

Subtheme / Track: S5 Government and public policy in the Triple Helix era.

Title: Challenges for governmental roles and lessons learnt.

Key words: public policy, government roles, commercialisation of technologies, communities of technology, university-industry cooperation.

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Abstract:

What is missing when regional or national governments play an active role in fostering community expansion? What is really missing when governments correctly anticipate the necessity for merging of communities of innovation? In “challenges for governmental roles and lessons learnt” we investigate limitations and challenges within the existing concept of the Triple Helix. Taking-up the concept of boundary-role stress and role-attribution in a reality of networks and communities of practice quickly unveils the theoretical challenges when implementing government and public policy in the Triple Helix era. This investigation is here done from comparing three recent case studies where European national or regional governments have correctly anticipated ‘where’ and ‘how’ their local research organisations should join forces – with all the implementation problems in the pre-cooperation phase as well as all the consequences from a government becoming the innovation-leader or driver (too far) ahead of real-world-focussed industry and organisational inertia in research organisations.

For quite a while the Triple Helix community has shared the perception that in some parts of the world the university sector is not fully committed towards its third mission or sometimes the weakest strain in Triple Helix. But also for quite some time there was this shared feeling that esp. in Europe more often than not it is the governments who lack the full involvement in the Triple Helix. Some have attributed this governmental behaviour pattern to the management fad of “New Public Management” others from a more sociological perspective have blamed the separation of public governance from “implementation agencies” and “Research Programme Management bodies”.

From a more abstract point of view we can reframe the issue of Triple Helix limitations and challenges in the “Development of Cities of Knowledge, Expanding Communities and Connecting Regions” as the problem of the three core pillars becoming networks or network-type of players themselves. Especially within weak-tie network relations it is even theoretically unclear how you can contribute towards a common development.

To illustrate the consequences for a regional government let us go into the nitty-gritty of European research and “cities of knowledge” realities.

When (regional) governments commission preparatory studies and even the entire design of technology-based stimulation programmes in order to help their cities to better prepare for the international competition for European and national research money information seems to be less an issue; good preparatory studies should not just retrieve or gather information but are rather expected to quasi establish strong ties between core actors in order to implement a competitive strategy or strategy element. However this easily overlooks the inherent nature of network relationships within European research organisations as well as within local industry boards. To give examples from the European context: a regional government in Europe identifies its international strength in transport research (research org A), logistics (research org B), communication technology (research org C). There are also an industry board of local truck operators (org D) and of large scale warehouse operators (org E). Why not just merge forces, and compete for the big European research grants by establishing an entirely new knowledge-node as a brand new competitor within the competition of “cities of knowledge”?

You would not expect that a top-ranked research institution in the field of transport research has not its established links to research partners in the field of public transport or logistics. The same holds true for links between this research centre and key innovators within industries. But more often than not your top partners are all over Europe and not within your own country or even the same city.

What are the consequences for regional governments from the fact of established networks of internationally-minded research primadonnas? How can you encourage critical mass and intense cooperation locally in your city when prestige, international visibility and prestigious large-scale research consortia are a thing of its own. When even international funding rules and review practices seem to punish strong partners to cooperate with a second partner locally instead of a similar partner in a far away region?

This paper presents experiences from the design phases of four science-technology-based stimulation programmes in European contexts (three case studies). Two programmes were on a national level in one of Europe’s rich smaller countries, one on a European scale and the forth on a regional scale in one of the key target regions for structural capacity building and public co-funding in Europe. In terms of technologies these knowledge-based initiatives varied from assistive technologies for the Elderly, Embedded systems research and Innovative satellite navigation related services and applications.

Throughout the design processes the study team focused not only on the state of the art in technology programming but integrated Triple Helix frames into the design processes and into communication efforts with the three communities (researchers, industry and government).

The Triple Helix frame of reference was used in order to effectively speed up the transfer of these emerging technologies and application fields into later stages of technology commercialisation (Jolly).

Data for this comparison of four public stimulation activities is derived from an action-research approach and extensive qualitative interviewing prior to participant observation in several Open-Space-Technology events.

One common limiting factor for effective public designs seems to be rigidly overly simplistic interpretations of key concepts like Cities of Knowledge, Knowledge Society, Science Parks as well as the Third mission of Universities. As a consequence, support in forming educated, realistic practice-based expectations seems to be a core bottleneck in designing effective public co-funding schemes.

Results show clear limits to a static concept of Triple-Helix-role models. But how can we integrate into the concept of Triple Helix the fact that today's governments might for some time have better long-term-oriented research executives than their best research institutions. Due to the longitudinal character of the action-research approach we can show where organizations learn faster to navigate the Triple-Helix-space.

Introduction

We first present some context for the three case studies and the issues studied, then link to the state of the art on the five threads "government roles", "boundary role stress" (or now "linking communities") and "role attribution", "path dependency", "networks, collaboration and weak ties" and finally "practice and emerging roles". Then we clarify the research focus and methodology. Findings are presented in a condensed form and we hope to elaborate more slowly on this during the oral presentation and discussion. The paper concludes with a presentation of key contributions to the Triple Helix concept, research and implications.

What is missing when regional or national governments play an active role in fostering community expansion? When (regional) governments commission preparatory studies and even the entire design of technology-based stimulation programmes in order to help their cities to better prepare for the international competition for European and national research money information seems to be less an issue; good preparatory studies should not just retrieve or gather information but are rather expected to quasi establish strong ties between core actors in order to implement a competitive strategy or strategy element. However this easily overlooks the inherent nature of network relationships within European research organisations as well as within local industry boards. What is really missing when governments correctly anticipate the necessity for merging of communities of innovation?

State of the art

Wickham (2007) maintains that despite widespread adoption of Porter's Industrial Cluster Theory as a policy development framework by federal and state governments over the past decade, the major cause cited for relatively poor performance has been inability of key government officials to implement effective industry policy that simultaneously avoids de facto protectionism and distortion of competition.

Technological progress and innovation plays a central role in a country's economic progress. As an economy advances to the global technological frontier and narrows the technological gap, an innovation-based growth strategy that focuses on investments in R&D and technology creation offers the greatest potential for economic growth. Koh (2006) discusses the requirements for a successful transition, in terms of changes to the technology infrastructure, economic institutions and the incentives' structure.

Minniti (2008) in a special issue on Entrepreneurship claims that in spite of a significant amount of work, there is still much we do not know about the relationship between the role of government policy on entrepreneurial activity.

Leydesdorff / Park showed that network dynamics have varied considerably according to the research policies of the Korean government. However, inter-institutional collaboration in the first decade of the 21st century was negatively influenced by the new national science and technology (S&T) research policies that evaluated domestic scientists and research groups based on their international publication numbers rather than on the level of cooperation among academic, private, and public domains.

Huysman, Wenger, and Wulf, (2001) have elaborated on the differences between communities of technology and communities of innovation. For quite a while the Triple Helix community has shared the perception that in some parts of the world the university sector is not fully committed towards its third mission (Brulin) or sometimes the weakest strain in Triple Helix.

To illustrate the consequences for a regional government let us go into the nitty-gritty of European research and “cities of knowledge” realities.

Research focus

Commercialization of new technologies has been said to be slow in Europe. In order to overcome this deficiency there has been ongoing research into effective practices and creation of new support instruments. Three drivers for this focus have been (1) Ambitious European policy visions (2) a (post-modern?) shift towards commercialisation of science and technological research and (3) a change in political discourse towards users, markets and participation of companies. All three prevailing trends have a strong element of functional hypocrisy (Brunsson, 2003).

Taking-up the concept of boundary-role stress and role-attribution in a reality of networks and communities of practice quickly unveils the theoretical challenges when implementing government and public policy in the Triple Helix era. In “challenges for governmental roles and lessons learnt” we investigate limitations and challenges within the existing concept of the Triple Helix.

To give three examples from the European context: a regional government in Europe (Saxony-Anhalt, Germany) identifies its international strength in transport research (research org A) , logistics (research org B), communication technology (research org C). There are also an industry board of local truck operators (org D) and of large scale warehouse operators (org E). Why not just merge forces, and compete for the big European research grants by establishing an entirely new knowledge-node as a brand new competitor within the competition of “cities of knowledge”?

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How can you encourage critical mass and intense cooperation locally in your city when prestige, international visibility and prestigious large-scale research consortia are a thing of its own.

When even international funding rules and review practices seem to punish strong partners to cooperate with a second partner locally instead of a similar partner in a far away region?

The second example relates to European countries setting up a bilateral mission-oriented technology stimulation programme to foster a significant contribution to demographic change (increasing number of elderly) from information and communication technologies (research). A third example is the same mission-oriented activity within the frame of a national stimulation programme (Austria).

Programmes were on a national level in one of Europe’s rich smaller countries, one on a European scale and the forth on a regional scale in one of the key target regions for structural capacity building and public co-funding in Europe. In terms of technologies these knowledge-based initiatives varied from assistive technologies for the Elderly, Embedded systems research and Innovative satellite navigation related services and applications.

Throughout the design processes the study team focused not only on the state of the art in technology programming but integrated Triple Helix frames into the design processes and into communication efforts with the three communities (researchers, industry and government). The Triple Helix frame of reference was used in order to effectively speed up the transfer of these emerging technologies and application fields into later stages of technology commercialisation (Jolly).

Methodology

Data for this comparison of four public stimulation activities is derived from an action-research approach and extensive qualitative interviewing prior to participant observation in several Open-Space-Technology events.

This investigation is done from comparing three recent case studies where European national or regional governments have correctly anticipated ‘where’ and ‘how’ their local research organisations should join forces – with all the implementation problems in the pre-cooperation phase as well as all the consequences from a government becoming the innovation-leader or driver (too far) ahead of real-world-focussed industry and organisational inertia in research organisations.

The study approach was action-research-oriented participant observation and focused upon actual practices rather than processes (Brown, Wenger).

Findings

We have some clear indication that today's local governments might for some time have better long-term-oriented research executives than their best local research institutions.

A comparison of the three case studies along 15 factors reveals communalities and differences shown in table 1:

Factors / dimensions	Saxony – Anhalt (Galileo Testbed)	Austria (BENEFIT)	Europe (AAL)
(1) No (local) industry commitment yet	X	X	X
(2) One (first and only) shot in terms of public budget	X		
(3) No acceptability of deferring public spending	X	X	X
(4) Local research institutions' strong existing (international) (complementary!) network relationships	X	X	X
(5) No cooperation between local (research) institutions	X	X	X
(6) All or significant impact from technology-based and research-based investment is local	X	X	X
(7) Legal framework limiting amount of public subsidies / co-financing	X	X	X
(8) Research / universities 3 rd role / inertia	X	X	X
(9) Government boundary role-spanning	X	X	
(10) Strong bias pro micro management versus acquisition	X	X	X
(11) Difficulty to accept and integrate hybrid organizations (non-profit)	X	X	
(12) Difficulty to accept and integrate key individuals in innovation system	X	X	
(13) Some organizations do have own contribution of zero (100 % funding)	X	X	X
(14) Multi-disciplinary review issues	X	X	X
(15) Key role of "fellow networks"	X		

Table 1: Key communality factors / dimensions across the three case studies

However, it may be that a significant underlying element to our findings can be explained from the concept of path dependence (Garud, 2001).

Contributions

During the past few decades, local governments have extended the scope of their activities in response to changing economic and political conditions. Labao / Kraybill (2005) have shown that by and large, research on local governments neglects counties. Relative to other counties, however, non-metro counties provide fewer economic development and other public services and are less likely to have increased their role in these activities over time. The same probably holds true for federal states and their governments.

One common limiting factor for effective public designs seems to be rigidly overly simplistic interpretations of key concepts like Cities of Knowledge, Knowledge Society, Science Parks as well as the Third mission of Universities (Brulin). As a consequence, support in forming educated, realistic practice-based expectations seems to be a core bottleneck in designing effective public co-funding schemes.

Results show clear limits to a static concept of Triple-Helix-role models. A significant underlying element to our findings can possibly be explained from the concept of path dependence (Garud, 2001). But how can we integrate into the concept of Triple Helix the fact that today's local governments might for some time have better long-term-oriented research executives than their best local research institutions.

The Drucker Foundation for Nonprofit Management (2002) claimed that hybrid / non-profit organisations will play an increasing role within the 21st Century due to the inherent limits in role-flexibility within the three stereotypical Triple Helix Players. Larédo investigated the disappearance of the (Colbertist) state as well as questions related to and raised by new instruments within the 6th Framework programme. Vestergaard documented and analysed two different models in extensive case-studies. Larédo addressed in his keynote speech at the 4th Triple Helix conference and in several discussion inputs unresolved and emerging issues within

European Research Policy Practice. Davenport at the 4th Triple Helix conference showed evidence that the use of the term ‘user’ and call for users in political discourse is not linked to real markets or real users.

Again an underlying consequence and issue for further research is the idea of improving understanding of the effective practices within the distinct Triple Helix domains.

What is needed is research on effective approaches to further improve impact from research and innovation management in large European collaborative research projects by means of adapting new roles and hybrid organisational models. Seen from Brunsson’s theoretical concept the paper investigated prerequisites for reducing some of the dysfunctional hypocrisy practices within this European Research Management Practice (seen as Triple Helix). The focus is upon the question whether hybrid organisational forms can become instrumental in reducing these dysfunctional practices. Hybrid organisational forms are e.g. governmental agencies with a strong indigenous research activity, university departments with strong entrepreneurial traits, corporate research divisions with strong links to university, retired government officials (Lester, 2008) and finally hybrid organisations per se who are outside the three Triple Helix Players.

Implications

Implications for Triple Helix related research: Open issues for discussion as well as for further research are threefold:

- (1) Design of research and validation exercises that effectively address the issue of hypocrisy and functional hypocrisy within technology stimulation practices and policies
- (2) International validation and extension of our set of communality traits / factors / dimensions.
- (3) Evaluation of pros and cons of introducing a fuzzy element (hybrid organisations and key individuals) into the rather successful concept of Triple Helix.

For quite some time there was this shared feeling that esp. in Europe more often than not it is the governments who lack the full involvement in the Triple Helix. Some have attributed this governmental behaviour pattern to the management fad of “New Public Management” others from a more sociological perspective have blamed the separation of public governance from “implementation agencies” and “Research Programme Management bodies”.

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References

- Aigner, W., Meinhard, D. (2002): How role perception and role attribution hinder successful university-industry and university-government interaction in cooperative research and development projects. Proceedings of the 4th Triple Helix Conference; Copenhagen 2002; Track 5. Rethinking the role of professions in knowledge society.
- Badelt, Christoph (2001): Entrepreneurship in Nonprofit Organisations: Its Role in Theory and in the Real World Nonprofit Sector, in: H.K. Anheier, A. Ben-Ner, (Ed.), Theories of Nonprofit Enterprise, New York (Kluwer/Plenum), 2001
- Bailey, W.J. et al. (1998) Choosing successful technology development partners: a good practice model. International Journal of Technology Management 15(1/2), 124–138.
- Brown, John Seeley; Duguid, Paul (2000b): Balancing Act: How to Capture Knowledge Without Killing It. Harvard Business Review, May-June 2000, pp.73-80
- Brunlin, G.: The Third Task of Universities or How to get universities to serve their communities. In: Reason, Peter, Bradbury, Hilary (eds.): Handbook of Action Research. Thousand Oaks: Sage Publications.
- Brunsson, N., (2003) The Organization of Hypocrisy: Talk, Decisions and Actions in Organizations. Copenhagen Business School Press.
- Burrington J. D.: “University-industry co-operation: a framework for dialogue”, in: Int. J. Technology Management, Special Issue on Industry-University-Government Cooperation, Vol. 8, Nos 6/7/8, p. 440-446
- Callon M., Larédo, Ph., Mustar, Ph. (Eds. 1995): La gestion stratégique de la recherche et de la technologie.
- Chakrabarti 2001: Universities as sources of new technology and problems of interface. In: Hamel, W., H G. Gemünden (eds.) Außergewöhnliche Entscheidungen.

- Coff, R W., K J. Laverty (2001): Roadblocks to competitive advantage: how organizational constraints and individual decision biases hinder investments in strategic assets. In: *The Journal of High Technology Management Research* Volume 12, Issue 1 April 2001 Pages 1-24
- Cohen, W. / Florida, R. / Randazzese, L. / Walsh, J. (1998): Industry and the academy: uneasy partners in the cause of technological advance. In: Noll R. (Ed.) (1998): *Challenges to Research Universities*. The Brookings Institution, Washington DC, pp 171-200.
- Coombs R. / Green K. / Richards A. / Walsh V. (eds.): *Technology and the Market*. 1999
- Darsø Lotte (2001): *Innovation in the Making*. Samfundslitteratur
- Davenport Sally (2002): The 'User' Ideograph in Triple Helix Negotiation Processes. Proceedings of the 4th Triple Helix Conference; Copenhagen 2002; Track 7: Research Policies in the Triple Helix.
- Dill, D., Sporn, B. (1995):, *The Implications of a Postindustrial Environment for the University: An Introduction*. Dill, D., Sporn, B. (Eds.), *Emerging Patterns of Social Demand and University Reform: Through a Glass Darkly*, Pergamon, Oxford.
- Drucker Foundation for Nonprofit Management (2002): *Meeting the Collaboration Challenge Workbook Set: Developing Strategic Alliances Between Nonprofit Organizations and Businesses*
- Duits, E. J. (1999): *L'homme réseau. Penser et agir dans la complexité*.
- Easton G.: "Case Research as a Methodology for Industrial Networks: A Realistic Apologia" in: Naudé P. and Turnbull P. W.(eds.): *Network Dynamics in International Marketing* Pergamon, Oxford, 1998, p. 73-87
- Etzkowitz, H., Webster, Healey: *Capitalizing Knowledge. New intersections of Industry and Academia*. New York 1998
- Etzkowitz, Henry (1998): The norms of entrepreneurial science: cognitive effects of the new university-industry linkages. In: *Research Policy* 27, pp. 823-833
- Foray, D. (2002): Ce que l'économie néglige ou ignore en matière d'analyse de l'innovation. In: Alter, N. (2002): *Les logiques de l'innovation. Approche pluridisciplinaire*.
- Foray, D. / Mairesse, J. (1999): *Innovations et performances. Approches Interdisciplinaires*.
- Garud, Raghu, Karnø, Peter: *Path Dependence and Creation*. London, 2001.
- Guilhon (2001): *Technology and Markets for Knowledge. Knowledge Creation, Diffusion and Exchange within a Growing Economy*. 2001
- Huysman, Marleen, Wenger, Etienne, Wulf, Volker: *Communities and Technologies*. London 2003.
- Jacob, M (2002) 'Rethinking Science and Commodifying Knowledge' Paper presented at the European Association for the Study of Science and Technology Conference 2002 'Responsibility Under Uncertainty' 31 July - 3 Aug 2002, York, UK
- Jolles, R. L. (2000): *Customer Centered Selling : Eight Steps to Success from the World's Best Sales Force*
- Jolly V. K.: "Commercializing new technologies: getting from mind to market – Chapter 4: Incubating to Define Commercializability", Harvard Business School Press, 1997, p. 85-122
- Jones, Lisa Marie (2000): *The commercialization of academic science: Conflict of interest for the faculty consultant*. Dissertation UNIVERSITY OF MINNESOTA 2000
- Kavanaugh, Andrea, Debbie Denise Reese, John M. Carroll, Mary Beth Rosson: *Weak ties in networked communities*. In: Huysman, Marleen, Wenger, Etienne, Wulf, Volker: *Communities and Technologies*. London 2003.
- Kickert, W.J.M., Klijn, EH., Koppenjan, JFM. (Eds. 1997): *Managing Complex Networks. Strategies for the Public sector*.
- Koh, Winston T H.: Singapore's transition to innovation-based economic growth: infrastructure, institutions and government's role. In: *R & D Management*. Oxford: Mar 2006. Vol. 36, Iss. 2, p. 143-160
- Koschatzky, K., Kulicke, M., Zenker, A.(2001): *Innovation networks. Concepts and Challenges in the European Perspective*.
- Koschatzky, K.: *Networks in Innovation Research and Innovation Policy – An Introduction*. In: Koschatzky, K., Kulicke, M., Zenker, A.(2001): *Innovation networks. Concepts and Challenges in the European Perspective*.
- Kuhlmann, Stefan (2001): *Future governance of innovation policy in Europe - three scenarios*, *Research Policy*, Volume 30, Issue 6, June 2001, Pages 953-976
- Labao, Linda, David S Kraybill. *The Emerging Roles of County Governments in Metropolitan and Nonmetropolitan Areas: Findings From a National Survey*. In: *Economic Development Quarterly*. Thousand Oaks: Aug 1, 2005. Vol. 19, Iss. 3, p. 245-259
- Larédo, P. (1998):, The networks promoted by the framework programme and the questions they raise about its formulation and implementation. In *Research Policy*, Volume 27, Issue 6, September 1998, pp 589-598.
- Larédo, P. , Ph. Mustar (Eds; 2002): *Research and Innovation Policies in the New Global Economy: An International Comparative Analysis (New Horizons in the Economics of Innovation)*
- Larédo, Philippe (1995): *The impact of Community Research Programmes in France*. Final Report prepared for the European Commission.
- Lee, Y. (1996): *Technological transfer and the research university: a search for the boundaries of university-industry collaboration*. In: *Research Policy* 25, pp 843-863.

- Lester, Richard H, Amy Hillman, Asghar Zardkoohi, Albert A Cannella Jr. Former government officials as outside directors: the role of human and social capital in: *Academy of Management Journal*. Briarcliff Manor: Oct 2008. Vol. 51, Iss. 5, p. 999
- Levin, M., Davydd Greenwood (2001): Pragmatic Action Research and the struggle to transform universities into learning Communities. In: Reason, Peter, Bradbury, Hilary (eds.): *Handbook of Action Research*. Thousand Oaks: Sage Publications.
- Lyles, M. / Mitroff, I. (1980): Organizational problem formulation. *Administrative Science Quarterly*. Vol 25, pp 102-20.
- May, K. (1997): "The politicking of research results: Presenting qualitative findings in the public arena," in *Completing a Qualitative Project: Details and Dialogue*, ed Janice Morse (Thousand Oaks, Calif: Sage Publications, 1997) pp 329-344.
- Meyer-Krahmer F. / Schmoch, U. (1998): Science-based technologies: university-industry interactions in four fields. In: *Research Policy* 27 1998 835–851
- Minniti, Maria: The Role of Government Policy on Entrepreneurial Activity: Productive, Unproductive, or Destructive? In: *Entrepreneurship Theory and Practice*. Waco: Sep 2008. Vol. 32, Iss. 5, p. 779-790
- Mukherji, Ananda / Hurtado, Pedro (2001): Interpreting, categorizing and responding to the environment: the role of culture in strategic problem definition. In: *Management Decision*, Vol 39,(2) pp105.
- Mustar, P., Larédo, P., (2002): Innovation and research policy in France (1980–2000) or the disappearance of the Colbertist state. In: *Research Policy*, Volume 31, Issue 1, January 2002, pp 55-72
- Nowotny, H, Scott, P and Gibbons, M (2001) *Re-thinking Science: Knowledge and the Public in an Age of Uncertainty* Cambridge: Polity Press
- Park, Han Woo, Loet Leydesdorff: Longitudinal trends in networks of university-industry-government relations in South Korea: The role of programmatic incentives. In: *Research Policy*. Amsterdam: Jun 2010 Vol. 39, Iss. 5, p. 640
- Perrin, J. (2001): *Concevoir l'innovation industrielle. Méthologie de conception de l'innovation*. (CNRS Editions).
- Schartinger, Doris, Christian Rammer, Manfred M. Fischer, Josef Fröhlich (2002): Knowledge interactions between universities and industry in Austria: sectoral patterns and determinants. In: *Research Policy* 31 (2002) 303–328
- Silverstein, M (1996): The public entrepreneurship revolution. In *Business and Society Review*, Vol 96 pp 15-18.
- Sinkula J. M., Baker W. E., Noordewier T.: "A Framework for Market-Based Organizational Learning: Linking Values, Knowledge, and Behavior", *Journal of the Academy of Market Science*, Volume 25, No. 4, 1997, p. 305-318
- Spink A., Greisdorf H., Bateman J.: "From highly relevant to not relevant: Examining different regions of relevance", *Information Processing & Management*, Oxford, September 1998
- Sporn, B. (1999): Towards more adaptive universities: Trends of institutional reform in Europe, *Higher Education in Europe*, 24/1, 23-33.
- Stewart, Glenn, Gable, Guy (2001): *Action Research: Researching with Industry*. In: Buhl, Hans Ulrich, Huther, Andreas, Reitwiesner, Bernd (Hrsg.) 2001: *Information Age Economy*. 5. Internationale Tagung Wirtschaftsinformatik 2001.
- Tübke, A., P. Moncada-Paternò-Castello, J. Rojo, F. Bellido, F. Fiore (2001): Early identification and marketing of innovative technologies: a case study of RTD result valorisation at the European Commission's Joint Research Centre. In: *Technovation* (2001)
- Vavakova, Blanka (1998): The New Social Contract Between Governments, Universities and Society: Has the Old One Failed? by in: *The Endless Transition: A Triple Helix of University-Industry-Government Relations*, Special issue of *Minerva* 36 (1998) 203-288.
- Vestergaard Jakob 2003: *Organising for the Commercialisation of Research Two European Case Studies*. MPP Working Paper No. 18/2003 November 2003 ISBN: 87-91181-60-7 ISSN: 1396-2817
- Wenger, Etienne; McDermott, Richard; Snyser, William M. (2002): *Cultivating Communities of Practice: A Guide to Managing Knowledge*. Harvard Business School Press: Boston.
- Wickham, Mark: Research and evaluation: The Development of Competitive Industries: The Role of State Government Actors. *Australian Journal of Public Administration*. Oxford: Mar 2007. Vol. 66, Iss. 1, p. 38-51
- Wigzell, H. (2002): Science in Europe. Framework programmes Evolve. In: *Science*. Volume 295, Issue 5554, January 18, 2002, Pp 443-445