Programming as a Cultural Technique

**Overview**
Programming undergirds cultural, economic, and even juridical infrastructures: global finance, power grids, search engines, word processes, library databases, biometric databases, legal evaluation and decision-making, architectural drafting, urban planning, state administration, and cultural policy are informed by the analyses and relays of digital programs. Increasingly language, speech, images, and sounds—the music of Lady GaGa, the Ice Age franchise, and an avalanche of eBooks—are produced, processed, and analyzed by the software that is constantly selecting and discriminating among the possibilities and probabilities of expression.

Only in the 1980s did cultural theorists begin the serious work of reflecting on the rapport among programming and human culture. Early accounts by the likes of Ben Schniderman and Friedrich Kittler posited a strong opposition between the logical basis of programing and the phenomenological level of everyday human perception and interaction. In recent years a new trend has emerged in critical and aesthetic though on programming: Theorists of software studies (Manovich), critical code studies (Hayles), and *Kulturtechniken* (Pias), among others, posit that programming and culture interweave and rework an always already technical human culture.

**Course Content**
Departing from the perspective of recent theorists of Kulturtechnik (e.g. Kassung, Krajewski, Macho, Pias, Siegert), this course will offer an introduction to classic and recent cultural theories of programming. We will incorporate recent research in fields such as software studies and consider relevant political and cultural movements (e.g. the Pirate Party and the Free Culture movement). Students will complete the course with an understanding of the fundamental debates in contemporary cultural theories of programing as well as an ability to create their own elementary programs in Perl.

Each week we will meet twice: Once for a lecture and seminar discussion on aspects of the cultural history and theory of programming, and again in the computer laboratory for applied work in Perl programming. Lectures, seminars, and programming sessions will be complemented by use of an online forum for reflecting on and discussing the relationship between the theoretical and applied aspects of the course. For their final students may either write a program or a seminar paper.

**Mode of Instruction**
The course will be co-taught by Professor Dr. Christian Kassung and Dr. Bernard Dionysius Geoghegan. Readings and lectures will be in German and English, depending on the session. No prerequisite experience in programming necessary or expected.

Basic Texts

Campbell-Kelly, Martin. *From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry*. Cambridge: MIT Press, 2003.

Ensmenger, Nathan L. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise*. Cambridge: The MIT Press, 2010.

Fuller, Matthew, ed. *Software Studies: A Lexicon*. The MIT Press, 2008.

Kittler, Friedrich A. *Programming Manual*. Unveröffentlicht.

Manovich, Lev. *Software Takes Command*. Cambridge: MIT Press, 2012.

**Prehistory of Programming**
Excerpts from texts by Pascal, Leibniz, Jacquard, Babbage, Lovelace, Hollerith.

Supplementary readings:
Excerpts from Campbell-Kelly, Martin. *From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry*. Cambridge: MIT Press, 2003.

**Recent Origins of Programming**

Ensmenger, Nathan L. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise*. Cambridge: The MIT Press, 2010.
excerpts from von Neumann, John. "First Draft of a Report on the EDVAC" (1945).

Supplementary readings:
Excerpts from Campbell-Kelly, Martin. *From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry*. Cambridge: MIT Press, 2003.

**What is Programming? What is Programmable?**
Kittler, Friedrich A. *Programming Manual*. unveröffentlicht, n.d.
Chun, Wendy Hui Kyong. "Programmability." In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.
Cox, Geoff, and Adrian Ward. "Perl." In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.

Supplementary Readings:
Turing, Alan. "Intelligent Machinery." edited by B. Jack Copeland, 410–432. The Essential Turing. Oxford: Clarendon Press, 1948.
Dreyfus, Hubert. *What Computers Can't Do: The Limits of Artificial Intelligence*. New York: Harper & Row, 1979.

**The Rise of the Interface**
Schneiderman, Ben. "Direct Manipulation: A Step Beyond Programming Languages." In *The New Media Reader*, edited by Noah Wardrip-Fruin and Nick Montfort, 485–494. Cambridge: MIT Press, 2003.

**What is Software?**
Kittler, Friedrich A. "Es Gibt Keine Software." In *Draculas Vermächtnis*. Leipzig: Reclam Verlag, 1993.
Manovich, Lev. "There Is Only Software" (unveröffentlicht).

**What is Software Studies?**
Manovich, Lev. *Software Takes Command*. Cambridge: MIT Press, 2012.

**What is Hardware?**

Kittler, Friedrich A. “Hardware, Das Unbekannte Wesen.” In *Medien, Computer, Realität: Wirklichkeitsvorstellungen Und Neue Medien*, edited by Sybille Krämer, 118–132. Suhrkamp, 1998. http://hydra.humanities.uci.edu/kittler/hardware.html.

———. *Programming Manual*. unveröffentlicht, n.d.

Montfort, Nick, and Ian Bogost. *Racing the Beam: The Atari Video Computer System*. Cambridge, Mass: MIT Press, 2009.

**What is a Database?**

Manovich, Lev. “Database as Symbolic Form.” In *The Language of New Media*. Cambridge: MIT Press, 2001.

Bowker, Geoffrey C. *Memory Practices in the Sciences*. Cambridge: MIT Press, 2005.

**What is Code?**

Kittler, Friedrich. “Code.” In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.

Mackenzie, Adrian. “The Problem of Computer Code: Leviathan or Common Power?” (unveröffentlicht). http://www.lancs.ac.uk/staff/mackenza/papers/code-leviathan.pdf.

**The Politics of Code**

Berry, David. “The Relevance of Understanding Code to International Political Economy.” *International Politics* 49, no. 2 (2012): 277–296.

Mackenzie, Adrian. “Internationalization.” In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.

Supplementary Readings:

Guattari, Félix, and Gilles Deleuze. *Anti-Oedipus: Capitalism and Schizophrenia*. Translated by Robert Hurley. New York: Viking Press, 1977.

Jameson, Fredric. *Postmodernism, or, The Cultural Logic of Late Capitalism*. Durham: Duke University Press, 1991.

Lyotard, Jean-Francois. *The Postmodern Condition: A Report on Knowledge*. Translated by Geoffrey Bennington and Brian Massumi. Minneapolis: University of Minnesota Press, 1984.

**Programing and Gender**

Grier, David Alan. *When Computers Were Human*. Princeton: Princeton University Press, 2007.

Light, Jennifer S. “When Computers Were Women.” *Technology and Culture* 40, no. 3 (1999): 455–483.

Supplementary:

Excerpt from Krajewski, Markus. *Der Diener: Mediengeschichte Einer Figur Zwischen König Und Klient*. Frankfurt am Main: S. Fischer, 2010.

**Can Programs Think?**

Searle, John R. “Minds, Brains, and Programs.” *Behavioral and Brain Sciences* 3, no. 03 (1980): 417–

424.
Shannon, Claude. “A Chess-Playing Machine.” *Scientfic American* 182, no. 2 (1950): 48–51.
Turing, Alan. “Intelligent Machinery.” edited by B. Jack Copeland, 410–432. The Essential Turing. Oxford: Clarendon Press, 1948.
Hayles, N. Katherine. “Traumas of Code.” *Critical Inquiry* 33, no. 1 (2006): 136–157.

**Aesthetics of Code**

Fuller, Matthew. “Elegance.” In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.
Hayles, Katherine N. “Print Is Flat, Code Is Deep: The Importance of Media-Specific Analysis.” *Poetics Today* 25, no. 1 (March 20, 2004): 67–90.
Kittler, Friedrich, and Axel Roch. “Wohin Flieht Die Literatur? In Die Software. (Über Microsoft Windows 95).” *Süddeutsche Zeitung* 40 (Oktober 1995): 28–32.
Marino, Mark. “The Ppg256 Perl Primer: The Poetry of Techneculture.” *Emerging Language Practices* 1, no. 1 (n.d.).

**Cultures of Coding**

Stallman, Richard. “The GNU Manifesto”, http://www.gnu.org/gnu/manifesto.html.
Kittler, Friedrich. “Wissenschaft Als Open-Source-Prozeß” (n.d.). http://hydra.humanities.uci.edu/kittler/os.html.
Berry, David M. *Copy, Rip, Burn: The Politics of Copyleft and Open Source: The Politics of Open Source*. London: Pluto Press, 2008.

**Cultures of Coding 2**

Kelty, Christopher M. *Two Bits: The Cultural Significance of Free Software*. Durham, NC: Duke University Press, 2008.
Pirate Party manifesto?

**Additional Readings**

Berry, David M. *The Philosophy of Software: Code and Mediation in the Digital Age*. New York: Palgrave Macmillan, 2011.
Bogost, Ian. *How to Do Things with Videogames*. Electronic Mediations. Minneapolis: University of Minnesota Press, 2011.
———. *Unit Operations: An Approach to Videogame Criticism*. Cambridge: MIT Press, 2006.
Cayley, John. “The Code Is Not the Text (unless It Is the Text)” (September 10, 2002). http://www.electronicbookreview.com/thread/electropoetics/literal.
———. *Programmed Visions: Software and Memory*. Cambridge: MIT Press, 2011.
Collins, Harry M. *Artificial Experts: Social Knowledge and Intelligent Machines*. Cambridge: The MIT Press, 1992.
Dreyfus, Hubert. *Alchemy and Artificial Intelligence*. Rand Corporation, 1965. www.rand.org/pubs/papers/2006/P3244.pdf.
Dreyfus, Hubert L. “Response to Collins, Artificial Experts.” *Social Studies of Science* 22, no. 4 (1992): 717–726.
Dreyfus, Hubert. *What Computers Can’t Do: The Limits of Artificial Intelligence*. New York: Harper & Row, 1979.

Fuller, Matthew. *Behind the Blip: Essays on the Culture of Software*. New York: Autonomedia, 2003.
Galloway, Alexander R. "Language Wants To Be Overlooked: On Software and Ideology." *Journal of Visual Culture* 5, no. 3 (December 1, 2006): 315–331.
———. *Protocol: How Control Exists After Decentralization*. Leonardo. Cambridge, Mass: MIT Press, 2004.
Hansen, Mark B. N. *Bodies in Code: Interfaces with Digital Media*. Routledge, 2006.
Haraway, Donna. "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s." In *The Haraway Reader*, 7–46. New York: Routledge, 2004.
———. *Modest-Witness@Second-Millennium.FemaleMan-Meets-OncoMouse: Feminism and Technoscience*. New York: Routledge, 1997.
Hardt, Michael, and Antonio Negri. *Empire*. Cambridge: Harvard University Press, 2000.
Hayles, N. Katherine. *My Mother Was a Computer: Digital Subjects and Literary Texts*. Chicago: University of Chicago Press, 2005.
Hayles, N. Katherine. "Traumas of Code." *Critical Inquiry* 33, no. 1 (2006): 136–157.
Hayles, N. Katherine. *Writing Machines*. Cambridge: MIT Press, 2002.
Heidegger, Martin. *Gelassenheit*. Pfullingen: Neske, 1960.
Holtorf, Christian, and Claus Pias, eds. *Escape!: Computerspiele Als Kulturtechnik*. Böhlau, 2007.
Macho, Thomas. "Zeit Und Zahl: Kalender- Und Zeitrechnung Als Kulturtechniken." In *Bild, Schrift, Zahl*, edited by Sybille Krämer and Horst Bredekamp, 179–192. Munich: Wilhelm Fink, 2008.
MacKenzie, Adrian. *Cutting Code: Software And Sociality*. New York: Peter Lang, 2006.
Manovich, Lev. "Database as Symbolic Form." In *The Language of New Media*. Cambridge: MIT Press, 2001.
———. *The Language of New Media*. Cambridge: MIT Press, 2001.
———. "There Is Only Software" (unveröffentlicht). http://www.manovich.net/DOCS/Manovich.there_is_only_software.pdf.
Marino, Mark. "Critical Code Studies." *Electronic Book Review* (September 4, 2006). http://www.electronicbookreview.com/thread/electropoetics/codology/.
Montfort, Nick. *Racing the Beam: The Atari Video Computer System*. Cambridge, Mass: MIT Press, 2009.
von Neumann, John. "First Draft of a Report on the EDVAC" (1945).
Neumann, John Von. *The Computer and the Brain*. Yale University Press, 2000.
Pias, Claus. *Computer Spiel Welten*. Berlin: Diaphanes, 2002.
———. "On the Epistemology of Computer Simulation." *Zeitschrift Für Medien- Und Kulturforschung* 2011, no. 1 (May): 29–54.
Searle, John R. "Minds, Brains, and Programs." *Behavioral and Brain Sciences* 3, no. 03 (1980): 417–424.
Shannon, Claude E. "A Mind-Reading (?) Machine." edited by N. J. A Sloane and Aaron D Wyner. Claude Elwood Shannon Collected Papers. Piscataway, N.J.: IEEE Press, 1993.
———. "A Symbolic Analysis of Relay and Switching Circuits." edited by N. J. A Sloane and Aaron D Wyner, 471–496. Claude Elwood Shannon: Collected Papers. Piscataway, N.J.: IEEE Press, 1938.
———. "Presentation of a Maze Solving Machine." edited by M. Mead H. von Foerster and H. L Teuber, 169–181. Cybernetics: Circular, Causal and Feedback Mechanisms in Biological and Social Systems, Transactions Eighth Conference, March 15-16, 1951. New York: Josiah Macy Jr. Foundation, 1952.
Suchman, Lucy A. *Human-Machine Reconfigurations: Plans and Situated Actions*. New York: Cambridge University Press, 2007.
———. "Practice-Based Design of Information Systems: Notes from the Hyperdeveloped World." *The Information Society* 18, no. 2 (2002): 139–144.

Suchmann, Lucy A. “Feminist STS and the Sciences of the Artificial.” In *The Handbook of Science and Technology Studies*, edited by Edward J Hackett. Cambridge, Mass: MIT Press, 2008.
Wardrip-Fruin, Noah. *Expressive Processing: Digital Fictions, Computer Games, and Software Studies*. Cambridge: MIT Press, 2009.
Wardrip-Fruin, Noah, and Nick Montfort, eds. *The New Media Reader*. Cambridge: MIT Press, 2003.
Wiener, Norbert. *God and Golem, Inc.: A Comment on Certain Points Where Cybernetics Impinges on Religion*. Cambridge: MIT Press, 1964.