

Programmieren als Kulturtechnik

(Draft Syllabus 2 (Final Version available 22. Okt)

Overview

Software bestimmt heute fraglos weite Teile unserer Kultur: den globalen Finanzstrom, Energienetze, Suchmaschinen, Textverarbeitung, biometrische Datenbanken, Architektur, Stadtplanung oder juristische Entscheidungsfindung. Aber auch Schrift, Sprache, Bild oder Musik werden produziert, prozessiert und analysiert von Programmen, die ununterbrochen die Möglichkeiten und Wahrscheinlichkeiten unterschiedlicher Optionen berechnen und statistisch vermitteln. Seit den 1980er Jahren wurden von Kulturtheoretikern die Wechselwirkungen zwischen ›maschinellem Intelligenz‹ und ›menschlicher Kultur‹ untersucht. Frühe Ansätze von Ben Schneiderman oder Friedrich Kittler beispielsweise postulierten einen starken Widerspruch zwischen der Logik von Programmiersprachen und Programmen einerseits und der alltäglichen Wahrnehmung und Kommunikation andererseits. Jüngere Untersuchungen von Lev Manovich, Katherine N. Hayles oder Claus Pias dagegen betonen die vielfältigen Wechselwirkungen zwischen Software und Kultur innerhalb einer immer schon ›technischen Natur‹ des Menschen.

Course Goals and Format

Das Seminar hat zwei Ziele. Erstens setzen wir uns mit den jüngsten Ansätzen der Kulturtechnikforschung auseinander, um Programmieren als eine der zentralen Kulturtechniken unserer Zeit zu verstehen (was auch politische Bewegungen wie die Piraten Partei oder die Open Access Bewegung umfaßt). Zweitens lernen wir am Beispiel der Sprache Perl selbst programmieren. Das Seminar trifft sich deshalb zweimal wöchentlich zu je einer theoretischen (Bernard Geoghegan) und einer praktischen (Christian Kassung) Sitzung. Programmierkenntnisse werden nicht vorausgesetzt.

Required Texts

- ♣ Schwartz, Randal L., and Tom Christiansen. *Einführung in Perl*. Köln: O'Reilly, 2001.
[Englisch: Schwartz, Randal L., and Tom Christiansen. *Einführung in Perl*. Köln: O'Reilly, 2001].
- ♣ All other texts available as PDF on Moodle.

Course Schedule

Einführung (22.10.12)

- ♣ Introduction to theme, distribution of syllabi, explanation of course goals, requirements, and evaluation.

What is Software Studies? (29.10.12)

- ♣ Dijkstra, Edsger W. "The Humble Programmer." *Commun. ACM* 15, no. 10 (October 1972): 859–866.
- ♣ Fuller, Matthew. "Introduction." In *Software Studies: A Lexicon*, ed. M. Fuller. The MIT Press, 2008.

Supplementary Readings:

- ♣ Fuller, Matthew. *Behind the Blip: Essays on the Culture of Software*. New York: Autonomedia, 2003.
- ♣ Kirschenbaum, Matthew G. "Virtuality and VRML: Software Studies After Manovich."

Electronic Book Review (August 8, 2003).

<http://www.electronicbookreview.com/thread/technocapitalism/morememory>.

♣ Manovich, Lev. *Software Takes Command*.

What is Code? (5.11.12)

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

Supplementary Readings:

♣ Cayley, John. “The Code Is Not the Text (unless It Is the Text)” (September 10, 2002).

<http://www.electronicbookreview.com/thread/electropoetics/literal>.

♣ Chun, Wendy. *Programmed Visions: Software and Memory*. Cambridge: MIT Press, 2011.

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

♣ Marino, Mark. “Critical Code Studies.” *Electronic Book Review* (September 4, 2006). <http://www.electronicbookreview.com/thread/electropoetics/codology/>.

Software vs. Hardware (12.11.12)

♣ Kittler, Friedrich A. “Es Gibt Keine Software.” In *Draculas Vermächtnis*. Leipzig: Reclam Verlag, 1993.

♣ 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>.

Supplementary Readings:

♣ Manovich, Lev. “There Is Only Software” (unveröffentlicht).

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

Prehistory of Programming, Part I (19.11.12)

♣ Excerpts from texts by Pascal and Leibniz

Prehistory of Programming, Part II (26.11.12)

♣ Excerpts from texts by Jacquard, Babbage, Lovelace, Hollerith.

What is Programming? (3.12.12)

♣ Chun, Wendy Hui Kyong. “Programmability.” In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.

♣ Iverson, Kenneth E. “Notation as a Tool of Thought.” *Commun. ACM* 23, no. 8 (August 1980): 444–465.

Supplementary Readings:

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

♣ Cox, Geoff, and Adrian Ward. “Perl.” In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.

- ♣ Ensmenger, Nathan L. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise*. Cambridge: The MIT Press, 2010.
- ♣ Kittler, Friedrich. *Programming Manual*. unveröffentlicht, n.d.

What is a Database? (10.12.12)

- ♣ Bachman, Charles W. “The Programmer as Navigator.” *Commun. ACM* 16, no. 11 (November 1973): 653–658.
- ♣ Manovich, Lev. “Database as Symbolic Form.” In *The Language of New Media*. Cambridge: MIT Press, 2001.

Supplementary Readings:

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

What is an Interface? (17.12.12)

- ♣ 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.

Supplementary Readings:

- ♣ Kittler, Friedrich, and Axel Roch. “Wohin Flieht Die Literatur? In Die Software. (Über Microsoft Windows 95).” *Süddeutsche Zeitung* 40 (Oktober 1995): 28–32.

Can Programs Think? (7.1.13)

- ♣ Turing, Alan. “Intelligent Machinery.” edited by B. Jack Copeland, 410–432. *The Essential Turing*. Oxford: Clarendon Press.
- ♣ Naur, Peter. “Computing Versus Human Thinking.” *Commun. ACM* 50, no. 1 (January 2007): 85–94.

Supplementary Readings:

- ♣ Dreyfus, Hubert. *What Computers Can't Do: The Limits of Artificial Intelligence*. New York: Harper & Row, 1979.
- ♣ Hayles, N. Katherine. “Traumas of Code.” *Critical Inquiry* 33, no. 1 (2006): 136–157.
- ♣ Newell, Allen, and Herbert Simon. “GPS, A Program That Simulates Human Thought.” edited by Edward A Feigenbaum and Julian Feldman, 279–293. Pias, Claus. *Computer Spiel Welten*. Berlin: Diaphanes, 2002.
- ♣ Searle, John R. “Minds, Brains, and Programs.” *Behavioral and Brain Sciences* 3, no. 03 (1980): 417–424.
- ♣ Shannon, Claude. “A Chess-Playing Machine.” *Scientific American* 182, no. 2 (1950): 48–51.

The Politics of Code (14.1.13)

- ♣ 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:

- ♣ Galloway, Alexander R. "Language Wants To Be Overlooked: On Software and Ideology." *Journal of Visual Culture* 5, no. 3 (December 1, 2006): 315–331.
- ♣ 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.

Gender and Programming (14.1.13)

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

Supplementary Readings:

- ♣ Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: University of Chicago Press, 1999. [Prologue, chs. 1-4.]
- ♣ Krajewski, Markus. *Der Diener: Mediengeschichte Einer Figur Zwischen König Und Klient*. Frankfurt am Main: S. Fischer, 2010.
- ♣ Plant, Sadie. *Zeros and Ones: Digital Women and the New Technoculture*. 1st ed. Doubleday, 1997.
- ♣ Turing, A. M. "Computing Machinery and Intelligence." *Mind* 59, no. 236 (1950): 433–460.

Aesthetics of Code (21.1.13)

- ♣ Dijkstra, Edsger W. "Letters to the Editor: Go to Statement Considered Harmful." *Communications of the ACM* 11, no. 3 (March 1968): 147–148.
- ♣ Knuth, Donald E. "Computer Programming as an Art." *Commun. ACM* 17, no. 12 (December 1974): 667–673.
- ♣ Fuller, Matthew. "Elegance." In *Software Studies: A Lexicon*, edited by Matthew Fuller. The MIT Press, 2008.

Supplementary Readings:

- ♣ 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.
- ♣ Marino, Mark. "The Ppg256 Perl Primer: The Poetry of Techneculture." *Emerging Language Practices* 1, no. 1.

Cultures of Coding (Subject to updates, changes, in course of semester) (28.1.13)

- ♣ Stallman, Richard. "The GNU Manifesto", <http://www.gnu.org/gnu/manifesto.html>.
- ♣ Kittler, Friedrich. "Wissenschaft Als Open-Source-Prozeß". <http://hydra.humanities.uci.edu/kittler/os.html>.

Supplementary Readings:

- ♣ Berry, David M. *Copy, Rip, Burn: The Politics of Copyleft and Open Source*. London: Pluto Press, 2008.

Cultures of Coding 2 (Subject to updates, changes, in course of semester) (4.2.13)

- ▲ Kelty, Christopher M. *Two Bits: The Cultural Significance of Free Software*. Durham, NC: Duke University Press, 2008.
- ▲ Piraten Partei. Visit, read through, <http://www.piratenpartei.de/>

Additional References:

- Amadae, S. M. *Rationalizing Capitalist Democracy: The Cold War Origins of Rational Choice Liberalism*. Chicago: The University Of Chicago Press, 2003.
- Bergin, Thomas J., and Richard G. Gibson, eds. *History of Programming languages—II*. New York, NY, USA: ACM, 1996.
- 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.
- Campbell-Kelly, M. “The History of the History of Software.” *Annals of the History of Computing, IEEE* 29, no. 4 (December 2007): 40–51.
- 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.
- Fuller, Matthew, ed. *Software Studies: A Lexicon*. The MIT Press, 2008.
- Godfrey, M. D., and D. F. Hendry. “The Computer as Von Neumann Planned It.” *IEEE Annals on the History of Computing* 15, no. 1 (January 1993): 11–21.
- Grier, David Alan. *When Computers Were Human*. Princeton: Princeton University Press, 2007.
- Haigh, T. “Software in the 1960s as Concept, Service, and Product.” *Annals of the History of Computing, IEEE* 24, no. 1 (March 2002): 5–13.
- 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.
- . *Writing Machines*. Cambridge: MIT Press, 2002.
- Heidegger, Martin. *Gelassenheit*. Pfullingen: Neske, 1960.
- Holtorf, Christian, and Claus Pias, eds. *Escape!: Computerspiele Als Kulturtechnik*. Böhlau, 2007.
- Lee, J.A.N., J. McCarthy, and J.C.R. Licklider. “The Beginnings at MIT.” *Annals of the History of Computing, IEEE* 14, no. 1 (1992): 18–54.
- 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.
- Mahoney, M.S. “What Makes the History of Software Hard.” *Annals of the History of Computing, IEEE* 30, no. 3 (September 2008): 8–18.

- Mahoney, Michael S. "Finding a History for Software Engineering." *Annals of the History of Computing, IEEE* 26, no. 1 (March 2004): 8–19.
- von Neumann, John. "First Draft of a Report on the EDVAC" (1945).
- Neumann, John Von. *The Computer and the Brain*. Yale University Press, 2000.
- Newell, Allen, and Herbert A. Simon. "Computer Science as Empirical Inquiry: Symbols and Search." *Commun. ACM* 19, no. 3 (March 1976): 113–126.
- Newell, Allen, and Herbert Simon. "GPS, A Program That Simulates Human Thought." edited by Edward A Feigenbaum and Julian Feldman, 279–293. 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.
- Scott, Dana S. "Logic and Programming Languages." *Commun. ACM* 20, no. 9 (September 1977): 634–641.
- 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.
- Thompson, Ken. "Reflections on Trusting Trust." *Commun. ACM* 27, no. 8 (August 1984): 761–763.
- 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.
- Wexelblat, Richard L., ed. *History of Programming Languages I*. New York, NY, USA: ACM, 1981.
- Wiener, Norbert. *God and Golem, Inc.: A Comment on Certain Points Where Cybernetics Impinges on Religion*. Cambridge: MIT Press, 1964.

The following themes may be added or substituted for existing ones:

♣ **What is a Game?**

1. **Bogost, Ian. *How to Do Things with Videogames*. Electronic Mediations. Minneapolis: University of Minnesota Press, 2011.**
2. ———. *Unit Operations: An Approach to Videogame Criticism*. Cambridge: MIT Press, 2006.
3. Holtorf, Christian, and Claus Pias, eds. *Escape!: Computerspiele Als Kulturtechnik*. Böhlau, 2007.

♣ **What is a Computer Architecture (von Neumann)**

1. Godfrey, M. D., and D. F. Hendry. "The Computer as Von Neumann Planned It." *IEEE Annals on the History of Computing* 15, no. 1 (January 1993): 11–21.
2. von Neumann, John. "First Draft of a Report on the EDVAC" (1945).
3. Neumann, John Von. *The Computer and the Brain*. Yale University Press, 2000.

♣ Was heißt "Computer Literacy"?

♣ A couple of key texts (Thompson on "Trusting Trust," Erschov "Aesthetics and the Human Factor in Programming")