HOWARD ROSENBROCK PhD Theses Supervised

At Cambridge	(at Cambridge often supervision was not for whole PhD)	
E.J.A. Davison	Automatic Control of High Order Systems	1963
B.W. Smith	Control Engineering Estimation Problems	1964
M.A. Wesley	Modelling of a Basic Open Hearth Furnace for Control Purposes	1965
S.F. Bush	The Mathematical representation of Distributed Flow Processes for Automatic Control	1965
J.G. Ternan	The Estimation of Parameters and Co-ordinates of Markoff Processes	1965
J.D. Wright	A Mathematical Model of a Chemical Reactor	1967
J.D.F. Wilkie	A Sampled-data Technique for Process Modelling	1968
G.J. Jennings	Control of Industrial Multivariable Systems	1968
A.D. McCann	Dynamic Analysis of a Supercritical Boiler	1968
At UMIST		
J. H. Anderson	The simulation and control of a power boiler	1967
H. Kwan	Studies related to the simulation and control of a 200 m.w. generating plant	1968
Antony Rowe	Some algebraic problems in system theory	1971
Ronald S. McLeod	The computer-aided-design of multivariable control systems	1971
John Ross Middleton	A mathematical model of the L.D. steelmaking process	1971
J. N. Hambury	Computational problems of control with reference to the L.D. process	1971
Peter D. McMorran	Design of multivariable control systems	1971
David James Hawkins	Techniques for the design of multivariable control systems.	1972
P. M. G. Lourtie	Modelling, simulation, identification and control of a gas turbine	1974
M.L. Browne	The digital simulation and multivariable control of a helicopter	1975
R. Whalley	The control of marine propulsion plant	1976
G.E. Taylor	Algebraic problems of multivariable systems	1976
T Koussiouris	The application of polynomial matrices to control	1977

HOWARD HARRY ROSENBROCK Publications

The following items are held in the Royal Society library apart from a few items which are marked with an asterisk.

Books

"Computational Techniques for Chemical Engineers", 1966 (Pergamon), (with C. Storey).

"Mathematics of Dynamical Systems", 1970 (Nelson-Wiley) (with C. Storey).

"State-space and Multivariable Theory", 1970 (Nelson-Wiley).

"Computer-aided Control System Design", 1974 (Academic Press).

"New Technology: Society, Employment and Skill", 1981 (Council for Science and Society), (Convenor of Working Party and Editor); abstracted in Tom Forester, The information technology revolution, 1985, pp.635-647 (Basil Blackwell); and in Jagdish Sheth and Abdolresa Eshghi (Editors), Global ecnomic perspectives, 1990, pp.45-58 (South-Western Publishing Co., Cincinnati, Ohio).

"Designing human-centred technology", 1989 (Springer-Verlag); Chinese edition, 1991 (World Publishing Corporation, Beijing).

"Machines with a purpose", 1990 (Oxford University Press).

Translations into other languages:

U. Forster and R. Unbehauen (translators), "Mathematik Dynamiker Systeme", 1971 (R. Oldenburg Verlag).

Zhou Wen-zhong and Pan Ko-yan (translators), Chinese translation of "Computer-aided Control System Design", 1983.

"Technik-entwicklung: Gestaltung ist machbar", Arbeitsheft der IG Metall zur Humanisierung des Arbeitslebens, no.9, 1984 (Industriegewerkschaft Metall fiir die BundesrepublikDeutschland). (Translationofsixpapers)

"Machines with a purpose", Japanese translation, 1995 (Agne Publishing).

Articles and Reports

"An extension of the momentum theory of wind turbines," ERA Technical Report C/T 105, 1951 (Electrical Research Association).

"Wind- and gust-measuring instruments developed for a wind-power survey", Proc. IEE, 1951, vol 98, pp 438-447 (awarded a Premium), (with J.R. Tagg).

"The design and development of three new types of gust anemometer", ERA Report C/T 106, 1951 (Electrical Research Association).

"Vibration and stability problems in large wind turbines having hinged blades". ERA Report C/T 113, 1955 (Electrical Research Association). (Submitted and accepted as a thesis for Ph.D.).

"The integral-of-error-squared criterion for servo mechanisms", Proc. IEE, 1955, vol 102, Part B, pp 602-607.

"An approximate method for obtaining transient response from frequency response", Proc. IEE, 1955, vol 102, Part B, pp 744-752.

"An approximate method for finding the 'best linear servo mechanism'", Proc. IEE, 1956, vol 103, Part C, pp 260-266.

"Some graphical methods in frequency analysis", Trans. SIT, 1956, vol. 8, pp 30-42.

"An investigation of the transient response of a distillation column, Part I : solution of the equations", Trans. Inst. Chem. Engrs. 1957, vol 35, pp 347-351. (with Part II, by W. D. Armstrong and W. L. Wilkinson, awarded the Moulton Medal).

"Approximate relations between transient and frequency response", J. Brit. IRE, 1958, vol 18, pp 57-64.

"Use of digital computers in chemical engineering", Process Control and Automation, 1958, vol 5, pp 466-470.

"Calculation of the transient behaviour of distillation columns - Parts I, II, III", July, August and September, 1958 issues of British Chemical Engineering.

"Interconverting frequency and transient response", Control Engineering, 1959, pp.116-120.

"A Theorem of "dynamic conservation" for distillation", Trans. Inst. Chem. Engrs. vol 38, 1960, pp 279-287.

"An automatic method for finding the greatest or least value of a function", Computer Journal, 1960, vol 3, pp 175-184. (Awarded a premium).

"Transient behaviour of multicomponent distillation columns", Automatic and Remote Control, Proc. lst IFAC Congress, Moscow 1960, vol 4, pp 303-311, (Butterworths), (with A. B. Tavendale, C. Storey and J. A. Clb.allis).

"The control of distillation columns", Trans. Inst. Chem. Engrs. 1962, vol 40, pp 35- 53.

"The gas bridge thermometer", Symposium on Developments in Techniques for Temperature Measurement, 26th April 1962, Session 1, Paper 5 (with A. B. Tavendale and M. T. Cross).

"The approach to a stable steady state far from equilibrium", Proc. Physic. Soc. 1962, vol 80, pp 962-970.

"Distinctive problems of process control", Chem. Eng. Progress, September 1962, vol 58, pp 43-50.

"The transient behaviour of distillation columns and heat exchangers: An historical and critical review", Trans. Inst. Chem. Engrs. 1962, vol 40, pp 376-384.

"A Lyapunov function with applications to some nonlinear physical systems", Automatica, 1962, vol l, pp 31-53.

"A Lyapunov function for some naturally-occurring linear homogeneous time-dependent equations", Automatica, 1963, vol l, pp 97-109.

"Some general implicit processes for the numerical solution of differential equations", Computer Journal, 1963, vol 5, pp 329-330.

"The stability of linear time-dependent control systems". J. Electronics and control, 1963, vol 15, pp 73-80.

"A method of investigating stability", Proc. IFAC, 1963, pp 590-592 (Butterworths). "An example of optimal adaptive control", J. Electronics and Control, 1964, vol 16, pp 557-567.

"The formulation of optimal control, with an application to large systems", Automatica, 1963, vol l, pp 263-288.

"On the stability of second-order differential equation", J. Lond. Math. Soc. 1964, vol 39, pp 77-80.

"Some conditions for the stability of nonlinear time-dependent differential equations", J. SIAM Control, 1965, vol 2, pp 171-180.

"On the computation of the optimal temperature profile in a tubular reaction vessel", in "Computing Methods in Optimization Problems", 1964, pp 23-64, Ed. A. V. Balakrishnan and L. E. Neustadt (Academic Press) (with C. Storey).

"Transfer matrix of a linear dynamic system", Electronics Letters, 1965, vol l, pp 95- 96.

"Further remarks on the transfer matrix of a linear dynamic system", Electronics Letters, 1965, vol l, pp 239-240.

"Sensitivity of an eigenvalue to changes in the matrix", Electronics Letters, 1965, vol 1, pp 278-279.

"Transformation of linear plant equations", Electronics Letters, 1966, vol 2, pp 49-50.

"On the design of linear multivariable control systems", Proc. 3rd IFAC Congress, June 1966, Session 1, Paper IA.

"Real-time on-line digital computers", Proc. 3rd IFAC Congress, June 1966, (with A. J. Young).

Letter, Computer Journal, 1966, vol. 9, pp. 320&324.

"Transfer function matrices", Electronics Letters, Sept. 1966, vol 2, No 9, pp 331-332.

"Least order of system matrices", Electronics Letters, 1967, vol 3, pp 58-59.

"Transformation of linear constant system equations", Proc. IEE, 1967, vol 114, pp 541- 544.

"Connection between network theory and the theory of linear dynamical systems", Electronic Letters, 1967, vol 3, pp 296-297.

"Reduction of system matrices", Electronics Letters, 1967, vol 3, p 368. "Efficient computation of least order for a given transfer function", Electronics Letters, 1967, vol 3, pp 413-414.

"Sur les relations entre les filtres linéaires discrets et quelques formules de Gauss", in "Identification, Optimisation et Stabilité des Systems Automatiques", 1967, pp 239- 249, Ed. J. Carpentier and H. Garelly (Dunod).

"Generation of polynomial system matrices", Electronics Letters, 1967, vol 3, pp 486-487.

"On linear system theory", Proc. IEE, 1967, vol 114, pp 1353-1359, (with the earlier paper, "Transformation of linear constant system equations", awarded Heaviside Premium).

"Computation of minimal representation of a rational transfer-function matrix", Proc. IEE, 1968, vol 115, pp 325-327.

"System matrices giving positive-real transfer-function matrices", Proc. IEE, 1968, vol 115, pp 328-329.

"System matrices giving lossless positive-real transfer-function matrices", Proc. IEE, 1968, vol 115, pp 330-331.

"Relatively prime polynomial matrices", Electronics Letters, 1968, vol 4, pp 227-228.

"Generalized resultant", Electronics Letters, 1968, vol 4, pp 250-251.

"McMillan forms from system matrices", Electronics Letters, 1968, vol 4, p 374.

"Some properties of relatively prime polynomial matrices", Electronics Letters, 1968, vol 4, pp 374-375.

"Design of multivariable control systems using the inverse Nyquist array", Proc. IEE, 1969, vol 116, pp 1929-1936.

"Minimal indices in dynamical systems", Electronics Letters, 1969, vol 5, pp 658-659.

"New vector-space structure for dynamical systems", Electronics Letters, 1970, vol 6, 162-163 (with A. G. J. Macfarlane).

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"The stability of multivariable systems", Trans. IEEE, 1972, vol AC-17, pp 105-107.

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"Structural properties of linear dynamical systems", 1974, Int. J. Control, vol 20, pp 191-202.

"Hierarchical theory of systems", 1975, in 'New Directions in Signal Processing in Communication and Control', Ed. J. K. Skwirzynski, pp.637-645 (Noordhoff-Leyden).

"Redundancy in linear, time-invariant, finite-dimensional systems", IFAC Conference on Multivariable Technological Systems, Manchester, Sept. 1974.

Comments on paper by MacFarlane, and on paper by Hughes and Mallouppa, IFAC Conference on Multivariable Technological Systems, Manchester, Sept. 1974.

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"Stability and the eigenvalues of G(s)", 1975, Int. J. Control, vol 21, pp 99-104 (with P. A. Cook).

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"Computer-aided design of multivariable control systems", 1975, Proc. Conference on "How to apply advanced control in industrial automation - II - Multivariable and noninteracting systems", Purdue, April 1975; in "Multivariable Control Systems", 1975 (Control Engineering).

"The future of control", 1975, Plenary address, Sixth IFAC Congress, Boston, August, 1975; reprinted in Automatica, 1977, vol.13, pp.389-392.

"A comment on three papers", Int. J. Control, 1977, vol 25, pp 1-3.

"The transformation of strict system equivalence", Int. J. Control, 1977, vol 25, pp 11-19.

"Comments on the paper 'A general frequency stability criterion for multi-input-output, lumped and distributed parameter feedback systems'", Int. J. Control, 1977, vol 25, pp 321-322 (with P.A. Cook).

"Inverse Systems", Int. J. Control, 1977, vol 25, pp 389-392 (with A. J. J. van der Weiden).

"Comments on 'Poles and zeros of linear multivariable systems; a survey of the algebraic, geometric and complex-variable theory'", Int. J. Control, 1977, vol 26, pp 157-161.

"The general problem of pole assignment", Int. J. Control, 1978, vol.27, pp 837-852 (with G. E. Hayton).

"Interactive computing: a new opportunity", in "Numerical Software - Needs and Availability", 1978, Edited by D. Jacobs, pp 227-235 (Academic Press).

"Transformation of system equations", in "Recent Theoretical Developments in Control", Edited by M. J. Gregson, 1979, pp 3-8 (Academic Press).

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"The redirection of technology, IFAC Symposium on "Criteria for selecting appropriate technologies under different cultural, technical and social conditions", Bari, Italy, 21-23 May 1979.

"Standard forms, controllability and observability", Chapter 3, pp 43-52, in "Modern approaches to control system design", Edited by N. Munro, 1979 (Peter Peregrinus).

"Inverse-Nyquist-array design method", Chapter 5, pp 65-81, in "Modern approaches to control system design", Edited by N. Munro, 1979 (Peter Peregrinus).

"Automation - Economics – Employment", Finnish Engineering Days Seminar, 7-8 November, 1979.

"Human resources and technology", presented at Sixth World Congress of the International Economic Association, Mexico City, 4-8 Aug. 1980, published in Paul Streeten and Harry Maier, Editors, Human Resources, Employment and Development, vol.2, pp 345-354, 1983 (MacMillan).

"Systems and polynomial matrices", in "Geometrical Methods for the Theory of Linear Systems", Edited by C. I. Byrnes and C. F. Martin, 1980, pp 233-255 (D. Reidel Publishing Co.).

"Automation and society", Systems and Control Letters, 1981, vol. 1, pp 2-6.

"Automation and society", in D. Hinrichsen and A Isidori (Editors), Feedback Control of Linear and Nonlinear Systems, Proc. Joint Workshop, Bielefield/Rome, June 22- July 3, 1981, pp. 215-226. (Springer-Verlag).

"Engineers and the work that people do," IEEE Control Systems Magazine, 1981, vol.l, pp 4-8; reprinted in IEEE Technology and Society, 1981; and as Occasional Paper No.21, Work Research Unit, London, and in Personnel Management Review, Shell Co., No.52, Dec 1981-March 1982; and in Review, Journal of the Society of Post Office Executives, vol.12, no.2, Feb.1983, pp 36-38; and in "Organizations: concepts, issues, cases", 1983, Open University Reader (Harper and Row); and in Education and Industry, 1983, No.16, pp 3-10 (Wigan Standing Conference on Education and Industry), and in The Experience of Work, pp. 161-171, edited by Craig R. Littler, November 1984, (Heinemann Educational Books); reprinted in Zenon W. Pylshyn and Liam J. Bannon, Editors, 1989, Perspectives on the computer revolution, pp.519-528 (Ablex); reprinted in translation Ny Teknik, (Stockholm), 25 Oct. 1984, pp 24-25; reprinted in Armson and Paton (eds), Organization; cases, issues, concepts, 1994 (Paul Chapman); and in J. Applied Manufacturing Systems, vol.7, No.l, 1994, pp.77-82.

Robots and people", Fourth Hartley Lecture, Measurement and Control, 1982, vol.15, pp 105-112; reprinted in Work and People (Australian Dept. of Education and Industrial Relations) vol.9, No.2, Aug. 1983; and in "Living with technology", 1983, Open University; and in Work and People, 1983, vol.9, No.2, pp 14-18 (Dept. of Employment and Industrial relations); and in Trade Union and the computer, (Institut fur berufsbezogene Erwachsenerbildung).

"Computers, doctors, patients and the 80s", 1980, in Computers and the General Practitioner, Edited by A. Malcolm and J. Poyser, 1982, pp 105-108 (Pergamon Press).

"Technology policy and options", presented at EEC FAST Conference on The Information Society: the distribution of benefits and risks associated with microelectronic applications, 25-29 Jan, 1982, London.

"Systems and polynomial matrices", and "Composite systems", pp. 713-714, and "Pole assignment", pp. 3720-3721, and "The inverse Nyquist array design method", pp. 2584-2588, in Madan Singh, editor, Systems and Control Encyclopedia, 1984, (Pergamon Press); the first two of these also in D.P.Atherton and P.Borne, Concise Encyclopedia of Modelling and Simulation, 1992 (Pergamon Press).

"Seeking an appropriate technology", presented at IFAC Symposium on Systems Approach to Appropriate Technology Transfer, Vienna, 21-23 March1983.

"Social and engineering design of an FMS", presented at CAPE 83, 25-28 April 1983, Amsterdam, published in "Computer applications in production and engineering CAPE 83", edited by E. A. Warman, 1983, pp 191-196 (North-Holland).

"Proposal for a new design of wind power generator", Wind Engineering, 1983, Vol.7, pp 60-63.

"Engineers, robots and people", Chemistry and Industry, Oct. 1982, pp 756-759.

"Designing automated systems - need skill be lost?", Section X, BAAS Annual Conference, 22-26 Aug.1983, Brighton; reprinted in Science and Public Policy, Dec. 1983, pp. 274-277; and in Trends in Analytical Chemistry, 1984, vol.3, pp 1-5; and in Pauline Marstrand (editor), New Technology and the future of Work and Skills, 1984 (Frances Pinter).

"Developing a technology which provides satisfactory work", IFAC International Research Symposium New Technology and Ergonomics, 31 May - 2 June 1983, Valenciennes; reprinted in IFAC Newsletter, 1983, No. 5, Oct., p.l., and in QWL Focus, vol.4, Spring 1984 (Ontario Quality of Working Life Centre).

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"The combined social and technical design of production systems," presented at the International Seminar on Advanced Information Technology, Milan 28-30 October 1987.

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* "Preservation of skill and design of technology", presented at RSO Conference on Joint Design of Technology, Organisation and People Growth, Venice, 12-14 October 1988.

* "Purpose and automatic control", Computing & Control, IEE, 1992, pp.87-90.

"Science, technology and purpose", AI & Society, 1992, vol. 6, pp.3-17.

* "Automation and the nature of work", Measurement & Control, Inst. MC, 1992, vol. 5, pp.149-151.

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