

An Aesthetics of Networks

Conjunctive Experience in Art and Technology



Anna Munster



An Aesthesia of Networks

Technologies of Lived Abstraction

Brian Massumi and Erin Manning, editors

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Conjunctive Experience in Art and Technology

Anna Munster

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For my father, George Munster

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Series Foreword

Erin Manning and Brian Massumi, editors

“What moves as a body, returns as the movement of thought.”

Of subjectivity (in its nascent state)

Of the social (in its mutant state)

Of the environment (at the point it can be reinvented)

“A process set up anywhere reverberates everywhere.”

• • •

The Technologies of Lived Abstraction book series is dedicated to work of transdisciplinary reach inquiring critically but especially creatively into processes of subjective, social, and ethical-political emergence abroad in the world today. Thought and body, abstract and concrete, local and global, individual and collective: the works presented are not content to rest with the habitual divisions. They explore how these facets come formatively, reverberatively together, if only to form the movement by which they come again to differ.

Possible paradigms are many: autonomization, relation; emergence, complexity, process; individuation, (auto)poiesis; direct perception, embodied perception, perception-as-action; speculative pragmatism, speculative realism, radical empiricism; mediation, virtualization; ecology of practices, media ecology; technicity; micropolitics, biopolitics, ontopower. Yet there will be a common aim: to catch new thought and action dawning, at a creative crossing. *Technologies of Lived Abstraction* orients to the creativity at this crossing, in virtue of which life everywhere can be considered germinally aesthetic, and the aesthetic anywhere already political.

• • •

“Concepts must be experienced. They are lived.”

Bibliography

Abiteboul, Serge, Richard Hull, and Victor Vianu. 1995. *Foundations of Databases*. Reading, Mass.: Addison-Wesley.

Agamben, Giorgio. 2009. *What Is an Apparatus? and Other Essays*. Trans. David Kishik and Stefan Pedatella. Stanford: Stanford University Press.

AlexK. 2006. "Why Does Germany Suddenly Look Different?" *Google Earth Hacks Forum*, March 24. Available at <http://www.googleearthhacks.com/forums/showthread.php?t=5935&page=1&pp=15>

Altman, Lawrence. 2009. "Is This a Pandemic? Define 'Pandemic.'" *The Doctor's World*. *New York Times* online, June 8. Available at <http://www.nytimes.com/2009/06/09/health/09docs.html>

Amerika, Mark. 2007. *META/DATA: A Digital Poetics*. Cambridge, Mass.: MIT Press.

Anderson, Chris. 2004. "The Long Tail." *Wired* 12.10. Available at http://www.wired.com/wired/archive/12.10/tail.html?pg=4&topic=tail&topic_set=

Arbib, Mark, Aude Billard, Marco Iacoboni, and Erhan Oztop. 2000. "Synthetic Brain Imaging: Grasping, Mirror Neurons and Imitation." *Neural Networks* 13 (8–9): 975–997.

Arquilla, John, and David Ronfeldt. 1999. *The Emergence of Noopolitik: Toward an American Information Strategy*. Santa Monica, Calif.: RAND Corporation.

Bachman, Charles. 1973. "The Programmer as Navigator." *Communications of the ACM* 16 (11):269–285.

Barabási, Albert-László. 2002. *Linked: The New Science of Networks*. New York: Basic Books.

Barabási, Albert-László, and Reka Albert. 1999. "Emergence of Scaling in Random Networks." *Science* (October 15):509–512.

Baran, Paul. 1990. "Interview with Paul Baran." Judy O'Neill, March 5, Menlo Park, Calif., Charles Babbage Institute, University of Minnesota, Minneapolis. Available at <http://special.lib.umn.edu/cbi/oh/display.phtml?term=Baran&search=Submit>

- Baran, Paul. 1964. "On Distributed Communications." Memorandum, RM-3420-PR, August, Santa Monica, Calif.: RAND Corporation. Available at http://www.rand.org/pubs/research_memoranda/2006/RM3420.pdf
- Bateson, Gregory. 2002. *Mind and Nature: A Necessary Unity*. Cresskill, N.J.: Hampton Press.
- Bateson, Gregory. 1978. *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution and Epistemology*. St. Albans: Paladin Books.
- Bellevue Linux Users Group. 2006. "Metadata Definition." *The Linux Information Project*. Available at <http://www.linfo.org/metadata.html>
- Benkler, Yochai. 2006. *The Wealth of Networks*. New Haven: Yale University Press.
- Bennett, Jane. 2010. *Vibrant Matter: A Political Ecology of Things*. Durham: Duke University Press.
- Bergson, Henri. 1920. "Intellectual Effort." In *Mind-Energy: Lectures and Essays*, trans. H. Wildon Carr, 186–230. New York: Henry Holt.
- Berners-Lee, Tim, and Robert Cailliau. 1990. "World-Wide Web: Proposal for a Hypertext Project." Worldwide Web Consortium, original memorandum. Available at <http://www.w3.org/Proposal.html>
- Bertelsen, Lone, and Andrew Murphie. 2010. "An Ethics of Everyday Infinities and Powers: Félix Guattari on Affect and the Refrain." In *The Affect Reader*, ed. Melissa Gregg and Greg Seigworth, 138–157. Durham: Duke University Press.
- Beslay, Laurent, and Hannu Hakala. 2005. "Digital Territories: Bubbles." Draft paper, 1–11. Available at <http://cybersecurity.jrc.ec.europa.eu/docs/DigitalTerritoryBubbles.pdf>
- Bilton, Nick. 2010. "Has Viral Gone Viral?" BITS weblog. *New York Times* online, March 29. Available at <http://bits.blogs.nytimes.com/2010/03/29/has-viral-gone-viral/>
- Blackmore, Susan. 1999. *The Meme Machine*. Oxford: Oxford University Press.
- Bloomberg Businessweek. 2006. "So Much Fanfare, So Few Hits." *Business Week* online, July 10. Available at http://www.businessweek.com/magazine/content/06_28/b3992051.htm?campaign_id=search
- Bogue, Ronald. 2003. *Deleuze on Music, Painting and the Arts*. London: Routledge.
- Bookchin, Natalie, and Blake Stimson. 2011. "Out in Public: Natalie Bookchin in Conversation with Blake Stimson." In *Video Vortex Reader II: Moving Images Beyond YouTube*, ed. Geert Lovink and Rachel Sommers Miles. Amsterdam: Institute of Network Cultures.
- Bosteels, Bruno. 2001. "From Text to Territory: Felix Guattari's Cartographies of the Unconscious." In *Deleuze and Guattari: Critical Assessments of Leading Philosophers*, ed. Gary Genosko, vol. 2, 881–910. London: Routledge.
- Bourriaud, Nicolas. 1998. *Relational Aesthetics*. Paris: Les Presses du Réel.

- Bricken, Meredith. 1991. "Virtual Reality: No Interface to Design." In *Cyberspace: First Steps*, ed. M. Benedikt. Cambridge, Mass.: MIT Press.
- Brin, Sergey, and Lawrence Page. 1998. "The Anatomy of a Large-Scale Hypertextual Web Search Engine." Seventh International World-Wide Web Conference, April 14–18, 1998, Brisbane, Australia. Available at <http://ilpubs.stanford.edu:8090/361/>
- Bruno, Christophe. 2006. "Interview with Christophe Bruno, Media Interventionist." *Neural magazine* (English edition), 25:43.
- Buccino, G., F. Binkofski, G. R. Fink, L. Fadiga, L. Fogassi, V. Gallese, R. J. Seitz, K. Zilles, G. Rizzolatti, and H. J. Freund. 2001. "Action Observation Activates Premotor and Parietal Areas in a Somatotopic Manner: An fMRI Study." *European Journal of Neuroscience* 13 (2):400–404.
- Bucksberg, Andrew. 2008. "VJing and Live A/V Practices". *VJTheory*. VJTheory.net: Realtime Books. Available at http://www.vjtheory.net/web_texts/text_bucksberg.htm
- Burgess, Jean. 2008. "All Your Chocolate Rain Are Belong to Us: Viral Video, YouTube and the Dynamics of Participatory Culture." In *Video Vortex Reader: Responses to YouTube*, ed. Geert Lovink and Sabine Niederer, 101–110. Amsterdam: Institute for Network Cultures.
- Bush, Vannevar. 1945. "As We May Think." *Atlantic Magazine* online. Available at <http://www.theatlantic.com/magazine/archive/1969/12/as-we-may-think/3881/>
- Buzzfeed. 2011. "Make Your Ideas Viral." BuzzFeed Inc. Available at <http://www.buzzfeed.com/signup>
- van Campen, Cretien. 1997. "Synaesthesia and Artistic Experimentation." *Psyche* 3. Available at <http://journalpsyche.org/ojs-2.2/index.php/psyche/article/view/2358/2290>.
- Carr, Nicholas. 2010a. *The Shallows: What the Internet Is Doing to Our Brains*. New York: W.W. Norton.
- Carr, Nicholas. 2010b. "The Web Shatters Focus, Rewires Brains." *Wired*, May 24. Available at http://www.wired.com/magazine/2010/05/ff_nicholas_carr/all/1
- Catts, Oron, and Ionat Zurr. 2002. "Growing Semi-Living Sculptures: The Tissue Culture & Art Project." *Leonardo* 35 (4):365–370.
- Centers for Disease Control and Prevention. 2007. "Hhs Unveils Two New Efforts to Advance Pandemic Flu Preparedness." Press release, Department of Health and Human Services, United States Government, February 1. Available at <http://www.cdc.gov/media/pressrel/2007/r070201a.htm>
- Chan, Margaret. 2010. "WHO Director-General's Letter to BMJ Editors." June 8, Media Centre, World Health Organization. Available at http://www.who.int/mediacentre/news/statements/2010/letter_bmj_20100608/en/index.html
- Chan, Margaret. 2009. "World Now at the Start of 2009 Influenza Pandemic." World Health Organization, media release. Available at http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html

Childs, David L. 1968. "Description of Set Theoretic Data Structure." Technical Report, College of Engineering, University of Michigan. Available at <http://deepblue.lib.umich.edu/handle/2027.42/4163>

Clemens, Justin, Dodds Christopher, and Adam Nash. 2009. *Autoscopia* website. Available at <http://www.autoscopia.net/>

Clemens, Justin, and Adam Nash. 2011. "Take a Good Hard Look at Yourself: *Autoscopia* and the Networked Image." In *New Imaging: Transdisciplinary Strategies beyond the New Media*, ed. Su Baker, Melanie Oliver, and Paul Thomas, 39–49. Column 7. Sydney: Artspace.

Codd, Edgar F. 1970. "A Relational Model of Data for Large Shared Data Banks." *Communications of the ACM* 13 (6):377–387.

Cohen, Noam. 2007. "Google Halts 'Miserable Failure' Link to President Bush." *New York Times* online, January 29. Available at http://www.nytimes.com/2007/01/29/technology/29google.html?_r=1

Community News. 2004. "Mapping the Working Coasts: Using Art to Understand the Waterfront." *Maine Arts Commission Magazine*, Fall. Available at <http://www.spurse.org/projects/working-waters/>

Comscore.com. 2010. "Facebook Captures Top Spot among Social Networking Sites in India." ComScore Inc. press release, August 25. Available at http://www.comscore.com/Press_Events/Press_Releases/2010/8/Facebook_Captures_Top_Spot_among_Social_Networking_Sites_in_India/%28language%29/eng-US

Connolly, William. 2002. *Neuropolitics: Thinking, Culture, Speed*. Minneapolis: University of Minnesota Press.

Cox, Christopher. 2002. "From Synapse to Signal." *Autopilot*, catalogue, 14–17. Berlin: Die Gestalten-Verlag.

Crampton, Jeremy W. 2010. *Mapping: A Critical Introduction to Cartography and GIS*. Oxford: Wiley-Blackwell.

Crampton, Jeremy W. 2003. *The Political Mapping of Cyberspace*. Chicago: University of Chicago Press.

Cunningham, J. E., F. Uri Gronemann, T. S. Huang, J. W. Pan, O. J. Tretiak, W. F. Schreiber, S. Asano, J. Ziv, L. Kleinrock, and D. N. Arden. 1962. "Processing and Transmission of Information." *Research Laboratory of Electronics Quarterly Progress Report*, Massachusetts Institute of Technology, April 15: 156–160. Available at <http://hdl.handle.net/1721.1/53693>

Cunningham, J. E., F. Uri Gronemann, T. S. Huang, J. W. Pan, O. J. Tretiak, W. F. Schreiber, S. Asano, J. Ziv, L. Kleinrock, and D. N. Arden. 1961. "Processing and Transmission of Information." *Research Laboratory of Electronics Quarterly Progress Report*, Massachusetts Institute of Technology, July 15: 162–163. Available at <http://hdl.handle.net/1721.1/53595>

- Cytowic, Richard. 1997. "Synaesthesia: Phenomenology and Neuropsychology." In *Synaesthesia: Classic and Contemporary Readings*, ed. Simon Baron-Cohen and John Harrison, 17–42. Oxford: Blackwell.
- Da Costa, Pedro Nicolaci. 2011. "Global Economy Week Ahead—Revolution and Some Inflation." *Reuters Africa*, February 13. Available at <http://af.reuters.com/article/egyptNews/idAFN1117606720110213?sp=true>
- Damasio, Antonio. 1989. "Time-Locked Multiregional Retroactivation: A Systems-Level Proposal for the Neural Substrates of Recall and Recognition." *Cognition* 33:25–62.
- Damasio, Antonio, and Kaspar Meyer. 2008. "Beyond the Looking Glass." *Nature* 454:167–168.
- Daniel, Caroline, and Maija Palmer. 2007. "Google's Goal: To Organise Your Daily Life." *Financial Times*, Financial Times.com, May 22. Available at http://www.ft.com/cms/s/2/c3e49548-088e-11dc-b11e-000b5df10621,dwp_uuid=e8477cc4-c820-11db-b0dc-000b5df10621.html#axzz1BL6wN8lo
- Davey, Nicholas. 2007. "Aesthetics." In *The Edinburgh Companion to Twentieth Century Philosophies*, ed. Constantin V. Boundas, 615–628. Edinburgh: Edinburgh University Press.
- Davies, Donald W. 1986. "D. W. Davies interviewed by M. Campbell Kelly." National Physical Laboratory, Charles Babbage Institute, University of Minnesota, Minneapolis, March 17: 1–34. Available at <http://www.cbi.umn.edu/oh/display.phtml?id=116>
- Dawkins, Richard. 1989. *The Selfish Gene*. Oxford: Oxford University Press.
- Deleuze, Gilles. 2005. *Cinema 2: The Time-Image*. London: Continuum.
- Deleuze, Gilles. 2003. *Francis Bacon: The Logic of Sensation*. London: Continuum.
- Deleuze, Gilles. 1994. *Difference and Repetition*. Trans. Paul Patton. New York: Columbia University Press.
- Deleuze, Gilles. 1993. *The Fold*. Trans. Tom Conley. Minneapolis: University of Minnesota Press.
- Deleuze, Gilles. 1992. "Postscript on the Societies of Control." *October* 59 (3):3–7.
- Deleuze, Gilles. 1988. *Foucault*. Minneapolis: University of Minnesota Press.
- Deleuze, Gilles, and Félix Guattari. 1994. *What Is Philosophy?* London: Verso.
- Deleuze, Gilles, and Félix Guattari. 1987. *A Thousand Plateaus*. Trans. Brian Massumi. London: Athlone Press.
- ditch. 2007. "mysterious hoze." With Riyoichi Kurokawa, video director. Music video. Available at http://www.youtube.com/user/opdisc#p/a/u/1/_eqBT6YbXBs
- Doidge, Norman. 2007. *The Brain That Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science*. New York: Penguin.

- Donath, Judith. 2006. "Sociable Media." In *Berkshire Encyclopaedia of Human-Computer Interaction*, 627–633. Great Barrington, Mass.: Berkshire Publishing Group.
- Doruff, Sher. 2007. "Extreme Intervals and Sensory Fusions: The Hinge." Conference proceedings, Mutamorphosis: Challenging Arts and Sciences, Prague. Available at <http://mutamorphosis.wordpress.com/2009/03/01/extreme-intervals-and-sensory-fusions-the-hinge/>
- Dragan, Richard V. 2005. "Google Earth 3.0." Review, *PC Magazine*, June 28. Available at <http://www.pcmag.com/article2/0,1895,1831854,00.asp>
- Duchenout, Nicholas, and Robert J. Moore. 2004. "The Social Side of Gaming: A Study of Interaction Patterns in a Massively Multiplayer Online Game." In *Proceedings of the 2004 ACM conference on Computer Supported Cooperative Work*, 360–369. New York: ACM Press.
- Dumit, Joseph. 2004. *Picturing Personhood: Brain Scans and Biomedical Identity*. Princeton: Princeton University Press.
- Dumit, Joseph. 1999. "Objective Brains, Prejudicial Images." *Science in Context* 12 (1):173–201.
- Edelstein, Henry. 2005. *Introduction to Data Mining and Knowledge Discovery*. Potomac, Md.: Two Crows Corporation.
- Edwards, Paul E. 1996. *The Closed World*. Cambridge, Mass.: MIT Press.
- Ekman, Paul, and Warren Friesen. 1986. "A New Pancultural Facial Expression of Emotion." *Motivation and Emotion* 10 (2):159–168.
- Eliasson, Olafur, and Chris Gilbert. 2004. "Interview with Olafur Eliasson." *BOMB*, 88. Available at <http://www.bombsite.com/issues/88/articles/2651>
- Engel, Jerome, Timothy A. Pedley, and Jean Aicardi. 2008. *Epilepsy: A Comprehensive Textbook*. Vol. 1. Philadelphia: Lippincott Williams & Wilkins.
- Fayyad, Usama, Gregory Piatetsky-Shapiro, and Padharaic Smyth. 1996. "From Data Mining to Knowledge Discovery in Databases." *AI Magazine* (Fall):37–54.
- Foucault, Michel. 2007. *Security, Territory, Population: Lectures at the Collège de France, 1977–1978*. Ed. Michele Senellart, trans. Graham Burchell. New York: Palgrave.
- Foucault, Michel. 1991. "Governmentality." In *The Foucault Effect: Studies in Governmentality*, ed. Graham Burchell, Colin Gordon, and Paul Miller, 87–104. Chicago: University of Chicago Press.
- Foucault, Michel. 1980a. "The Confession of the Flesh." In *Power/Knowledge: Selected Interviews and Other Writings*, ed. Colin Gordon, 194–228. New York: Pantheon Books.
- Foucault, Michel. 1980b. "The Politics of Health in the 18th Century." In *Power/Knowledge: Selected Interviews and Other Writings*, ed. Colin Gordon, 166–182. New York: Pantheon Books.
- Foucault, Michel. 1973. *The Birth of the Clinic: An Archaeology of Medical Perception*. London: Tavistock.
- Fried, Michael. 1988. "Art and Objecthood." In *Fried, Art and Objecthood: Essays and Reviews*, 148–172. Chicago: University of Chicago Press.

- Fuller, Matthew. 2010. "Pits to Bits, Interview with Graham Harwood." Matthew Fuller personal website. Available at <http://www.spc.org/fuller/interviews/pits-to-bits-interview-with-graham-harwood/>
- Fuller, Matthew. 2003. *Behind the Blip: Essays on the Culture of Software*. New York: Autonomedia.
- Fuller, Matthew, and Andrew Goffy. 2009. "Towards an Evil Media Studies." In *The Spam Book: On Viruses, Porn and Other Anomalies from the Dark Side of Digital Culture*, ed. Jussi Parikka and Tony Sampson, 141–159. Cresskill, N.J.: Hampton Press.
- Fuller, Gillian, and Ross Harley. 2011. "The Protocological Surround: Reconceptualizing Radio and Architecture in the Wireless City." In *From Social Butterfly to Engaged Citizen: Urban Informatics, Social Media, Ubiquitous Computing, and Mobile Technology to Support Citizen Engagement*, ed. M. Foth, L. Forlano, C. Satchell, and M. Gibbs, 39–54. Cambridge, Mass.: MIT Press.
- Galloway, Alex, and Eugene Thacker. 2007. *The Exploit: A Theory of Networks*. Minneapolis: University of Minnesota Press.
- Genosko, Gary. 2002. *Felix Guattari: An Aberrant Introduction*. London: Continuum.
- Gibbs, Anna. 2008. "Panic? Affect Contagion, Mimesis and Suggestion in the Social Field." *Cultic Studies Review* 14 (2):130–145.
- Gibbs, Anna. 2001. "Contagious Feelings: Pauline Hanson and the Epidemiology of Affect." *Australian Humanities Review*, September. Available at <http://www.australianhumanitiesreview.org/archive/Issue-September-2001/gibbs.html>
- Gibson, William. 2010. "Google's Earth." *New York Times* online, August 31. Available at http://www.nytimes.com/2010/09/01/opinion/01gibson.html?_r=6
- Godard, Michael, and Jussi Parikka. 2011. "Editorial." *Unnatural Ecologies, The Fibreculture Journal*, 17. Available at <http://seventeen.fibreculturejournal.org/>
- Godlee, Fiona. 2010. "Conflicts of Interest and Pandemic Flu." *British Medical Journal* 340:2947.
- Goodwin, Jacob. 2005. "Inside Able Danger: The Secret Birth, Extraordinary Life and Untimely Death of a U.S. Military Intelligence Program." *Global Security News Magazine*, September. Available at http://www.gsnmagazine.com/sep_05/shaffer_interview.html
- Google. 2010. "Understanding Google Earth Imagery." Google Earth website. Available at <http://earth.google.com/support/bin/answer.py?answer=176147>
- Google. 1999. "Google's New GoogleScout Feature Expands Scope of Search on the Internet." Google Press Center website. Available at <http://www.google.com/press/pressrel/pressrelease4.html>
- Google Earth Community. 2005. "Google Earth—Common Questions." Google Earth Community forum. Available at <http://bbs.keyhole.com/ubb/ubbthreads.php?ubb=showthreaded&Number=89366>
- Google Inc. 2011. "Google Corporate." Google Corporate website. Available at <http://www.google.com/corporate/>

- Gouchenour, Philip H. 2006. "Distributed Communities and Nodal Subjects." *New Media and Society* 8 (1):33–51.
- Graham, Stephen. 2009. "The Urban 'Battlespace.'" *Theory, Culture and Society* 26:278–287.
- Granovetter, Mark. 1973. "The Strength of Weak Ties." *American Journal of Sociology* 78 (6): 1360–1380.
- Greenfield, Susan. 2009. "Screen Culture May Be Changing Our Brains." Interview with Kerry O'Brien for the 7:30 Report, Australian Broadcasting Commission, March 19. Transcript available at <http://www.abc.net.au/7.30/content/2009/s2521139.htm>
- Grossman, Lev. 2006. "You—Yes, You—Are TIME's Person of the Year." *Time Magazine US* online, December 25. Available at <http://www.time.com/time/magazine/article/0,9171,1570810,00.html>
- Guattari, Félix. 2008. *The Three Ecologies*. Trans. Ian Pindar and Paul Sutton. London: Continuum.
- Guattari, Félix. 1996. *The Guattari Reader*. Ed. Gary Genosko. Oxford: Blackwell.
- Guattari, Félix. 1995. *Chaosmosis: An Ethico-aesthetic Paradigm*. Trans. Paul Bains and Julian Pefanis. Sydney: Power Publications.
- Guattari, Félix. 1974. *Molecular Revolutions: Psychiatry and Politics*. New York: Puffin.
- Guattari, Félix, and Suely Rolnik. 2008. *Molecular Revolution in Brazil*. Trans. Karel Clapshow and Brian Holmes. New York: Semiotext(e).
- Hansell, Saul. 2006. "Marketers Trace Paths Users Leave on Internet." *New York Times* online, August 15. Available at <http://query.nytimes.com/gst/fullpage.html?res=9C0DEFD9173EF936A2575BC0A9609C8B63&sec=&spon=>
- Hansen, Mark. 2006. *New Philosophy for New Media*. Cambridge, Mass.: MIT Press.
- Hare, R. M. 1981. *Moral Thinking: Its Levels, Method, and Point*. Oxford: Oxford University Press.
- Harrison, John E., and Simon Baron-Cohen. 1997. "Synaesthesia: An Introduction." In *Synaesthesia: Classic and Contemporary Readings*, ed. Simon Baron-Cohen and John E Harrison, 3–16. Oxford: Blackwell.
- Harwood, Graham, with Anthony Iles. 2010. "In the Mud and Blood of Networks: An Interview with Graham Harwood." *MetaMute*. Available at http://www.metamute.org/en/articles/interview_with_graham_harwood
- Hayles, N. Katherine. 2007. "Hyper and Deep Attention: The Generational Divide in Cognitive Modes." *Profession* 1:187–199.
- Heylighen, Francis. 1996. "Evolution of Memes on the Network: from Chain Letters to the Global Brain." In *Memesis: The Future of Evolution*, ed. Ingrid Fischer, 48–57. Ars Electronica catalogue. Vienna: Springer.

- Hofman, Heike. 2003. "Mosaic Plots and Their Variants." In *Handbook of Data Visualisation*, ed. C. Chen, W. Härdle, and A. Unwin, 619–642. Berlin: Springer.
- Holmes, Brian. 2008. "Counter Cartographies." In *Elsewhere Mapping: New Cartographies of Networks and Territories*, ed. Janet Abrams and Peter Hall, 20–25. Minnesota: University of Minnesota Design Press.
- Howe, Daniel C., and Helen Nissenbaum. 2009. "TrackMeNot: Resisting Surveillance in Web Search." In *Lessons from the Identity Trail: Anonymity, Privacy and Identity in a Networked Society*, ed. Ian Kerr, Carole Lucock, and Valerie Steeves, 417–440. Oxford: Oxford University Press.
- Howe, Daniel C., and Helen Nissenbaum. 2006. *TrackMeNot* website. Available at <http://mrl.nyu.edu/~dhowe/TrackMeNot/>
- Jacquet, Yannick, and Thomas Vaquié. 2011. "St Gervais Interview." *AntiVJ* Vimeo online video channel. Available at <http://vimeo.com/channels/5119>
- James, William. 2008. *A Pluralistic Universe*. Rockville, Md.: Arc Manor.
- James, William. 1992. *Writings: 1879–1899*. New York: Library of America.
- James, William. 1979. *Some Problems in Philosophy*. Cambridge, Mass.: Harvard University Press.
- James, William. 1977. *The Writings of William James: A Comprehensive Edition*. Ed. J. J. Mc Dermott. Chicago: University of Chicago Press.
- James, William. 1912. *Essays in Radical Empiricism*. New York: Longmans, Green.
- Jansz, Jeroen, and Lonneke Martens. 2005. "Gaming at a LAN Event: The Social Context of Playing Video Games." *New Media and Society* 7 (3):333–355.
- Jenkins, Holman. 2010. "Google and the Search for the Future." *Wall Street Journal*, Wall Street Journal Digital Network, August 10. Available at <http://online.wsj.com/article/SB10001424052748704901104575423294099527212.html>
- Johnston, John. 2008. *The Allure of Machinic Life: Cybernetics, Artificial Life, and the New AI*. Cambridge, Mass.: MIT Press.
- Kahn, Richard, and Doug Kellner. 2005. "Oppositional Politics and the Internet: A Critical/Reconstructive Approach." *Cultural Politics* 1 (1):75–100.
- Kanai, Ryota, Bahador Bahrami, Rebecca Roylance, and Geraint Rees. 2011. "Online Social Network Size Is Reflected in Human Brain Structure." *Proceedings of the Royal Society, Series B: Biological Sciences*. Available at <http://rspb.royalsocietypublishing.org/content/early/2011/10/12/rspb.2011.1959.full?sid=bdc5f98b-ea8a-4cb3-a864-15af80cb24f9>
- Karotz blog. 2011. "Karotz Points His Ears Straight Up in March 2011!" Karotz weblog. Available at <http://blog.karotz.com/?p=1545&lang=en>
- Kelso, J. A. Scott. 2010. "Metastable Mind." In *Cognitive Architecture: From Biopolitics to Noopolitics—Architecture and Mind in the Age of Communication and Information*, 116–141. Rotterdam: 010 Publishers.

- Kerr, Iain. 2011. "Systems and Things Diagrammed." Iain Kerr personal website. Available at http://iainakerr.com/iainkerr/spurse_dia.html
- Kerr, Iain. 2008. "Notes on Immanent Assemblages." In *Useful Pictures*, ed. Adelheid Mers, 108–109. Chicago: Whitewalls.
- Kleinrock, Leonard. 2005. "Kleinrock on Nomadic Computing: *Ubiquity* Interviews Leonard Kleinrock (Inventor of Packet-Switching)." *Ubiquity* 6 (25):12–19. Available at http://www.acm.org/ubiquity/interviews/v6i25_kleinrock.html
- Kline, Morris. 1972. *Mathematical Thought from Ancient to Modern Times*. Vol. 3. Oxford: Oxford University Press.
- Knouf, Nicholas. 2009a. MAICregator website. Available at <http://maicregator.org>
- Knouf, Nicholas. 2009b. "Mining the Military-Academic-Industrial Complex in a Poetic-Serious Fashion." MAICregator website. Available at <http://maicregator.org/statement>
- Kolb, Robert. 2011. "What Is Financial Contagion." In *Financial Contagion: The Viral Threat to the Wealth of Nations*, ed. Robert Kolb, 3–10. Hoboken, N.J.: Wiley.
- Krebs, Vladis. 2002. "Uncloaking Terrorist Networks." *First Monday* 7 (4) (April 1). Available at <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/941/863>
- Kriegeskorte, Nikolaus, W. Kyle Simmons, Patrick S. Bellgowan, and Chris I. Baker. 2009. "Circular Analysis in Systems Neuroscience: The Dangers of Double Dipping." *Nature Neuroscience* 12:535–540.
- Kurokawa, Rioyichi. dir. 2007. "mysterious hoze." Music video, music by ditch, op. disc label. Available at http://www.youtube.com/user/opdisc#p/a/u/1/_eqBT6YbXBs
- Kurokawa, Rioyichi, and Bertram Niesson. 2006. "Rioyichi Kurokawa: Perspective and Nature [Interview]." *Digimag*, September 17. Available at <http://www.digicult.it/digimag/article.asp?id=627>
- Lanier, Jaron. 2010. *You Are Not a Gadget: A Manifesto*. New York: Knopf.
- Latour, Bruno. 2010. "Tarde's Idea of Quantification." In *The Social after Gabriel Tarde: Debates and Assessments*, ed. Matei Candea, 145–162. London: Routledge.
- Latour, Bruno. 2005. "From Realpolitik to Dingpolitik or How to Make Things Public." In *Making Things Public*, ed. Bruno Latour and Peter Weibel, 14–41. Cambridge, Mass.: MIT Press.
- Latour, Bruno. 2002. "Gabriel Tarde and the End of the Social." In *The Social in Question: New Bearings in History and Social Science*, ed. Patrick Joyce, 117–132. London: Routledge.
- Latour, Bruno. 1999. "On Recalling ANT." In *Actor Network Theory and After*, ed. John Law and John Hassard, 15–25. Oxford: Blackwell-Wiley.
- Latour, Bruno. 1993. *We Have Never Been Modern*. Cambridge, Mass.: Harvard University Press.
- Latour, Bruno, and Peter Weibel, eds. 2005. *Making Things Public: Atmospheres of Democracy*. Cambridge, Mass.: MIT Press.

- Lazzarato, Maurizio. 2006a. "The Machine." *Transversal*, 11. Available at <http://eipcp.net/transversal/1106/lazzarato/en>
- Lazzarato, Maurizio. 2006b. "The Concepts of Life and the Living in the Societies of Control." In *Deleuze and the Social*, ed. Martin Fuglsang and Bent Meyer Sorenson, 171–190. Edinburgh: Edinburgh University Press.
- Lazzarato, Maurizio. 2004. "General Intellect: Towards an Inquiry into Immaterial Labour." *Multitudes* 4 (Summer). Available at <http://multitudes.samizdat.net/General-intellect>
- Lazzarato, Maurizio. 2002. "From Biopower to Biopolitics." *Pli. Warwick Journal of Philosophy* 13:99–113.
- Lazzarato, Maurizio. 1996. "Immaterial Labour." In *Radical Thought in Italy: A Potential Politics*, ed. Michael Hardt and Paulo Virno, 133–147. Minneapolis: University of Minnesota Press.
- Liailina, Olya. 2007. "Vernacular Web 2.0." New Network Theory conference, Institute of Network Cultures, University of Amsterdam, June 28–30. Also available at <http://www.contemporary-home-computing.org/vernacular-web-2/>
- Licklider, J. C. 1963. "Members and Affiliates of the Intergalactic Computer Network." Memorandum. Available at <http://www.kurzweilai.net/memorandum-for-members-and-affiliates-of-the-intergalactic-computer-network>
- Lovink, Geert, and Ned Rossiter. 2005. "Dawn of the Organised Networks." *Precarious Labour, The Fibreculture Journal*, 5. Available at http://journal.fibreculture.org/issue5/lovink_rossiter.html
- Luhmann, Niklas. 2008. "The Autopoiesis of Social Systems." *Journal of Sociocybernetics* 6 (2):84–92.
- Mackenzie, Adrian. 2012. "Sets." In *Devices and the Happening of the Social*, ed. Celia Lury and Nina Wakefield, 219–231. London: Routledge.
- Mackenzie, Adrian. 2010. *Wirelessness: Radical Empiricism and Network Media*. Cambridge, Mass: MIT Press.
- Mackenzie, Adrian. 2007. "Protocols and the Irreducible Traces of Embodiment: The Viterbi Algorithm and the Mosaic of Machine Time." In *24/7: Time and Temporality in the Network Society*, ed. Robert Hassan and Ronald Purser, 89–108. Stanford: Stanford University Press.
- Mackenzie, Adrian. 2006. *Cutting Code: Software and Sociality*. New York: Peter Lang.
- MacNamara, Paul. 2010. "Facebook Unleashes Lawyers on Web 2.0 Suicide Machine." Buzzblog weblog. Available at <http://www.networkworld.com/community/node/53078>
- Madrigal, Alexis. 2010. "Inside the Google Books Algorithm." *Atlantic Magazine* online, November 1. Available at <http://www.theatlantic.com/technology/archive/2010/10/inside-the-google-books-algorithm/65422/>
- Manning, Erin. 2009. *Relationescapes: Movement, Art, Philosophy*. Cambridge, Mass.: MIT Press.

- Manning, Peter. 2004. *Electronic and Computer Music*. Oxford: Oxford University Press.
- Manovich, Lev. 2001. *The Language of New Media*. Cambridge, Mass.: MIT Press.
- Marguiles, Daniel, and Chris Sharp. 2008. "Untitled." Online video, available at <https://vimeo.com/9871689>
- Maturana, Humberto R. 2002. "Autopoiesis, Structural Coupling and Cognition: A History of These and Other Notions in the Biology of Cognition." *Cybernetics and Human Knowing* 9 (3–4): 5–34.
- Maturana, Humberto R., and Francisco J. Varela. 1988. *The Tree of Knowledge: The Biological Roots of Human Understanding*. Boston, Mass.: Shambala.
- Maturana, Humberto R., and Francisco J. Varela. 1980. *Autopoiesis and Cognition: The Realization of the Living*. Dordrecht: Riedel.
- Massumi, Brian. 2011a. *Semblance and Event: Activist Philosophy and the Occurrent Arts*. Cambridge, Mass.: MIT Press.
- Massumi, Brian. 2011b. "Conjunction, Disjunction, Gift." *Transversal*, "Inventions" issue, <http://eipcp.net/transversal/0811/massumi/en>
- Massumi, Brian. 2010. "The Future Birth of the Affective Fact: The Political Ontology of Threat." In *Digital and Other Virtualities: Renegotiating the Image*, ed. Griselda Pollock and Antony Bryant, 79–92. London: I. B. Taurus.
- Massumi, Brian. 2009. "Technical Mentality Revisited: Brian Massumi on Gilbert Simondon." With Arne de Boever, Alex Murray, and Jon Roffe. *Parrhesia*, 7: 36–45. Available at <http://www.parrhesiajournal.org/past.html#issue07>
- Massumi, Brian. 2002. *Parables for the Virtual: Movement, Affect, Sensation*. Durham: Duke University Press.
- Massumi, Brian. 1997. "Deleuze, Guattari, and the Philosophy of Expression." *Canadian Review of Comparative Literature* 24 (3):751–783.
- Mayfield, Ross. 2005. "Social Network Dynamics and Participatory Politics." In *Extreme Democracy*, ed. Jon Lebkowsky and Mitch Ratcliffe. Lulu.com publishers
- Mayer, Marissa. 2005. "Googlebombing 'Failure.'" The Official Google Blog, September 16. Available at <http://googleblog.blogspot.com/2005/09/googlebombing-failure.html>
- McAlinden, Ryan, Andrew S. Gordon, H. Chad Lane, and David Pynadath. 2009. "UrbanSim: A Game-Based Simulation for Counterinsurgency and Stability-focused Operations." Workshop on Intelligent Educational Games, 14th International Conference on Artificial Intelligence in Education, Brighton, England, July 7. Available at <http://people.ict.usc.edu/~gordon/sble.html>
- McCormack, Derek. 2010. "Thinking in Transition: The Affirmative Refrain of Experience/Experiment." In *Taking Place: Non-representational Theories and Geographies*, ed. Ben Anderson and Paul Harrison, 201–220. London: Ashgate.

- McCulloch, Warren S., and Walter Pitts. 1943. "A Logical Calculus of the Ideas Immanent in Nervous Activity." *Bulletin of Mathematical Biology* 52 (1–2):99–115.
- McLuhan, Marshall. 1997. *The Essential McLuhan*. Ed. Eric McLuhan and Frank Zingone. New York: Routledge.
- MEART. 2011. "The Project." MEART website. Available at <http://www.fishandchips.uwa.edu.au/project.html>
- Mejias, Ulises A. 2010. "The Limits of Networks as Models for Organizing the Social." *New Media and Society* 12 (4):603–617.
- Melitopolous, Angela, and Maurizio Lazzarato. 2010. "Machinic Animism." In *Animism*, ed. Anselm Franke, vol. 1, 45–56. Berlin: Sternberg Press.
- Mell, Peter, and Tim Grance. 2009. "The NIST Definition of Cloud Computing." National Institute of Standards and Technology website. Available at <http://csrc.nist.gov/groups/SNS/cloud-computing/>
- Meltzoff, Andrew N., and Richard W. Borton. 1979. "Intermodal Matching by Human Neonates." *Nature* 282 (5737):403–404.
- Mills, Elinor. 2006. "Will Search Keep Google on the Throne?" *CNET News* online. Available at http://news.cnet.com/Will-search-keep-Google-on-the-throne/2100-1032_3-6070774.html
- Mitchell, John C. 2003. *Concepts in Programming Languages*. Cambridge: Cambridge University Press.
- Mockenhaupt, Brian. 2010. "SimCity Baghdad." *Atlantic Magazine* online, January/February. Available at <http://www.theatlantic.com/magazine/archive/2010/01/simcity-baghdad/7830/>
- Moddr. 2009. *Web 2.0 Suicide Machine* website. Available at <http://suicidemachine.org/>
- Monge, Peter R, and Noshir S. Contractor. 2003. *Theories of Communication Networks*. Oxford: Oxford University Press.
- Moore, Gordon E. 1965. "Cramming More Components onto Integrated Circuits." *Electronics* 38 (8):114–117.
- Mullins, Craig. 2002. *Database Administration: The Complete Guide to Practices and Procedures*. Indianapolis: Addison-Wesley Professional.
- Munster, Anna. 2009. "The Henson Photographs and the 'Network Condition.'" *Continuum: Journal of Media and Cultural Studies* 23 (1):3–12.
- Munster, Anna. 2005. "Why Is Bioart Not Terrorism? Some Critical Nodes in the Networks of Life." *Culture Machine*, 7. Available at <http://culturemachine.net/index.php/cm/article/view/31/38>
- Muntean, Nick. 2009. "Viral Terrorism and Terrifying Viruses: The Homological Construction of the 'War on Terror' and the Avian Flu Pandemic." *International Journal of Media and Cultural Politics* 5 (3):199–216.

- Murphie, Andrew. 2010. "Deleuze, Guattari, and Neuroscience." In *The Force of the Virtual: Deleuze, Science, and Philosophy*, ed. Peter Gaffney, 277–300. Minneapolis: University of Minnesota Press.
- Neufeld, M. Lynne, and Martha Cornog. 1986. "Database History: From Dinosaurs to Compact Discs." *Journal of the American Society for Information Science American Society for Information Science* 37 (4):183–190.
- Nicolai, Carsten. 2000. *Telefunken*. Installation: cd player, cd, Sony Hiblack Trinitron Television, dimensions variable.
- Nicolai, Carsten, and Hans Ulrich Obrist. 2002. "Hans Ulrich Obrist in Conversation with Carsten Nicolai." *Autopilot* catalogue, 74–82. Berlin: Die Gestalten-Verlag.
- Nielsen, Jakob. 2001. "Designing Web Ads Using Click-through Data." *Alertbox* website, September 2. Available at <http://www.useit.com/alertbox/20010902.html>
- Nielsen, Jakob. 2000. *Designing Web Usability: The Practice of Simplicity*. Indianapolis: New Riders.
- Nielsen, Jakob. 1998. "Nielsen's Law of Internet Bandwidth." *Alertbox* website, April 5. Available at <http://www.useit.com/alertbox/980405.html>
- Niessen, Bertram. 2006. "Ryoichi Kurokawa, Perspective and Nature." *Digimag* 17, September. Available at http://www.digicult.it/archivio/digimag_17eng/articoli/audiovideo_bertramniessen.html
- Nirre, Robert. 2004. "Spatial Discursions. Flames of the Digital and Ashes of the Real: Confessions of a San Francisco Programmer." In *Life in the Wires: The CTheory Reader*, ed. Arthur and Marilouise Kroker, 260–268. Victoria, Canada: New World Perspectives/CTheory Books.
- Noë, Alva. 2004. *Action in Perception*. Cambridge, Mass.: MIT Press.
- Nunes, Rodrigo, and Ben Trott. 2008. "'There Is No Scope for Futurology; History Will Decide': Félix Guattari on Molecular Revolution." *Turbulence* 4. Available at <http://turbulence.org.uk/turbulence-4/there-is-no-scope-for-futurology/>
- O'Reilly, Timothy. 2005. "What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software." O'Reilly weblog. Available at <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html?CMP=&ATT=2432>.
- Packer, Randall, and Ken Jordan. 2001. *Multimedia: From Wagner to Virtual Reality*. New York: Norton.
- Papadopoulos, Dimitris, Niamh Stephenson, and Vassilis Tsianos. 2008. *Escape Routes: Control and Subversion in the Twenty-First Century*. London: Pluto Press.
- Parikka, Jussi. 2007. *Digital Contagions: A Media Archaeology of Computer Viruses*. Oxford: Peter Lang.
- Pasquinelli, Matteo. 2008. *Animal Spirits: A Bestiary of the Commons*. Amsterdam: NAI Publishers.

- Pasternack, Alex. 2008. "Beijing Olympics: The Buildings." *Bloomberg Business Week* online, July 30. Available at http://www.businessweek.com/innovate/content/jul2008/id20080730_080833.htm?chan=innovation_architecture_architectural+showcase
- Peirce, Charles Sanders. 1998. *The Essential Peirce: Selected Philosophical Writings, 1893–1913*. Vol. 2. Bloomington: Indiana University Press.
- Peirce, Charles Sanders. 1933. *Collected Papers*. Ed. Charles Hartshorne and Paul Weiss. Vol. 4. Cambridge, Mass.: Harvard University Press.
- Peirce, Charles Sanders. 1932. *Collected Papers*. Ed. Charles Hartshorne and Paul Weiss. Vol. 11. Cambridge, Mass.: Harvard University Press.
- Peirce, Charles Sanders. 1870. *Description of a Notation for the Logic of Relatives*. Cambridge, Mass.: Welch, Bigelow and Company.
- Peretti, Jonah. No date. "Contagious Media Experiments." *Contagious Media* website. Available at <http://www.contagiousmedia.org/>.
- Peretti, Jonah. 2005. Interview by J. Chung. Arts and Events, *Gothamist* website. Available at http://gothamist.com/2005/06/04/jonah_peretti_director_of_rd_at_eyebeam.php
- Petersen, Wolfgang, dir. 1995. *Outbreak*. Warner Bros. Productions, USA.
- Phiffer, Dan, and Mushon Zer-Aviv. 2006–2011. *ShiftSpace* website. Available at <http://www.shiftspace.org>
- Piccinini, Gualtiero. 2004. "The First Computational Theory of Mind and Brain: A Close Look at McCulloch and Pitts's 'Logical Calculus of Ideas Immanent in Nervous Activity.'" *Synthese* 141:175–215.
- Polak, Esther, and Ivar van Bekkum. 2010. <*AbstractView*> website. Available at <http://www.abstractview.tv/>
- Ramachandran, Vilayanur, and Sandra Blakeslee. 1998. *Phantoms in the Brain*. London: Fourth Estate.
- Ramachandran, Vilayanur S., and Edward M. Hubbard. 2001. "Synaesthesia—A Window into Perception, Thought and Language." *Journal of Consciousness Studies* 8 (12):3–34.
- RapidShare. 2010. "Anti-Waiting Lounge." *Rapidshare* website. Available at <http://rapidshare.com/#!lounge>
- RFID FAQ. 2002–2011. "What's the Difference between Passive and Active Tags?" *RFID Journal* online. Available at <http://www.rfidjournal.com/faq/18/68>
- RFID News. 2003. "Military Edict: Use RFID by 2005." *RFID Journal* online, October 3. Available at <http://www.rfidjournal.com/article/view/604>
- Rizzolatti, Giacomo, and Laila Craighero. 2004. "The Mirror Neuron System." *Annual Review of Neuroscience* 27:169–192.

- Rizzolatti, Giacomo, G. di Pellegrino, L. Fadiga, L. Fogassi, and V. Gallese. 1992. "Understanding Motor Events: A Neurophysiological Study." *Experimental Brain Research* 91:176–180.
- Rogers, Richard. 2009. "The Googlization Question: Towards the Inculpable Engine?" In *Deep Search: The Politics of Search beyond Google*, ed. Konrad Becker and Felix Stalder, 173–184. Piscataway, N.J.: Transaction Publishers.
- Rushkoff, Douglas. 2002. "Open Source Reality." In Richard Metzinger, *Disinformation: The Interviews*, 50–59. New York: Disinformation Company.
- Rushkoff, Douglas. 1996. *Media Virus: Hidden Agendas in Popular Culture*. New York: Ballantine Books.
- Sabisch, Petra. 2011. *Choreographing Relations: Practical Philosophy and Contemporary Choreography*. Munich: epodium Verlag.
- Sampson, Tony. 2011. "Contagion Theory beyond the Microbe." *CTheory: Theory, Technology and Culture* 34:1–2. Available at <http://www.ctheory.net/articles.aspx?id=675>
- Sedgwick, Eve Kosofsky, and Adam Frank. 2003. *Touching Feeling: Affect, Performativity, Pedagogy*. Durham: Duke University Press.
- Serfarty, Viviane. 2004. *The Mirror and the Veil: An Overview of American Online Diaries and Blogs*. Amsterdam: Rodopi.
- Sharma, Dinesh C. 2005. "Indian President Warns against Google Earth." *CNET News* online, October 17. Available at http://news.com.com/Indian+president+rails+against+Google+Earth/2100-1028_3-5896888.html
- Shirkey, Clay. 2008. *Here Comes Everybody*. London: Penguin.
- Simondon, Gilbert. 1992. "The Genesis of the Individual." In *Incorporations*, ed. Jonathan Crary and Sanford Kwinter, 297–319. New York: Zone Books.
- SiteLogiq. 2012. SiteLogiq website. Available at <http://sitelogiq.com/>
- Skipper, Jeremy I., Susan Goldin-Meadow, Howard C. Nusbaum, and Steven L. Small. 2007. "Speech-Associated Gestures, Broca's Area, and the Human Mirror System." *Brain and Language* 101:260–277.
- Slyck. 2001–2011. "Slyck's Guide to BitTorrent." Slyck website. Available at <http://www.slyck.com/bt.php?page=1>
- Spurse. 2011a. "spurse." spurse website. Available at <http://www.spurse.org>
- Spurse. 2011b. "Working Waters." spurse website. Available at <http://www.spurse.org/projects/working-waters/>
- Stafford, Barbara Maria. 2007. *Echo Objects: The Cognitive Work of Images*. Chicago: University of Chicago Press.

Stalbaum, Brett. 2006. "An Interpretive Framework for Contemporary Database Practice in the Arts." Paper presented at the College Art Association 94th annual conference, Boston. Available at <http://rhizome.org/discuss/view/20448/>

Stengers, Isabelle. 2009. "William James: An Ethics of Thought?" *Radical Philosophy* 157 (September/October):9–19.

Stephenson, Niamh, and Michelle Jamieson. 2009. "Securitising Health: Australian Newspaper Coverage of Pandemic Influenza." *Sociology of Health and Illness* 31 (4):525–539.

Sterling, Bruce. 2005. *Shaping Things*. Cambridge, Mass.: MIT Press.

Stern, Daniel. 2010. "The Issue of Vitality." *Nordic Journal of Music Therapy* 19 (2):88–102.

Stern, Daniel. 1998. *The Interpersonal World of the Infant*. New York: Karnac Books.

Stiegler, Bernard. 2010. *Taking Care of Youth and the Generations*. Stanford: Stanford University Press.

Stiegler, Bernard. 1998. *Time and Technics 1: The Fault of Epimetheus*. Stanford: Stanford University Press.

Stockhausen, Karlheinz. 2004. "Electronic and Instrumental Music." In *Audio Culture: Readings in Modern Music*, ed. C. Cox and D. Warner, 370–380. New York: Continuum.

Strawn, John. 1985. "Overview." In *Foundations of Computer Music*, ed. Curtis Roads and John Strawn. Cambridge, Mass.: MIT Press.

Surowiecki, James. 2004. *The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations*. New York: Doubleday.

Tarde, Gabriel. 2000. *Social Laws: An Outline of Sociology*. New York: Batoche Books.

Tarde, Gabriel. 1903. *The Laws of Imitation*. New York: Henry Holt.

Taylor, Mark C. 2003. *The Moment of Complexity: Emerging Network Culture*. Chicago: University of Chicago Press.

Teran, Michele. 2011. *Buscando al Sr. Goodbar* weblog. Available at <http://www.ubermatic.org/blog/?p=225>

Terranova, Tiziana. 2007. "Failure to Comply: Bioart, Security and the Market." *Transversal*, "Art and Police" issue. Available at <http://eipcp.net/transversal/1007/terranova/en>

Thacker, Eugene. 2009. "The Shadows of Atheology: Epidemics, Power and Life after Foucault." *Theory, Culture and Society* 26 (6):135–153.

Thacker, Eugene. 2005. "Living Dead Networks." *Fibreculture Journal* 4. Available at <http://four.fibreculturejournal.org/>

Thain, Alanna. 2009. "Affective Commotion." *Inflexions* 1. Available at http://www.senselab.ca/inflexions/volume_4/n1_thainhtml.html

Thatcher, Margaret. 1987. Extract from a transcript of the original interview with Douglas Keay, "Aids, Education and the Year 2000!" *Woman's Own*, available at <http://www.margareththatcher.org/document/106689>

Thrift, Nigel. 2008. "Pass It On: Towards a Political Economy of Propensity." *Emotion, Space and Society* 1:83–96.

UBERMORGEN.com. 2005–2007. *Google Will Eat Itself* website. Available at <http://www.gwei.org/index.php>.

Vaidhyathan, Siva. 2011. *The Googlization of Everything (and Why We Should Worry)*. Berkeley: University of California Press.

Vaidhyathan, Siva. 2007–. *The Googlization of Everything (and Why We Should Worry)*, online collaborative publication, Institute for the Future of the Book. Available at <http://www.googlizationofeverything.com/>

Van Kranenberg, Rob. 2008. *The Internet of Things: A Critique of the Ambient and All-Seeing Network of RFID*. Network Notebooks. Amsterdam: Institute of Network Cultures. Available at <http://networkcultures.org/wpmu/portal/publications/network-notebooks/the-internet-of-things/>

Varela, Francisco J. 1999. *Ethical Know-How: Action, Wisdom and Cognition*. Stanford: Stanford University Press.

Virno, Paolo. 2009. "Natural-Historical Diagrams: The 'New Global' Movement and the Biological Invariant." *Cosmos and History: The Journal of Natural and Social Philosophy* 5:1. Available at <http://www.cosmosandhistory.org/index.php/journal/article/view/129/238#footnote-524-2-backlink>

Voth, Danna. 2003. "Rat Neurons, Robotic Arms, and Art." *IEEE Intelligent Systems* 18 (5):7–9.

Vul, Edward, Christine Harris, Piotr Winkelman, and Harold Pashler. 2009. "Puzzlingly High Correlations in fMRI Studies of Emotion, Personality, and Social Cognition." *Perspectives on Psychological Science* 4 (3):274–290.

Wagner, Richard. 2001. "The Art-Work of the Future." In *The Wagner Library*, ed. Patrick Swinkels. (Originally published in English in *Richard Wagner's Prose Works*, vol. 1, trans. William Ashton Ellis, 1895.) Available at <http://users.belgacom.net/wagnerlibrary/prose/index.htm>

Walker, Jill. 2002. "Links and Power: The Political Economy of Linking on the Web." In *Proceedings of Hypertext 2002*, 78–79. Baltimore: ACM Press.

Watson, Janell. 2008. "Schizoanalysis as Meta-modeling." *Models, Metamodels and Contemporary Media* issue, *Fibreculture Journal*, 12. Available at http://journal.fibreculture.org/issue12/issue12_watson.html

Webster, Robert G., and Elizabeth J. Walker. 2003. "The World Is Teetering on the Edge of a Pandemic that Could Kill a Large Fraction of the Human Population." *American Scientist* online, 91(2):122. Available at <http://people.scs.carleton.ca/~soma/biosec/readings/influenza/influenza.html>

- Weinberger, David. 2002. *Small Pieces Loosely Joined*. New York: Basic Books.
- Weiser, Mark. 1991. "The Computer for the Twenty-First Century." *Scientific American* 265 (3 September): 94–104.
- White, Colin. 2004. "In the Beginning: An RDBMS History." *Teradata magazine*, September. Last available at <http://www.teradata.com/t/page/127057>, May 20, 2010. No longer available online.
- Whitelaw, Mitchell. 2008a. "Comment on 'Array Aesthetics (Olympic Edition)'." *the teeming void* weblog. Available at <http://teemingvoid.blogspot.com/2008/08/array-aesthetics-olympic-edition.html?showComment=1290816162270>
- Whitelaw, Mitchell. 2008b. "Synesthesia and Cross-Modality in Contemporary Audiovisuals." *Senses and Society* 3 (3):259–276.
- Willis, Holly. 2009. "Natalie Bookchin on YouTube." *KCET: infinitely more* website, Southern California Public Broadcasting Service online. Available at <http://www.kcet.org/social/voices/natalie-bookchin-on-youtube.html>
- Wilson, Ralph F. 2000. "The Six Simple Principles of Web Marketing." *Web Marketing Today* website. Available at <http://www.wilsonweb.com/wmt5/viral-principles.htm>
- Wolf, Maryanne. 2007. *Proust and the Squid: The Story and Science of the Reading Brain*. London: Harper.
- World Health Organization. 2009. "Pandemic Influenza Preparedness and Response." Influenza section, World Health Organization website. Available at http://www.who.int/influenza/resources/documents/pandemic_guidance_04_2009/en/
- World Health Organization. 2005. "WHO Checklist for Influenza Pandemic Preparedness Planning." Global Alert and Response, World Health Organization website. Available at http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_4/en/
- Zer-Aviv, Mushon. 2007. "Interface as a Conflict of Ideologies." *Networking Loose Ends* weblog, April. Available at <http://mushon.com/blog/2010/03/23/interface-as-a-conflict-of-ideologies/>
- Zonday, Tay. 2007. *Chocolate Rain*. YouTube video. Available at <http://www.youtube.com/watch?v=EwTZ2xpQwpA>

