

## STRATA CONSOLIDATING WORKSHOP

Science and technology policies in Europe: new challenges, new responses

Brussels, 22-23 April 2002

### About the Key Session Participants and their Recent Work (by order of presentation)

<b>Parallel session 1:</b>	<b>“Globalisation: Strategies of multi-national corporations, international research co-operation, and implications for S&amp;T policies in Europe”</b>
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#### **Keith Smith**

He is a Senior Research Fellow at UNU Intech in Maastricht. He is trained at the Universities of Cambridge and Sussex (at the Institute of Development Studies). His academic background is in economics and development. Following nine years as University Lecturer in Economics at the University of Keele, he was appointed as Economic Adviser to the Science Policy Council of Norway in 1988. From 1990 to 2000 he was Research Director of the STEP Group in Oslo, carrying out a wide range of research on innovation issues for Ministries, Research Councils and the European Commission. His main fields of research are innovation and economic growth, the development of innovation statistics and indicators, regional innovation, innovation in 'low technology' industries, and the economic and social organization of knowledge production. From 1993 he was Professor at the Norwegian Science and Technology University.

*Keith Smith has worked extensively as a consultant to policy agencies on innovation policy, both at a national and international level, including OECD and the EU. He has recently been a member of the expert panel 'Innovation Policies in the Knowledge-Based Society', for the European Commission, and deputy chairman of the Norwegian Government Commission on Tax Incentives for Business-Financed Research and Development.*

#### **Sanjaya Lall**

She was educated in India and at Oxford University, UK. He is Professor of Development Economics at Oxford, based at the International Development Centre of Queen Elizabeth House, and a Fellow of Green College. He has been a staff member of the World Bank on three occasions for a total of around six years. He has acted as advisor and consultant to many organisations, including the World Bank, IFC, UNCTAD, UNIDO, FAO, ILO, UNICEF, Asian Development Bank, Inter-American Development Bank, African Development Bank, UN Centre on Transnational Corporations, ESCAP, OECD, CEPAL, UN University Institute of New Technologies, Ford Foundation, and the Commonwealth Secretariat. He has also advised governments in South East Asia, Africa and the Middle East. Professor Lall has published 30 books and monographs and over 200 articles and reports dealing with international investment, technology transfer and development, trade and industrial strategy. His work has focused on Asia, Africa and the Middle East but he has also worked on Latin America and the transition economies of East Europe.

**Pikay Richardson** started his career in 1976 as a graduate engineer and worked in the broadcasting industry in the UK and overseas. In 1985, he joined the UMIST Department of Management Sciences where he studied Economics and Management, finishing with a PhD in 1988. Since then, he has been on the faculty of Manchester Business School, the University of Manchester, where he has had responsibility for teaching Business Economics courses on the School's MBA and PhD programmes. As director of the India Research and Development Unit, Dr Richardson has designed and run many management development programmes for Indian organisations as well as undertaken many consulting assignments in India for the UK Government.

**Recent publications include:**

1. Richardson, P (2000) Management in Nigeria, in Warner, M (ed) Management in Emerging Countries, Regional Encyclopaedia of Business and Management, Thomson Press
2. Richardson, P (1999) EC Steel Prices and Imports: Impact of Imports from Central and Eastern European Countries, Journal of Product and Brand Management, vol 8, no.5.
3. Bowonder, B and Richardson, P (2000) Liberalisation and the Growth of Business-led R&D: the Case of India, R&D Management, vol 30, no. 4.

**Jon Sigurdson** is professor of East Asia Science & Technology, and Programme Director at The European Institute of Japanese Studies at the Stockholm School of Economics, and concurrently Coordinator for the Swedish School of Advanced Asia Pacific Studies (SSAAPS), and previously held a professorship in Research Policy at Lund University. *As a researcher in science policy he has developed special expertise in technology management at national and company level with a focus on areas such as:*

- *Global structures for research and development and their interaction with national systems for innovation;*
- *Structural changes in the electronics and information technologies industries; and*
- *Mobile Internet.*

Sigurdson held government posts in Swedish ministries of Foreign Affairs, Finance, and Industry before embarking on an academic career.

**Recent publications include:**

1. Cartermill Guide to Science and Technology in Japan, Cartermill Publishing, London 1995, 365 p
2. Future Advantage Japan? - Technology Strategies for Chemical and Pharmaceutical Companies, Cartermill Publishing, London, 1996, 142 pp
3. A New Technological Landscape in Asia Pacific, Guest Editor (jointly with Cheng, Alfred Li-Ping), Special Issue of the International Journal of Technology Management, Vol. 22, No 5/6, 2001
4. Wireless Application Protocol (WAP) OFF – Origin, Failure and Future, EIJS WP No.135, Stockholm School of Economics, October 2001, also available at <http://www.telecomvisions.com>
5. Technological Governance in ASEAN – Failings in Technology Transfer and Domestic Research, Paper prepared for Workshop on Institutional Change in the Southeast Asia in the wake of the Asian Crisis, Singapore, Singapore, November 23-24, 2001
6. “Path Dependency and Mobile Telecommunications”, Paper prepared for Workshop on Explaining Surprising Changes – The Social Sciences Confront Innovation and Entrepreneurship; Florence, November 30 – December 1, 2001.

### **Ron Johnston**

He is the Executive Director of the Australian Centre for Innovation and International Competitiveness Limited (ACIIC) at the University of Sydney, is one of Australia's leading analysts of change. He was educated as a scientist in Australia and the UK, and worked for many years in Europe and the US in the private sector, international organisations and universities. He returned to Australia in 1979 to a position in the Commonwealth Government. Over the past fifteen years he has mapped and publicised the forces of change emerging from new technologies, changing patterns of international competitiveness and trade, new organisational structures, and shifts in social values. Current areas of particular focus are knowledge management, the knowledge economy, scenario planning, and e-commerce. Professor Johnston is a Fellow of the Australian Academy of Technological Sciences and Engineering. He is also appointed Deputy Chair of the Australian Science and Technology Engineering Council (ASTEC), Deputy Chair of the International Relations Committee of the Australian Academy of Technological Sciences and Engineering, Research Director of the Australian Graduate School of Engineering Innovation, Director of the Australian Commission for the Future, Trustee of the Powerhouse Museum, member of the Australian Manufacturing Council, and Adjunct Professor at University of Technology, Sydney.

### **Petri Peltonen**

He is Licentiate in Technology from the Tampere University of Technology, Department of Electrical Engineering since 1991. He also passed in 1987 a Master of Science at the same university. Since 1999, he is Executive Director of Tekes, the National Technology Agency, in Helsinki. From 1996 to 1998, he was Research Manager at the National Technology Agency (Tekes). From 1990 to 1996, he worked as Product Assurance Engineer at the European Space Agency (ESA), Noordwijk, the Netherlands

Dr. **Léa Velho**, UNU INTECH, Maastricht, is an agricultural engineer by training, with a Masters degree in Plant Science and a PhD in Science and Technology Policy, Sussex University, UK, 1985. She worked for many years as senior Policy Analyst for the Brazilian National Research Council (CNPq). She moved to academe in 1991 and became a professor in Science and Technology Policy at the University of Campinas, Brazil, from where she is on leave. She has been visiting professor at Edinburgh University, UK and at Ohio State University (Columbus), Cornell University and Indiana University (Bloomington), USA. *Her contribution to the field covers a wide range of topics, from science indicators to the applications of the new sociology of science to science policy. She has done extensive work on the various dimensions of research capacity building in developing countries, from policies to the training of human resources to the links between the knowledge base and the productive sector. She is a member of the editorial board of Social Studies of Science.*

### **Recent publications include:**

"Government-Industry-Academic Relations on the Periphery", *Minerva*, vol. 36(3), pp. 229-251, 1998,

"Assessment of International Scientific Collaboration in Brazilian Amazonia", in J. Gaillard (ed.), *International Scientific Cooperation, 20th Century Sciences: Beyond the Metropolis*, Vol.7, Paris: ORSTOM Editions, pp.155-170, 1998

"Decision Process in the Construction of the Synchrotron Light National Laboratory in Brazil", *Social Studies of Science*, vol. 28 (2), pp. 195-219, 1998.

**Parallel session 2:**

**“Sustainability: R&D policy, the precautionary principle and new governance models”**

**Arie Rip** was educated as a chemist and philosopher in the University of Leiden. He was Professor of Science Dynamics at the University of Amsterdam (1984-1987) and is now Professor of Philosophy of Science and Technology at the University of Twente. He is also Visiting Professor at the University of Stellenbosch, Republic of South-Africa.

*He was and is member of science policy committees of various kinds, nationally and internationally. He is active in R&D Evaluation, Technology Assessment and Science and Technology Foresight. He was member of the board of the Rathenau Institute, formerly NOTA, the Netherlands Organisation for Technology Assessment.*

His own research has focused on science and technology dynamics and science and technology policy analysis, including issues of ongoing changes in modes of knowledge production and Constructive Technology Assessment.

**Some major publications:**

Susan E. Cozzens, Peter Healey, Arie Rip, John Ziman (eds.), *The Research System in Transition* (Dordrecht: Kluwer Academic, 1990). NATO Advanced Study Institute Series, D: Behavioural and Social Sciences, Vol. 57.

A. Rip, Th. Misa, J.W. Schot (eds.), *Managing Technology in Society. The Approach of Constructive Technology Assessment* (London: Pinter Publishers, 1995).

Arie Rip and Rene Kemp, 'Technological Change,' in S. Rayner and E.L. Malone (eds), *Human Choice and Climate Change*, Columbus, Ohio: Battelle Press, 1998. Volume 2, Ch. 6, pp. 327-399.

Stirling, Andrew, *On Science and Precaution in the Management of Technological Risk. Volume 1. A synthesis report of case studies.* Brussels/Luxembourg: European Commission, 1999. A report based on four evaluative survey studies: formal decision analysis and economics (Salo), institutional and regulatory policy analysis (Renn and Klinke), science and technology studies (Rip), risk assessment and environmental appraisal (Stirling).

Arie Rip, 'Fashions, Lock-Ins, and the Heterogeneity of Knowledge Production,' in Merle Jacob and Thomas Hellström (eds.), *The Future of Knowledge Production in the Academy.* Buckingham: Open University Press (2000), 28-39. Also published in Andre Kraak (ed.), *Changing Modes. New Modes of Knowledge Production and its Implications for Higher Education in South Africa*, Pretoria: Human Sciences Research Council, 2000, 56-69.

Arie Rip and Aard Groen, 'Many visible hands,' in Rod Coombs, Ken Green, Vivien Walsh, and Albert Richards (eds.), *Technology and the Market. Demands, Users and Innovation.* Cheltenham: Edward Elgar, 2001, pp. 12-37.

**Dr. Jerome R. Ravetz** was born in Philadelphia; his grandfather was a Russian-Jewish immigrant, and his father a truck driver and union organizer. He attended Central High School and Swarthmore College, and in 1950 came to Trinity College, Cambridge as a Fulbright Scholar. He did his Ph.D. in mathematics; but he soon changed his field to the History & Philosophy of Science, which he taught at Leeds University for many years. He helped to found the Council for Science and Society, serving as its Executive Secretary (1973-76), and served on the Genetic Manipulation Advisory Group, as a representative of the public interest, in 1977-1978. He has held positions at many universities and research institutions worldwide, including Utrecht (Netherlands), Harvard, The Institute for Advanced

Study (Princeton), California (Santa Cruz), FuDan (Shanghai), EC. Joint Research Centre (Ispra, Italy), Texas (Dallas), and Carnegie Mellon (Pittsburgh).

His principal published works include: *Scientific Knowledge and its Social Problems* (Oxford U.P. 1971; Penguin; German and Japanese translations; reprint Transaction Publishers, 1996); *The Merger of Knowledge with Power* (Cassell 1990); (with S.O. Funtowicz) *Uncertainty and Quality in Science for Policy* (Kluwer 1990); (co-edited with Zia Sardar) *Cyberfutures* (Pluto and N.Y.U. 1997), and (co-authored with Zia Sardar and Borin van Loon) *Introducing Mathematics* (Icon, 1999). He is now an independent scholar and self-employed consultant. He works in the area of 'science and governance', with special reference to problems of the management of uncertainty in risks and environmental issues. With S.O. Funtowicz, he has developed a notational system, "NUSAP", for the representation of uncertainty in quantitative information; and they have also developed the concept of "post-normal science", a mode of scientific problem-solving appropriate to policy issues where facts are uncertain, values in dispute, stakes high and decisions urgent.

**David Gee** has worked for over two decades on occupational and environmental risk reduction with UK Trade Unions (AUEW, TUC & GMB), with the Environmental Group, Friends of the Earth, where he was Director; and as a consultant. Since December 1995, he has been working for the European Environment Agency, an EU information providing body in Copenhagen, where he is coordinator for "Emerging Issues and Scientific Liaison".

He has worked on following reports:

- The risks and uncertainties arising from chemicals, radiation and asbestos;
- Clean production;
- Ecological tax reform;
- Eco-efficiency and associated indicators;
- The integration of environment into economic sectors;
- Communicating scientific complexity and uncertainty to non-specialists.

He is currently working on the links between environment and health, particularly of Children and relevant indicators (see forthcoming WHO/EEA Monograph on Children and Health); and has just finished work on the EEA report; 'Late Lessons from Early Warnings: the Precautionary Principle 1896-2000' published in January 2002.

**Silvio Funtowicz** taught mathematics, logic and research methodology in Buenos Aires, Argentina. During the decade of 1980 he was a Research Fellow at the University of Leeds, England. He is now Head of the Knowledge Assessment Methodologies Sector, Institute for the Protection and Security of the Citizen (IPSC), European Commission - Joint Research Centre (EC-JRC). He is the author of *Uncertainty and Quality in Science for Policy* (1990, Kluwer, Dordrecht) in collaboration with Jerry Ravetz, and numerous papers in the field of environmental and technological risks and policy-related research. He is a member of the editorial board of several publications and of the scientific committee of many international conferences, and has lectured extensively.

**Recent publications include:**

He has published numerous articles in Journals and Books. His book publications include: *Uncertainty and Quality in Science for Policy*, with Jerome Ravetz, Kluwer Academic Publishers, Dordrecht, 1990

*Epistemologia Politica: Ciencia con la gente*, with Jerome Ravetz, CEAL, Buenos Aires, 1993

*La Ciencia posnormal: Ciencia con la gente*, Icaria, Barcelona, 2000

<b>Parallel session 3      “S&amp;T policy making for the future: new rationales, new design tools”</b>
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**Rémi Barré** (born 07 April 1948, French nationality)

M. Barré holds a Civil Engineering degree (Ecole des Mines), a Doctorate in Economics from the Ecole des Hautes Etudes en Sciences sociales (Paris) and the ‘Habilitation à diriger les Recherches’ (HDR).

He has been Director of Observatoire des Sciences et des Techniques (OST) from 1990 to 2001.

He is now Visiting Professor at CNAM (Paris), in charge of the program 'prospective and evaluation of research and technology' and holds regular seminars on Science Policy for public research institutions and for ministries.

He is currently involved in the feasibility study for a French Foresight exercise, and is a member of the High Level Group on Foresight appointed by DG Research.

He is co-Editor of the 2002 edition of the *Science & Technology indicators Report*, published by OST and author of a recent study for the Public Policies Evaluation Commission of the French Senate ‘*Le renouvellement des générations des personnels de l’enseignement supérieur et de la recherche – éléments d’analyse*’ (2001)

**Recent relevant publications include:**

La Loi sur la recherche de 1982 – origine, bilan et perspectives du ‘modèle français’ (J-F. Théry, R. Barré), Collection *Sciences en Questions*, INRA éditions, Paris 2001, 133 p.

*Sense and nonsense of S&T productivity indicators*, Science and Public Policy, vol. 28 (4) 1-8 (August 2001)

*The Agora model of innovation systems : S&T indicators for a democratic knowledge society*, Research Evaluation, vol 10 (1) 13-18 (April 2001)

*Public research programmes : socio-economic impact assessment and user needs*, in Evaluating the impact of publicly funded RTD programmes, IPTS Report, Special issue, 5-9 (December 1999)

Les systèmes d’innovation à l’ère de la globalisation, (B. Amable, R. Barré, R. Boyer), *Economica*, 1997, 401 p.

**Ahti Salo** is Professor at the Systems Analysis Laboratory, Helsinki University of Technology (<http://www.sal.hut.fi/>). He has been in charge of several technology assessment, evaluation and foresight studies for industrial federations, the National Technology Agency (Tekes), the Finnish Ministry of Trade and Industry and the Committee for the Future of the Finnish Parliament. In addition, he has participated in several European research projects and served recently on the High Level Expert Group on technology foresight appointed by DG Research in 2001. His research interests include technology assessment, technology foresight, and group decision support systems.

**Recent publications:**

He has published extensively in leading journals such as *Technology Analysis & Strategic Management*, *International Journal of Technology Management*, *International Journal of*

Technology, Policy, and Management, Science and Public Policy and Technological Forecasting and Social Change.

- Salo, A. and J.-P. Salmenkaita (2002). "Embedded Foresight in RTD Programmes", *International Journal of Technology, Policy and Management* (to appear).

“An empirically based analysis of how foresight processes can be enacted in the context of large RTD programmes, in recognition of the challenges caused by the rapid pace of technological progress in fields such as electronics and telecommunication”.

- Salmenkaita, J.-P. and A. Salo (2002). "Rationales for Government Intervention in the Commercialization of New Technologies", *Technology Analysis & Strategic Management* 14/2 (to appear).

“A re-appraisal of the rationales that seem to justify government interventions in technology policy (i.e., market failure, systemic failure, structural rigidities, anticipatory myopia), together with a discussion of how different types of evaluation studies help mitigate the risk of ‘policy capture’”.

Salo, A. and O. Kuusi (2001). Developments in Parliamentary Technology Assessment in Finland", *Science and Public Policy* 28/6, 453-464.

- En examination of the developments which lead to the institutionalisation of parliamentary technology assessment in Finland, followed by a critical review of the assessment studies that were carried out during the period 1997-2001.

Salo, A. (2001). "Incentives in Technology Foresight", *International Journal of Technology Management* 21/7-8, 694-710.

- Development of a taxonomy for the incentives that can be instituted to promote active stakeholder participation in foresight exercises. A description of the sectoral foresight study which was carried out in collaboration with the Finnish Food and Drink Industries' Federation.

Salo, A. and D.W. Bunn (1995). "Decomposition in the Assessment of Judgemental Probability Forecasts," *Technological Forecasting and Social Change* 49, 13-25.

- Development of a novel judgemental forecasting methodologies, based on the incorporation of incomplete probability information.

Bunn, D.W. and A. Salo (1993). "Forecasting with Scenarios," *European Journal of Operational Research* 69, 291-303. A review of the literature on scenario in planning and strategic decision making, with an emphasis on the quality properties of scenario analysis and the utilisation of scenarios in forecasting

**Jean-Eric Aubert** is currently seconded by the OECD at the World Bank Institute working as senior advisor to a program which provides policy services and training courses on development strategies and knowledge related policies (innovation, education, ICT). At OECD since 1973 he used to work in the Directorate for Science, Technology and Industry, where he has been in charge of science and technology policy reviews, policy outlooks and a number of horizontal studies, including in social sciences. It has ensured occasional consultant for UNESCO, UNIDO and UNCTAD. Chief editor of numerous OECD publications and author of several dozen of articles.

**Major publications include:**

- China and the Knowledge Economy (co-authored with C. Dahlman) World Bank, 2001
- OECD Science and Technology Policy Outlook (as Chief Editor), 1992 and 1994
- Science, Technology and Innovation Policy Reviews (as project leader), 10 publications covering various OECD countries and countries in transition (including Russia)
- Cultural Influences on Innovation Climates in the Industrialised World, in Innovation, Economic Progress and the Quality of Life, edited by G. Sweeney, Edward Edgar, 2001

**Parallel session 4:                   “Implementation of Science and Technology Policy: new instruments”**

**Anthony Bartzokas**

Anthony Bartzokas is a Senior Research Fellow at UNU/INTECH. He is an economist by training with a PhD in the Economics of Technological Change. His work in recent years has focused on empirical studies of technological change at the sectoral level, with special reference to the role of environmental regulation and capital markets on corporate strategies and competitiveness. He has also done extensive work on the impact of innovation and technology policy in regional integration processes of countries and regions with asymmetrical levels of economic development. His current research focuses on the impact of financial systems on innovation and corporate performance and he is also working on the comparative analysis of innovation policy in Advanced and Industrialising Countries.

**Recent publications include:**

- Anthony Bartzokas (2001) Policy Relevance and Theory Development in Innovation Studies, *Enterprise and Innovation Management Studies*, Vol. 2, No. 1, pp. 1-18.
- Anthony Bartzokas (2001) *Financial Markets and Technological Change: Patterns of Technological and Financial Decisions by Manufacturing Firms in Southern Europe*. UNU/INTECH Discussion Paper, 2001-4
- Anthony Bartzokas (2001) Technological Change and Corporate Strategies in the Fertiliser Industry , UNU/INTECH Discussion Paper, 2001-7.
- Anthony Bartzokas, Rhys Jenkins and Jan Hasselberg (2001): *Environmental Regulation in the New Global Economy: the Impact on Industry and Competitiveness*, Cheltenham: Edward Elgar.
- Anthony Bartzokas and Morris Teubal (2002) A framework for Policy Oriented Innovation Studies in Industrialising Countries, *Journal of the Economics of Innovation and New Technology* (2002, Vol. XI, No. 4).
- Anthony Bartzokas (ed.), *The Economics of Industrial Structure and Innovation Dynamics*, Edward Elgar, forthcoming in 2002.
- Anthony Bartzokas and Valpy Fitzgerald, *Financial Systems and Industrial Restructuring in Southern Europe*, Routledge, UK, forthcoming in 2002.
- Anthony Bartzokas (ed.) *Technology Policy in Regional Blocks: a Comparative Perspective*, Routledge, UK, forthcoming in 2002.

**Alfonso Gambardella**

Alfonso Gambardella obtained his PhD from the Department of Economics, Stanford University in 1991. He is Professor at the Sant’Anna School of Advanced Studies, Pisa, Italy. His main research interests are in the Economics of Technical Change, Applied Industrial Organisation, and Strategic Management. He participated in research projects of the EU (DGXII and DG III); the Sloan Foundation; the Italian Research Council (CNR); the Italian Ministry of Scientific



Research (MURST); the Stanford Institute for Economic Policy Research (SIEPR), Stanford University.

### **Recent books and publications:**

- Arora, A., Fosfuri, A. and Gambardella, A., 2001, *Markets for Technology: The Economics of Innovation and Corporate Strategy*, The MIT Press, Cambridge MA.
- Gambardella, A., 1995, *Science and Innovation*, Cambridge University Press, Cambridge UK.
- Gambardella, A., 2001, "Successes and Failures in the Markets for Technology", *Oxford Review of Economic Policy*, Vol.18 (1), forthcoming.
- Arora, A., Fosfuri, A., and Gambardella, A., 2001, "Specialized Technology Suppliers, International Spillovers and Investments: Evidence from the Chemical Industry", *Journal of Development Economics*, Vol. 65 (1), pp. 31-54.
- Gambardella, A. and Torrisi, S., 1998, "Does Technological Convergence Imply Convergence in Markets ? Evidence from the Electronics Industry", *Research Policy*, Vol.27, pp.445-463.
- Arora, A. and Gambardella, A., 1997, "Domestic Markets and International Competitiveness: Generic and Product Specific Competencies in the Engineering Sector", *Strategic Management Journal*, Vol. 18 (Summer Special Issue), pp.53-74.

### **Joachim Arhens**

Presently Associate Professor of Economics (Privatdozent) at the Department of Economics, University of Goettingen/Germany. He has a Ph.D. in economic from the University of Goettingen, an habilitation and Venia legendi in economics (University of Goettingen). He has been for several years a Visiting Scholar at the Hoover Institution/Stanford University, Stanford, CA, USA. Economist at the Asian Development Bank in Manila/Philippines (focus: governance and institutional reform in Laos and Vietnam)

### **Recent publications include:**

- Toward a Post-Washington Consensus: The Importance of Governance Structures in Less Developed Countries and Economies in Transition. In: *Journal for Institutional Innovation, Development and Transition (IB Review)*, Vol. 4, 2000.
- Prospects of Institutional and Policy Reform in India. Toward a Model of the Developmental State? In: *Asian Development Review*, Vol. 15, No. 1, 1999.
- Economic Development, the State, and the Importance of Governance in East Asia. In: *Economic Systems*, Vol. 22, No. 1, 1998.

### *Book Chapters:*

- Governance, Conditionality, and Transformation in Central and Eastern Europe. In: H. W. Hoen (ed.), *Good Governance in Central and Eastern Europe. The Puzzle of Capitalism by Design*. Cheltenham: Edward Elgar, 2001.
- Makro-Gouvernanz und kulturelle Faktoren in der Systemtransformation: Ein konzeptioneller Ansatz aus institutionenökonomischer Sicht. In: H.-H. Höhmann (Hrsg.), *Kultur als Bestimmungsfaktor der Transformation im Osten Europas. Konzeptionelle Entwicklungen – empirische Befunde. (Macro-Governance, Cultural Factors, and Systemic Transformation: A Conceptual Approach from the Viewpoint of the New Institutional Economics*. In: H.-H. Höhmann (ed.), *The Impact of Cultural Factors on the Transformation in Eastern Europe: Conceptual Developments – Empirical Findings*) Bremen: Temmen, 2000.

### *Working Papers:*

- Public Sector Governance in the EU: The Importance of Competition, Meta-Institutions, and Adaptive Efficiency. July 2001.
- Institutions, Governance, and Economic Performance in Post-Socialist Countries: A Conceptual and Empirical Approach. February 2001. Deepening vs. Enlargement of the European Union: Problems of European Integration from the Viewpoint of Club Theory. January 2001.

### **Philippe Mustar**

He is Professor at the "Ecole Nationale Supérieure de Mines de Paris" (ENSMP) where he teaches socio-economics of innovation and science policy. He is researcher at the "Centre de Sociologie de l'Innovation" (ENSMP).

He is a specialist in innovation policies publishing on high tech SMEs and start-ups and the strategic management of research and technology.

### **Recent publications include:**

#### selected books :

- Larédo, P. and P. Mustar (eds), 2001, *Research and Innovation Policies in the New Global Economy, An International Comparative Analysis*, Cheltenham and Brookfield: Edward Elgar, 509 p.
- Callon M., Larédo P., Mustar P. (Eds.), 1997, *The Strategic Management of Research and Technology*, Paris: Economica International, 445p.

#### selected articles :

- Mustar, P. and P. Larédo, 2002, Innovation and Research Policy in France (1980-2000) or the disappearance of the Colbertist State, *Research Policy*, Vol 31/1, pp 55-72.
- Larédo, P. and P. Mustar, 2000, Laboratory Activity Profiles: An Exploratory Approach, *Scientometrics*, 47, 3, 515-539.
- Mustar, P., 1998, Partnerships, Configurations and Dynamics in the Creation and Development of SMEs by Researchers, A study of Academic Entrepreneurs in France, *Industry & Higher Education*, August 1998, pp. 217-221.
- Mustar, P., 1997, How French Academics Create Hi-tech Companies: the Conditions for Success or Failure, *Science and Public Policy*, February, pp. 37-43.
- Walsh V., Niosi J., Mustar P, 1996, "New firm formation and national systems of innovation : biotechnology in the USA, UK, France and Canada ", *Japan Journal for Science, Technology & Society*, vol. 5, pp. 125-161
- Walsh V., Niosi J., Mustar P, 1995, "Small-firm formation in biotechnology: a Comparison of France, Britain and Canada", *Technovation*, vol. 15, n°5, pp. 303-327.

### **Andrea Bonacorsi**

He holds a degree in Economics and Business from the University of Pisa. He is currently Professor at the Sant'Anna School of Advanced Studies, Pisa, Italy. His recent research interests are in the Economics of Science, Industrial Dynamics in high technology industries, and the theory and empirics of diffusion of technologies with network externality. He has authored two books and around 70 papers in international journals and conferences. His articles have been published, among others, in *Structural Change and Economic Dynamics*, *International Journal of Industrial Organization*, *Research Policy*, *Industrial and Corporate Change*, *Journal of International Business Studies*, *Journal of Product Innovation Management*.

In 2000-2001 he served as Economic Advisor of the Minister of Industry and Trade, Italian Government. He chaired the Working Party on Industrial Policy in the Pharmaceutical Industry

and the Committee for the reception of Directive 98/44 on patents in biotech. He drafted several legislative initiatives, including the reform of the Patent and Trademark Agency and the launch of the High Tech Start Up Programme.

He is currently member of the Scientific Committee of the National Fund for Technological Innovation, member of the Working Group on price regulation for drugs, member of the Board of AGITEC (a National Agency for technology transfer) and of several scientific and technical committees. He is the co-founder of a company specialized in technological due diligence, for which he has evaluated several business plans, and of a company specialized in quantitative analysis of scientific research.

### **Ruud Smits**

Ruud Smits (1950) studied physics at the University of Eindhoven and got training in system dynamics at the Massachusetts Institute of Technology and Dartmouth College. He was active as teacher in physics, freelance researcher in the area of technology, economy and society, member of the Social Systems Working Group of the University of Nijmegen, part-time professor 'Technology, policy and society' at the University of Brabant and spent the second half of 1995 as visiting fellow at the Forward Studies Unit, the thinktank of the chairman of the European Commission. The largest part of his career he spent with the TNO-Centre for Technology and Policy Studies. From 1988 till 1996 he acted as director of TNO-CTPS.

Since 1999 he is full time professor 'Technology and Innovation, more in particular the management of innovation processes' in the Department of Innovation Studies of the University of Utrecht. Furthermore Ruud Smits is director of 'Smits Innovation Consultancy' and associate of 'Dialogic', a young and innovative consultancy firm involved in interactive strategy- and policy development in the area of innovation in services and E-commerce.

He is presently Chairman of the steering committee of the Six Countries Program: the Innovation Network and Member of the advisory board of 'Science, technology and Society'.

*The focus of his work is on management of innovation processes, the development of more user-oriented types of innovation policy and -management, technology assessment and the development of instruments that facilitate the participation of relevant actors in decision-making processes on innovation as for instance scenario workshops and ICT-based group decision support systems like electronic meeting rooms.*

### **Recent publications include:**

- With Hekkert en van Lente (2001): 'Transitiemanagement: nieuwe rollen voor NOVEN?', [Transition management: new roles for NOVEN?] report commissioned by NOVEN, Department of Innovation Studies, Utrecht University, Utrecht.
- With Goverse, Hekkert, Groenewegen, Worrell (2001): 'Wood in the residential construction sector: opportunities and constraints', in *Resources, Conservation and Recycling*, 34, 53-74.
- With Bongers and Geurts (2000): 'Technology and society: GSS-supported participatory policy analysis' in: *Special Issue on Public Engineering Management of the International Journal of Technology Management*, Vol. 19, Nos. 3/4/5.
- With Bongers, Geurts & Holland (1998): 'GDSS-supported technology scans at the Dutch Ministry of Economic Affairs', in: *Journal of Decision Systems, Volume 7 -Special issue*, pages 309-329.

<b>Plenary session 5: "What the Future can do for you: A look at Science and Technology trends and policy implications."</b>
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### **William Wicksteed (SQW)**

William Wicksteed has skills in economic analysis, science park and business skills. Main policy areas are in incubator feasibility studies, and biotechnology management, market analysis and technology, economic analysis, strategic government policy, with coverage of all EU, CE&EC countries, Far Eastern and ANZAC also, expertise in Technology Foresight content and methodology, past ETAN panellist, extensive DG ENTR and REGIO knowledge of S&T activities. Author of, amongst several books, "The Cambridge Phenomena" that coined the phrase "Silicon Fen". His company, SQW was founded in 1983. Consultants are drawn from academia, government, industry and the development agencies. Clients include international bodies, such as the World Bank and the European Commission, government departments in the UK and overseas, several directorates of the European Commission, major charitable foundations, private firms and a wide range of regional development agencies and local authorities.

See their website at <http://www.sqw.co.uk/> or write to Bill at [WWicksteed@sqw.co.uk](mailto:WWicksteed@sqw.co.uk)

### **Recent publications include:**

- A Report to the CBI Information Age Partnership on the Information Technology, Communication and Electronics Sectors (ITCE) Clusters
- The Cambridge Phenomenon Revisited
- Planning Policies for High Tech Clusters - article for Planning Magazine,
- What Makes an Entrepreneurial Culture? - for National Federation of Enterprise Agencies

### **Ed Steinmueller**

He is a Professorial Fellow at the University of Sussex, SPRU, and Director of the NPRnet Thematic Network. He was engaged in teaching, research, consulting and university administration at Stanford University's Centre for Economic Policy Research and Department of Economics for twenty years before accepting a professorial chair at the University of Maastricht. He has been Professorial fellow at SPRU since 1997. He has published prolifically and widely in the field of the industrial economics of information and communication technology industries including integrated circuits, computers, telecommunications, software and the economic, social policy issues of the Information Society. He has also contributed to research in science policy and the economics of basic research. Ed Steinmueller is [w.e.steinmueller@sussex.ac.uk](mailto:w.e.steinmueller@sussex.ac.uk)

### **Recent Publications include:**

- Overcoming the 'digital divide': strategies for development and poverty alleviation. In: International Labour Office, World Employment Report 2001. Life at Work in the Information Economy; Geneva: International Labour Office, 2001, pp. 178-214.
- Bottlenecks, standards and the information society. Final report prepared for IPTS, Seville, June 2001. Brighton: SPRU, 2001
- Technology in corporate strategy: change, continuity and the information revolution. In: A. Pettigrew, H. Thomas and R. Whittington (eds), Handbook of Strategy and Management; London: Sage, 2001, pp. 344-372.
- Does the United States need a technology policy? In: C. Howes and A. Singh (eds), Competitiveness Matters: Industry and Economic Performance in the US; Ann Arbor: University of Michigan Press, 2000, pp. 145-162.

### **Franco Malerba**

Franco Malerba is Professor of Industrial Economics and Director of CESPRI<sup>1</sup> at Bocconi University, Milan, Italy. His primary research interest includes industrial organisation, industrial dynamics, the economics of innovation and the theory of the firm. His current research concentrates on modelling industrial economics; sectoral dynamics; the theory of the firm; innovation and international competitiveness; Technological specialisation of firms of firms and countries. His e-mail is: [franco.malerba@uni-bocconi.it](mailto:franco.malerba@uni-bocconi.it)

### **Andrew Webster**

Prof Webster completed his doctoral studies in the sociology of science at York. In 1988 he established the Science and Technology Studies Unit (SATSU) which was relocated with me to York in 1999. In 1999 he was appointed Director of the ESRC's Innovative Health Technologies Programme, an initiative which explores the impact health technologies have on society and conversely the way society shapes and gives meaning to these same technologies. His e-mail is: [ajw25@york.ac.uk](mailto:ajw25@york.ac.uk)

### **Recent books and papers relevant to the Workshop include**

- Andrew Webster and Brian Rappert, 'The Commercial Exploitation of Knowledge', Knowledge, Economy, and Society, (forthcoming) 2000.
- Andrew Webster and Henry Etzkowitz, 'Towards a Theoretical Analysis of Academic-Industrial Collaboration, Capitalising Knowledge, (SUNY: New York), 1998.
- Andrew Webster and Kathryn Packer, 'When worlds collide', in L Leydesdorff and H. Etzkowitz (eds.) University and Industry in Global Relations, Cassells, London, 1997.
- Brian Rappert, Andrew Webster and David Charles, 'Making Sense of Diversity and Reluctance', Research Policy vol. 28: 873-890, 1999.
- Building Innovation Capacity Through Networks, in A Webster (ed), Building New Bases for Innovation, (Anglia University: Cambridge), 1996.
- Capitalising Knowledge (SUNY Press: New York) 1998 (co-editor)
- Contested Futures: Mobilising tomorrow's science and technology (Ashgate, 2000) (co-editor)
- Science Technology & Society: New Directions (Macmillan, 1991).
- Health and Life Sciences Panel: Integrating Social Sciences into the Foresight Process, A Report for the Office of Science and Technology, London, March 1997 (co-author)
- Valuing Technology: Organisations, Culture and Change (Routledge, 1999) (co-author)

### **Thierry Gaudin**

He is currently president of the association "Prospective 2100". He is past director of the Centre de prospective et d'évaluation au ministère de l'Industrie (France). Ancien élève de l'Ecole Polytechnique et ingénieur du Corps des Mines. Il a notamment publié 2100, récit du prochain siècle et coordonné l'ouvrage 2100, Odyssée de l'espèce. Former Director of the Centre de Prospective et d'Evaluation at the Ministry of Industry (France). Thierry Gaudin is [gaudin@2100.org](mailto:gaudin@2100.org)

### **Recent Publications include:**

- Introduction à l'économie cognitive (éditions de l'Aube, 1997)
- L'aménagement du territoire vu de 2100 (éditions de l'Aube, 1994)
- De l'innovation Gaudin avec Jean Eric Aubert (éditions de l'Aube, 1998)
- Préliminaires à une prospective des religions (éditions de l'Aube, 1998)
- L'écoute des silences (coll 10/18, 1978, épuisé).

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<sup>1</sup> CESPRI, Centre for Research on Innovation and Internationalisation Processes

**Peter Tindemans**

Dr. Tindemans trained as a physicist in Leyden University, and has a lifelong interest in the relationship between, technology and society. As Director for Research and Science Policy of the Dutch Ministry of Education, Science and Culture, he was involved in the formulation of nearly all Community programmes, European and national initiatives, and chaired the OECD "Megascience Forum" from 1992 to its end in 1999. He chaired the COSINE group which interconnected the academic networks of the EU MS and now has a world-beating 10GB backbone connection. He works independently under his company "Global Knowledge Strategies and Partnerships". He was a key partner in the EUROPOLIS project and has published many articles on the work. Amongst other activities, he is chairman of the Council that tries to establish the 1.5BEuro European Spallation Source (ESS). He is working with the Universities of Maastricht (NL) and Hasselt/Diepenbeek (B) to set up the Transnational University of Limburg. He is assisting UNESCO and the governments of Lebanon and Bahrain to define and implement new STI policies. He also works with the World Bank and sat on the evaluation panel of the Millennium Science Initiative. His article in **Euroscience** on the **10 April 2001 "New Funding Mechanisms for European Science"** defines the outline of his position.

Peter Tindeman's e-mail is [peter@tindemans.demon.nl](mailto:peter@tindemans.demon.nl)

**Pierre Papon**

He is an internationally renowned policy maker, with extensive experience of the European S&T policy area. Mr. Pierre PAPON, is a former Director General of CNRS and IFREMER, and now heads the Board of OST - the French "S&T Observatory". OST is a "Public Interest Group" (GIP) set up in 1990 at the initiative of the Ministry of Research; and 13 other French public institutions - ministries and research organisations - are members of OST, who finance the activities of OST and constitute its board. The missions of OST are:

- to produce indicators of the scientific, technological and innovation activities of France and its regions in their European and world context,
- to assess the strategies of the actors, provide policy analysis and, more generally, produce knowledge relevant for policy-making and debate regarding science and technology,
- to contribute to methodological research and training in those areas.

The clients of OST are the decision-makers in science and technology policy, at national and regional levels, as well as within the public research institutions; they are also all those interested in science policy, with special attention to those having education responsibilities, journalists, as well as the researchers themselves. There is an extensive web site at [http://www.obs-ost.fr/ost\\_en/present.htm](http://www.obs-ost.fr/ost_en/present.htm) .

**Paul A. David**

Paul David is well known in EU and US circles for his economic analysis of S&T. Most recently he published an interesting paper on the modelling of collaboration and he is interested in structures and their impact on the S&T system. He is Professor of Economics and Economic History (titular), Senior Research Fellow, All Soul's College, University of Oxford. His research interests cover: Economic history, with special reference to modern economic growth in the North Atlantic region; economics of science and technology, economics of information technologies and networks; theory and empirics of non-ergodic

dynamical processes in economics. He is said to be Alan Greenspan's favourite economic historian, and has advised the White House directly.

**Campbell Warden**, President of EARMA

Personal interests are in Management of research, principles and practice, innovation in R&D, New knowledge-based professions - new training requirements, issues for young researchers. The Aim of EARMA is to improve the function of research management and administration and thereby, the excellence and competitiveness of European research. This is via encouraging professional development and promotion of best practice, promoting innovation in the area of research management and administration; improving the interface between science and its management; stimulate and facilitate networking to share all the available expertise and experience: multi-cultural, cross-sector and all over Europe; nurturing and encouraging new entrants to careers in research management and administration and promoting the interests of the research managers and administrator's community in policy-making fora and funding bodies. His personal research interests lie in the development of systems methodology for the valuation and management of Intangibles generated by public research.

### **Recent and Seminal Publications on Foresight and S&T Policy**

Some recommended reading for the Future of Society, and S&T Policy and Foresight include:

- Ages of Gaia, a biography of our living earth, James Lovelock, Norton, New York, 1988.
- Branscomb Lewis M. and Keller James H. (1999), Investing in Innovation
- Callon M., Lascoumes P. and Barthes Y. (2001), Agir dans un monde incertain
- Caracostas & Muldur (1997), "Society, the endless frontier"
- De Bruyne, P. (1988), Politique de la connaissance
- Die Erfundene Wirklichkeit. Wie wissen wir, was wir zu wissen glauben ? Beitrage zu Konstruktivismus, Paul Watzlawick, Piper &Co Verlag, München, Germany, 1985
- Dodgson M. and Bessant J. (1996), Effective Innovation Policy: A new approach
- End of History and the Last Man, Francis Fukuyama, The Free Press, New York, 1992.
- Gaia Atlas of Planet Management, Norman Myers, Pan Books Ltd, London, 1985
- Gibbons, Nowotny..(1997), The new production of knowledge
- Gibbons, Nowotny..(2001), Rethinking science
- Guzzetti L. (1995), A brief History of European Union Research Policy
- Human Development Report, United Nations Development Program, New York, 1994.
- Human Zoo, Desmond Morris, Jonathan Cape, London, 1969.
- Intelligence Revolution, Report on the state of technology, CPE, A.Y. Portnoff, T. Gaudin, Gamma Institute, Montreal, 1988.
- Krige J. and Guzzetti L. 1995) History of European scientific and technological cooperation: Conference held at Firenze, Italy, 9-11 November 1995
- Laredo P. and Mustar P. 2001, Research and Innovation Policies in the New Global Economy
- Macro-engineering, Frank P. Davidson & Lawrence Meador, Ellis Horwood Ltd, Chichester, West Sussex, England, 1992.
- Mindstorms, Children, computers, and powerful ideas, Seymour Papert, Basic Books, New York, 1980.
- Nelson's, Lundvall's, Boyer's and Edquist's books on *national systems of innovation*
- Next One Hundred Years, Jonathan Wiener, Bantam Book, 1990, New York.
- Our Common Future, Gro Harlem Brundtland, World Commission for Environment and Development, Oxford University Press, 1987.
- Papon P. (2001), L'Europe de la science et de la technologie
- Peterson J. and Sharp M. (1999), Technology Policy in the European Union
- Powershift, Knowledge, Wealth and Violence at the edge of the 21st century, Alvin & Heidi Toffler, Bantam Books, New York, 1990.
- Preparing the XXIst century, Paul Kennedy, Harper Collins, 1993.
- Real Sciecne, J Ziman, 2000
- Small is Beautiful, E.F. Schumacher, Blond & Briggs, London, 1973.
- Society of Mind, Marvin Minsky, Simon & Schuster, New York, 1985.
- State of the World 1995, Lester R. Brown, World Watch Institute, W.W. Norton & Co, New York, London, 1995.
- The Discoverers, Daniel J. Boorstin, Random House, New York, 1983.
- Why Big Fierce Animals Are Rare, Paul Colinvaux, Princeton University Press, Princeton, New Jersey, 1978.

### **General Bibliography**

Most recently, the **WorldFuture Society** has voted the following its top books on the Future for the year 2001:

**2001 State of the Future**, by The Millennium Project (book and CD-ROM)

AAAS'stlas of **Population and Environment**,



**Eco-Economy**, by Lester Brown  
OECD's Policies to **Enhance Sustainable Development**;  
UNDP's **World Energy Assessment**;  
UNU's **Ethics and International Affairs** by Jean-Marc Coicaud and Daniel Warner.  
World Bank's **World Development Report 2000/2001**.