

ISIS 270 – BodyWorks (Spring 2005) – Tim Lenoir

<http://www.cs.duke.edu/projects/MT/isis270>

Bulletin Description:

ISIS 270. BodyWorks: Medicine, Technology, and the Body in Early 21st Century

America. ALP, CCI, STS. Influence of new medical technologies (organ transplantation, VR surgery, genetic engineering, nano-medicine, medical imaging, DNA computing, neuro-silicon interfaces) on the American imagination from WWII to the current decade. Examines the thesis that these dramatic new ways of configuring bodies have participated in a complete reshaping of the notion of the body in the cultural imaginary and a transformation of our experience of actual human bodies.

Prerequisites: None. Instructor: Tim Lenoir. One course. 3 grad student units. TTh, 1:15-2:30.

BodyWorks Course Description:

Course Overview: Before World War II, the typical American physician had a modest toolbox consisting of a thermometer, stethoscope, sphygmomanometer, occasional access to x-ray machines and electrocardiographs, and a very limited cabinet of pharmaceuticals. Beginning in the late 1950s, but accelerating at an ever-faster pace at the turn of the millennium, technology has dramatically transformed the landscape of modern medicine. BodyWorks examines the influence of new medical technologies (organ transplantation, endoscopic surgery, genetic engineering, computer-aided tomography, medical imaging, nanotechnology and nanosurgery, molecular and DNA computing, neural implant interfaces) on the American imagination from WWII to the current decade. The aim of the course is to examine the thesis that these dramatic new ways of imaging, controlling, restoring, remaking, possibly even choosing bodies have participated in a complete reshaping of the notion of the body in the cultural imaginary and a transformation of our experience of actual human bodies. The history of recent and contemporary medical technology will serve as our material context to explore this thesis about body-work using theories of postmodernism to address the questions: Are there postmodern bodies? If so, how have they been constructed? Among the themes we will explore is Donna Haraway's notion of the postmodern cyborg body and Katherine Hayles' conception of the posthuman. The class will be conducted as a hybrid graduate/undergraduate colloquium framed by student presentations related to the course readings.

This course contains controversial material and images that may disturb some people. Students are urged to understand the nature of the course material before they enroll.

Prerequisites: None.

Course Format: BodyWorks will be conducted as a colloquium, with heavy emphasis on reading and discussion. The course will meet for two 75-minute class sessions is

organized in terms of Thursday/Tuesday units. The themes and assigned course materials are listed for Thursday sessions. Students are expected to complete all the assigned material for each Thursday class session. Prior to each Thursday session, students will post their thoughts regarding the questions and themes for the session to the class webforum. Webforum postings should not merely be reactions to the course materials for that week but rather should engage course colleagues in interesting points as preliminary "agenda-setting" for our in-class discussions. Thursday discussions will often be joined, either in person or via videoconferencing, by outside guests (see proposed course schedule for suggested guest discussants). Tuesday class sessions are devoted to presentations by mixed undergrad-grad "lab teams" on the materials for the week (see "Course Requirements").

Course Requirements:

- **Lab Teams:** Students are to form hybrid undergrad-grad (as enrollment allows) "lab teams" responsible for one Tuesday class session. The team will make a presentation intended to initiate the discussion topic in the Tuesday class. Presentations should not exceed 30 minutes. Effort should be made to coordinate the presentations carefully—either to present a critical controversy, or, if you so choose, to present a unified view. The choice of presentation mode is up to students. One team member should be responsible for presenting the technical aspects of the subject (e.g., organ transplantation, fetal tissue transplants, gender reassignment surgery, medical genetics, etc.), and the other presenter(s) should concentrate on presenting an interpretive position that will stimulate and direct the discussion. In many of these sessions, it would be helpful (and strongly encouraged) for presenters to go beyond the material in the web-reader and to locate materials of interest, particularly graphic materials, video clips, and/or other aids to assist in bringing the subject to life. For instance, students may want to bring in data from a technical journal like *Clinical Transplants* on the survival rates of particular types of organ transplant recipients. In the session on transgender, presenters might want to bring in material on surgical procedures.
- **Webforum Interaction:** Each week students should post a response of up to 200 words to the themes and questions posed on the forum/presentations page. The webforum postings should be filed on the BodyWorks forum by 6AM on each Thursday (for the session on that day). Course members will consult the forum in preparing for our Thursday afternoon sessions. Individual student contributions to the forum will be evaluated as part of their grade.
- **Written Work:** Undergraduates in the course are expected to write a 10-12 page final paper, which may be based on the materials for the session they presented. Students may also work together with other members of their team to create an in-depth website for materials and performances related to their subject matter. Graduate students are expected to write a 20-page final term paper on a subject negotiated with the course instructor. Options for work other than research

papers, such as websites, are also enthusiastically encouraged but should be arranged with instructor in advance.

Course Materials: Required and supplementary course materials will be provided on the BodyWorks course website at the time of the course (see “Course Schedule” section for planned course assignments). Course materials will consist of a diverse range of multimedia documents, including digital video segments, images, and texts. All course content will be password-protected to allow access only to course participants.

Course Schedule (preliminary draft):

13 January: Machines & Bodies after WWII

Guest(s):

Required material:

- "Control of Life" 4 part series in *Life*, September-October, 1965.
- John Maddox, "The Unexpected Science to Come", *Scientific American* (End-of-the-Millennium special issue): "What science will know in 2050," December 1999, pp 62-67.
- Martin Heidegger, The question concerning technology, *The question concerning technology, and other essays*; translated and with an introduction by William Lovitt, New York: Garland Pub., 1977, pp 287-317.

20 January: Cyborg Culture

Guest:

- Steve Mann – University of Toronto.

Required material:

- "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century," in *Cyborgs, Simians, and Women*, pp 149-182.
- Chapter 1 of Steve Mann and Hal Niedzvieck, *Cyborg: Digital Destiny and Human Possibility in the Age of the Wearable Computer* (Doubleday, 2002).
- Steve Mann, "Wearable Computing: A First Step toward Personal Imaging," *Computer*, Vol. 30, No. 2, February 1997, pp. 25-32.
- Steve Mann, "Wearable Computing: Toward Humanistic Intelligence," *IEEE Intelligent Systems*, Vol. 16, No. 3, May/June 2001, pp. 10-15.
- Manfred E. Clynes and Nathan S. Kline, "Cyborgs and Space," *Astronautics*, 1960 (September), reprinted in Chris Hables Gray, ed., *The Cyborg Handbook*, London and New York; Routledge, 1995, pp. 29-33.
- *Popular Science*: "Body of the Future," October 1999.
- Chris Cunningham, Björk's "All is Full of Love" music video (1999).
- Paul White, Björk's "Hunter" music video (1998).

Supplementary material:

- Video segments from *Terminator 2: Judgment Day*:
 - "Terminator creation"
 - "Terminator revealed: The machine in the flesh"
 - "T-2 liquid potential"

- “Hasta la vista, baby”
- “Morphing/Lucky day”
- *Popular Science*: “Humans 2.0,” October 1999, pp 87-91.

27 January: Spare Parts

Guest(s):

- Duane Davis, Professor of Thoracic Surgery, Director of Transplantation, Duke University Medical Center

Required material:

- Thomas E. Starzl, et al., "The Evolution of Liver Transplantation," *Hepatology*, 1982. 2: pp. 614-636.
- Adrian Kantrowitz, "America's First Human Heart Transplantation: The Concept, the Planning, the Furor", *ASAIO Journal*, 1998, pp 244-251.
- Articles on Kidney transplantation by Kolff, Starzl, Murray in <http://www.stanford.edu/dept/HPS/transplant/html/history.html>.
- Rosalind Pollack Petchesky, "The Body as Property: A Feminist Re-vision," in *Conceiving the New World Order: The Global Politics of Reproduction*, F.D. Ginsburg and R. Rapp, Eds. University of California Press: Berkeley, 1995, pp. 387-406.
- Pranlal Manga, "A Commercial Market for Organs? Why Not," *Bioethics*, 1987. 1(4): pp. 321-338.

Supplementary material:

- Stanley Joel Reiser, "The Machine as Means and End: The Clinical Introduction of the Artificial Heart," in *After Barney Clark*, M.W. Shaw, Ed. University of Texas Press: Austin, 1984, pp. 168-175.
- Kenneth Arrow, "Gifts and Exchanges," *Philosophy and Public Affairs*, 1972. 1(no 4): pp. 343-462.
- Stanley Relman, "The New Medical-Industrial Complex," *New England Journal of Medicine*, Vol. 303, No. 17, pp. 963-970.
- Renee Fox and Judith Swazey, *Spare Parts: Organ Replacement in American Society*, (New York; Oxford University Press, 1992), pp. 95-153.
- J.P. Kassirer, "Managed Care and the Morality of the Marketplace," in *New England Journal of Medicine*, pp 50-52.
- T. Bodenheimer, "The Oregon Health Plan -Lessons for the Nation (Part Two)," in *New England Journal of Medicine*, pp 720-723.
- *Akira* by Katsuhiko Ōtomo (1988) video segments.

03 February: Designer Babies

Guest(s):

- Britt Russert, Duke University

Required material:

- View Chris Carter, *X-Files* episodes "Eve," and "The Erlenmeyer Flask," particularly the following segments:
 - “The Litchfield Experiments”
 - “We have no parents”
 - “A visit to Zeus Storage, 1616 Pandora St.”

- "Purity control"
- David J. Mooney and Antonios G. Mikos, *Scientific American*, April, 1999. "Growing New Organs."
- Mary Warnock, "Do Human Cells Have Rights?," *Bioethics*, 1987. 1(1), pp. 1-14.
- Sarah Franklin, "Postmodern Procreation: A Cultural Account of Assisted Reproduction," in *Conceiving the New World Order: The Global Politics of Reproduction*, F.D. Ginsburg and R. Rapp, Eds. University of California Press: Berkeley, 1995, pp. 323-345.
- Arthur Caplan, "Should Foetuses Or Infants Be Utilized as Organ Donors?," *Bioethics*, 1987. 1(2): pp. 119-140.

Supplementary material:

- See "Model eggs auction" and "Model sperm auction" at Ron's Angel Auction (<http://www.ronsangels.com>).
- Lindsey Arent, "Serving Up Eggs on the Web," *Wired News Online*.
- Carol Ezzel, "Adam's Rib?" *Scientific American*, May 1999.
- J.C. Polkinghorne, "Law and Ethics of Transplanting Fetal Tissue," in *Fetal Tissue Transplantation in Medicine*, R.G. Edwards, Ed. Cambridge University Press: Cambridge, 1992, pp. 323-330.
- Robert Blank and Janna C. Merrick, "Assisted Reproduction: Expanding the Right to Have Children," in *Human Reproduction, Emerging Technologies, and Conflicting Rights*. Congressional Quarterly Inc.: Washington, D.C., 1995, pp. 84-108.
- Robert Blank and Janna C. Merrick, "Prenatal Intervention: Choosing the Characteristics of Unborn Children," in *Human Reproduction, Emerging Technologies, and Conflicting Rights*. Congressional Quarterly Inc.: Washington, D.C., 1995, pp. 133-152.
- Robert Blank and Janna C. Merrick, "Issues in Fetal and Embryo Research," in *Human Reproduction, Emerging Technologies, and Conflicting Rights*. Congressional Quarterly Inc.: Washington, D.C., 1995, pp. 176-198.
- Janet Gallagher, "Eggs, Embryos, and Foetuses: Anxiety and the Law," in *Reproductive Technologies* Michelle Stanworth, Ed. Polity Press: Oxford, 1987, pp. 139-150.
- Amelia Jones, "Tracing the Subject with Cindy Sherman," *Cindy Sherman Retrospective*, Chicago and Los Angeles: The Museum of Contemporary Art, 1997, pp. 33-53.

10 February: Is there a doctor in the chatroom? Computer-Assisted Surgery & Telemedicine

Guest:

- Richard Satava, Professor of Surgery, Washington University; Project Director for DARPA Intelligent Multi-modal Volume Angio Computed Tomography (IM-VAC) Project and DARPA Virtual Soldier Project

Required material:

- Richard Satava, Tim Lenoir, & Zach Pogue, "The Richard Satava Files: History of Telemedicine website"
- Tim Lenoir and Sha Xin Wei, "Authorship and Surgery: The Shifting Ontology of the Virtual Surgeon," in Linda Henderson and Bruce Clarke, *From Energy to Information: Representation in Science, Art, and Literature*, Stanford: Stanford University Press, 2002, pp. 283-308.
- Tim Lenoir, "The Virtual Surgeon," in Phillip Thurtle, ed., *Semiotic Flesh: Information and the Human Body*, Seattle, WA: University of Washington Press, 2002, pp. 28-51.

17 February: Postmodern bodies

Guest:

- Anne Balsamo, Managing Director, Institute for Multimedia Literacy, Annenberg School, USC (via PolyCom videoconference).

Required material:

- Elizabeth Grosz, "Introduction" and "Chapter 7: Intensities and Flows," *Volatile Bodies: Toward a Corporeal Feminism* (Indiana: Indiana UP, 1994).
- Jean-Francois Lyotard, "Answering the Question: What Is Postmodernism?" Translated by Regis Durand. from *The Postmodern Condition: A Report on Knowledge*, Minneapolis; University of Minnesota Press, 1984, pp. 71-82.
- Gilles Deleuze and Felix Guattari, "Introduction: Rhizome," from *A Thousand Plateaus: Capitalism and Schizophrenia* (Minneapolis; University of Minnesota Press, 1987), pp. 3-25.
- Judith Butler, "Introduction," *Bodies that Matter* (New York; Routledge, 1993), pp. 1-23.
- Judith Halberstam and Ira Livingston, "Introduction: Posthuman Bodies," *Posthuman Bodies*, ed. J. Halberstam/ I. Livingston, Bloomington/ Indianapolis: Indiana University Press, 1995.

Supplementary material:

- Anne Balsamo, "Introduction," *Reading Cyborg Women: Technologies of the Gendered Body* (Durham, N.C.; Duke University Press, 1996), pp. 1-10.
- Frederic Jameson, "The Cultural Logic of Late Capitalism," in *Postmodernism: Or, the Cultural Logic of Late Capitalism*, Durham; Duke University Press, 1992, Chpt. 1, pp 1-54. Chpt.2, pp. 55-66.
- David Harvey, *The Condition of Postmodernity*, Oxford; Blackwell, 1989, chapters 8-10.
- Martha Nussbaum, "The Hip Defeatism of Judith Butler: Professor of Parody."
- View images of postmodern architecture
- Charles Jencks, "Post-Modernism and Discontinuity," *Architectural Association Quarterly*, Vol 6 (1974): pp. 5-8.

24 February: Posthuman Bodies: Replicants, androids, and AI

Guest(s):

- N. Katherine Hayles, Professor of English, UCLA, (via PolyCom videoconference).

Required material:

- *Blade Runner* by Ridley Scott (year? Director's cut?).
- Excerpts from N. Katherine Hayles, N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (1999).
- Jean Baudrillard, "Simulations and Simulacra", in Jean Baudrillard, *Selected Writings*, ed. Mark Poster (Stanford; Stanford University Press, 1988), pp.166-184.
- Scott Bukatman, "Terminal Space," from *Terminal Identity: The Virtual Subject in Postmodern Science Fiction* (Durham, NC; Duke University Press, 1993), pp. 103-37.
- Tim Lenoir & Casey Alt, "Flow, Process, Fold: Intersections in Bioinformatics and Contemporary Architecture" in Antoine Picon and Alessandra Ponte, eds., *Architecture and the Sciences: Exchanging Metaphors* (Princeton: Princeton Architectural Press, 2003), 314-353.

Supplementary material:

- Giuliana Bruno, "Ramble City: Postmodernism and *Blade Runner*," October, 41 (1987), pp. 61-74.
- *Kokaku kidotai (The Ghost in the Shell)* by Mamoru Oshii (1995) video segments:
 - o "Ghost/Shell creation"
 - o "The puppet-master"
 - o "Fusion with Project 2501"

03 March: BodMods: Cosmetic surgery, inscriptions, and performativity

Guest(s):

- Bernadette Wegenstein, Professor of Comparative Literature, SUNY-Buffalo (via PolyCom videoconference).

Required material:

- Orlan, *Successful Operation Nr. X* video segment.
- STELARC at <http://www.stelarc.va.com.au/>.
- Extended-Body: Interview with Stelarc at http://www.stanford.edu/dept/HPS/stelarc/a29-extended_body.html.
- Linda Kauffman, *Bad Girls and Sick Boys: Fantasies in Contemporary Art and Culture* (Berkeley; University of California Press, 1998), pp. 19-80.
- Jacques Lacan, "The Mirror Stage as Formative of the Function of the I as Revealed in Psychoanalytic Experience," in Alan Sheridan, ed., *Écrits A Selection*. New York: 1977, pp. 1-7.
- Yukio Shirakabe, "The Development of Aesthetic Facial Surgery in Japan as Seen Through a Study of Japanese Pictorial Art," *Aesthetic Plastic Surgery*, 1990. 14: pp. 215-221.
- Anne Balsamo, "On the Cutting Edge: Cosmetic Surgery and the Technological Production of the Gendered Body," *Camera Obscura*, 1992. 28: pp. 206-237.

Supplementary material:

- David Moos, "Memories of Being: Orlan's Theater of the Self," *Art + Text* 54 (1996), pp. 67-72.

- Barbara Rose, "Orlan: Is It Art? Orlan and the Transgressive Act," *Art in America* 81:2 (February 1993), pp. 83-125.
- Explore data from *Newsweek* articles on cosmetic surgery, Claudia Kaub, "The Quest to be Perfect," *Newsweek Online*.
- R.P. Petchesky, "Foetal Images: The Power of Visual Culture in the Politics of Reproduction," in *Reproductive Technologies*, M. Stanworth, Ed. Polity Press: Oxford, 1987, pp. 57-80.
- Carol A. Stabile, "Shooting the Mother: Fetal Photography and the Politics of Disappearance," *Camera Obscura*, 1992. 28: pp. 178-205.
- Peter Jaret, "Surgical Sculpture," *Vogue*, May, 1995, pp. 287-315.
- Kathryn Pauly Morgan, "Women and the Knife: Cosmetic Surgery and the Colonization of Women's Bodies," *Body and Flesh, A Philosophical Reader*, ed. Donn Welton, London: Blackwell, 1998, pp. 325-347.
- Brian Massumi, "Stelarc: The Evolutionary Alchemy of Reason (An Excerpt)," in John Beckman, ed., *The Virtual Dimension: Architecture, Representation, and Crash Culture*, New York: Princeton Architectural Press, 1998, pp. 333-341.
- Carl Elliot, "A New Way to Be Mad," *Atlantic Monthly*, December 2000. Volume 286, No. 6; pp. 72-84.
- Gareth Branwyn, "The Desire to Be Wired," in John Beckman, ed., *The Virtual Dimension: Architecture, Representation, and Crash Culture*, New York: Princeton Architectural Press, 1998, pp. 322-332.

10 March: Engineering Gender

Guest(s):

- Tyler Curtain, Professor of English and Cultural Studies, UNC-Chapel Hill.

Required material:

- View *Paris is Burning* -- ?? director and year?
- Judith Butler, "Gender is Burning," in *Bodies that Matter*, pp. 121-142.
- Allucquère Rosanne (Sandy Stone) Stone, "The Empire Strikes Back: A Posttranssexual Manifesto," *Camera Obscura*, 1992. 29: pp. 151-176.
- Teresa de Lauretis, "The Technology of Gender", *Technologies of Gender: Essays on Theory, Film, and Fiction*, Bloomington and Indianapolis: Indiana University Press, 1987, pp 1-30.

Supplementary material:

- Marjorie Garber, Spare Parts: The Surgical Construction of Gender," in *Vested Interests: Cross-Dressing and Cultural Anxiety* (New York; Harper, 1997), pp. 93-117.
- Resources for Gender Dysphoria:
 - o Mental Health Matters: Gender Disorders-Gender Dysphoria
 - o Surgery Options
 - o Surgical Results Information
 - o Postoperative Results Questionnaire
 - o Partner Declaration (Australia)
 - o Example of Procedures Offered
 - o H. Benjamin International Gender Dysphoria Association Standards of

- Care
 - DSM-IV Criteria
- Denise & Allison's Online Home

17 March: Spring break

24 March: Overclocking: Doping, implants, psychopharms, and other performance upgrades

Guest(s):

- Henning Schmidgen, Max Planck Institute for the History of Science

Required material:

- *Johnny Mnemonic* video segments:
 - “Warning: Do not exceed capacity”
 - “Hit me”
- *Lawnmower Man* video segments:
 - “Never unplug a program when I’m engaged”
 - “Sometimes I think I’ve discovered a new planet”
 - “Now you can witness the impossible, Dr. Angelo”
 - “Automatic shutdown inoperative”
- *Virtuosity* video segments:
 - “Maybe it’s the uniforms”
 - “Game over”
 - “Wrong door”
 - “I’m a 50 terabyte, self-evolving neural network”
 - “She’s interactive, Clyde”
 - “What you’re seeing are millions of nanomachines”
 - “I think I’m gonna like it here”
 - “Implant is ready”
 - “Like a real person with multiple personality disorder”
 - “We have a symphony to compose”
 - “Stayin’ alive”
 - “Prepare to rumble”
 - “Welcome to Death TV”
 - “Hey baby, you just missed Parker”
 - “You’re in my world now”
 - “Are you going to get me out of here?”
 - “I’m your party man”
- *Strange Days* video segments:
 - “You know I don’t deal in snuff”
 - “History starts right now”
 - “Do you request backup?”
 - “Rollerblading”
 - “It’s a bad situation”
 - “You’re just peddling the pieces of other people’s lives”
 - “I can hardly wait”
 - “Sunset Regent”

- “He’s not a well-adjusted human being”
- “I’m sorry this has to be your first playback”
- “Don’t make any assumptions about our friendship, Lenny”
- “Now, pay attention”

Supplementary material:

- David Cronenberg, "New Flesh for Old: The Tax-Shelter Experiments", in: *Cronenberg on Cronenberg*, ed. Chris Rodley, London and Boston: Faber, 1992, pp.64-108.
- Linda S. Kauffman, "David Cronenberg's Surreal Abjection", in: *Bad girls and sick boys: fantasies in contemporary art and culture*, Berkeley: University of California Press, 1998, pp.115-145.
- *Cyberpunk Handbook*, ed. Ken Goffman/ Jude Milhon, "Building your Cyber Word Power: A Dictionary of Terminally Hip Jargon and Useful Expressions", New York: Random House, 1995, pp 39-74.
- Chris Cheser, Colonizing Virtual Reality Construction of the Discourse of Virtual Reality, 1984-1992. Cultronix website.
- David Cronenberg films: *eXistenZ* (1999), *Crash* (1996), *Dead Ringers* (1988), *The Fly* (1986), *The Dead Zone* (1983), *Videodrome* (1983), *Scanners* (1981), *The Brood* (1979), *Rabid* (1977), *Shivers* (1975)
- *Tetsuo I: The Iron Man* (1989) - Shinya Tsukamoto.
- *Tetsuo II: Body Hammer* (1992) - Shinya Tsukamoto

31 March: VR & Medical Imaging

Guest(s):

- Rachael Brady, Research Scientist, Visualization Technology Group, Duke University.
- Visit to the UNC “pit” and Rachel Brady’s CAVE at Duke CIEMAS

Required material:

- Tim Lenoir, “Virtual Reality Comes of Age,” in *Funding a Revolution: Government Support for Computing Research*, National Research Council, Washington, DC, 1999, pp. 226-249.
- Don Ihde, "Bodies, Virtual Bodies and Technology", in: *Body and Flesh, A Philosophical Reader*, ed. Donn Welton, London: Blackwell, 1998, pp 349-358.

07 April: The Matrix: Neuro-silicon interfaces

Guest(s):

- Miguel Nicolelis, Professor, Neurobiology Biomedical Engineering and Psychological and Brain Sciences, Co-Director, Center for Neuroengineering, Duke University.

Required material:

- Miguel Nicolelis, “The Amazing Adventures of Roborat,” *Trends in Cognitive Sciences*, Vol. 6, No. 11, November 2002, pp. 449-450.
- Miguel Nicolelis, “Brain-Machine Interfaces to Restore Motor Function and Probe Neurocircuits,” *Nature Reviews: Neuroscience*, Vol. 4, May 2003, pp. 417-422.

- Miguel Nicolelis, "Learning to Control a Brain- Machine Interface for Reaching and Grasping by Primates," Public Library of Science Biology, Vol. 1, Issue 2, 2003, pp. 001-016.
- *Neuromancer* excerpts: downloadable readings for iPod...
- View *The Matrix*, particularly the following video segments:
 - o "Are you sure this line is clean?"
 - o "Welcome to the real world."
 - o "Can you fly that thing?"
 - o "In the matrix"
- "Deep Safari," in Elliot, ed., *Nanodreams*, New York; Pocket Books Simon Schuster, 1995.
- Slavoj Zizek, "Cyberspace, or the Unbearable Closure of Being," from *The Plague of Fantasies* (London; Verso, 1997), pp. 127-164.
- Anne Balsamo, "The Virtual Body in Cyberspace," *Reading Cyborg Women: Technologies of the Gendered Body* (Durham, N.C.; Duke University Press, 1996), pp. 116-132.

Supplementary material:

- N. Katherine Hayles, "The Power of Simulation: What Virtual Creatures Can Teach Us," *Critical Inquiry*, Autumn 1999.
- Mary Flanagan, "Mobile Identities, Digital Stars, and Post-cinematic Selves," *Wide Angle: Issue on Digitality and the Memory of Cinema*, Volume 21:3 (1999), pp. 3-20.

14 April: Nano-medicine

Guest(s):

- Colin Milburn, Department of English, Harvard University (via PolyCom videoconference).

Required material:

- Excerpts from N. Katherine Hayles, ed., *NanoCulture: Implications of the New Technoscience* (Intellect, 2004).
- Colin Milburn, "Nanotechnology in the Age of Posthuman Engineering: Science Fiction as Science," *Configurations* 10:2 (Spring 2002), 261-295.
- More to come...

21 April: DNA Computing

Guest(s):

- Eugene Thacker, Professor of Literature, Communication, and Culture, Georgia Institute of Technology (via PolyCom videoconference).
- Tom LaBean, Professor of Computer Science, Duke University.
- John Reif, Professor of Computer Science, Duke University.

Required material:

- Excerpts from Eugene Thacker, *Biomedica*
- Eugene Thacker, "What Is Biomedica?" *Configurations* Vol. 11, 2003, pp. 47-79.
- Eugene Thacker, "Data Made Flesh: Biotechnology and the Discourse of the Posthuman," *Cultural Critique*, Vol. 53, Winter 2003, pp. 72-97.

- Bart Simon, "Toward a Critique of Posthuman Futures," *Cultural Critique*, Vol. 53, Winter 2003, pp. 1-9.
- A. Gehani and J.H. Reif, Micro flow Bio-Molecular Computation, 4th DIMACS Workshop on DNA Based Computers, University of Pennsylvania, June 15-19, 1998. *DNA Based Computers, IV, DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, (ed. H. Rubin), American Mathematical Society, 1999. Also appeared in a special issue of *Biosystems, Journal of Biological and Informational Processing Sciences*, Vol. 52, Nos. 1-3, (Edited By L. Kari, H. Rubin, and D. H. Wood), pp 197-216, (October 1999) at <http://www.cs.duke.edu/~reif/paper/geha/pub.microflow.pdf>.
- More to come...