

THE ROLE OF INDIVIDUALS AND FUNDING IN UNIVERSITY–ENTERPRISE PARTNERSHIPS IN EUROPE. A CROSS-NATIONAL APPROACH

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INTRODUCTION

The present article focuses on knowledge exchange in European universities as viewed through the lenses of university–enterprise partnerships¹. The empirical material is drawn from six European countries (Germany, Italy, Spain, the United Kingdom, the Netherlands, and Poland) and the analysis is performed at three distinct levels: six national case studies, eighteen institutional case studies, and ten partnership case studies, with different units of analysis: countries, individual academic institutions, and individual institutional partnerships².

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² The article refers specifically to national reports from six countries (Spain, Germany, Italy, the Netherlands, Poland, and the United Kingdom), eighteen institutional case studies (University of Kassel, Technische Universität Darmstadt, and Cologne University of Applied Sciences in Germany; Valencia University of Technology, University of Santiago de Compostela and University of Seville in Spain; Politecnico di Torino, University Commerciale Luigi Bocconi, and University of the Salento at Lecce in Italy; University of Maastricht, University of Twente, and Utrecht University of Applied Sciences in the Netherlands; Adam Mickiewicz University/University of Poznan, Poznan University of Economics and Poznan University of Technology in Poland; and University of Warwick, University of Hull, and University of Hertfordshire in the United Kingdom), and ten partnership

The structure of the article is as follows. After this introductory section, the analytical framework is presented in section two. Next, the article explores two major partnership parameters: in section three, the role of individuals (academics/administrators) in establishing and running successful partnerships; and in section four, the role of public authorities, public subsidies and private donations in operations of successful partnerships. Section five presents tentative conclusions. In general, research findings are linked to current discussions in the knowledge transfer and science policy literatures on the growing role of knowledge exchange and university–industry linkages in the knowledge economy, with particular emphasis on the role of individual *vs.* institutional characteristics in successful university–industry collaborations and the role of the public/private mix in funding and governance modes in partnerships.

CONTEXT

Knowledge production in European universities is undergoing a significant reconfiguration, both in its governance and authority relationships (Whitley, Gläser 2007; Whitley 2010; Whitley, Gläser, Engwall 2010; Kwiek 2011) and in its funding modes (Geuna, Martin 2003; Martin, Etzkowitz 2000). The combination of ever-increasing costs of academic scientific and the decreasing willingness and/or ability of European governments to finance academic research from the public purse (Aghion *et al.* 2008; Etzkowitz *et al.* 2000; Geuna 1999; Geuna, Muscio 2009) leads to growing emphasis in both national and European-level policy thinking on seeking new revenue sources for research universities (Alexander, Ehrenberg 2003; *European Commission* 2008, 2009, 2011; Mazza, Quattrone, Riccaboni 2008). New sources may include increased fees for the teaching mission and increasing reliance on various forms of third stream activities leading to more non-core non-state income for the research mission (see Geuna 1999, 2001; Geuna, Martin 2003; Shattock 2009; Temple 2012a).

case studies (Institute of Materials Technology – Polymer and Recycling Technology, University of Kassel; Integrated and Dual Study Programmes, Cologne University of Applied Sciences; Valencia Institute of Biomechanics, Valencia University of Technology; UNIRISCO, University of Santiago de Compostela; Istituto Superiore Mario Boella, Politecnico di Torino; University of Maastricht Holding BV; Kennispark, University of Twente; Adam Mickiewicz University Foundation's Science and Technology Park, University of Poznan; Hull Logistics Institute, University of Hull; and University of Hertfordshire and Heales Medical Ltd), publicly available from the GOODUEP ("Good Practices in University-Enterprise Partnerships") project website: <http://www.gooduep.eu/>.

The inter-sectoral national competition for tax-based public funding has been on the rise in the last two decades, following the rising costs of all major public services, especially health care and pensions (Kwiek 2006; Kwiek 2013a; Powell, Hendricks 2009; Salter, Martin 2001). At the same time, both the ability and the willingness of national governments to fund growing costs of academic research may be still reduced, for reasons as diverse as a shrinking tax base (Tanzi 2011), escalating costs of maintaining the traditional European welfare state model, and economic challenges resulting from global economic integration and the passage to knowledge-based capitalism (Florida, Cohen 1999), as well as the overall social climate in which the promises of science may not be thought by both the population at large and policy makers to be kept by public universities and research organisations (see Martin, Etzkowitz 2000: 6–8 on the “changing social contract” between science and the university, and between society and the state; Guston, Keniston 1994 on the emergent “fragile contract” with science; Ziman 1994 on science under “steady state conditions”, and Kwiek 2005 and 2006 on the changing social contract linking universities, nation-states and welfare states).

In this wider context of the reconfiguration of governance modes and funding modes of university research, knowledge transfer has become “a strategic issue: as a source of funding for university research and (rightly or wrongly) as a policy tool for economic development” (Etzkowitz, Webster 1998; Geuna, Muscio 2009: 93). There are increasing social and political expectations from universities to show “more direct interaction with society and the economy” (Bonaccorsi, Daraio, Geuna 2010: 1) to which both academic knowledge production and various knowledge exchange channels need to respond, following transformations in universities’ environments.

The policy focus at national, European, and global levels on universities functioning in a closer symbiosis with enterprises has never been so dramatic in the last four decades as it is now (for early reports, see Gibbons 1992; Fairweather 1988; Stankiewicz 1986; Ziman 1994). Linking universities to the world of business may take a variety of forms, but each of them, over a period of time, is able to influence the core institutional culture of academic institutions (Maassen, Olsen 2007). Certain patterns of university–business relationships may gradually become institutionalised; the process of recognition of new institutional norms and values, institutional behaviors, routines and procedures (Braunerhjelm 2007: 621) takes time in such institutions as culture-embedded and history-attached European universities (see in particular Bruneel, D’Este, Salter 2010: 859; David, Metcalfe 2010: 90; Etzkowitz *et al.* 2000: 326; Etzkowitz 2003: 116; Ranga, Debackere, Tunzelmann 2003: 302). Transformative rather than incremental changes are possible but, as aptly remarked, “the university is

a very adaptable organism. Throughout its history, it has proved able to evolve in a changing environment” (Martin, Etzkowitz 2000: 17; see especially Kwiek 2013a).

Universities do evolve, following transformations in their environments, do redefine their norms and values, and in the last two or three decades, depending on a national context, they have been following new, highly economic (rather than culture-related) legitimization for scientific research (Aghion *et al.* 2008; Etzkowitz, Leydesdorff 2000: 117; Ziman 1994) as the link between universities and “the promise of economic growth” becomes ever closer (Geiger, Sá 2008: 186–210). The emphasis in national and European policy thinking on the redefinition of academic cultures, norms and values towards accepting ever closer relationships between universities and their economic surrounding has been stronger than ever before in the post-war period. University–enterprise partnerships studied in this article are clearly linked to these more widespread processes of universities’ institutional adaptations resulting from powerful global and European policy trends (see Florida, Cohen 1999: 589–610 on “knowledge-based capitalism” and Slaughter, Rhoades 2004: 305–338 on the “academic capitalist knowledge/learning regime”). The role of different types of collaboration between European universities and their environments has been increasingly discussed in both scholarly and policy literature throughout the 2000s. Efforts to build business–university collaborations are “gathering momentum throughout the developed world” (Lambert 2006: 161).

The article explores relationships between the world of academia and the world of business, as they appear in joint undertakings between academics and business people, most often with the support of public officials and public funding. Differences between the three groups of partnership stakeholders can clearly be shown; indeed their languages and timetables, their incentives for collaboration and their institutional cultures, are often radically different (and therefore, university–industry research relationships have to overcome what Robert L. Geiger termed the “cultural divide”). As he argues, “the cultures of industrial and academic research are fundamentally different. The goal of industry in utilizing research is to obtain an economic return from some technological advantage [...]. Research in industry thus possesses an inherent inclination toward applied research and nondisclosure. Universities, in contrast, have a mission to advance and disseminate systematic knowledge, and these goals permeate the culture of the faculty. For academic scientists, the advancement of their field, duly shared through publication, results in recognition and reputation. Scientific recognition takes place through professional channels and rewards. [...] Faculty research is thus inherently inclined toward theoretical topics and open publications” (Geiger 2004: 183).

And these different institutional cultures clash in partnerships and in their governance modes, which leads to clashes of values and attitudes, procedures and behaviors, and to ad hoc idiosyncratic governance solutions. At the same time, as Pontus Braunerhjelm points out in his study linking social norms, university culture and policies, “altering existing routines and norms that have prevailed for a long time is a difficult and time-consuming task” (Braunerhjelm 2007: 621). Novel trial-and-error governance and management modes gradually become institutionalised as partnerships grow and mature. Some partnerships are short in duration and others are long-term, sustained, but all operate at the intersection of mostly incommensurable institutional cultures (Metcalf 2010: 30). Academia and industry, due to their different missions and modes of operation, are subject to what Müller (2006: 178) called “intrinsically different agendas”, and the cultures of industrial and academic research are “fundamentally different”: while research in industry possesses “an inherent inclination toward applied research and nondisclosure”, faculty research is “inherently inclined toward theoretical topics and open publications” (Geiger 2004: 183). Private industry’s support of university research certainly raises the question of “what businesses expect to receive in return for their investments. After all [...] industry funding is presumably based on a profit calculation” (Weisbrod, Ballou, Asch 2008: 151)³.

ANALYTICAL FRAMEWORK

The present research is focused on diversified channels of knowledge transfer in universities rather than on (more restricted) technology transfer. Consequently, in its analytical framework and empirical background, it goes beyond what Abreu *et al.* (2008: 45) called “a prescriptive view of university–business interactions with a narrow focus on technology transfer”. As they pointed out in their study on *Universities, Business and Knowledge Exchange*, “although technology transfer may be important, it is also necessary to focus on the more diverse and varied impacts of business–university knowledge exchange relations” (Abreu *et al.* 2008: 45).

³ The list of 18 European universities for which institutional case studies were produced and 10 institutional partnerships for which case studies were produced is given before the References section. I would like to thank interviewees throughout Europe who were willing to spend time with the GOODUEP project international team members, and in particular, my own interlocutors in Poland, Germany, and the Netherlands.

In the course of research within the GOODUEP project, two definitions of university–enterprise partnerships have been adopted: a more open one was adopted in the mapping of partnerships in eighteen European universities selected in six countries (university–enterprise partnership as ‘any joint activity involving university and enterprises’), and a more restrictive one was adopted in the selection of case studies of good practices of specific partnerships. Thus, a university–enterprise partnership in the second, more restrictive account, is:

a partnership between the university (or a university unit such as a particular department or research institute), an industrial partner (or some other private entity such as a foundation), and, in most cases, a government partner (national, regional, municipal). The partnership is based on a formal agreement between the partners about the goals, funding, management and governance of the partnership in terms of each partner’s responsibilities and contributions. The activities of the university-enterprise partnerships focus on the manipulation (co-production, sharing, dissemination, valorization, and commercialization) of academic knowledge (see a final report from the GOODUEP project: Mora, Detmer, Vieira 2010: 126).

The analysis of partnerships was thus performed at three distinct levels: national case studies, institutional case studies, and partnership case studies. At the first level, national case studies evaluated general conditions for developing partnerships in six countries. At the second level, institutional case studies reported currently developed partnerships in eighteen European universities in terms of their types, institutional policies to promote them, and governance structures used to develop them. Institutional case studies, in particular, referred to the following variables: types of universities in the country, size of universities, geographical aspects, teaching/research orientation, originality of content/structure of possible partnerships, and originality of governance structures. Finally, at the third level, partnership case studies included science parks, research institutes, joint teaching programs and joint support structures for promoting entrepreneurship and were based on both documentary analysis and semi-focused interviews with key stakeholders.

The partnership-level case studies provide an empirical basis for the present analysis. The variables included in the analytical framework were analysed transversally for the ten cases. The analytical framework referred to two dimensions: the institutional context of partnerships and the governance of partnerships (see Mora, Detmer, Vieira 2010: 175–176). The institutional context section included key elements of the regional and institutional settings (including institutional support structures) which directly affected

the development of a partnership. And the governance section focused on partnership-level structures, mechanisms and instruments used in governing the partnership. The unit of analysis in partnership case studies was a specific partnership at a given university. The institutional context of the studied partnerships was examined with a focus on the level of institutional governance structures, institutional human resources management, incentives to academics and academic cultures, and the degree of decentralization. The partnership's governance was the focus of interviews and it assessed specific aspects of partnerships rather than aspects of institutions; in particular, various roles and responsibilities of partnerships' stakeholders and the role of institutional support structures in developing particular partnerships, the role of governmental actions, policies taken by enterprises and their associations, and potential conflicts of interest. The first question explored was the degree to which responsibilities were shared between institutional, enterprise, and other types of partners in a partnership in developing, by each stakeholder, different functions (funding, programming/research agenda, facilities, execution of core activities, supervision, and other). The second question explored was the degree to which different benefits from partnerships were shared between the university, the enterprise, and other actors (such as governmental agencies): financial benefits, intellectual property, training and education, knowledge and acknowledgement of partners' needs and capacities (including on-site training for students and academic staff, continuous education for enterprises' employees, and the acknowledgement of labor market conditions and enterprises' needs as well as university research results, facilities, and capacities).

The article uses a mixed-method approach (that is, at least one quantitative method and at least one qualitative method, see Greene 2007: 95–137; Nagel *et al.* 2010: 28–50). While quantitative methods in this article collect “numbers”, qualitative methods collect “words” (Caracelli, Greene 1993: 195). Following Nagel *et al.* (2010: 28–50), it uses different methodological strategies: (expert) interviews and documentary analysis and a policy network analysis. Each method uses specific research logic: explorative logic (interviews) and descriptive logic (documentary analysis); each is used here to different degrees. The article supports its theoretical propositions with two-level case studies, statistical analyses, financial statements analyses, analysis of transcribed semi-focused interviews, and (in its contextual part in section six) analyses of large-scale European surveys. In its research design, it follows the logic of case-oriented research, with its emphasis on understanding through differences, exploring diversity, keeping the number of cases low, and focus on processes and temporal sequences (rather than periodization) (see Della Porta, Keating 2008: 198–222), as well as with its emphasis on “policy relevance” (George, Bennett 2005: 263–286).

The three parameters used to explore partnerships in the present article are the following: the leadership and the role of individual academics/administrators in establishing and running successful partnerships; the role of public authorities (at the EU, national, regional and local levels), public subsidies and private donations; and staff mobility between public and private sectors as part of partnerships.

THE LEADERSHIP AND THE INDIVIDUAL/INSTITUTIONAL CHARACTERISTICS

Recent literature on different factors underlying the development of university–industry links draws an important distinction between (often overlooked) individual characteristics and institutional characteristics. For instance, D’Este and Patel (2007: 1309) conclude that “in explaining the variety and frequency of interactions with industry among academic researchers, individual characteristics have a stronger impact than the characteristics of their departments or universities”. The present research indicates that individual research motivations, drives and interests of particular researchers or administrators count at least as much as (and often more than) the academic culture and institutional arrangements in which their activities are embedded (which is consistent with findings by D’Este and Patel about individual *vs.* department *vs.* university characteristics underlying various interactions with industry). Individual academic norms, behaviors and routines seem to count as much as (and often more than) institutional academic norms, rules, behaviors and routines (to which we shall return in a contextual survey-based sixth section about the academic profession). University–enterprise partnerships studied in this article are clearly bottom-up driven; they succeed because individual researchers’ motivations are followed, often despite a weak or missing entrepreneurial culture across their institutions; in contrast, top-down approaches to creating partnerships where individual motivations are weak or missing seem to be bound to fail (just as top-down pushes towards more third mission or more entrepreneurial activities in European universities may be detrimental or ineffective: as Philpott *et al.* observed, “the research indicates that a bottom-up approach is more conducive to fostering academic entrepreneurship in a comprehensive university setting and thus university management need to be cognizant of the underlying culture within their institution before engaging in interventionist policies”, Philpott *et al.* 2011: 169). Partnerships studied from the perspective of the individual/institutional distinction, are all clearly individual-driven rather than institution-driven. They seem to be more successful, though, when the norms, rules, behaviors and routines shared across the

institution are similar to those shared by entrepreneurial researchers or administrators involved in running partnerships. The role of institutional academic norms was already viewed as key when first studies of university–industry liaisons were published (see Fairweather 1988; Stankiewicz 1986: 27).

The role of individuals, powerful and visionary leaders in partnerships studied, is critical. Leaders – both researchers, administrators and researchers-turned-administrators (as often in the case of research groups as “quasi-firms”, Etzkowitz 2003: 111) – make every effort to sustain expanding partnerships and research groups they have created. The “human factor” in partnerships, or individual-level characteristics accompanying institutional-level characteristics, represented by academics and administrators alike (located in universities or in its close surroundings, most often both physically and organisationally), is at least as important as other factors. Which is consistent with what Abreu *et al.* recently observed on the basis of their study of knowledge exchange in the United Kingdom: “There are multiple knowledge exchange mechanisms; the most important of these involve people” (Abreu *et al.* 2008: 45). Other factors include the legal environment in which partnerships appear, the availability of infrastructure and university support structures for entrepreneurship, public and private funding available, and the overall positive attitude of universities towards partnerships with enterprises (or the appropriate “institutional culture”, see Braunerhjelm 2007, and the “entrepreneurial belief” or the “integrated entrepreneurial culture”, see Clark 1998). And often, as our research shows, the “human factor” seems more important than other factors for the partnership’s lasting success.

In several cases studied, the role of individuals involved in creating and maintaining partnerships is overwhelming. Their determination, persistent acting against institutional and administrative obstacles, but also persistent opportunism, or acting when opportunities arise, makes partnerships financially sustainable. Also, recent studies of academic entrepreneurialism in European universities show that the bottom-up approach is of critical importance in establishing and running partnerships, even though the top-down arrangements (e.g. national, regional and institutional policies accompanied by various national and regional forms of supporting entrepreneurialism, or national or regional funding schemes to support university–enterprises partnerships) are important as well (on specific conditions for academic entrepreneurship to appear more widely in European universities, see Kwiek 2008a; Kwiek 2008b; and the second part of Kwiek 2013a book; Shattock 2009; Temple 2009).

The pattern of the emergence, growth and evolution of successful partnerships is structurally similar in several cases studied: there are powerful, charismatic individuals

(rectors, former rectors, or university professors with internationally recognized research achievements). Without much influence of top-down national policies supporting university–industry links, these individuals become heavily involved in establishing a viable support structure of university–industry cooperation. The structure often involves a network of local and regional private businesses (mostly, although not exclusively, small and medium-sized enterprises). These individuals use both their academic powers at the university (to make a public institution enter the partnership smoothly) and their excellent relations with local and regional authorities (to make them enter the partnership and possibly invest municipal land and/or municipal and regional public funding). At the same time, powerful university leaders ensure good working relationships with local and regional businesses, sometimes with core business funders in the region, and, based on their networking abilities and past experiences of collaboration, ensure a necessary level of trust between all stakeholders involved in the emergent partnership. In order to be sustainable, partnerships need long-term trust between their major stakeholders, first of all between universities and enterprises. The initial trust is often based on previous good personal relationships. What also seems useful is high social and institutional visibility (and resulting social and institutional respect) in the region of the major stakeholders in a partnership.

Examples of powerful academic leaders involved in the creation and maintenance of successful partnerships in the current research include a former rector of the University of Poznan, Poland, who in the 1990s founded the first Polish science and technology park with the aid of Poznan municipalities and their land donation, of European Union structural funds, and of municipal and regional funding. After two decades, he is still running the park and the university foundation, and is coordinating its recent multi-million-euro expansion (for a review of recent reforms in Poland, see Kwiek and Maassen 2012, Kwiek 2014a and Kwiek 2013b; for their link to internationalisation of research and research productivity in Poland from a European comparative perspective, see Kwiek 2014b; and on the deinstitutionalisation of the research mission in Polish universities, see Kwiek 2012a and Kwiek 2012). Other examples include a former rector of Politecnico di Torino, Italy, who founded the Istituto Superiore Mario Boella (ISMB) and combined several factors: regional needs of university–industry cooperation, the availability of funding from a private foundation, and the presence of a prestigious Italian university of technology. As the Italian institutional case study (2009) explains, “with the support of the Compagnia di San Paolo, he gave the initial boost for creating the ISMB and he was the Chairman of its Governing body from the beginning. The leadership of one person able to connect different elements in

a big project is in this case the spark which explains to a great extent the success of the ISMB". These findings are consistent with research results from other countries: as stressed recently, in Spain, "relationships between universities and firms are linked to personal interactions between individuals. They are born from common and overlapping interests from both sectors and often take place through exchanges which are negotiated informally" (Ramos-Vielba *et al.* 2010: 652).

Powerful leaders in partnerships studied come from both managerial and academic university ranks. Examples in the current research include the visionary leadership of an eminent professor from the University of Santiago de Compostela, Spain, who stood behind the creation of the UNIEMPRENDE, a support structure dedicated to increasing the entrepreneurial culture at the university; its financial structure, the UNIRISCO, was already "exported" at the national level throughout Spain and then was used as a model in Colombia and Chile. As the Spanish institutional case study (2009) stresses:

The success of the UNIRISCO is certainly also due to the visionary leadership of its inventor: the professor who created the UNIEMPRENDE is completely dedicated to the development and improvement of the complex system of supporting structures he has set up over the years. [...] With his networking skills and his strong will to realize the vision, the inventor of the UNIEMPRENDE presents a strong pull factor driving the university-enterprise partnership towards success by connecting university to entrepreneurial culture.

Another example of the crucial role of individuals in the emergence of knowledge transfer and knowledge exchange structures comes from Valencia, Spain. The Institute of Biomechanics (IBV) was started over 30 years ago by a small group of people, including its current director, and the role of visionary leadership was key to its success. At Twente University in the Netherlands, the key role in promoting the initiative of the Kennispark was played by its former rector, who was heavily involved in turning the university into an entrepreneurial organisation (the institutional change process at Twente was reported for the first time in Burton Clark's seminal discussion of a set of empirical case studies of European universities in *Creating Entrepreneurial Universities*, Clark 1998: 39–60, and then in his *Sustaining Change in Universities*, Clark 2004: 38–49). In smaller-scale partnerships, as in the case of the University of Kassel, Germany, the role of a strong, visionary academic leader was critical. The Kassel partnership studied represented a pyramid of twenty-five researchers in the area of mechanical engineering, with a highly successful professor at its top. The role of the ability to

combine the two university missions (the traditional research mission and various types of “third mission activities”, see especially Guldbrandsen, Slipsaeter 2007: 112ff; Laredo 2007: 441–456; Molas-Gallart *et al.* 2002; Molas-Gallart 2004: 74–89; Zomer, Benneworth 2011) seems crucial to the success of the partnership. While the highly competitive, nationally and internationally relevant research output of the research team paved the way to get competitive national German research funding and research-based academic respect, diversified third mission activities provided additional funding based on hundreds of smaller-scale practical interventions performed at the level of companies, mostly located in the region. The vision of combining internationally competitive research on the one hand and the provision of research-derived practical solutions to daily technical problems of regional small- and medium-size companies, often at an ad hoc basis, on the other hand, lies at the core of the long-term success of this partnership.

This University of Kassel partnership shows, also, the role of academic leadership combined with the ability to work according to two substantially different modes of operation: the academic mode and the business mode. It is a good example of Etzkowitz’s findings about research group functioning as a “quasi-firm” and about the stages of development of a research group:

Research groups operate as firm-like entities, lacking only a direct profit motive to make them a company. In the sciences, especially, professors are expected to be team leaders, and team members, with the exception of technicians, are scientists in training. As group size increases to about seven or eight members, professors who formerly were doing research are typically compelled to remove themselves from the bench to devote virtually full time to organisational tasks. Often persons in this situation describe themselves as “running a small business” (Etzkowitz 2003: 111).

Leaders in partnerships studied are highly ambitious, being clearly in line with what Shattock noted about *Managing Successful Universities*: “ambition fuels success in universities as in other organisations. [...] No organisation can achieve success without being ambitious and competitive; success does not just happen, it is achieved” (Shattock 2003: 137). Both enterprises and universities, as well as their units involved in partnerships, are highly prestige-driven and competitive. Their logic of operation differs considerably, though (David, Metcalfe 2010: 90). As Lambert summarizes the difference, “academics and business people are not natural bedfellows. They talk in different languages. They work to different timetables, and are driven by different incentives” (Lambert 2006: 161). Their time-scales seem to be different,

and bureaucratic hurdles encountered in universities are sometimes hard to explain to enterprise partners. Our findings are consistent with what Ternouth *et al.* (2010) included among limiting factors influencing university–business cooperation: “the natural pace of activity tends to be slower for universities. Lack of true commercial experience leads to protracted and bureaucratic processes. These tendencies reinforce each other to increase transaction costs, which are a deterrent especially to smaller companies which are unused to such dealings”. Also Abreu *et al.* enlist “a mismatch in time lines, with universities often operating on longer time scales” (Abreu *et al.* 2008: 13) among barriers to cooperation. As reported, in a similar vein, in the Kassel partnership case study (2009):

The logic of the company is different from the logic of the university in e.g. time-lapse: the university is naturally inclined to be involved in longer projects while companies usually want as short projects as possible. What does success mean for the staff involved in contract research? Successful projects mean that “the company will call us again”. The institute views itself, and its staff view themselves, as a helping partner to companies – and acts itself “almost like a company”. After years of experience, there is no major clash between the academic culture and the company culture in contracted work performed.

Not surprisingly, the majority of employees in the studied university support structures (located within universities or in a close institutional proximity to them) come from universities, but at the same time, they do not share the same academic culture as their university-based colleagues. They seem more often to rely on a more business-related culture of entrepreneurship (and often only heads of these structures remain both inside and outside of the academia, combining academic posts in the university and administrative posts in the cooperation support structure). The prestige gained through high research achievements is translated into the trust, on the part of enterprises seeking partnerships, in the academics’ abilities to solve the technical problems of their enterprise partners (in a similar manner, the partnership with a medical company studied at Hertfordshire University in the UK would not have occurred if the department partner had not had academic credibility in the area in which this company sought a solution to its technical problem).

Most university partnerships with the studied enterprises are long-lasting and based on mutual “inter-organisational trust” (Bruneel, D’Este, Salter 2010: 861), gained in various types of previous smaller-scale collaborations. Previous small-scale collaborations often lead to higher-level, more institutionalised and larger-scale collaborations, as various recent studies show (D’Este, Patel 2007: 1309; Ramos-

Vielba, Fernández-Esquinas 2012). As Paul Temple pointed out recently, “partnerships shift over time across various categories of interaction. What might have begun as a relatively informal consultancy may turn into a formal, specially tailored teaching activity which might lead to a research collaboration” (Temple 2012b: 14–15). Universities display the ability to manage and to reconfigure knowledge; they are able to “to take knowledge created in one context (consultancy, say) and to apply it in another context (perhaps formal research), with this then feeding into teaching” (see also Jongbloed, Zomer 2012: 99); on mutually feeding relations of “exploration” and “exploitation” between university and industry (Geuna, Muscio 2009); on two-way interactions between the two sectors (Philpott *et al.* 2011: 162–164); on the impact of earlier “softer” entrepreneurial activities on later, more mature and “harder” activities.

The relationships of universities with the studied enterprises are established with strong individuals (rectors, directors or academics), as well as with academic or non-academic (but remaining in an institutional proximity to universities) units or structures at first formed and then headed for many years by those individuals. Also, external funding seems guaranteed by the high academic prestige of university stakeholders, or their powerful business or political or social connections, as well as their high networking skills at local, regional or national levels. These powerful individuals are the founding fathers of a particular partnership or a particular university support structure for university entrepreneurship. Former rectors involved in partnerships are board members in companies which subsidize their academic units or academic structures involved in partnerships as they have long-lasting, trustful relationships with the business stakeholders in the partnership. They have trustful working relationships with business funders and their foundations; also, charismatic academic professors maintain their endowed chairs at universities funded or co-funded by private local or regional companies; and they maintain their board memberships in science and technology parks and in university support structures, inside or outside of academia.

Their role as individuals is critical, and they are not easily replaceable. The success of a lasting partnership is often an individual success much more than an institutional success. However, the less institutionalised partnerships are, the more susceptible they are to the succession problem, as evident from several case studies. Social networking skills play an important role in partnerships, as shown by the Italian partnership case study of the Politecnico di Torino (2009):

The ISBM was supported from the beginning by the Torino Wireless, a regional foundation of companies, local authorities, and universities which promote innovation

in the region. The role of the Torino Wireless is finding out the needs of innovation that, when feasible, are solved by the ISMB. To some extent, the Torino Wireless is a provider of clients to the ISMB. Not too surprisingly, it happens that the Chair of the Torino Wireless is the former rector of Politecnico and Chair of the ISMB. Public authorities are not directly involved in the ISMB (although they are part of the Torino Wireless) but they have important demands of innovation which are tunneled through the ISMB.

Academic linkages with private companies are based on very individual, trustful, and long-lasting relationships. The general rule could be that the more institutionalised a partnership support structure is (as the cases of the Kennispark in Enschede, the Netherlands, the ISMB in Torino, the IBV in Valencia, and the AMU Foundation in Poznan indicate), the more financially and institutionally viable (and the less vulnerable) it is in the future. In the cases of more individual (academics-led research) partnerships, such as, e.g., partnerships with small and medium enterprises via contracted research (as in the cases of the Kassel and Hertfordshire partnerships studied), there is a danger that they may gradually disappear as the level of their institutionalisation is usually very low.

PUBLIC SUBSIDIES AND PRIVATE DONATIONS IN PARTNERSHIPS

Partnerships studied usually involve universities, business partners and local, regional or national governments. Public subsidies, private donations, or a combination of both sources of third stream funding, play a fundamental role both in their establishment and in their financial sustainability (which is consistent with the “no margin, no mission” slogan, a reminder that university partnership structures, as other organisations, cannot operate without revenue, as it is pointed out by Weisbrod, Ballou, Asch 2008: 5). The combination of the support of public authorities and access to public subsidies (especially to those from municipal and regional authorities and to regional public funding) and the support of private business donors and partners is crucial. Regional and national governments, in general, are as important in partnerships as universities and business even though, following Geiger, who analysed American universities, it can be stated that “universities are the sellers and commercial firms the buyers” (Geiger 2004: 182). Governments throughout the industrialised world are helping to build bridges between the higher education sector and the business sector. Lambert (2006: 162) lists three incentives governments can

have in supporting building the bridges: they want to push their economies up the value chain and build a competitive advantage in knowledge-intensive industries; they want to maximise the return on the public funding of research; or they want to attract and retain research-intensive multinational businesses at a time when business research is going global. “Nowhere are these challenges more important than in Europe”, he concludes. Partnerships studied seem to need both public subsidies, especially at the time of their inception, and private donations from their business partners, especially later in their lifecycles. The combination of public and private funding and public and private lobbying and public relations seems especially fruitful. Public funding is most often available to partnerships and university partnership support structures in their initial stages of operation. Then they often become increasingly financially self-reliant and base their operations increasingly on non-core income. But as literature shows, financial self-reliance of both partnerships and support structures is extremely hard to achieve. Some partnerships studied (e.g. the ISMB in Torino, see <http://www.ismb.it>) have, for many years, had access to annual multi-million euro donations for running costs from their major private partners. Other partnerships, like the AMU Foundation in Poland and its science and technology park (see <http://www.ppnt.poznan.pl>), or the Kennispark at Twente University (see <http://www.kennispark.nl/>), have received substantial public financial support in the beginning, including the title to the ownership of land on which their infrastructure is being built (on the role of Polish universities in regional development, see Kwiek 2012b). The case studies suggest that, in general, successful partnerships with enterprises most often made very good use of public subsidies, especially of regional development funds from regional development agencies or, as in the Polish case, of both regional and European structural funds. Then, with the passage of time, they are increasingly determined to seek new sources, especially non-state or private sources of revenues.

The availability of public funding is sometimes a decisive factor for a partnership to emerge: it was the case of the Hull University partnership in the UK, where regional development funding was made available to meet its start-up costs. In the case of the AMU Foundation and its science and technology park, both regional funding and European structural funds (regionally distributed), as well as the donation of the land belonging to the municipality, were of critical importance both in the early 1990s and in the 2000s (its second period of expansion). The Twente University Kennispark case (and its predecessor, science and technology park) shows the importance of both public (municipal, regional, and national) funding and the donation of land belonging to the city. As the Kennispark partnership case study explains (2009),

Financial commitment from the city, provincial and central governments for Kennispark started. The initiative was attractive due to its potential economic impact on the Twente region; at the same time, there were funds available for innovation, including those from the 2002–2003 Municipality Master Plan. Important funding from the three levels was received, being crucial for the project's viability.

On a smaller scale, public funding was also instrumental in setting up a University Hertfordshire partnership with a medium-sized medical company in which governmental KTP scheme (Knowledge Transfer Partnerships) was used to cover the costs of placing researchers (called KTP Associates) in firms having specific research and development tasks to perform. Also, in the Spanish case of the University of Santiago de Compostela, the UNIEMPRENDE university support structure (see <http://www.uniemprende.es>) has initially received financial and technical support from the regional government.

The regional involvement means, in practice, not only public funding for partnerships but also the commitment of governmental structures and regional development agencies to the development of the region through the partnership. The will to boost regional economy via various forms of university support structures for partnerships was clearly evident in the cases of Twente University and Maastricht University, where regional authorities have had strong interest in collaborating not only with the university sector but also with the private sector, the other necessary element of partnerships. In the AMU Foundation case in Poland, structural funds invested in both AMU Foundation's science and technology park and the university itself have a clearly regional dimension. In the Cologne partnership, where demand-oriented study programs were developed (and whose model of combining studying and working became a German benchmark for other universities of applied sciences), the regional market-led demand to develop fee-based courses in some areas of studies was a determining factor.

Regional funds in the partnerships studied were both public and private. In two cases the fostering of regional development was strongly supported by regional private big business institutions: in the case of Torino's ISMB, an important national Torino-based bank (INTESA San Paolo) started a foundation and acted together with the technical university (Politecnico di Torino), accompanied by several other smaller private business partners. In the case of the UNIEMPRENDE support structure at the University of Santiago di Compostela, two big Galician private enterprises (Inditex and Grupo San José) invested their money, needed to start the UNIRISCO company (see <http://www>.

unirisco.org). The role of local small and medium enterprises was important in the Kassel case of academic entrepreneurship: at first, the regional entrepreneurs' association was funding an endowed chair for the professor in charge of the partnership at the university, and then the enterprises involved were often valuable clients in contracted research activities of the partnership. Ideally, both substantial public and private funding is made available to a partnership, as in the case of the University of Santiago de Compostela, in which both the support from Galician private enterprises and from regional development agencies were of critical importance to establish the partnership.

Both public funders (national and regional authorities, regional development agencies) and private donors (especially big companies) remain heavily involved in the governance of partnerships, and the relationships between public and private stakeholders and the university representatives in partnerships become trustful. Joint steering and supervisory bodies that include representatives of both public authorities and private companies are being formed, and the three types of stakeholders – that is, public authorities, private companies, and public universities – often meet on a regular basis. As a Maastricht partnership case study (2009) stresses,

Steering bodies with representation of members from Maastricht University and other stakeholders (City of Maastricht, Academic Hospital, LIOF development agency, business sector) are put in place and meet on a regular basis with the management of the respective valorisation bodies. The board members discuss the strategy of the Holding, respectively BioPartner, BioMedBooster. There is good communication and trust among the partners. This was built up over the years and partly thanks to the persons sitting on the boards and the management.

The partnerships studied, ideally, need both public subsidies and private donors for their operations. Both public and private funding is valuable; both short-term (for instance, start-up costs) and long-term commitment contributes to the success of partnerships. The scale of public and private commitments to partnerships differs across partnerships and across countries studied; also, the role of representatives of public authorities and of private donors on boards of directors, councils or steering bodies of partnerships differs across institutions and countries, often being a reflection of national traditions. Most successful institutions and institutional support structures seem to be able to combine public and private funding from the very beginning. As already noted three decades ago in a study on American research universities and their patrons, “excessive dependence on a single patron produces an unhealthy degree of vulnerability. This is true even when the patron is as internally diverse as is the federal bureaucracy” (Rosenzweig, Turlington 1982: 47; see esp. Shattock 2009 and Williams 2009).

CONCLUSIONS

The research findings in this article strongly support the argument according to which the role of individuals in knowledge exchange is equal to (and often higher than) that of institutional (both funding- and governance-related) arrangements. Case studies across European universities seem to indicate that individual academic norms and values, as studied in research on the academic profession, count at least as much in the development of university-enterprise partnerships as institutional academic norms and values, as studied in institutionalist approaches to the studies of organisations (Maassen, Olsen 2007). The partnerships studied here are bottom-up driven and heavily dependent on their visionary leaders, who often function like “quasi-firms”. In order to be successful, policy changes leading to the enhancement of university-business links need to refer to the existing academic norms and values, which show strong country-variations across Europe. The most successful partnerships seem to emerge when there is a convergence between individual academic norms, supportive of knowledge exchange with the outside environment, and institutional academic norms, favoring academic entrepreneurialism and third mission activities. The pattern of growth of partnerships across Europe seems structurally similar, although the level of public engagement (and public funding) in partnerships varies widely. While the world of academia and the world of business operate like separate universes (with different attitudes and work motives, different institutional cultures, timeframes of operation, and conceptions of what their core activities are), at the intersections between them, found in partnerships, the two worlds come closer for specific purposes, in specific academic places, and with specific (often publicly supported) funding arrangements. The inter-sectoral mobility is very low, being mostly one-way (from the academia to the business sector) but is nevertheless present through various part-time arrangements. The European academic profession, as viewed through the lense of a large-scale statistical analysis of eleven countries performed in the EUROAC project (see Kwiek 2014b), seems surprisingly highly appreciative of commercially-oriented research, with such countries as Germany, Finland and Switzerland having one fifth or more academics characterizing their research emphasis as strongly commercially oriented. The most popular soft channel of knowledge transfer, i.e., “writing academic papers”, does not seem to collide with such hard channels as “technology transfer” and “patenting”, at least at the level of national systems (an individual-level cross-country analysis of relationships between engagement in soft and hard channels would go beyond the scope of this article but is an exciting research topic).

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ЗНАНИЕТО КАТО ЦЕННОСТ, ПОЗНАНИЕТО КАТО ПРИЗВАНИЕ

Юбилеен сборник
В чест на професор Пенка Бояджиева

Румяна Стоилова, Кръстина Петкова, Светла Колева
съставители

Knowledge as a Value, Scientific Knowledge as a Vocation

Jubilee Collection
in Honour of Professor Pepka Boyadjieva

Rumiana Stoilova, Kristina Petkova, Svetla Koleva
Editors



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