between Lev Manovich and Patrick Lichty*, http://mailman.thing.net/pipermail/idc/2006-April/000345.html

53 Jamie O'Neil, "The Remix Aesthetic: Originality Mixed and Mashed Up" *media-N* 02, no. 03 (2006) Paper can be found at: http://www.newmediacaucus.org/media-n/current_table.htm

of mix/remix (that is familiar to students of digital media) as a means to activate and enliven a more robust multiplicity of knowledge. Like the library I am sitting in right now, knowledge has long been collected and categorized in the surround-environment of college. The mix/remix epistemology is knowledge—becoming.

Soon after students of the mix-generation have graduated, the most important remix of their lives will take place. They will attempt to overlay the track of their newfound societal or corporate identity over whomever they were when they put on their cap and gown. I hope that this new template will be taken on actively, as something mutable, rather than a static/passive representation. Perhaps through a re-arrangement of attitudes, a co-presence of multiple images, a harmonious development, a critical superimposition, a trance, a flow, or an equilibrium-seeking vector—a knowledge of mixing/remixing—they will transition from this present day medium/environment into a new future; and perhaps it will have a better groove.

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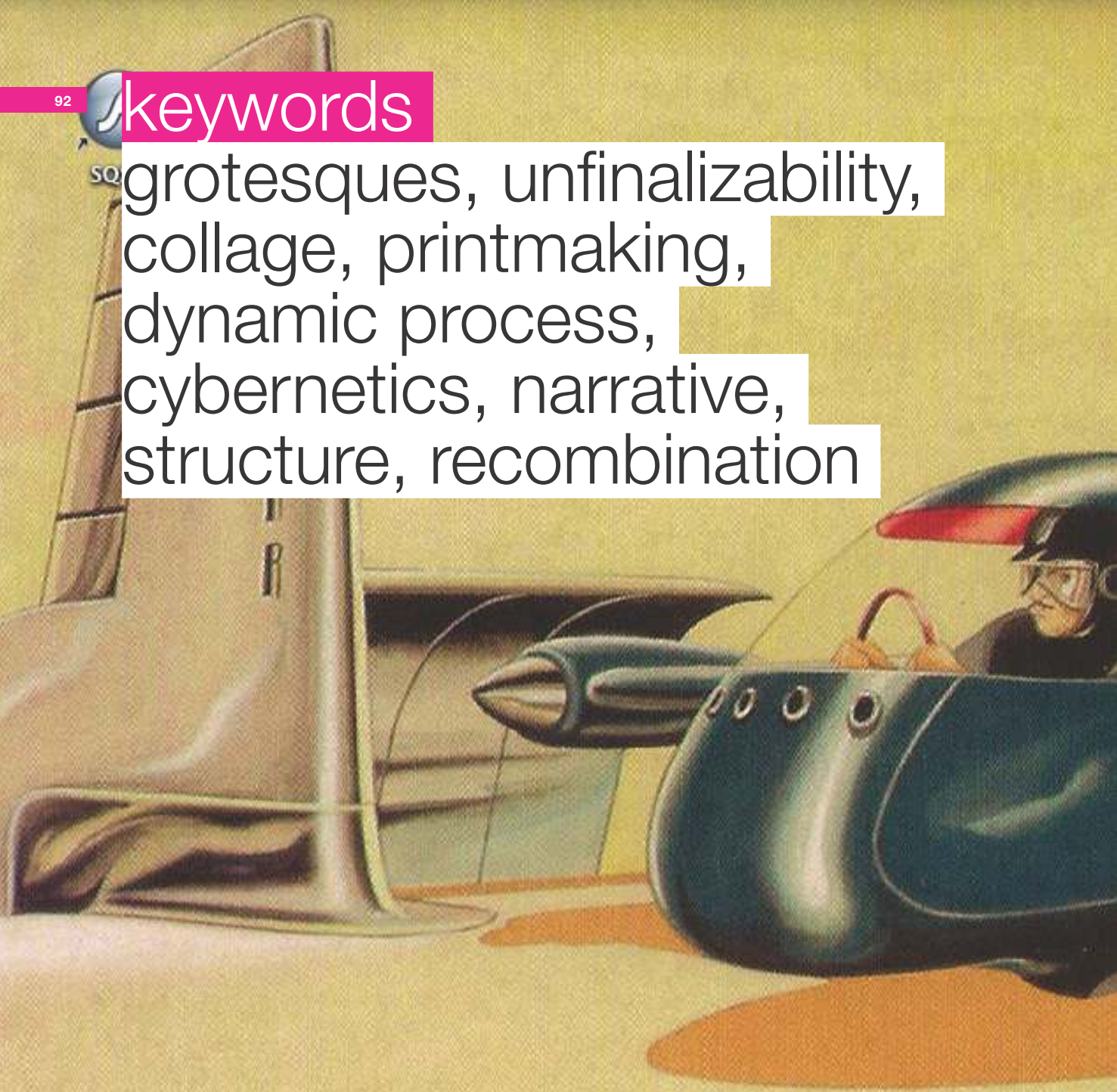
keywords
grotesques, unfinalizability, collage, printmaking, dynamic process, cybernetics, narrative, structure, recombination



Seth Ellis
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New Grotesques: New-Media Process in Old-Media Product

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Abstract

This paper is an initial attempt to define some of the ideas that have been arising in my own work, as I have moved from dynamic new-media works to dynamically generated prints and artist books, and from there to collage. (In doing so I have occasionally felt that I am moving backwards in technological history, even though my collages are done primarily in Photoshop, with little physical manipulation.) As such, this is an overview of these ideas, raising issues that this paper does not have the scope to examine in detail.

The "new grotesque," as I use the phrase, refers to the irruption of new-media paradigms into traditional media. I take the term "grotesque" from Mikhail Bakhtin, whose use of the term has been tremendously influential on subsequent theories of culture and aesthetics. Bakhtin says of the grotesque:

> The grotesque body is a body in the act of becoming. It is never finished, never completed; it is continually built, created, and builds and creates another body.[1]

The grotesque is intimately related to another of Bakhtin's central ideas, that of the unfinalizability of the self. For Bakhtin, the individual can never be completely known or understood, because the individual is never finished:

> [n]othing conclusive has yet taken place in the world, the ultimate word of the world and about the world has not yet been spoken, the world is open and free, everything is still in the future and will always be in the future.[2]

Identity can only be understood as a momentary approximation of a contingent process, the process of being. It is easy to extend this idea of the unfinalized self not just to the individual and his body, but to the form of an individual work of art—very literally so in the case of digital media, since a digital file can be reopened and re-manipulated ad infinitum. But in this paper I want to address how static works are also becoming, in a conceptual sense, unfinalized, as they start to incorporate techniques and paradigms from digital media.

The change wrought by new media is not a revolutionary change, in the sense of a total, abrupt transformation from previous modes of thought and production, but the culmination of an ongoing, non-linear trend in thought and culture through Modernism and Postmodernism. In two-dimensional visual arts, the precursor we often cite for contemporary digital image making is collage. This is a little simplistic, and it isn't my intention to force all digital art under the rubric of that term. But the parallels are obvious; even in the early days of Modernism, collage was a practical pre facto primer in the Postmodern process of decontextualization and recontextualization. Postmoderism identified the process of contemporary culture as images, language, and ideas being removed from their original context, and thrown together with alien elements in such a way as to force the pieces to develop their own, new context from direct experience (the Internet is the most obvious contemporary example of this process). To Postmodern theorists, this is the manner in which all contemporary culture constantly re-defines itself; but even in early Modernism, in particular through the work of the Dada movement, some artists predicted this breakdown of cultural objects into reusable pieces—in the most literal sense, through collage. In Kurt Schwitters' Merz collages, for instance, scraps of paper from various mundane sources are turned into fragments, which become elements in formal compositions; thus Schwitters' collage *Untitled (Tea-Rose)*, 1924, obsessively re-uses the materials found in tea shops—wrappers, napkins, et cetera—to create an abstract collage that does not refer to a tea shop in any literal, representative way. The process is not one simply of decontextualization; the original source remains in highly structured and symbolic forms that depend on the material nature of the original rather than on its image-bearing quality. The effect of the casual viewer, unaware of these antecedents, is that even as the collage itself becomes a bulky, layered object, the affect of the source images is flattened into a single, new context. The disparate elements are synthesized, flattened, into a single pictorial composition that overrules the original subject matter even as it draws upon it. The collage borrows the apparent immediacy of its elements while elliding their actual, original nature.

In Bakhtin's terms, these traditional collages partake of the nature of the grotesque—they are rebuilt, re-created bodies—but they fall short of full grotesquery; they are not *continually* re-created. Once the collage image is made, it reads as an image; it is finalized, and as such it can be displayed as an art object in a gallery setting in the same manner as a painting. In fact, the later history of Dada involves the reconstruction of original, ephemeral Dada productions precisely so that they could be "finished" for the sake of posterity. Many Dada works were created out of flimsy materials, meant to be ephemeral; some, like Marcel Duchamp's *Fountain*, were made only to be photographed and reproduced in avant-garde art journals, and were never meant to be displayed at all. In order for Dada to achieve the status of a real movement in art history, many of these works had to be re-made in later decades, out of more durable materials, so that they could be owned by museums in the traditional way that art objects are stored and remembered. Posterity was not equipped to understand

1 Mikhail Bakhtin, *Rabelais and His World*. 1965. HÄlÅne Iswolsky, trans.,. (Bloomington: Indiana University Press, 1984), 317.

2 Mikhail Bakhtin, , *Problems of Dostoevsky's Poetics* (Minneapolis: University of Minnesota Press, 1984), 166.

Identity can only be understood as a momentary approximation of a contingent process, the process of being.

them otherwise.[3] This, I contend, is what has changed in contemporary attitudes towards collage, as I would like to examine a particular kind of contemporary artwork: digital prints deriving from a dynamic computerized back-end. These are static works, generally abstract images, presented as prints hanging on a wall, that are generated not through the specific aesthetic choices of a human artist, but by a computer program that was itself created by an artist/programmer. The artist has taken a step back from responsibility for the final image; he has removed himself from the traditional role of the artist as image-maker, even as the final product is a traditionally displayed image.

Joshua Davis is a designer and artist who first became known for his sophisticated Flash interfaces, made both for commercial clients and as art projects. Concurrently with his dynamic work, he has been making two-dimensional images using an increasingly complex series of computer programs. These programs create images drawing on shapes created by Davis, and combining them in randomly-generated ways. His ongoing series *Once Upon a Forest*, begun in the late nineties, is an example of such a process; each print, traditionally made and distributed in limited editions, has been generated by algorithm.[4] A more recent series, *bmw z4*, consists of unique prints, each generated separately from a set of pre-programmed behaviors. These images draw on the contours of the BMW z4 and on geographic notes from German atlases; the application breaks the forms down and re-maps them along curves mathematically derived from those same forms. It is also worth pointing out that these prints are not distributed through the gallery system; they are sold through BMW's web site, sight unseen by the customer, as a promotional tie-in. Until purchase, the print remains a hypothetical structure to the purchaser; as Davis describes it, "a kind of frozen image of the high-speed workings of [his] program codes."[5] But at that point it suddenly becomes a traditional print, composed of ink on paper.

The forms that Davis borrows to create these prints are represented in the generating engine as mathematical formulae, not as images. The resulting impression is one of an autochthonic image, as much as a unique product as an abstract painting, divorced from representation. The source material—the form of the z4—is precisely represented in the code, not as a model but by mathematical formula; but the source shapes are blended together in the final image into a seamless, and above all, a flat whole. It is this idea of *flatness* in which all digitally-made images partake. The flattening of collage is taken to a radical extreme; digital collage happens not through the juxtaposition of separate images but through the transposition within an image, in layers—in the case of the z4 prints, around 120,000 layers per image. In other words, flatness is made possible by the internal transparency of the imagery. Once the image becomes physical, the layers disappear. In the case of Davis' images, the process of generation, and the source

3 For a recent discussion of the later history of Dada's influence and products, see Charles Stuckey, "Dada Lives," *Art in America* June/July 2006: 142-151.

4 These images are viewable online at http://www.once-upon-a-forest.com/. Davis' web site is http://www.joshuadavis.com.

5 Quoted on the z4byjd.com web site (no direct link; from the *About the Project* documentation).

shapes, are never apparent at all. There is no border between the recurring shapes of Davis' algorithmic images; the source materials are embedded within each other. The picture plane becomes a smooth, uninterrupted surface.

In my own work I have drawn on Davis as a model; but in doing so I work with dynamically generated or recombined text, which adds an entirely new type of structural complexity to the resulting work. Machine-created language has a long history, and many writers have attempted to grapple with its implications, even before it was really technologically possible. In his 1967 essay "Cybernetics and Ghosts," Italo Calvino asks:

> What would be the style of a literary automaton?…The test of a poetic-electronic machine would be its ability to produce traditional works, poems with closed metric forms, novels that follow all the rules…The true literature machine will be one that itself feels the need to produce disorder, as a reaction against its preceding production of order.[6]

Calvino is supposing here that the machine will be autonomous, as autonomous as the human author seems to be. But that autonomy is to some degree a product of the author-reader divide caused by printing. As a counter-example before the printing press, I think of Ludovico Ariosto, the author of the other medieval Italian epic, *Orlando Furioso*. This poem took him ten years to write; apparently, during that time, he would leave the manuscript on a table in his front hall with a pen, so that visitors could record comments and additions in the margin.[7] Of course Ariosto remained the author, in any meaningful sense of the term—he was free to disregard the interpolated comments if he wanted—but this is a much closer, more intimate and more fluid relationship than the printing press allows between the author and reader, or rather, between the text and the people who interact with the text, both as author and as reader.

But that was a long time ago. In 1967, when Calvino wrote this essay, the author-machine was a single, autocratic unit, whether human or technological in origin; the reader was a consumer, interacting with the author's product in a purely mental, interpretive, non-participatory way. Elsewhere in the same essay, and repeatedly throughout his career, Calvino insisted that he was looking forward to being replaced as writer by a machine, so that the real job of literature could be seen to reside in reading. It's worth examining what Calvino meant by reading.

In *Castle of Crossed Destinies*, Calvino creates several different stories programmatically, by dealing out all the face cards of the Tarot deck and deriving narrative from their physical relationships.[8] He is "reading" the cards in precisely the manner of a fortune-teller, deriving meaning from the combination of symbolism and chance; this is reading as a kind of divination.

I think that this is what Calvino thought of as reading the works of a machine; an active reading, one that generated narratives rather than, or as well as, interpreting them. This makes reading a very active prospect, but it also means there is more than one kind of reader: there is Calvino, who is reading the cards, and there is me, reading Calvino. Calvino is the active reader—the new reader of the future, one might say—but the ultimate product is a static text in which I then participate in a very traditional way. This fixed, static, final product is, we are generally told, the casualty of the digital revolution; all texts in new media remain fluid at all times, all products remain nodes of authorship, through adding comments, through editing wiki pages, through adding incrementally to email or instant message exchanges, and so forth. It's this unfixedness that many new media programs and art scholars are trying to come to grips with. But this "unfixedness" is only a factor in new media products, for instance in Web pages. Traditional, fixed media still exist, and while many of these media incorporate digital technologies into their production or back-end, the product is still a fixed physical object; for instance, a book written non-linearly in a word processing machine, digitally typeset, still ends up as a book. Is this merely a holdover from a previous iteration of the world, or is their real benefit to be gained from products of fixed media—even, or especially, fixed media that emerge from dynamic media in their production? That is, how have fixed-media works started to incorporate dynamic media? What consequences does this have for their nature, their exhibition, and their affect?

Why is it important that these works be static? Precisely so that they can be unfinalized; so that they can imply a continuing narrative, or a continuing field of meaning, without containing it. Implication depends on silence—in visual

6 Italo Calvino, "Cybernetics and Ghosts," in *The Uses of Literature: Essays,* Patrick Creagh, ed. (San Diego, Calif.: Harcourt, 1982), 12-13.

7 Ludovico Ariosto, *Orlando Furioso (part I)*, Barbara Reynolds, trans. (New York: Penguin Classics, 1975), 71-72.

8 Italo Calvino, *Castle of Crossed Destinies*, William Weaver, trans. (New York: Harcourt, 1979).

media, on stillness. For the work to be in motion marries the viewer unilaterally to the work's process, rather than engendering a process of cognition in the viewer. Even for the work to remain screen-based makes it inconclusive; work existing on the computer implies that the work remains fluid, that is, still in process. For the work to be physically finished, captured as a traditional, static work, highlights its unfinalizability as an image—its essential contingency on other experience and knowledge. This relationship is a primary feature of dynamically-generated, static works.

Briefly, what are the consequences of this process on the presentation and the economic nature of these products? Joshua Davis' *z4* prints are meant to be hung on the wall, but not to be hung on the wall in a gallery. Since they do not really exist until they are sold, display for sale in a gallery would be misleading, at the very least. Gallery display becomes mere documentation. These prints really only work as a notional part of a larger whole; they do not lend themselves to gallery display. Thus the gallery continues to lose its central position as a node for the display and consumption of art, even for some traditionally displayed artworks. This is a real issue for artists who continue to pursue relatively traditional career paths.

Of course, Davis is not taking the next step: distributing not the prints, but the engine that generates them. Davis creates the mechanism as a personal machine, one that allows me to "read" the resulting works and shape them. These dynamic processes have allowed him to become his own reader, in the sense Calvino means. To return to Calvino's essay:

> And so the author vanishes—that spoiled child of ignorance—to give place to a more thoughtful person, a person who will know that the author is a machine, and will know how this machine works.**9**

. . . . .

At this point I want to hearken back to Bakhtin; these works are *unfinalized*, literally in the case of the z4 prints, but also in something like the terms Bakhtin meant that term to describe individual identity. These works appear to be contained, coherent works, but they are not understandable without an awareness of their antecedents, and of the way they inhabit their present context, and that awareness can never be total.

9 "Cybernetics and Ghosts," 16.

And so I come back to the term *grotesque*. These works are grotesques of traditional art objects; not original to the artist, not unique to the immediate process, and yet not unoriginal, not merely repetitive. I am interested in this idea precisely because my own work is displayed, in its final form, in the most traditional of media: ink marks on paper. I am a "digital" artist, but only as an end-user: I use commercially available software in the ways made possible by the software developers, no more; I make a conscious effort to produce my finished work in "casual" media (that is, reproducible prints and books) that can be distributed and experienced without reliance on a particular event or context. Viewers and readers in contemporary society are surrounded by decontextualized imagery that can only be understood as meaningful if one understands that there is a contextual antecedent to the image; but that antecedent is generally, by nature, unavailable. Every image becomes unfinalized; the grotesque is no longer the exception, but the cultural norm. Art-makers, even painters, become not the autonomous authors of finished works, but participants in an unfinalized process.

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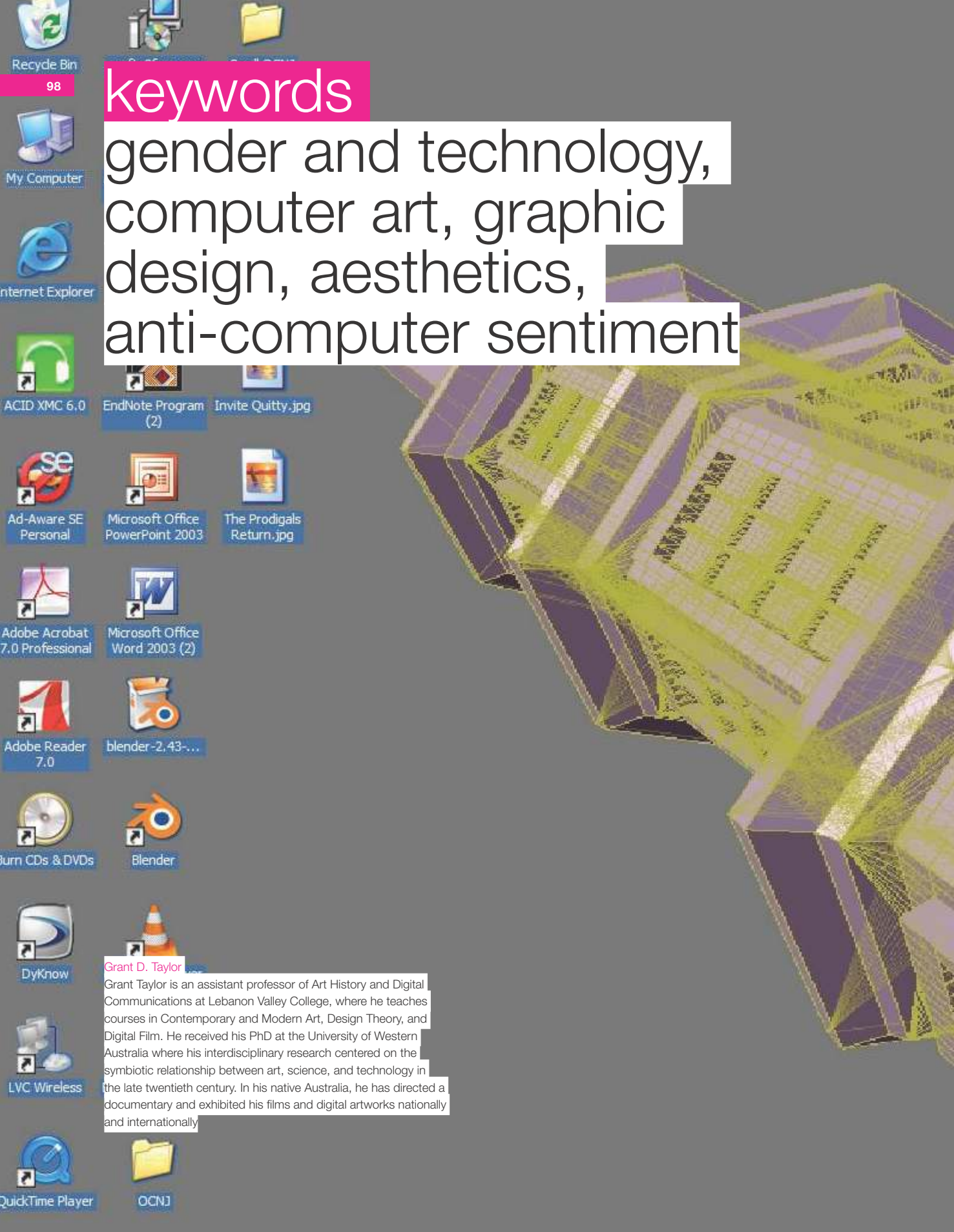
keywords

gender and technology, computer art, graphic design, aesthetics, anti-computer sentiment



Grant D. Taylor

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Humanizing the Machine: Women Artists and the Shifting Praxis and Criticism in Computer Art

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Abstract

In the early 1970s a revolution in computer art and design took place. At the time, the graphics community, which was made up of small group of technologists, was indistinguishable from the computer art community. A number of women artists became the primary agents in the theorization and criticism of computer art. To record the shift in computer art, this paper shows the move from the dominant abstract paradigm of early computer art towards more personalized and naturalistic imagery and mark making.

A new kind of renaissance is beginning. All those now working visually with the computer are Giottos announcing the coming of a new visual age.
Collette Bangert, 1976 [1]

A computer is never lifeless. It hums as if it were cogitating some primordial secret that it will tell us only if we nurture it.
Jillian Schwartz, 1992 [2]

As soon as the computer's graphic capabilities were reached in the early 1960s, scientists and technologists became fascinated with the visual by-products of what was ground-breaking research. In these bewitching geometric patterns that emerged from the computer's peripheral machines they saw a wholly new kind of creativity. In these rather rudimentary vector lines the technologists relished the mathematical grandeur of harmony, order, and symmetry (Figure 1).

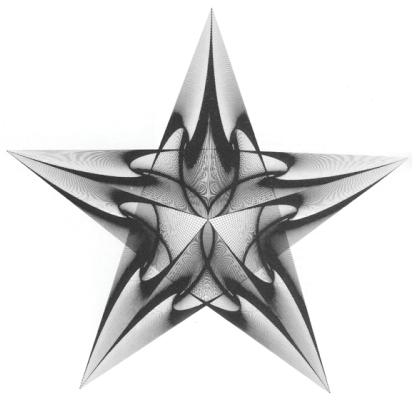

Figure 1 Donald K. Robbins from *The Sandia Corporation*, New Mexico, Verifying Star, 1967.

These perfectly executed lines seemed to find continuity with the ancient Pythagorean tradition and its poetics of geometry. Sensitive to the history of 20th century art, these technologists also believed that the new abstract forms had echoes of the Constructivists and other early abstract Modernist movements.[3] In these early abstract movements, the scientists and technologists saw their kindred spirit. After all the constructivists' utilitarian doctrine for extending the formal language of abstract art into practical design found resonance in the technologists own research pursuits. Meanwhile in Northern Europe—where the Constructivist movement first emerged—the technologists naturally saw in there computer art a continuation with modernist abstraction (Figure 2). Abstraction composition dominated both sides of the Atlantic. However, Europeans technologists differed in that they placed importance on what the early computer art theorist and historian, Herbert Franke, called the "mathematization of art."[4] The technologists and mathematicians envisaged the power of the computer as an experimental tool, an instrument to transform complex mathematical information into visual phenomena. Beyond

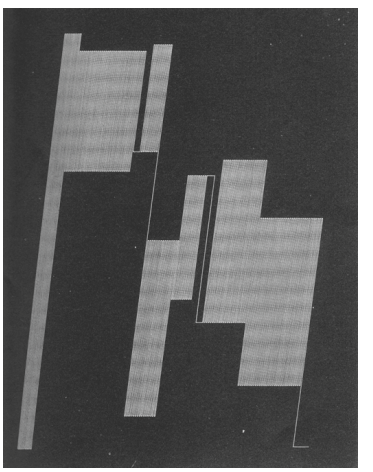

Figure 2 Auro Lecci, *Slant*, 1969

making the abstract visible, there is an attempt to submit art to the powers of mathematics— in effect to demystify

1 Collette Bangert and Charles Bangert, "Computer Grass Is Natural Grass," in *Artist and Computer*, ed. Ruth Leavitt (New York: Harmony Books, 1976), 23.

2 Lillian Schwartz and Laurens Schwartz, *The Computer Artist's Handbook* (New York: W. W. Norton & Company, 1992), 3.

3 The new computer artists also shared with the constructivists the utilitarian doctrine for extending the formal language of abstract art into practical design. The Modernist schools of criticism, such as Constructivism, Bauhaus and the De Stijl Group, analysed composition in terms of design elements and principles. Corresponding to the age of efficient industrialisation, these modernist groups also were interested in producing art mechanically as a way to increase functionality and avoid embellishment and artistic idiosyncrasies.

4 Herbert, Franke, *Computer Graphics—Computer Art*. trans. Gustav Metzger. (New York: Phaidon, 1971), 8.

art. For these exponents, mathematical formalization could finally purge art of the taint of mystery by unlocking the secrets of how beauty and artistic creativity were created. Of course, this pursuit appeared abhorrent to the mainstream art-world intent on protecting the romantic myth of the "genius" artist.

Outlining a computer art discourse infused with mathematical mysticism and associations to early abstract art provides important context to the significant shift in aesthetics and theorisation that takes place in the early 1970s. Thus far I've been talking about a rather small group of male technologists attempting to create static graphic works. This was a small and peripheral subset of the larger art-and-technology movement in the United States, a movement that had gained popularity in the 1960s for its collaborative and progressive spirit.[5] To add further context to the changing shape of computer art, it's worth briefly commenting on the state of the art-and-technology movement in the early 1970s. By the early 1970s, the momentum that computer art had harnessed from the art-and-technology movement was rapidly dissipating as the movement disintegrated. The demise of the art-and-technology project was relatively swift. Two significant events in the early 1970s spelt the movement's end: first, the closure of the Howard Wise Gallery in New York,[6] which for eleven years had been the primary promoter and sponsor of new technological art forms; and second, the closure of the ambitious *Software* exhibition at the Jewish Museum in New York, as a result of a number of "technical disasters."[7] In the short-term, computer art's fate seemed tied to the art-and-technology movement. After reaching the height of popularity with the international exhibition *Cybernetic Serendipity*, computer art saw its public support begin to wane.[8] Many artists retreated from collaborative efforts and from the "difficulties of operating in the no-man's land where art overlaps with science and technology."[9] However, harnessed to an ever-evolving technology, computer art found support in a number of nascent industries, most notably the rapidly growing computer graphics industry. More importantly to the changing nature of computer art was that trained artists showed increasing interest in the computer.

Perhaps the most significant reason for the "resurgence" was the artist, who, avoiding the crippling effects of collaboration, began learning computer programming. This resulted in a shift away from the dominant position held by scientists and technologists. The original computer art exhibitions were made up entirely of scientists and technologists. When the major international exhibition *Cybernetic Serendipity* was held, there were very few trained artists engaging with the computer. As the curator, Jasia Reichardt, noted "only three artists [had] actually produced computer graphics, while the rest to date had been made by scientists."[10] In the 1970s, scientists were no longer the primary practitioners and artists were no longer dependent on their expertise.

By the early 1970s, the "artist-programmer" began to materialize,[11] and, in contrast to the declining art-and-technology movement, computer art expanded in the 1970s. By 1975 *Computers and People* (formerly *Computers and Automation*),[12] a journal for computer scientists and enthusiasts, featured the work of forty-one artists from eleven countries in its annual exposition. By 1978, there were thirty times more computer art practitioners than a

5 For convenience, I employ Edward Shanken's descriptor "art-and-technology." Likewise I describe art-and-technology as a broad artistic phenomena that emerged in the US in the 1960s through a number of exhibition and where exponents focused their "inquiry on the materials and/or concepts of technology and science." They also sought, through a "meta-critical process," to challenge the "systems of knowledge that structure scientific methods and conventional aesthetic values." Edward Shanken, "Art in the Information Age: Technology and Conceptual Art," *Leonardo* 35, no. 4 (2002): 434.

6 Edward Shanken, "Art in the Information Age: Technology and Conceptual Art," *Leonardo* 35, no. 4 (2002): 435.

7 Edward Shanken, "The House That Jack Built: Jack Burnham's Concept of 'Software' as a Metaphor for Art," in *Reframing Consciousness: Art and Consciousness in the Post-Biological Era*, ed. Roy Ascott (Exeter: Intellect, 1999), 145-196.

8 K. Loewengart, *Computer Genesis: A Vision of the 70s* (New York: Joe and Emily Lowe Art Gallery, 1977).

9 Jonathan Benthall, *Science and Technology in Art Today* (New York: Praeger Publishers, 1972), 11.

10 Jasia Reichardt, ed., *Cybernetic Serendipity: The Computer and Art* (New York: Praeger, 1968), 71.

11 Ken Knowlton, "Collaborations with Artists: A Programmer's Reflection," in *Graphic Languages*, ed. Frieder Nake and Azriel Rosenfeld (Amsterdam: North-Holland Publishing Company, 1972).

12 The journal was first published in 1951 with the title *The Computing Machinery Field*. In 1953, it changed to *Computers & Automation*, then to *Computers and People* in 1974 when it began to publish material relating to the social effects of computers and information systems. For example, it tackled, in relation to computers, the ethical, social, and global issues of the day.

decade earlier.[13] Once exhibited in isolation, and within "modest settings,"[14] computer art began to be shown in larger venues. A considerable portion of venues included university and polytechnics that had recently built computer science and engineering departments. Subsequently, there was an expansion of computer courses, including, for the first time, computer art classes.[15]

Beyond the appearance of the trained artist, the most invigorating factor within the computer art project was the influx of women artists, writers, and critics. In the 1970s and beyond, women became primary agents in the theorisation and criticism of computer art. Besides her curatorial work on the landmark *Cybernetic Serendipity*, which initiated much of the worldwide interest in computer art, Jasia Reichardt's publications, *The Computer in Art* (1971) and *Cybernetics, Art and Ideas* (1971), marked her as the most astute commentator of the computer art phenomenon. Furthermore, in the 1970s, women computer artists became prolific writers. Grace Hertlein wrote extensively on computer art, and Ruth Leavitt gave voice to a range of computer artists in her seminal publication *Computer and Artist* (1976). In addition, the visionary works and writings of Lillian Schwartz, Vera Molnar, and Collette Bangert shaped computer art discourse. In the following decade, women would also take the key role in criticism through the work of Cynthia Goodman, Margaret Lovejoy, Patric Prince, and Anne M. Spalter. Furthermore, in the 1980s there emerged an ever-increasing group of successful computer-based women artists.[16]

The movement of trained artists into the field meant that computer art evolved more humanist sensibilities. Intuition, subjectivity, and poetics began to replace the omnipresent rhetoric of abstraction, which was the overwhelming instrumental view of a depersonalized art. While much of the computer art of the 1960s evoked an organic quality through the generation of symmetrical geometric figures, the artist of the 1970s were looking to redefine their relationship to nature through such features as the landscape motif.[17] For example, in the early 1970s, Grace Hertlein completed the naturalistic work *The Field* (Figure 3), which employed different kinds of traditional drawing mediums such as paper, pens, and inks to produce highly individual and natural effects.[18]

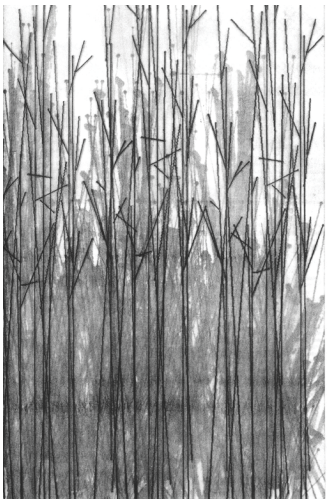

Figure 3 Grace C. Hertlein, *The Field*, 1970. 11x14, Grey Pastel Paper.

The symmetry and precision that gave 1960s computer art a "mechanistic" appearance shifted towards in-exactness and disorder, as the artist worked against the accuracy of the computer.[19] The husband and wife team of Collette and Charles Bangert produced landscapes such as *Large Landscape* (Figure 4)[20] that simulated chaotic patterns through random generators.[21]

While these critics, writers, and artists made more than significant contributions, women computer artists are absent from art and gender studies covering the

13 Grace Hertlein, "Computer Art: Review,1968; Survey, 1978; Predictions, 1988," *Computers and People* August-September (1978).

14 Herbert W Franke, *Computer Graphics—Computer Art*, trans. Gustav Metzger (New York: Phaidon) 72.

15 Grace Hertlein, "Computer Art: Review,1968; Survey, 1978; Predictions, 1988."

16 Rebecca Allen, Eudice Feder, Darcy Gerberg, Cooper Giloth, Barabara Nessim, Sonia Landy Sheridan, Vibeke Sorensen, Joan Truckenbrod, Jane Veeder, Donna Cox, Diane Fenster, Sue Gollifer, Cynthia Rubin, Darcy Gerbarg, Nicole Stenger, and many more.

17 Beyond the Bangerts, there were artist such as Grace C. Hertlein, Mutsuko K. Sasaki, Harold Hedelman, Duane M. Palyka, and Petar Milojevic who explored computerized natural forms.

18 Grace Hertlein, "An Artist Views Discovery through Computer-Aided Graphics." *Computers and Automation* August (1970): 25-26.

19 The artists attempt to "avoid making computer drawings that have a computer-made appearance." See both Bangert and Bangert, "Experiences in Making Drawings by Computer and by Hand"; Bangert and Bangert, "Computer Grass Is Natural Grass," 18.

20 Gift of Colette Stuebe Bangert and Charles Jeffries Bangert, 1999.0232. © Collette Stuebe Bangert and Charles Jeffries Bangert.

21 Bangert and Bangert, "Computer Grass Is Natural Grass," 20.

The symmetry and precision that gave 1960s computer art a “mechanistic” appearance shifted towards in-exactness and disorder, as the artist worked against the accuracy of the computer.

1970s. This is surprising considering the dominance of women in computer art. Even in computer art discourse, women's role in computer art has only recently been acknowledged.[22] Although these accounts are crucial first steps in mapping the impact of women on computer art, they do not deal with the complex relationship between gender and technology.

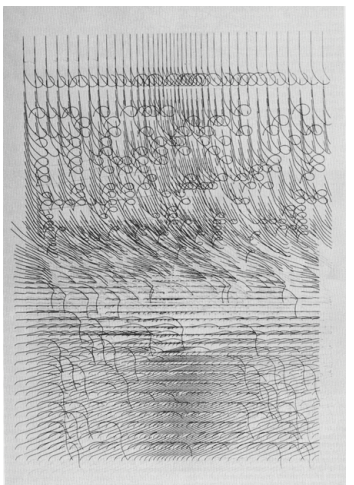

Figure 4 CS & CJ Bangert, *Large Landscape*, 1, Computer-plotter, Orchre and Black ink on paper, 1970. Spencer Museum of Art, University of Kansas.

Many have noted the gender politics of twentieth century science and technology, especially in engineering, which is traditionally associated with men and masculinist ideology.[23] Likewise, computer culture, which emerges from engineering and militaristic domains, privileges masculinity. Computer programming, which interestingly had been the domain of women before and during the war,[24] became increasingly male-orientated in the 1950s as its prestige as a "challenging and creative intellectual enterprise" grew.[25] Beyond the computer industry's links to militarism, traditionally a resolute masculine domain, computer science was allied with mathematical and cognitive rationalism, which has a long history of masculine association (from Aristotle, to Descartes, to Locke).[26] These factors and others meant that culturally the computer was deemed masculine.[27] Contemporary gender mythologies have followed this trend, especially in the arts where anti-computer sentiment has reinforced gender stereotypes.[28] A strong negative response to the computer in the humanities is one key reason why computer art—and importantly women's contribution—was ignored. Many cultural critics promote a measured scepticism towards computer technology and its perceived modes of control. Dystopianism gained popularity in the 1970s within the reactive counter-culture and avant-garde movements.[29] Influenced by the pessimistic and cynical sentiment of anti-humanist writings, many within the arts, such as artists and critics, viewed the computer as an emblem of rationalisation, a powerful instrument in the overall subordination of the individual to the emerging technocracy and associated its military industrial complex.

It seems surprising in the face of the counter-culture's technophobia and the feminist critique of industrialisation, that woman artists were able to move with relative ease into the masculine world of computing. While there were excep-

22 Anne Spalter, in her wide-ranging publication *The Computer in the Visual Arts*. (Reading, Massachusetts: Addison-Wesley, 1999) was the first to formally acknowledge the role of women in the emergence of computer art. More recently, Patric D. Prince has written an important descriptive account. Patric Prince, "Women and the Search for Visual Intelligence," in *Women, Art & Technology*, ed. Judy Molloy (London: The MIT Press, 2003).

23 Angela Creager, Elizabeth Lunbeck, and Londa Schiebinger, eds., *Feminism in Twentieth-Century Science, Technology, and Medicine* (Chicago: The University of Chicago Press, 2001).

24 Prior to the 1950s the term computer denoted a person, usually a woman, who "carried out calculations by hand or with a mechanical calculator." Michael Mahoney, "Boy's Toys and Women's Work: Feminism Engages Software," in *Gender & Technology*, ed. Nina Lerman, Ruth Oldenziel, and Arwen Mohun. (Baltimore: The Johns Hopkins University, 2003). 171.

25 Ibid., 171.

26 Paul Edwards, "Industrial Genders: Soft/Hard," in *Gender & Technology*, ed. Nina Lerman, Ruth Oldenziel, and Arwen Mohun (Baltimore: The Johns Hopkins University, 2003), 177.

27 Mahoney remarked that studies, even as late as the 1980s when PCs had become widespread, found that "children of both sexes from kindergarten on identify the personal computer as masculine: it is something for the boys." Mahoney, "Boy's Toys and Women's Work: Feminism Engages Software," 171.

28 When I mention computer art to my colleagues in art history, many are surprised to discover the existence of female practitioners. They were astounded when I outlined the crucial role women played in shaping computer art. The stereotypical view of a computer artist is still male, which goes well with many who persist in combining outmoded gender identities with anti-technology sentiment. The women computer artists I've contacted have also confirmed this bias.

29 In 1964, the same year that computer art first entered the cultural sphere, influential cultural theorists, Jacques Ellul, Herbert Marcuse and Marshall McLuhan produced influential publications that in different ways were critical of technology. Jacque Ellul, *The Technological Society*, trans. J. Wilkinson (New York: Vintage, 1964); Herbert Marcuse, *One-Dimensional Man* (Boston: Beacon Press, 1964); Marshall. McLuhan, *Understanding Media* (New York: McGraw Hill, 1964).

tions, as Sue Gollifer has pointed out,[30] women tended not to be excluded as they had been in engineering prior to the 1970s. Lillian Schwartz was invited to work at Bell Labs by technologist Ken Knowlton. For Schwartz, there were no gender issues.[31] The shift was relatively straightforward because she had always worked with the latest technologies; and she had no concern over how her computer work would be received because her pre-computer art was already successful.[32] Schwartz was not actively seeking equal rights within a male domain. This corresponds with Cynthia Rubin's account of her transition to computer-based art. Beyond the aesthetic flexibility of the computer, Rubin remained in the computer art field because it was "open." According to Rubin, "any one who had a new idea was welcome" as gender, race, and position within the computer community were not a central concern.[33]

Historically, the gender shift parallels the increased participation of women in engineering and computing fields in the 1970s.[34] Another facilitating factor was the "women's movement" and the resulting influx of women into the visual arts.[35] Moreover, other creative fields once dominated by men were witnessing a shift; for example, at the same time, a generation of female science-fiction writers came to prominence.[36] Feminism was a major issue in the visual arts during the 1970s. For many feminist artists, painting was considered too masculinist or at least too closely associated with a very masculinist history of Western art. Hence they were particularly attracted to non-mainstream media which they felt were suited to feminist subject matter, such as textiles and performance. On the other hand, Spalter suggests that females were attracted to the computer for similar reasons, because "unlike traditional fine art media, [the computer] does not have a history of primarily male practitioners."[37] While this is true, feminist themes are not common amongst female computer artists (unlike textiles, performance, video, and photography), and male scientists and technologists did dominate computer art production in the 1960s, (as would be expected given science and engineering's long masculine bias). However, computer art was such a new medium that male practitioners were yet to construct a history that favoured them.

Early women computer artists seem not to have raised gender issues in their work or collaborative efforts, unlike their feminist contemporaries in video and performance art. This is one major factor in women artists slipping underneath the radar. There was no overt polemics involved in the use of the computer by women in the early 1970s. This contrasts with artists using video, which became an "alternative, progressive, and flexible medium for expressing their political and cultural objectives."[38] Like their male counterparts, female computer artists were devoted to the potential of the computer and its processes, rather than its potential as a political tool. Nevertheless, women artists overcame the fallacy that computer technology was inherently masculine. It became clear that computers did not embody masculinity; rather, the medium had in the very early years been "culturally constructed" as a male preserve.[39]

One of the significant factors that drew women to the computer was the artist's belief that the computer was a mysterious and untouched frontier fit for exploration. This has historical precedence. Some of the most insightful and passionate writings on mechanical calculation have been made by the nineteenth-century mathematician Lady Lovelace, Augusta Ada King-Byron.[40] In the computer world, gender issues in the 1970s appear to be eclipsed by the absorption in, and enthralment of, the computer's innate potentiality. The computer itself was equally seductive to both genders. Sherry Turkle has noted how "engrossing" the computational medium can become for users, and how that interaction with the machine "offers the illusion of companionship."[41] Computer artists such as Grace Hertlein, who invoked the idea of the "joyous machine," followed the highly reflective relationship that others (including male technologists and artists) entered into.[42]

30 While Lillian Schwartz had few problems, the celebrated print maker, Sue Gollifer, found that computing in the late 1960s was not "deemed a woman/art area." Sue Gollifer, e-mail message to author, June 1st 2004.
31 Lillian Schwartz, e-mail message to author, 25th May 2004.
32 Lillian Schwartz, e-mail message to author, 25th May 2004.
33 Cynthia Rubin, e-mail message to author, 25th May 2004.
34 Creager, Lunbeck, and Schiebinger, eds., *Feminism in Twentieth-Century Science, Technology, and Medicine;* Edwards, "Industrial Genders: Soft/Hard," 179.
35 Lawrence Alloway, "Women's Art in the '70s," *Art in America* May-June (1976).
36 Charlie Gere in *Digital Culture*. (London: Reaktion Books, 2002) 163, mentions Ursula LeGuin, Anne McCaffrey, Joanna Russ, Kate Wilhelm, C.J. Cherryh, and Joan Vinge.
37 Anne Spalter, *The Computer in the Visual Arts* (Reading, Massachusetts: Addison-Wesley, 1999), 11.
38 Margot Lovejoy, *Postmodernist Currents: Art and Artists in the Age of Electronic Media*, (Ann Arbor: UMI Research Press, 1989) 105.
39 Edwards, "Industrial Genders: Soft/Hard," 196.
40 Joan Baum, *The Calculating Passion of Ada Byron* (Hamden, Conn: Archon Books, 1986).
41 Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon and Schuster, 1995), 31.
42 Grace Hertlein, "An Artist Views Discovery through Computer-Aided Graphics" *Computers and Automation August* (1970): 26.

Ever since the 1950s when the computer first entered the cultural psyche, it had evoked a special kind of wonderment. The tendency to both anthropomorphize and mythologize the machine was part of the general public's, and indeed the artist's, inability to comprehend the logical complexities of the machine.[43] As Philip Davis and Reuben Hersh describe, "in the passage from symbolic and programmatic to the visual, [the artist] cannot anticipate all aspects of what the machine will create."[44] The computer's metaphorical link to the mind and its descent from the mysterious Enlightenment automaton meant that computers were seen as strangely sentient.[45] In effect, the spectacle of seeing a computer, apparently operating autonomously as it drew complex images, was a major attraction for a fascinated public (Figure 5). For both male and female computer artists, the appeal of the computer lay in its ability to configure new visual worlds through Cartesian spatial logic.[46] This creationist mythology was ever present in computer art and often all consuming, as recorded in artist writings. From the beginning, computer artists were captivated by the power of becoming an "omnipotent creator," creating a "new universe" with its "its own physical laws."[47] This belief would sustain the artist in what would become difficult times for the genre as it sought validation from an art world hostile and distrustful of the computer and its future place in the visual arts.

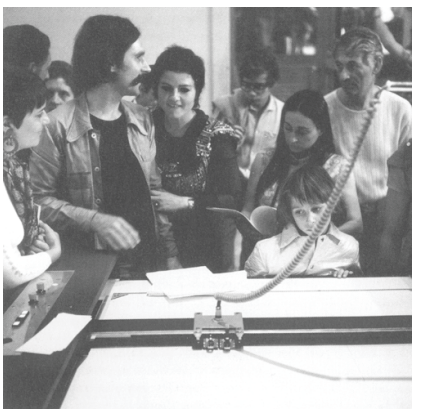

Figure 5 Manfred Mohr in front of the flatbed plotter explaining his technique, 1971. ARC, Musée d'Art Moderne, Paris Exposition.

43 The digital mythology, as Richard Wright suggest, was a way to "compensate and account for the dimly apprehended events seen on the screen." Richard Wright, "Computer Graphics as Allegorical Knowledge: Electronic Imagery in the Sciences." *Leonardo Supplemental Issue*, 3 (1990): 68.

44 Philip Davis, and Reuben Hersh. *Descartes' Dream: The World According to Mathematics*. (Sussex: The Harvester Press, 1986), 52.

45 These mechanical marvels known as *automata* (from Greek *automatos*, acting of one's own will, self-moving') inspired a whole spectrum of emotions, from wonderment at the machine's lifelike motion, to extreme indignation over the Promethean powers it seemed to engender. Automata reached the height of popularity in the eighteenth century largely due to the lifelike flute player, drummer and duck built by Jacques de Vaucanson, whose creations amazed both the general public and privileged elite up until the nineteenth century.

46 A three-dimensional coordinate system developed by Rene Descartes to plot objects along three, graduated axes: *X, Y,* and *Z*. This geometric system became the foundation of computer graphics and later became a key element in the theorization of virtuality.

47 Frank Dietrich, "Visual Intelligence: The First Decade of Computer Art (1965-1975)." *Leonardo* 19, 2 (1986): 161.

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the conference came
and went like the opening
hello, how are you

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