

Updated: 15 August 2007

CURRICULUM VITAE: DONALD ANGUS MACKENZIE

- Born Inverness, Scotland
British Citizen
- Degrees BSc Applied Mathematics, University of Edinburgh, 1972
(First Class Honours; Newton Undergraduate Scholarship in Natural Philosophy; Napier Medal in Mathematics; Carnegie Scholarship)
- PhD, University of Edinburgh, 1978
Thesis: "The Development of Statistical Theory in Britain, 1865-1925: A Historical and Sociological Perspective."
Supervisor: Barry Barnes.
- Posts Lecturer in Sociology, University of Edinburgh, 1975-1988
- Reader in Sociology, University of Edinburgh, 1988-1992
- Professor of Sociology (personal chair), University of Edinburgh, 1992 - present
- Visiting positions Drapers' Company Visiting Lecturer, Deakin University, Australia, August-December 1981
- Lecturer in Science Studies Unit, University of Edinburgh, October 1983 - September 1984
- Visiting Scholar (unpaid), Program in Science, Technology and Society, MIT, September - December 1984
- Chargé de Recherche Associé, Centre de Sociologie de l'Innovation, École Nationale Supérieure des Mines de Paris, July - August 1987
- Visiting Professor of the History of Science, Harvard University, July 1997 - January 1998
- Frier Mitarbeiter, Max-Planck-Institut für Wissenschaftsgeschichte (Berlin), July 2003
- Distinguished Fellow, Institute for Advanced Study, University of Durham, October-December 2008.

Professional Awards and Memberships

Abbott Payson Usher Prize of Society for the History of Technology, 1986: for article 10 below.

U.S. Navy Prize in Naval History, 1989: for article 17 below.

Institute of Electrical and Electronic Engineers Life Members' Prize in Electrical History, 1992: for article 24 below.

co-winner, Robert K. Merton Award of the American Sociological Association, 1993: for *Inventing Accuracy* (see below).

Ludwik Fleck Prize of the Society for Social Studies of Science, 1993: for *Inventing Accuracy* (see below).

Robert K. Merton Award of the American Sociological Association, 2003: for *Mechanizing Proof* (see below).

K. William Kapp Prize of the European Association for Evolutionary Political Economy, 2003: for article 53 below.

Viviana A. Zelizer Distinguished Scholarship Award of the American Sociological Association, 2005: for article 53 below.

John Desmond Bernal Prize of the Society for Social Studies of Science and Institute for Scientific Information, 2005.

Chancellor's [i.e. Duke of Edinburgh's] Award for Research, University of Edinburgh, 2006.

Clarendon Lecturer in Management Studies, University of Oxford, 2007.

Elected Fellow of the Royal Society of Edinburgh, 2001, and Fellow of the British Academy, 2004.

Member of Editorial Advisory Boards of *Social Studies of Science*; *Science, Technology, & Human Values*; *Studies in History and Philosophy of Science*; *Accounting, Organizations and Society*; *Journal of Cultural Economy*; and, formerly: *Technology and Culture*; *Sociology*; *History and Technology*; *Knowledge and Society*; *Research in Technology Studies*; *Social Intelligence*; *Capital and Class*; and Comité de Lecture, *Revue d'Histoire des Mathématiques*.

UK Economic and Social Research Council: member of Society and Politics Research Development Group (1990-91); ad hoc committee on Science Policy Support Group (1990-91); commissioning panel of Virtual Society Initiative (1996-97); commissioning panel of World Economy and Finance Programme (2004-5).

Society for the History of Technology: member, Usher Prize Committee (1987 and 1988); Chair, Usher Prize Committee (1989); Chair, Awards Committee (1990).

Research Grants

UK Social Science Research Council (SSRC)

Documentary Research in Karl Pearson Archive [HR 5258]
December 1977-September 1978 £275

Nuffield Foundation

The Development of Strategic Missile Guidance Technology
September 1984 - August 1985 [SOC/181(1201)] £2,972
September 1985 - March 1987 [SOC/442] £19,416

The Development of Inertial Guidance and Navigation in the Soviet Union
May 1988 - September 1989 [SOC/181(1705)] £1,432

UK Economic and Social Research Council (ESRC)

The Management of Technical Uncertainty
January 1987 - March 1987 [F24250027] £2,000

Programme in Information and Communication Technologies (PICT):
Phase One (with F. Bechhofer, M. Fransman, D. Edge, J. Fleck and R. Williams)
October 1987 - March 1991 [A35250006] £234,198
(supplemented by c. £70,000 per annum from Universities Funding Council)
Phase Two (with E. Peláez, M. Tierney and R. Williams):
April 1991 - March 1994 [WA35250006] £132,000
(supplemented by c. £50,000 per annum from UFC)

National Laboratories, Arms Dynamics and Civil Science and Technology
[Y307253006]
April 1989 - December 1991 £59,372

The Environmental Impact of Military Activity: Low Flying and Public Opinion
(with C. Bell and M. Spaven) [R00231980]
November 1989 - October 1991 £49,440

Studies in the Sociology of Proof (with A. Bundy) [R000234031]
July 1993 - February 1995 £48,500

From Invention to Innovation: Technology Transfer and the British Technology
Group (with G. Spinardi, W. Faulkner and R. Williams) [R000236784]
October 1996 - September 1999 £205,888

Military and Civil Innovation and the Defence Technology Base: UK Radar,
1945-2000 (with G. Spinardi) [R000238555]
November 2000 – October 2003 £253,684

Rolling through the Twentieth Century: A Historical Sociology of the Wheelchair
(with B. Woods and N. Watson) [L218252007]

January 2001 – December 2003 £160,350

INNOGEN: ESRC Centre for Social and Economic Research on Innovation in
Genomics (with J. Tait et al.)

Phase 1, October 2003 - September 2008: £2.06 million

Phase 2, October 2008 – September 2012: £5.05 million

Professorial Fellowship in Social Studies of Finance

April 2004 – March 2007 £382,128 [RES-051-27-0062]

Technical Knowledge and Arms Dynamics: A Sociology of Ballistic Missile
Defence (with G. Spinardi)

September 2005 – August 2008 £298,938 [RES-051-27-0062]

UK Science and Engineering Research Council (SERC)/ UK Safety Critical
Systems Research Programme

Communication in Safety Cases: A Semantic Approach (with S. Anderson, G.
Cleland, A. Bundy, D. Robertson, K. Stenning) [GR/J58619]

July 1993 - June 1996 £572,447

ESRC/SERC Joint Committee

Social Processes in the Development of High-Integrity Computer Systems (with S.
Anderson, B. Carré, M. Tierney) [GR/H74452]

October 1992 - September 1995 £139,118

As part of the reorganisation of the Research Councils, Joint Committee projects
were transferred to ESRC in 1994. The remaining part of this project became
ESRC grant R000290008

January 1994 - December 1996 £88,534

UK Engineering and Physical Sciences Research Council (EPSRC)

Understanding Software Architecture (with S. Anderson and K. Stenning) [GR/L
37953]

June 1997 - May 2000 £158,755

Interdisciplinary Research Collaboration on the Dependability of Computer-Based
Systems (with C. Jones, S. Anderson, R. Williams, et al.) [GR/N13999]

July 2000 – June 2006 £7,800,000

(of which c. £1 million to Edinburgh)

Scottish Higher Education Funding Council

Scottish Universities Policy Research and Advice Network: Science, Technology
and Environment (with R. Williams, J. Tait et al.)

October 1998 - September 2001 £200,000

October 2001 – September 2002 £59,327

Teaching Experience

(University of Edinburgh unless otherwise stated.)

<u>Current</u>	<p>Introductory: Sociology 1 Honours: Methods B: Doing Survey Research. Honours/MSc: Sociology of the Environment and Risk</p>
<u>Past</u>	<p>Pre-Honours: Sociology 2; Sociology 3; Technology and Society 2; Science Studies 2B (Sociology of Science).</p> <p>Honours: Social Statistics, Sociology of Knowledge and Culture, Marxist Social Theory, Sociology of Mathematics, Nuclear Weapons and Society, Armed Force and Society, Technology and Society, Cultures and Politics of Financial Markets.</p> <p>The Sociology of Technology and Science (University of Pennsylvania graduate option, 1985).</p> <p>Nature and Human Nature (Deakin University extension course, course consultant, 1981).</p> <p>History of Science 188v: Technology, History, and Society (Harvard University, 1997).</p> <p>History of Science 287v: Technology, Mathematics, and the Sociology of Knowledge (Harvard University, 1997).</p>

Publications

Books

1. *Statistics in Britain, 1865-1930: The Social Construction of Scientific Knowledge* (Edinburgh: Edinburgh University Press, 1981). 306 + viii pp. ISBN: 0-85224-369-3
2. *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance* (Cambridge, Mass.: MIT Press, 1990). 464 + xiii pp. ISBN: 0-262-13258-3. Edited version of chapter 7 reprinted as “Nuclear Missile Testing and the Social Construction of Accuracy,” in Mario Biagioli, ed., *The Science Studies Reader* (New York: Routledge, 1999), 342-57. Japanese translation under contract (Tokyo: Aoki Shoten, forthcoming).
3. *Knowing Machines: Essays on Technical Change* (Cambridge, Mass.: MIT Press, 1996). 338 + ix pp. ISBN: 0-262-13315-6. Includes articles 10, 23, 24, 26, 27, 29, 30, 35 and 37. Part of introductory essay reprinted in Merritt Roe Smith and Gregory Clancey, eds, *Major Problems in the History of American Technology* (Boston: Houghton Mifflin, 1998), 13-15.
4. *Mechanizing Proof: Computing, Risk, and Trust* (Cambridge, Mass.: MIT Press, 2001). 427 + xi pp. ISBN: 0-262-13393-8
5. *An Engine, not a Camera: How Financial Models shape Markets* (Cambridge, Mass.: MIT Press, 2006). 377 + x pp. ISBN: 0-262-13460-8

Co-authored Book/Edited Books

1. *In and Against the State* (London: Pluto Press, 1980). Co-authors Cynthia Cockburn, John Holloway, John MacDonald, Neil McInnes, Jeanette Mitchell, Nicola Murray and Kathy Polanshek.
2. *The Social Shaping of Technology* (Milton Keynes: Open University Press, 1985; second edition 1999). Co-edited with Judy Wajcman. First edition: 327 pp. ISBN: 0-335-15027-6. Second edition: 462 + xvii pp. ISBN: 0-335-19914-3. Part of introductory essay of first edition appeared in Greek translation as “E Koinonike Diaplaoss tes Technologias,” in A. Vlachou, ed., *Politike Oikonomia toy Sygchronoy Kapitalismoy* (Athens: Athens University of Economics and Business), pp. 1-41, and in Korean translation as “Muot I k’isul ul hyongsong hanun’ga?” in Seong-Su Song, ed., *Uri eke k’isul iran muot inga?* (Seoul: Nokt’u, 1995), 111-149.
3. *Do Economists Make Markets? On the Performativity of Economics* (Princeton, NJ: Princeton University Press, 2007). Co-edited with Fabian Muniesa and Lucia Siu.

Journal Articles and Book Chapters

1. (with Barry Barnes) "Biometriker versus Mendelianer: Eine Kontroverse und ihre Erklärung," *Kölner Zeitschrift für Soziologie und Sozialpsychologie* Sonderheft 18 (1975): 165-96.
2. "Eugenics in Britain," *Social Studies of Science* 6 (1976): 499-532.
3. "Statistical Theory and Social Interests: a Case-Study," *Social Studies of Science* 8 (1978): 35-83. French translation as "Comment faire une sociologie de la statistique," in M. Callon and B. Latour (eds), *Les scientifiques et leurs alliés* (Paris: Pandore, 1985), 121-67. Further reprinted in Callon and Latour (eds), *La Science telle qu'elle se fait: anthologie de la sociologie des sciences de langue Anglaise* (Paris: La Découverte, 1991), 200-261. Polish translation as "Teoria Statystyczna a Intersy Społeczne: Studium Przypadku," in Edmund Mokrzycki, ed., *Mocny Program: Socjologii Wiedzy* (Warsaw: Ifis, 1993), 177-236.
4. "Karl Pearson and the Professional Middle Class," *Annals of Science* 36 (1979): 125-43.
5. "Eugenics and the Rise of Mathematical Statistics in Britain," in J. Irvine, I. Miles and J. Evans (eds), *Demystifying Social Statistics* (London: Pluto Press, 1979), 39-50. German translation: "Rasse und Klasse: Eugenik und der Aufschwung mathematischer Statistik in Großbritannien," *Wechselwirkung: Technik, Naturwissenschaft, Gesellschaft* No. 15 (November 1982): 28-30. Dutch translation: "De Eugenetika en de Oorsprong van de Mathematische Statistiek," *Revoluon: Naturwetenschap Techniek en Maatschappij* 6 (1981): 55-66. Japanese translation: "Igirisu ni okeru yuuseigaku, oyobi suuri tookeigaku no kooryu," *Kyokoo no tokei* (trans. Yooichi Ito, Akiyoshi Tanaka and Masakatsu Nagaya) (Tokyo: Azusa), 29-43. Korean translation, Seoul: Rationality and Reality Press, 1990 (not seen). Revised English version in Ludi Simpson and Danny Dorling, eds., *Statistics in Society: The Arithmetic of Politics* (London: Arnold, 1998), 55-61.
6. (with Barry Barnes) "On the Role of Interests in Scientific Change," in R. Wallis (ed.), *On the Margins of Science: the Social Construction of Rejected Knowledge* (Sociological Review Monograph No. 27, 1979), 49-66. Japanese translation as "Paradaimutenkan ni okeru kanshin no yakuwari" (trans. Teruo Yokoyama), *Haijo sareru chi* (Tokyo: Seidosha, 1986), 272-304.
7. (with Barry Barnes) "Scientific Judgment: the Biometry-Mendelism Controversy," in B. Barnes and S. Shapin (eds), *Natural Order: Historical Studies of Scientific Culture* (Beverly Hills, Calif. and London: SAGE Publications, 1979), 191-210.
8. "Sociobiologies in Competition: the Biometrician-Mendelian Controversy," in C. Webster (ed.), *Biology, Medicine and Society 1840-1940* (Cambridge: Cambridge University Press, 1981), 243-288.

9. "Militarism and Socialist Theory," *Capital and Class*, No. 19 (Spring 1983): 33-73.
10. "Marx and the Machine," *Technology and Culture* 25 (1984): 473-502. Korean translation as "Marukus wa k'igye" in Seong-Su Song, ed., *Uri eke k'isul iran muot inga?* (Seoul: Nokt'u, 1995) 68-108. Persian translation in *Falsafeye Teknolodgi*, ed. and trans. Shapour Etemad (Tehran: Nashre Markaz, 1999), 216-258.
11. "Nuclear War Planning and Strategies of Coercion," *New Left Review* No. 148 (November/December 1984): 31-56.
12. "Missile Accuracy - An Arms Control Opportunity," *Bulletin of the Atomic Scientists* 42/6 (June/July 1986): 11-16.
13. "Missile Accuracy: A Case Study in the Social Processes of Technological Change," in W.E. Bijker, T.P. Hughes and T.J. Pinch (eds), *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, Mass. and London: MIT Press, 1987), 195-222.
14. "The Problem with 'The Facts': Nuclear Weapons Policy and the Social Negotiation of Data," in R. Davidson and P. White (eds), *Information and Government* (Edinburgh: Edinburgh University Press, 1988), 232-51.
15. (with W. Rüdiger and G. Spinardi) "Social Research on Technology and the Policy Agenda: An Example from the Strategic Arms Race," in B. Elliott (ed.), *Technology and Social Change* (Edinburgh: Edinburgh University Press, 1988), 152-80. Reprinted in *Rivista di Studie Epistemologici e Sociali sulla Scienza e la Tecnologia* 2 (1992) 167-95.
16. "The Soviet Union and Strategic Missile Guidance," *International Security* 13(2) (Fall 1988): 5-54. Reprinted in S. M. Lynn-Jones, S. E. Miller and S. Van Evera (eds), *Soviet Military Policy* (Cambridge, Mass. and London: MIT Press, 1989), 231-80.
17. (with G. Spinardi) "The Shaping of Nuclear Weapon System Technology: US Fleet Ballistic Missile Guidance and Navigation, I: From Polaris to Poseidon," *Social Studies of Science* 18 (1988): 419-63; "II: 'Going for Broke' - The Path to Trident II," *Social Studies of Science* 18 (1988): 581-624.
18. "Stellar-Inertial Guidance: A Study in the Sociology of Military Technology," in E. Mendelsohn, M. Roe Smith and P. Weingart (eds.), *Science, Technology and the Military: Sociology of the Sciences Yearbook* 12 (1988) (Dordrecht: Reidel, 1988), 187-241.
19. (with G. Spinardi) "Politics and Technology in the Arms Race: A Case-Study in the History of Nuclear Weapons Systems," in R. P. W. Visser et

- al. (eds), *New Trends in the History of Science* (Amsterdam: Atlanta, 1989), 121-43.
20. "From Kwajalein to Armageddon? Testing and the Social Construction of Missile Accuracy," in D. Gooding, T. Pinch and S. Schaffer (eds), *The Uses of Experiment: Studies in the Natural Sciences* (Cambridge: Cambridge University Press, 1989), 409-35.
 21. "Towards an Historical Sociology of Nuclear Weapons Technologies," in Nils Petter Gleditsch and Olav Njølstad (eds), *Arms Races: Technological and Political Dynamics* (London: SAGE, 1990), 121-39.
 22. "Notes Towards a Sociology of Supercomputing," in Todd R. La Porte (ed.), *Social Responses to Large Technical Systems: Control or Anticipation* (Dordrecht: Kluwer, 1991), 159-75.
 23. (with Boelie Elzen) "The Charismatic Engineer: Seymour Cray and the Development of Supercomputing," *Jaarboek voor de Geschiedenis van Bedrijf en Techniek* 8 (1991): 248-77.
 24. "The Influence of the Los Alamos and Livermore National Laboratories on the Development of Supercomputing," *Annals of the History of Computing* 13 (1991): 179-201.
 25. "Formal Methods and the Sociology of Proof," in J.M. Morris and R.C. Shaw, eds, *Proceedings of the Fourth Refinement Workshop* (London: Springer, 1991), 115-124.
 26. [Commentary] "The Fangs of the VIPER," *Nature* 352 (8 August 1991): 467-68.
 27. "Economic and Sociological Explanation of Technological Change," in R. Coombs, P. Saviotti and V. Walsh, eds., *Technological Change and Company Strategies: Economic and Sociological Perspectives* (London: Academic Press, 1992), 25-48.
 28. "Computers, Formal Proof and the Law Courts," *Notices of the American Mathematical Society* 39 (1992): 1066-69.
 29. "Negotiating Arithmetic, Constructing Proof: The Sociology of Mathematics and Information Technology," *Social Studies of Science* 23 (1993): 37-65.
 30. "From the Luminiferous Ether to the Boeing 757: A History of the Laser Gyroscope," *Technology and Culture* 34 (1993): 475-515.
 31. (with Boelie Elzen) "From Megaflops to Total Solutions: The Changing Dynamics of Competitiveness in Supercomputing," in William Aspray (ed.), *Technological Competitiveness: Contemporary and Historical Perspectives on the Electrical, Electronics, and Computer Industries* (New York: IEEE Press, 1993), 119-51.

32. "The Social Negotiation of Proof: An Analysis and a further Prediction," in Peter Ryan and Chris Sennett, eds, *Formal Methods in Systems Engineering* (London: Springer, 1993), 23-31.
33. (with Graham Spinardi) "The Technological Impact of a Defence Research Establishment," in Richard Coopey, Matthew R. H. Uttley and Graham Spinardi (eds), *Defence Science and Technology: Adjusting to Change* (Reading: Harwood, 1993), 85-124.
34. (with Boelie Elzen) "The Social Limits of Speed: The Development and Use of Supercomputers," *IEEE Annals of the History of Computing* 16 (1994): 46-61.
35. "Computer-Related Accidental Death: An Empirical Exploration," *Science and Public Policy* 21 (1994): 233-48.
36. "Ordinateurs et Missiles de Croisières: La Sociologie des Techniques Contemporaines," in Bruno Latour and Pierre Lemonnier (eds), *De La Préhistoire aux Missile Balistiques: L'Intelligence Sociale des Techniques* (Paris: La Découverte, 1994), 132-48.
37. (with Graham Spinardi) "Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons," *American Journal of Sociology* 101 (1995): 44-99. Reprinted in Nathalie Lazaric and Edward Lorenz, eds., *Knowledge, Learning and Routines* (Cheltenham: Elgar 2003), vol. 1, 142-197.
38. "The Automation of Proof: A Historical and Sociological Exploration," *IEEE Annals of the History of Computing* 17 (3) (1995): 7-29.
39. (with George Cleland) "The Industrial Uptake of Formal Methods in Computer Science: An Analysis and a Policy Proposal," *Science and Public Policy* 22 (1995): 369-82.
40. "How do we Know the Properties of Artefacts? Applying the Sociology of Knowledge to Technology," in Robert Fox (ed.), *Technological Change: Methods and Themes in the History of Technology* (London: Harwood, 1996), 247-63. French translation as "Histoire des techniques et sociologie de la connaissance," *Annales: histoire, sciences sociales*, special issue, "Histoire des techniques," year 53, nos. 4-5 (July-Oct. 1998): 795-814. Chinese translation as "Zhishi shehuixue zai jishu yanjiu zhong de yingyong: ruhe renshi rengongwu de texing?" (trans. Weiwen Duan), in Dengxiang Yin, Robin Williams, Xiaobai Shen and Kong Mingan (eds.), *Jishu de Shehui Xinchebg* (Beijing: Capital Normal University Press, 2004), 89-111.
41. "Proof and the Computer: Some Issues Raised by the Formal Verification of Computer Systems," *Science and Public Policy* 23 (1996): 45-53.

42. “Computers, ‘Bugs’, and the Sociology of Mathematical Proof,” in William H. Dutton (ed.), *Information and Communication Technologies: Visions and Realities* (Oxford: Oxford University Press, 1996), 69-85. Also appeared as “Computer, ‘Bag’ oyobi suugakuteki shomei no shakaigaku,” in Dutton, ed., *Jyohou tsushin tekunoroji*, trans. Takeshi Hiromatsu et al. (Tokyo: Fujitsu Books, 1998), volume 1, 99-120.
43. (with Malcolm Peltu, Stuart Shapiro and William H. Dutton) “Computer Power and Human Limits,” in William H. Dutton (ed.), *Information and Communication Technologies: Visions and Realities* (Oxford: Oxford University Press, 1996), 177-95. Also appeared as “Computer pawa to ningen no genkai,” in Dutton, ed., *Jyohou tsushin tekunoroji*, trans. Takeshi Hiromatsu et al., (Tokyo: Fujitsu Books, 1998), volume 2, 75-97.
44. (with Margaret Tierney) “Safety-Critical and Security-Critical Computing in Britain: An Exploration,” *Technology Analysis and Strategic Management*, 8 (1996): 355-79.
45. (with Garrel Pottinger) “Mathematics, Technology, and Trust: Formal Verification, Computer Security, and the U.S. Military,” *IEEE Annals of the History of Computing* 19 (3) (1997): 41-59.
46. “Slaying the Kraken: The Sociohistory of a Mathematical Proof,” *Social Studies of Science* 29 (1999): 7-60. Erratum, *ibid.*, 317-18, Corrigendum, *ibid.*, 30 (2000): 317-18.
47. “Theories of Technology and the Abolition of Nuclear Weapons,” in Olivier Coutard et al. (eds), *The Governance of Large Technical Systems* (London: Routledge, 1999), 173-98, and in MacKenzie and Wajcman (eds), *The Social Shaping of Technology* (Buckingham: Open University Press, second edition, 1999).
48. “The Science Wars and the Past’s Quiet Voices,” *Social Studies of Science* 29 (1999): 199-213, also “The Zero-Sum Assumption: Reply to Sullivan,” *Social Studies of Science* 29 (1999): 223-34.
49. “A Worm in the Bud? Computers, Systems, and the Safety-Case Problem,” in Agatha C. Hughes and Thomas P. Hughes, eds., *Systems, Experts, and Computers: The Systems Approach in Management and Engineering, World War II and After* (Cambridge, Mass.: MIT Press, 2000), 161-90.
50. “Fear in the Markets,” *London Review of Books* (13 April 2000): 31-32. Reprinted with minor changes in *Ökonomie und Gesellschaft, Jahrbuch 16: Facts and Figures: Economic Representations and Practices*, eds. Herbert Kalthoff, Richard Rottenburg, and Hans-Jürgen Wagener (Marburg: Metropolis, 2000), 277-87.
51. “Physics and Finance: S-Terms and Modern Finance as a Topic for Science Studies,” *Science, Technology, & Human Values* 26 (2001): 115-

144. Reprinted in Ash Amin and Nigel Thrift (eds), *The Blackwell Cultural Economy Reader* (Oxford: Blackwell, 2004), 101-120.
52. “A View from the Sonnenbichl: On the Historical Sociology of Software and System Dependability,” in Ulf Hashagen, Reinhard Keil-Slawik, and Arthur Norberg (eds.), *History of Computing: Software Issues* (Berlin: Springer, 2002), 97-122.
53. (with Yuval Millo) “Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange,” *American Journal of Sociology* 109 (2003): 107-145. Reprinted in Richard Swedberg (ed.), *New Developments in Economic Sociology* (Cheltenham, Glos.: Elgar, 2005). Abbreviated reprint also forthcoming in Ismail Erturk, Julie Froud, Sukhdev Johal, Adam Leaver and Karel Williams (eds), *Perspectives on Financialization: Key Readings and Commentaries* (London: Routledge). Abbreviated French translation as “Construction d’un marché et formation théorique: sociologie d’une bourse de produits dérivés financiers,” *Réseaux* 122 (2003): 15-61.
54. “Long-Term Capital Management and the Sociology of Arbitrage,” *Economy and Society* 32 (2003): 349-380. Abbreviated version reprinted as “How a Superportfolio Emerges: Long-Term Capital Management and the Sociology of Arbitrage,” in Karin Knorr Cetina and Alex Preda (eds), *The Sociology of Financial Markets* (Oxford: Oxford University Press, 2005), 62-83.
55. “An Equation and its Worlds: *Bricolage*, Exemplars, Disunity and Performativity in Financial Economics,” *Social Studies of Science* 33 (2003): 831-868. Abridged version reprinted as “The Emergence of Option Pricing Theory”, in Geoffrey Poitras and Franck Jovanovic, *Pioneers of Financial Economics: Volume 2* (Cheltenham: Elgar, 2007), 170-191.
56. “Social Connectivities in Global Financial Markets,” *Environment and Planning D: Society and Space* 22 (2004): 83-101.
57. “The Big, Bad Wolf and the Rational Market: Portfolio Insurance, the 1987 Crash and the Performativity of Economics,” *Economy and Society* 33 (2004): 303-334.
58. “Computers and the Sociology of Mathematical Proof,” in Tinne Hoff Kjeldsen, Stig Andur Pedersen and Lisa Mariane Sonne-Hansen (eds), *New Trends in the History and Philosophy of Mathematics* (Odense: University Press of Southern Denmark, 2004), 67-86. Reprinted in Reuben Hersh (ed.), *18 Unconventional Essays on the Nature of Mathematics* (Berlin: Springer, 2006), 128-146.
59. “‘Boardwalks across the Tar’: Software Engineering and the Problems of Safety and Security,” in Peter Lyth and Helmuth Trischler (eds), *Wiring Prometheus: Globalisation, History and Technology* (Aarhus: Aarhus University Press, 2004), 217-234.

60. "Models of Markets: Finance Theory and the Historical Sociology of Arbitrage," *Revue d'Histoire des Sciences* 57 (2004): 409-433.
61. "Opening the Black Boxes of Global Finance," *Review of International Political Economy* 12 (2005): 555-576. Spanish translation forthcoming in *REDES: Revista de Estudios Sociales de la Ciencia*.
62. "Computing and the Cultures of Proving," *Philosophical Transactions of the Royal Society of London*, series A, 363 (2005): 2335-2347. Discussion, *ibid.*: 2347-2350.
63. "Mathematizing Risk: Models, Arbitrage and Crises," in Bridget Hutter and Mike Power (eds), *Organizational Encounters with Risk* (Cambridge: Cambridge University Press, 2005), 167-189.
64. "Is Economics Performative? Option Theory and the Construction of Derivatives Markets," *Journal of the History of Economic Thought* 28 (2006): 29-55.
65. (with Daniel Beunza and Iain Hardie), "A Price is a Social Thing: Towards a Material Sociology of Arbitrage," *Organization Studies* 27 (2006): 745-769. Abbreviated German translation as "Die materiale Soziologie der Arbitrage," in Jens Beckert, Rainer Diaz-Bone and Heiner Ganssmann (eds), *Die sozialen Strukturen von Märkten* (Frankfurt: Campus, forthcoming).
66. (with Iain Hardie) "Assembling an Economic Actor: The Agencement of a Hedge Fund," *Sociological Review* 55/1 (2007): 57-80.
67. "Globalization, Efficient Markets and Arbitrage," in Libby Assassi, Anastasia Nesvetailova and Duncan Wigan (eds), *Global Finance in the New Century: Beyond Deregulation* (Basingstoke: Palgrave Macmillan), 13-24.
68. "The Material Production of Virtuality: Innovation, Cultural Geography and Facticity in Derivatives Markets," *Economy and Society* 36 (2007): 355-376.
69. "Producing Accounts: Finitism, Technology and Rule Following." in *Society as Knowledge: Rethinking the Social Theory of Barry Barnes*, edited by Massimo Mazzotti (Aldershot, Hants: Ashgate, in press).
70. (with David Hatherly and David Leung). "The Finitist Accountant: Classifications, Rules and the Construction of Profits," in *Living in a Material World: On the Mutual Constitution of Technology, Economy, and Society*, edited by Trevor Pinch and Richard Swedberg. Cambridge, MA: MIT Press, forthcoming).

Essay Reviews

“Science and Technology Studies and the Question of the Military,” *Social Studies of Science* 16 (1986): 361-71.

“Probability and Statistics in Historical Perspective,” *Isis* 80 (1989): 116-24.

“Technology and the Arms Race,” *International Security* 14 (1) (Summer 1989): 161-75.

“Humming, Gurgling and Whistling” [essay review of Alder, *Engineering the Revolution*], *London Review of Books* 19 (24) (11 December 1997): 18-19.

“What’s in the Bottle?” [essay review of Labinger and Collins, eds., *The One Culture?*], *London Review of Books* 24 (9) (9 May 2002): 21-22.

“The Imagined Market” [essay review of Mirowski, *Machine Dreams*], *London Review of Books* 24 (21) (31 October 2002): 22-24.

“Empty Cookie Jar” [essay review of books on Enron], *London Review of Books* 25 (10) (22 May 2003): 6-9.

“The Blindfolded Archer” [essay review of Mandelbrot and Hudson, *The (mis)Behavior of Markets*], *London Review of Books* 27/15 (4 August 2005): 21-23.

Also short book reviews in various journals including *American Journal of Sociology*, *Sociological Review*, *Sociology*, *Political Quarterly*, *Technology and Culture*, *Isis*, *New Technology*, *Work and Employment* and the *British Journal for the History of Science*.

Minor Articles

“Arthur Black: A Forgotten Pioneer of Mathematical Statistics,” *Biometrika* 64 (1977): 613-6.

“A PAREX Workshop on the Sociology of Mathematical Knowledge and the Social History of Mathematics,” *Social Studies of Science* 8 (1978): 141-2; also in *Historia Mathematica* 5 (1978): 228-9.

“Notes on the Science and Social Relations Debate,” *Capital and Class* No. 14 (June 1981): 47-60.

“Interests, Positivism and History,” *Social Studies of Science* 11 (1981): 498-504.

“Historical Materialism,” in W. F. Bynum and R. Porter, eds, *Dictionary of the History of Science* (London: Macmillan, 1981), 188-89. Spanish translation in W.F. Bynum, E.J. Browne and R. Porter, eds, *Diccionario de Historia de la Ciencia* (Barcelona: Herder, 1986).

“Reply to Steven Yearley,” *Studies in the History and Philosophy of Science* 15 (1984): 251-59.

“The ‘Political Implications’ of Scientific Theories : a Comment on Bowler,” *Annals of Science* 42 (1985): 417-19.

“Why ‘The Social Aspects of Science and Technology’ is not just an Optional Extra,” *ACM Computers and Society* 15 (1986): 2-6. Also in *Electronics for Peace Journal* (April 1986): 2-6.

“Perestroika and Parallelism: The Soviet Union and Advanced Information Technology,” *Technology Analysis and Strategic Management* 1 (1989): 145-55.

“The Great IT Thaw?,” *Computing* (5 October 1989): 26-27.

“The Guiding Principles of Nuclear War,” *New Scientist* 125 (24 March 1990): 33-37.

(with Graham Spinardi) “Anthony Giddens on Nuclear Strategy: A Comment,” *Sociology* 25 (1991): 465-72.

(with George Borthwick, Daniel Ellingworth and Colin Bell) “Research Note: the Social Background of British MPs,” *Sociology* 25 (1991): 713-17.

“Burden of Proof goes to Trial,” *Times Higher Education Supplement* (5 March 1993): 19 and 21.

(with Alfonso Molina) “Formal Education,” *Computing* (6 May 1993): 24.

“Uninventing the Bomb,” *Medicine, Conflict and Survival* 12 (1996): 202-11.

[Guest opinion] “Moving Toward Disinvention,” *Bulletin of the Atomic Scientists* 52 (5) (Sept./Oct. 1996): 4.

“Wasting Assets,” *London Review of Books* 19 (2) (23 January 1997): 24-25.

“Technological Determinism,” and “The Certainty Trough,” in William H. Dutton, ed., *Society on the Line: Information Politics in the Digital Age* (Oxford: Oxford University Press, 1999), 39-41 and 43-46 (also Japanese translation, 2002, Tokai University Press). “The Certainty Trough” also in Robin Williams, Wendy Faulkner and James Fleck, eds., *Exploring Expertise: Issues and Perspectives* (Basingstoke: Macmillan, 1998), 325-29. Both reprinted in Italian translation in Dutton, ed., *La Società On Line: Politica dell’Informazione nell’Era Digitale* (Milan: Baldini & Castoldi, 2001).

“David Owen Edge, 1932-2003,” *Isis* 94 (2003): 498-99.

“Relating Science, Technology, and Industry after the Linear Model,” in Karl Grandin, Nina Wormbs and Sven Widmalm (eds), *The Science -Industry Nexus: History, Policy, Implications. Nobel Symposium 123* (Sagamore Beach, MA: Science History Publications, 2004), 305-312.

“Models and Markets,” *WILMOTT Magazine*, May 2005: 34-38.

“Feedback Loops,” *Journal of Financial Transformation* 16 (April 2006): 77-79. Also published as “Feedback Loops and Modelling Risks,” *Risk & Regulation* 11 (Summer 2006): 8-9.

“The Political Economy of Carbon Trading,” *London Review of Books* (5 April): 29-31. Reprinted in *Post-Autistics Economics Review*, no 42 (May 2007): 8-17.

“LIBOR.” in *Globalization in Practice*, edited by Nigel Thrift, Adam Tickell, and Steve Woolgar (Oxford: Oxford University Press, forthcoming)..

Newspaper articles

“When human and commercial logics clash,” *The Guardian* (26 February 1982): 20.

“Why Europe’s scientists must beware lure of ‘Star Wars,’” *The Scotsman* (21 June 1985): 9.

“The race is on for the teraflop,” *The Guardian*, (25 May 1989): 27.

(with Alfonso Molina) “A lead Britain must not lose,” *The Independent* (17 July 1989): 15.

“How the Soviets found their own way to guide a nuclear missile,” *The Independent* (7 August 1989): 13.

(with Graham Spinardi) “True terror of Trident II,” *The Guardian* (19 September 1989): 23.

- (with Eloína Peláez) "March of the conquering cubers," *The Guardian* (15 March 1990): 31.
- (with Eloína Peláez) "Darkness at the heart of US research policy," *The Independent* (7 May 1990): 13.
- (with Boelie Elzen) "Hedging the supercomputer bets," *The Guardian* (19 July 1990): 31.
- "The barrister and the microchip," *The Independent* (14 January 1991): 16.
- "How good a Patriot was it?" *The Independent* (16 December 1991): 13.
- "Safety in numbers?" *The Guardian* (7 March 1991): 37.
- "Life in the fast lane claims an American legend," *The Independent* (8 June 1992).
- "The furry saboteur who nearly blew up the world," *The Independent* (13 September 1993): 15.
- (with Graham Spinardi) "Isn't it time we forgot about the atomic bomb?" *The Independent* (1 August 1995) section 2, 14-15.
- "No bomb like an old bomb," *The Guardian*, 'Online' section (28 September 1995): 8-9.
- "The myth of Iraq's shop-till-you-drop nuclear programme," *The Guardian*, 'Online' section (22 February 1996): 13.
- "The Tritium Factor," *The Independent* (15 April 1996): 20.

Conference Papers and Invited Lectures

- 1974 Harvard, Cornell and Bath Universities, University of Pennsylvania, MIT.
- 1976 University of Keele, Project PAREX (Regensburg, Bavaria), British Society for the History of Science.
- 1977 Manchester and Leeds Universities.
- 1978 Past and Present Society/British Society for the History of Science, Technische Universität Berlin.
- 1980 *History Workshop Journal* Conference, British Society for the History of Mathematics, Conference of Socialist Economists, European Association for the Study of Science and Technology (Schloss Deutschlandsberg, Austria).
- 1981 Conference of Socialist Economists; Melbourne, New South Wales, Wollongong, Griffith, Murdoch, Deakin and Adelaide Universities; Australian National University; Australasian Association for the History and Philosophy of Science; CSIRO Mathematics and Statistics Division.
- 1982 University of Sheffield, Conference of Socialist Economists, Universität Bielefeld.
- 1983 British Sociological Association (Scottish Branch).
- 1984 Wissenschaftskolleg Berlin, Middlesex Polytechnic, Technische Hogeschool Twente (Netherlands), University of Pennsylvania, National Museum of American History (Washington, DC), State University of New York at Stony Brook, University of Toronto, MIT.
- 1985 Aston and Stanford Universities, Hampshire College (Amherst, Mass.), XVIIth International Congress of the History of Science (University of California, Berkeley), British Society for the History of Science/British Sociological Association.

- 1986 Leeds, Manchester, Brunel, Bath and Heriot-Watt Universities, Rijksuniversiteit Utrecht, University of Illinois at Urbana-Champaign, Balliol College, Oxford.
- 1987 MIT, King's College London, Technische Hogeschool Twente, British Sociological Association.
- 1988 International Theory Symposium on Arms Dynamics (Oslo), University of Amsterdam.
- 1989 Cambridge, Cornell and Stanford Universities, University of California, Berkeley.
- 1990 University of Minnesota, University of Manchester, University of Lancaster, Logica (Cambridge), Ltd, Ecole Nationale Supérieure des Mines de Paris.
- 1991 ESRC New Technologies and Firm Initiative (University of Stirling); British Computer Society (Fourth Annual Workshop on Refinement), FM 91.
- 1992 Fondation des Treilles, Society for Social Studies of Science (Gothenburg), DTI 'Proof' Club, PICT Software and Systems Practice Conference (Reading), University of York
- 1993 University of Glasgow, Cité des Sciences et de l'Industrie, University of Oxford.
- 1994 University of St. Andrews, University of the Basque Country, European University Institute (Florence), University of Manchester.
- 1995 King's College London, Programme on Information and Communication Technologies final conference (London), Large-Technical Systems (Autun, Burgundy).
- 1996 Dibner Institute (MIT), University of Southampton, Conf. on History of Software Engineering (Schloss Dagstuhl), Conf. on History of Mathematics, German Mathematical Society (Oberwolfach).
- 1997 Stanford, Harvard, Carnegie-Mellon and Cornell Universities, MIT, Vassar College, Keele University.
- 1998 Centre de Recherche en Histoire des Sciences et des Techniques, Univ. of Cambridge, Norwegian Univ. of Science and Technology (Trondheim), Max-Planck-Institut für Wissenschaftsgeschichte (Berlin), Roskilde University, Northern Formal Methods Workshop, Deutsches Museum, Science Policy Research Unit (Univ. of Sussex), York Univ.
- 1999 Max-Planck-Institut für Wissenschaftsgeschichte (Berlin), Colloque Internationale d'Histoire des Mathématiques (Luminy, Marseilles), Harvard and Bucknell Universities, King's College London.
- 2000 University of California (Berkeley), SRI International (Menlo Park, Calif.), International Conference on the History of Computing (Paderborn, Germany), Cardiff and Exeter Universities, Acadia University (Nova Scotia), Technische Hochschule Zurich, Séminaire d'Histoire des Mathématiques (CNRS), École des Mines (Paris).
- 2001 University of Manchester, European Association for Evolutionary Political Economy (Siena), Centre Koyré (Paris), University of St. Andrews
- 2002 Lancaster University, DIRC Annual Meeting (Lancaster), City University, "Absent Presence," (Svarta Manor, Finland), London School of Economics. Max-Planck-Institut für Wissenschaftsgeschichte (Berlin), International Network for Economic Methodology (Stirling), University of Newcastle, University of Warwick.
- 2003 University of Konstanz, Deutsches Museum, Stockholm School of Economics (Skebo), Princeton University, Society for Social Studies of Science (Atlanta), University of Oxford, University of Leeds.

- 2004 Universities of Stirling, Oxford, Aberdeen, Cardiff and Manchester; Universitat Pompeu Fabra (Barcelona); Society for Social Studies of Science (Paris); École des Mines; Royal Society of London; Harvard University (History of Science Dept.); Harvard-MIT Economic Sociology Group; History of Science Society (Austin, Texas).
- 2005 British Academy, Economic Geography Research Group (Royal Geographical Society), University of Sussex, London School of Economics, Open University, David Hume Institute, Society for Social Studies of Science (Pasadena), University of Essex, Goldsmiths College, Max-Planck-Institut für Gesellschaftsforschung (Cologne), Johann Wolfgang Goethe-Universität (Frankfurt am Main).
- 2006 British Bankers Association (workshop on LIBOR); Workshop on “New Actors in a Financialised Economy” (London); Social Studies of Finance Group (Paris); Society for the Advancement of Socio-Economics (Trier); American Sociological Association (Montréal); Universidade Técnica de Lisboa
- 2007 London School of Economics, University of Salford, University of Durham, University of Oxford, Cerisy-la-Salle (conference on work of Bruno Latour).

PhD Theses Supervised (all University of Edinburgh)

- 1980 Stephen Jacyna, Scientific Naturalism in Victorian Britain: An Essay in the Social History of Ideas. Co-supervisor: Steven Shapin.
- 1986 John Mattausch, A Commitment to Campaign: A Sociological Study of CND. Co-supervisor: Frank Bechhofer.
- 1987 Paul Underhill, Science, Professionalism and the Development of Medical Education in England: An Historical Sociology.
- 1987 Dale Stout, Statistics in American Psychology: The Social Construction of Experimental and Correlational Psychology, 1900-1930. Co-supervisor: John Beloff.
- 1987 Alfonso Molina, The SocioTechnical Basis of the Microelectronics Revolution: A Global Perspective. Co-supervisor: David Edge.
- 1988 Eloína Peláez, A Gift from Pandora’s Box: The Software Crisis. Co-supervisor: Stuart Anderson.
- 1988 Graham Spinardi, The Development of Fleet Ballistic Missile Technology from Polaris to Trident.
- 1990 Anne Elder, Breathing Life into the Wooden Model: A Participant Observation Study of Technical Change.
- 1991 Mikel Olazarán, A Historical Sociology of Neural Network Research. Co-supervisors: James Fleck and Alfonso Molina.
- 1997 Donald Hislop, Capabilities, Strategy and Environment: Organizational Change in the UK’s Defence Industrial Base, 1989-95. Co-supervisor: Jan Webb.
- 1998 Alex Law, Dimensions of Restructuring: State, Capital and Labour in the Defence Industry in Scotland. Co-supervisor: David McCrone.
- 1999 Brian Woods, Revolutionaries and Bureaucrats: A Socio-Technical History of the U.S. Space Shuttle. Co-supervisor: Graham Spinardi.
- 2001 Takuji Hara, Technological Change in the Pharmaceutical Industry. Co-supervisor: Graham Spinardi.

- 2002 Sarah Glover, Shaping the 'Right Stuff': Gender, Technology, and the Cultures of Aviation. Co-supervisor: Wendy Faulkner.
- 2004 Yuval Millo, Where do Financial Markets come from? Historical Sociology of Financial Derivatives Markets. Co-supervisor: David Bloor.
- 2004 Sang-Hyun Kim, Making the Science of Global Warming: A Social History of Climate Science in Britain, 1950-1990. Co-supervisor: David Bloor.
- 2005 Aaron Wilson, Easier Done than Said: A Sociological Analysis of Tacit Knowledge in Railway Maintenance Systems. Co-supervisor: Felix Schmidt.
- Ongoing Iain Hardie, Bringing the Domestic Back In: The Role of Domestic Financial Capital and Emerging Market Government Policy Autonomy. Co-supervisor: David Howarth.
- Ongoing Lucia Siu, Cropping the Future: A Study of the Dalian Commodity Exchange. Co-supervisor: James Clunie.
- Ongoing David Leung, The Social Construction of Corporate Earnings. Co-supervisor: David Hatherly.
- Ongoing Tzung-De Lin, Fuzzy Logic: A Travelling Theory. Co-supervisor: Graham Spinardi.
- Ongoing David Stearns, A Sociotechnical History of Visa International's Payment System. Co-supervisor: Luciana d'Adderio.
- Ongoing James Clunie, Securities Lending, Short Selling and Predatory Trading. Co-supervisor: Peter Moles.
- Ongoing Svetlana Milyaeva, The Construction of Financial Derivatives Markets in Russia. Co-supervisor: Alex Preda.
- Ongoing Juan Pablo Pardo-Guerra, The Automation of the London Stock Exchange. Co-supervisor: Alex Preda.