

## **Prehistories of New Media: 1965 to the Present**

ARTHI 2511 001

1 p.m.–4 p.m., Wednesdays

MacLean 1307

Fall 2011

Paul Hertz, Instructor

Download Syllabus (PDF)

### **Requirements**

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#### **Textbook**

The textbook for ARTHI 2511 will be *Multimedia: From Wagner to Virtual Reality*, edited by Randall Packer and Ken Jordan, published by W. W. Norton. It's available at the Barnes & Noble DePaul Center Bookstore.

#### **Other texts and resources**

Other reading materials for the class will be online in the class portal, on e-reserve, or on reserve at the Library. I will put a number of books listed in the Bibliography on reserve. For a general overview of New Media art history, I recommend Ed Shanken's generously illustrated book *Art and Electronic Media* (2009). Rachel Greene's book *Internet Art* will be our primary source for the class session on net.art. You may also find the *New Media Reader*, edited by Noah Wardrip-Fruin and Nick Monfort, a useful complement to Packer and Jordan's text: the two anthologies have much in common, but the *Reader* is particularly strong for research in cyberliterature. This syllabus includes numerous links to online resources. You should expect to spend at least three hours every week outside of class reading or viewing assignments or writing your research papers.

#### **Research Paper**

All students are required to write a research paper (10 pages, double-spaced, with footnotes and bibliography) on a topic developed from class lectures, discussions, and supplemental materials. The resulting text must cite at least three post-1965 New Media artworks and discuss them in detail within the context of New Media Art and its various precursors. The research paper will be evaluated on the basis of personal investment, critical engagement with art history and theory, and creativity. I encourage experimentation with form but require a personal essay that focuses on historical, theoretical, or critical ideas and develops them coherently through references to primary and secondary sources, properly footnoted, with bibliography and optional glossary. Note that Wikipedia cannot be used as a source. It may be a useful place to get started, but don't count on it for accurate, in-depth scholarly research.

To help students who do not have experience writing a research paper, and to clarify what is expected for those who do, we will devote part of a class to discussing this. There are guides to writing research papers in the course portal (including the required style for footnotes). The Teaching Assistant will be available by appointment to help you check that you are following the relevant stylistic guidelines. The SAIC Writing Center (112 S. Michigan Ave., room B1-03, see Writing Center Information and Writing Center Signup for details) can also provide help with writing. Some time will also be available before class to consult with the instructor or the TA.

All students declare the intended topic of the New Media Art research texts in a document called pre-alpha text before beginning the development of the alpha text research. Once agreed upon, the topic will remain the same throughout the process. Your pre-alpha text will be due on 2012.09.26. Send it via email to Paul Hertz and the TA.

The alpha text will be due 2012.10.31 at the beginning of class and must consist of at least 4-5 pages of text. Send it via email to the TA.

Paul Hertz + the TA will review your alpha text + discuss your research with you. You will then make changes and refinements to the research, arguments, etc., in the text and create an improved version, the beta text, to receive credit for the class.

The beta text will be due 2012.12.05 and must be posted online to the class portal. The beta text will be shared with all students. On 2012.12.12 a group discussion will address the research, ideas and critical positions expressed in the texts.

Throughout the research phases of the alpha and beta texts, students will journal, blog, create diary or sketchbook entries, or other such collections of thoughts, references, and notes. In the case of digital practices such as blogs, vlogs, etc., students will make the uri's of these known to the class. In the case of analog or physical practices, students will make these available to the Professor for review on the Professor's request.

### **Supplements**

You should check back to the syllabus periodically to see what is new in the supplemental materials. I will add them to the syllabus as the year progresses, usually as a response to in-class discussion. Other supplemental materials will appear in my lecture notes, which will be available online in RTF format. Please feel free to suggest resources that can be added to the supplements sections. The Supplements sections can be a good place to get ideas for a research paper.

Many required and supplemental materials can be found on YouTube, in playlists I have created for the class. You will probably find many other useful links to media and documentation. Please bring them to my attention to share with the class.

[Prehistories New Media playlist](#)

[PNM Art Music playlist](#)

[PNM New Media Sampler](#)

[Mission Playlist](#)

[Cyberpunk](#)

[Virtual \[Worlds|Bodies\]](#)

### **Media Art Histories Ning**

The Media Art Histories Ning is a social network space this course shares with the "Media Art Histories & Genealogies" course, is a new course being taught by Jon Cates and Dan Eisenberg. It is one of the possible prerequisites for this course. Please sign up for the Ning. We will use it for discussions with each other and with students and professors in the "Media Art Histories & Genealogies" course.

### **Quizzes**

Quizzes will be given weekly on the outside assignments given the previous week. Outside assignments will consist of readings, screenings and participation in various New Media projects.

### **Attendance**

Attendance and punctuality are required.

3 absences == NO CREDIT.

Late = 20 minutes.

2 lates == 1 absence.

6 lates == NO CREDIT.

Attendance records will be kept and made available to students.

## Philosophy

"It is preferable to share ignorance with precision than to share knowledge imprecisely"

~ Luis Camnitzer

## 0: 2010.08.29 Prehistories, New Media + Marshall McLuhan

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Feeling our way forward into the labyrinth of new media with Marshall McLuhan's *Understanding Media* as an [Ariadne's thread](#), let us ask, What is media, that we should understand it? We can take as our starting point in answering this question the generalized concept of a text: "a coherent, delimited, comprehensible structure of meaning." Within this definition we include not just the physical presence of the text, but its production, distribution, exhibition, and—critically—its reception. No text is complete without reception: our responses are part of the text. A book is a text. So, too, is a painting, and a television program, and all manner of chunks of meaning on the Internet. Texts are encoded in media—or perhaps they are media. McLuhan's aphoristic insight, "the medium is the message," conveys the notion that the medium, independent of its content, alters us. We have to take in the medium in order to take in the "message" it contains: The medium is itself a message. The medium communicates with us by altering us and so changes society. In other words, the inscription systems through which texts are encoded for transmission shape us before we even decode the text, let alone interpret its meaning. Let us consider the implications.

View:

[The Medium is the Massage](#) - Marshall McLuhan, Quentin Fiore + Jerome Agel (1967)

Download + read: [New Media from Borges to HTML](#) - Lev Manovich (2002)

Read:

Marshall McLuhan, excerpt from *The Medium is the Massage* (pp. 19-32) in class portal.

Vilém Flusser, excerpt from "On the Theory of Communication," in class portal.

Vilém Flusser, "The Future of Writing," in class portal.

Supplements

Read:

Vilém Flusser, "Images in the New Media," in class portal.

## 1: 2012.09.05 art + technology I: New Tendencies (NT)

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New Tendencies (NT), the New Tendency and the Tendencies exhibitions, symposia, and publications in took place in Zagreb (in the former Yugoslavia, now Croatia) and other locations from 1961 to 1973. They marked a profoundly optimistic moment in Europe and internationally, where art, science, and technology seemed to offer a common way forward for artists, engineers, and scientists as cultural activists. The rationalizing tendencies of early 20th century Constructivism, De Stijl, and the Bauhaus influenced many of the artists, who also felt affinities with North American Conceptualism. An aesthetic theory based in part on Claude Shannon's information theory inspired many of the early digital artists. We examine the course and context of NT, the art and artists involved, and its (re)positioning within art history.

Read:

Darko Fritz, "New Tendencies" (essay from [Oris](#), Number 54). Available in course pages in class portal.

Matko Mestrovic, [Art and Technology—Yesterday and Today](#). Also in class portal.

In Shanken, *Art and Electronic Media*, on reserve in the library, the following primary source texts: Naum Gabo and Anton Pevsner, "The Realistic Manifesto" [1920], p. 193; Laszlo Moholy-Nagy, "The New Vision" [c. 1928], p. 193; Asociacion Arte Concreto-Invencion, "Inventionist Manifesto" [1946], p. 194; Otto Piene, "Light Ballet" [1965], p. 197; Groupe de Recherche d'Art Visuel (GRAV), "GRAV Manifesto" [1967], p. 199.

In the CompArt database at the University of Bremen, note on Hiroshi Kawano.

From Ruth Leavitt, *Artist and Computer*, essays by [Hiroshi Kawano](#), [Vera Molnar](#), [Manuel Barbadillo](#), [Edward Zajec](#), [Herbert Franke](#).

View:

[bit international](#) (online documentation of exhibition)

[I am Still Alive](#) (online documentation of exhibition)

Supplements

Visual art:

[Nicolas Schöffer](#), [Otto Piene](#), [Vladimir Bonacic](#), Edward Ihnatowicz, Gustav Metzger, GRAV (Groupe de Recherche d'Art Visuel), [ZERO](#)

Music:

Pierre Schaeffer and Pierre Henry: [Symphonie pour un Homme Seul](#) (1950)

Pierre Boulez: [Le Marteau sans Maître](#) (1955)

Karlheinz Stockhausen: [Gesang der Jünglinge](#) (1955-56)

## **2: 2012.09.12 art + technology II: To The Pepsi Pavilion and Beyond**

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Concurrent with the "Neo-Constructivist" aesthetics of NT and other formations in Europe and South America, a loosely affiliated group of artists identified as practitioners of "Art and Technology" arose in the U.S. In an atmosphere of expanding public interest in science and technology spurred by the competitive pressures of the Cold War, with the support of industry, artists and engineers collaborated on several exhibitions. "9 Evenings: Theatre and Engineering," which opened on October 13, 1966, at the 69th Regiment Armory in New York City is probably the most famous of the events staged by Experiments in Art and Technology (E.A.T.), an organization founded by artist Robert Rauschenberg and engineer Billy Klüver. The culminating point of E.A.T.'s collaborations was arguably the Pepsi Pavilion at Expo '70 in Osaka, Japan. Such collaborations chilled in later years, as many artists criticized the uses of technology in the Vietnam War and shunned corporations that they associated with the war.

Read:

Billy Klüver, The Great Northeastern Power Failure, in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Jack Burnham, excerpt from *Beyond Modern Sculpture*, "The Future of Responsive Systems in Art," in portal.

Edward Shanken, "Art in the Information Age," in class portal.

View:

Nine Evenings (DVD), on reserve in Flaxman library

Supplements

Gene Youngblood, [Expanded Cinema](#) complete book available for download, a classic text on new cinema/art + technology from the 60s.

Jack Burnham, "Systems Esthetics" (from Artforum, September, 1968), in portal.

At the Langlois Foundation, Sylvia Lacerte's [text on E.A.T.](#) and other [documents](#)

[Alex Hay, Grass Field](#) at Langlois Foundation

[Alex Hay, Grass Field](#) at Media Art Net

[Pepsi Pavilion](#) at Media Art Net

Music:

John Cage, [Imaginary Landscape](#) N° 4, for 12 radios (1951) [score](#)

Milton Babbitt, [Ensembles for Synthesizer](#) (1964)

Ornette Coleman, [Free Jazz](#) (1960)

John Coltrane, [Ascension](#) (1965)

### **3: 2012.09.19 re[sample | mix | mash | peat]**

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Collage in the visual arts, montage in film, and tape-recording techniques all serve as precursors to remix technology, as perhaps could scrapbooks and Curiosity Cabinets. Remix in the digital age leaps way beyond all these precursors thanks to two technologies: cut-and-paste techniques and databases. A standard feature of operating systems, cut-and-paste enables cross-application remixing. Databases provide systems for storing and retrieving huge amounts of data, including media of all types. A search on the Internet is in effect a database query. The impact of these technologies is felt in such different areas as intellectual property law, shared and anonymous authorship, punk/hacker/maker aesthetics, Open Source and Free Culture.

Supplements

RIP: A Remix Manifesto <http://ripremix.com/>, on UT in nine parts

<http://www.youtube.com/watch?v=zdwN6rRU0Xk>

Florian Cramer, per.m]utations <http://permutations.pleintekst.nl/>

### **4: 2012.09.26 algorithmics**

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An algorithm, simply put, is a "computable set of steps to achieve a desired result." Algorithms have a long history in mathematics and in wider cultural practices. Combination, permutation, and variation are ancient algorithmic practices, prevalent in music, architecture, visual pattern making, and esoteric literature, which the computer can execute with unprecedented speed and accuracy. Computation essentially consists of algorithms and the data structures on which they operate. Early computer art often dealt directly with algorithmic processes, but the *algorithmic trace* lies buried in all digital transactions. Computer code and digital communications systems have established a new cultural context, *virtuality*, which N. Katherine Hayles defines as "the cultural perception that material objects are interpenetrated by information patterns."

Read:

A. Michael Noll, "[The Beginnings of Computer Art in the United States: A Memoir.](#)"

Frank Dietrich, "Visual Intelligence: The First Decade of Computer Art (1965-75)" in portal.

Max Bense, "[The Projects of Generative Aesthetics](#)" (in German and English)

Edward Ihnatowicz, [Towards a Thinking Machine](#)

Herbert W. Franke, "Theoretical Foundations of Computer Art" [1971], in Shanken, *Art and Electronic Media*, p. 205, on reserve in the library.

Frieder Nake, "The Semiotics Engine," from CAA Art Journal, Spring 2009 (e-reserve)

## Supplements

Ruth Leavitt, [Artist and Computer](#) (1976)

Herbert W. Franke, *Computer Graphics, Computer Art* second edition Berlin: Springer-Verlag, 1985, in Flaxman library.

## Music:

Alvin Lucier, [I Am Sitting in a Room](#)

pre-alpha text due

## **5: 2012.10.03 [multisensory | synesthetic | hybrid ] art: intermedia**

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As employed by Fluxus artist and theorist Dick Higgins, *intermedia* designates a compositional process that works across the boundaries between media or even fuses media. It extends the creation of form across media or sensory modalities without necessarily promoting a tight coupling of events. It isn't necessarily "synesthetic art," but it implies something more coherent than multisensory opera. It is not so much a "total art work" as a hybrid art work. With the computer we can compose and perform multisensory events with a degree of precision beyond the threshold of human perception, and so create intermedia experiences that were never before possible.

## Read:

Charles Baudelaire, "Correspondances," in class portal.

Arthur Rimbaud, "Voyelles," in class portal.

Wassily Kandinsky, "Concrete Art," in class portal.

Richard Wagner, *Outlines of the Artwork of the Future*, in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Dick Higgins, *Intermedia*, in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Stephen Holtzman, excerpt from *Digital Mantras* (MIT Press, 1994), in class portal.

## Supplements

Digital Harmony : On the Complimentarity of Music and Visual Art, John Whitney, 1981

Vom Klang der Bilder : Die Musik in der Kunst des 20. Jahrhunderts, Karin von Maur [Prestel, 1985; 2nd edition 1996], translated into English as *The Sound of Painting: Music in Modern Art* (abridged) [Prestel, 1999].

Phonetics-music: Kurt Schwitters, [Ursonate](#)

Painting-music: Jack Ox, [visualization of the Ursonate](#)

Music-literature: Charles Amirkhanian, [Mental Radio](#)—try, for example, Dot Bunch.

## **6: 2012.10.10 hyper[media | text]**

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"Ideas are to objects as constellations are to stars." ~ T.W. Adorno

Hypertext is nothing new. The technology that made it explode into a world wide web is. The oral tradition of story-telling, where narratives constantly vary at the prodding of an actively engaged audience, or the the written tradition of scholasticism where annotations pile upon annotations, as in this page of the Talmud

(<http://people.ucalgary.ca/~elsegal/TalmudPage.html>), reveal how branching narratives and

thought-webs are a natural form of communication. One could argue, as McLuhan does, that linear narratives are really the historical exception brought about by the printing press, a Guttenberg Galaxy of fixed, sequential constellations. Digital communications technology recasts all texts it captures as hypertexts, and reveals the degree to which all written text has always been hypertext, a constellation changing its (inter)connections with each interpreter. Hypermedia goes one step further: not just written text, articulated in words and phrases, but all digital media branch, connect, and reconnect, articulated into units ultimately derived from human cognition. The topologies of communication assume new forms, with profound consequences for our socially constructed image of the world and ourselves.

Read:

Vannevar Bush, "As We May Think," in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*, or [here](#).

Ted Nelson, excerpt from "Computer Lib, Dream Machines," in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Lynn Hershman, The Fantasy Beyond Control, in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Supplements

Two books that are frequently cited in documenting hypertext are Argentinian author Julio Cortazar's novel [Rayuela](#), translated as [Hopscotch](#) in English, and Daniel Spoerri's [An Anecdoted Topography of Chance](#), both of which offer non-linear readings. Here are a number of "classic" hypertexts that are still accessible online, with the exception of Patchwork Girl, on CD-ROM.

Shirley Jackson, Patchwork Girl (CD-ROM available in Flaxman library, may not work on all current operating systems)

Judy Malloy, Uncle Roger: <http://www.well.com/user/jmalloy/uncleroger/unclerog.html> — A very early hypertext, published on the Well (historic BBS + community web site). The current version is a revision. The Roar of Destiny Emanated from the Refrigerator

<http://www.well.com/user/jmalloy/roarofdestiny/control.html>, an extended hypertext poem, will also reward the patient reader. Malloy's hypertext novel *Its Name was Penelope* was one of the earliest commercially published hypertexts. More on her home page, <http://www.well.com/user/jmalloy/>.

Talan Memmott, Lexia to Perplexia: at <http://talanmemmott.com/elit.html> If Lexia doesn't load, try its sequel, Translucidity, linked on the same page.

Mark Amerika, GRAMMATRON: <http://www.grammatron.com/index2.html> (information) or <http://www.grammatron.com/bandwidth.html> (to begin) It spins out realtime generated pages on its own for the first few minutes, until the interactive hypertextual part arrives. Be patient.

Judd Morrissey, The Jew's Daughter: <http://judisdaid.com/thejewdaughter/>

Yael Kanarek, World of Awe: <http://www.worldofawe.net/site/journal.php> Three stories, actually, so start with Chapter 1.

Mary-Anne "Mez" Breeze, various hypertexts:

<http://netwurkerz.de/mez/datableed/complete/index.htm>

Caitlin Fisher, These Waves of Girls: <http://www.yorku.ca/caitlin/waves/>

## 7: 2012.10.17 inter[face | action]

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While the raw computational power and storage capacity of computers have evolved rapidly, human computer-interfaces have changed more slowly. We are still using the WIMP (Window, Icon, Menu, Pointing device) interfaces that emerged from laboratories in the early 1980s. In this class and the subsequent one on virtual worlds, we will look at alternative interfaces.

Read:

Alan Kay, "User Interface: A Personal View" (1989), in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Douglas Engelbart, "Augmenting Human Intellect: A Conceptual Framework" (1962), in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Supplements

The Machine That Changed the World, at

[http://waxy.org/2008/06/the\\_machine\\_that\\_changed\\_the\\_world/](http://waxy.org/2008/06/the_machine_that_changed_the_world/). A documentary produced by WGBH public television in Boston, released in 1992.

Hyperland, <http://video.google.com/videoplay?docid=7190175107515525470#>, a documentary written by Douglas Adams and produced by BBC Two in 1990, explores the potential for networked hypertext and interactive multimedia.

### **8: 2012.10.24 virtual [worlds | bodies]**

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Virtual worlds provide immersive, realtime, user-centered exploration of computer-generated spaces. 3-D Virtual Reality is probably the best known virtual worlds technology, but there are important senses in which MUDs and MOOs, early text-based participatory systems, are also virtual worlds. The experience of immersion, a key factor in virtual worlds, operates in these "primitive" technologies, and indeed, operates in music, ritual, and story-telling from prehistorical times. Immersion implies a "being present within" the virtual world that resonates with our physical self: physical bodies arrive in virtual worlds through immersion and are transformed into virtual bodies.

Read:

Myron Krueger, "Responsive Environments," in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Ivan Sutherland, "The Ultimate Display," in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

Scott Fisher, "Virtual Interface Environments," in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

### **9: 2012.10.31 [culture | activism | tactics | media]+**

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New media propagate new forms of activism. Some become so notable as to identify with the media: this is the case of cyberfeminism and tactical media. Cyberfeminist groups such as the Old Boys Network and VNS Matrix brought the struggle by women and minorities for recognition in the art world into the "art and technology" world. Feminist theories of gender, identity, and political action found new expression in new media, for example, in the cyborg theory of Donna Haraway. Like the "alternative media" scene of the 60s and 70s, tactical media attempt to open channels of communication outside of corporate and governmental structures. Tactical media tend to be micro-media, realized with DIY technology, deployed within loose social networks rather than tight organizations. Their context ranges from art to community empowerment to disruptive protest (electronic civil disobedience) and beyond. If nothing else, they demonstrate the vigor of hybrids and mutants: a gesture of non-compliance aware of its own futility and yet prepared to go viral, there at the intersection Walter Benjamin warned us to avoid (in "The Work of Art in an Age of Mechanical Reproduction"), where aesthetics and politics cross.

Read:

Walter Benjamin, [The Work of Art in an Age of Mechanical Reproduction](#)

Margaret Morse, "The Poetics of Interactivity," in *Women, Art & Technology* (anthology), edited by Judy Malloy. On e-reserve.

Geert Lovink, "An Insider's Guide to Tactical Media," from *Dark Fiber* (MIT Press, 2002), in portal

Critical Art Ensemble, chapter 1 from *Electronic Civil Disobedience* <http://www.critical-art.net/books/ecd/ecd2.pdf>

Supplements

Cornelia Sollfrank, [Female Extension](#) (online documentation of a famous hack)

Fred Forest, "[For an Aesthetics of Communication](#)" (1985)

Bruno Latour, "Factures/Fractures: from the concept of network to the concept of attachment" (1999), in class portal.

alpha text due

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**10: 2012.11.07          cyber.punk.net.art.ware**

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Media art culture in the 60s and 70s sought an alternative means of distribution, especially for video art, without ever really managing to find it. Digital networks seem to offer a unique opportunity to realize alternative streams of distribution, perhaps at last bypassing the Market, perhaps at last re-encoding art with cultural immediacy, delivering it still malleable and vital rather than reified and spent. In the early days of networked technology, low bandwidth and lack of control over visual design was a challenge. In these days of broadband and extended interactivity, the challenge is to keep up with the technology—or opt out and develop multiple online niche cultures, distributing everything from FLOSS (Free Libre Open Source Software) to Artware to Media.

In class: Each student will have the opportunity to drive and critique a "classic" work of net.art, with participation of the rest of the class.

Read: Rachel Greene, *Internet Art*, chapters 1 & 2 (pp 31-117, lavishly illustrated), on reserve in Flaxman

View:

Olia Lialina, *My Boyfriend Came Back From the War*,

<http://myboyfriendcamebackfromth.ewar.ru/>. View the original version, browse the remixes.

JODI, <http://www.wwwwwww.jodi.org/>

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**11: 2012.11.14          nomadic futurism**

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Where is New Media Art headed? We attempt to answer this question by taking up the fraught question of online identity and identity in general in a networked culture. The dominance of the English language and of technologically developed countries/cultures is obviously an issue, if we're contemplating the future. Are we headed for a system of unequal privileges in this (supposedly) democratizing medium? Or does the future hold unsuspected promise as our communications networks foster a distributed intelligence capable of tackling global problems?

Read:

Ravi Sundaram, "[Recycling Modernity: Pirate electronic cultures in India](#)"

Guillermo Gomez-Peña, *The Virtual Barrio @ The Other Frontier*, e-reserve.  
Pierre Levy, "Art and Architecture of Cyberspace," from *Collective Intelligence* (1994), in  
Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

**12: 2012.11.21**      **</break>**

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**13: 2012.11.28**      **@Play**

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If networks and New Media art are necessarily bound up in cultural and personal identity, if they intensify rather than resolve the conflicts of territory, resources, and global economies—who's to say they can't also be fun? We will examine the possibilities for pleasure and play offered by New Media, and how they might affect body, mind and society.

Read:

"Can Video Games Be Art" (New Scientist, September 2010),

<http://www.newscientist.com/blogs/culturelab/2010/09/can-video-games-be-art.html>

Supplements

Marcus Novak, "Liquid Architectures in cyberspace" (1991), in Packer, Randall and Ken Johnson *Multimedia: From Wagner to Virtual Reality*.

**14: 2012.12.05**      **Crit Week**

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beta text due

**15: 2012.12.12**      **beta text**

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Discussion of beta texts.