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KNOWLEDGE ANGELS

OR HOW CREATIVE PEOPLE FOSTER INNOVATION IN THE SERVICE INDUSTRY: EMERGING CONCEPTS AND INTERNATIONAL OBSERVATIONS

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8.1 Introduction

In one of the first contributions to the systemic view of innovation, Lundvall (1992) defined a system of innovation as being "[...] constituted by elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge [...]" (Lundvall 1992, p. 2). This short reference indicates three key aspects which form the focal point of this article: 1) elements, 2) relationships and interactions, and 3) new and economically useful knowledge. Within the context of the increasing importance attributed to knowledge and knowledge-related activities such as innovation (third aspect), our article focuses on the specific element (first aspect) of service firms – notably the segment of knowledge-intensive business services (KIBS) – in innovation systems, their interactions and relationships with other actors (second aspect) and also internally within their companies and company networks.

The undeniable importance of knowledge and innovation in modern economies justifies the increasing interest of researchers in studying the relationships between knowledge-intensive business services (KIBS) and innovation. This chapter delves deeper than the micro level of individual KIBS firms and focuses on creative individuals within KIBS. These individuals are suspected of playing a crucial role for the innovativeness of this kind of firm.

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According to Sternberg and Lubart (2008, p. 3), "creativity is the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints)." As such, creativity can be seen as a subtle mix of ideas, visions, market knowledge and problem-solving competences which constitutes a decisive skill in a knowledge-based economy. In the same way that business angels can play a decisive role in the development of innovative firms by providing financial support, it is assumed that creatively gifted individuals can act as knowledge "catalysts" within KIBS. Consequently, creative individuals acting within KIBS are called "knowledge angels" in analogy with business angels. In order to investigate this aspect, an ad hoc explorative methodology was developed and field research was performed in different countries.

This contribution is structured as follows: first the topic of knowledge angels is addressed from a conceptual perspective, presenting them as the possible missing link needed to fully understand what is really happening when KIBS innovate. The third section is devoted to empirical insights and the fourth section draws possible implications for local, innovation-oriented policies.

8.2 Entering the black-box of innovation in KIBS or: why knowledge angels may be the missing link for understanding what is really happening when service firms innovate

Starting with the seminal work by Miles et al. (1995), KIBS have been a research subject since the middle of the 1990s. As depicted in Muller and Doloreux (2009), studies devoted to KIBS and innovation have developed strongly over time. The initial phase of academic work focused on higher services and comprised mainly theoretical reflections – with only a weak empirical basis – recognising KIBS as a specific sector. Miles et al. (1995) proposed the first detailed elaboration of KIBS following (and inspired by) the works of Barras (1986; 1990) on the use of ICT in services as well as the taxonomy of services by Soete and Miozzo (1990). These seminal studies stressed that KIBS form a category of service activity, compared to other service branches, "which is often highly innovative in its own right, as well as facilitating innovation in other economic sectors, including both industrial and manufacturing sectors" (Miles et al. 1995). This insight, in turn, stimulated significant subsequent research efforts.

The most important subsequent development that made a significant contribution to understanding the innovation process and innovative patterns was probably made possible due to the introduction of the Community Innovation Survey (CIS). This survey was developed to collect micro-level data on the innovation activities of firms in Europe. It includes questions about innovative processes as well as innovative performance. Service innovation was also included in the Oslo Manual for collecting and interpreting innovation data, which states that "the importance of innovation in the services sector and of the services sector's contribution to economic growth is increasingly recognised and has led to a number of studies on innovation in services [...]" (OECD and Eurostat 2005, p. 38). Empirical studies of KIBS focus mainly

on topics such as patterns of innovation and sources of competitiveness (Camacho and Rodriguez 2005; Evangelista 2000; Hollenstein 2003; Tether 2003; Tether and Hipp 2002), innovation and sectoral performance (Cainelli et al. 2004; 2006; Evangelista and Savona 2002; 2003) and innovation and inter-firm collaboration (Djellal and Gallouj 2001; Koschatzky 1999; Muller 2001; Muller and Zenker 2001; Tether 2003). In general, these studies show that innovative activities in KIBS are distinct from those in manufacturing firms and that KIBS are more intensively engaged in innovation and training activities than their manufacturing counterparts, but that they are less likely to collaborate with international partners or perform internal R&D. In addition, the innovativeness of KIBS is strongly linked to highly qualified employees and the intensive exploitation of human capital (cf. Muller and Doloreux 2009).

A shared finding of the above-mentioned studies which serves as a base for further KIBS-related analyses is that certain "basics" of service productions and innovations apply to every type of service company, a fortiori to KIBS, i.e.:

- synchrony of production/delivery and consumption
- intangibility (non-storable economic goods
- mainly knowledge- and competence-based (even if some artefacts and/or technologies may contribute to the process)

In emphasizing that "[s]ince KIBS' growth is much faster than that of other sectors, it cannot just be driven by the growth of these sectors that are users of KIBS", Miles (2005, p. 43) suggests that something peculiar is happening within this type of firm which cannot be explained by only the changes affecting the context(s) in which they evolve. In line with this assumption, and keeping in mind the "basics" of the service industry, the starting point of this article is that a clear research gap can be identified. In fact, something is clearly missing, namely the key factor explaining service firms' innovativeness.

Strambach (2008) distinguished horizontal and vertical knowledge domains which made it possible to go one step further in this direction.[1] Consequently, phenomena like disintegration in production, further fragmentation of value chains, modularisation and externalisation processes have led to the continued evolution of KIB structures and to new hybrid forms of organisation. These processes are reinforcing the complexity of knowledge domains around business functions and are creating new proximity–distance relationships between multiple intra- and inter-organisational actors – not only in organisational and spatial terms, but, above all, in institutional and cognitive terms.

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1 Strambach (2008, p. 163) claims that these are important for understanding KIBS' evolution and innovation capacities: "We define horizontal knowledge domains with respect to business functions and understand vertical knowledge domains as sector-specific knowledge. KIBS are acting in complex horizontal and vertical knowledge domains which force them to combine and reconfigure knowledge units very flexibly from various knowledge categories and knowledge bases by producing customised 'knowledge products'. [...] KIBS appear to be responding to the increasing need for coordination, communication and organisation caused by these developments with both their composite knowledge products and the mode they use in producing their services."

What if something very basic has been disregarded (or at least insufficiently stressed) so far? Without denying the importance of previous work, it must be pointed out that, for KIBS and micro-level creativity, changes and transformation are at the level of individual actors. In this respect, Andries and Czarnitzki (2012) underline that there may be a clear link between individual knowledge and innovation since it is widely accepted for any kind of organisation that there is a close link between the capability to innovate and its individual knowledge resources. In particular, they point out that various studies characterise innovative companies as knowledge creating (e.g. Nonaka and Takeuchi 1995), or as exploring innovation in the sense of a knowledge management process (e.g. Madhavan and Grover 1998). Along the same lines, according to Grant (1997) for instance, individuals are the primary agents of knowledge creation and – in the case of tacit knowledge – the principal repositories of knowledge.

Generally, and in line with Cohen and Levinthal (1990), it can be asserted that a key principle in the literature on innovation is that a firm's innovation capacity depends on its ability to create, absorb and develop knowledge. In addition, individual knowledge and skills (like other intangible resources such as brand equity) are more likely to produce a competitive advantage because they are often rare and socially complex, and therefore difficult to imitate (Hitt et al. 2001). It is obvious, however, that smart ideas alone are not enough! To be innovative or innovation-supportive is not only a question of being "bright" or "talented", but requires a set of psychological characteristics which correspond to a certain extent to the qualities of an entrepreneur. In this regard, Dyer et al. (2011) derive the following five key competencies of today's innovators from a broad range of interviews: associating, questioning, observing, networking, and experimenting. They show that innovators have certain specific characteristics on a cognitive dimension, but also behave in a specific way and are embedded in a specific, favourable environment.

Consequently, and based on the above described findings, the core assumption of our research is that there are specific individuals within KIBS, who perform tasks – based on their creative abilities – that significantly increase the creative capacities of the firms in which they are embedded. In order to obtain more evidence for this premise, the research project KAIROS (Knowledge Angels or the Reinvention of Outstanding Services), named for the Greek god of "right time and timelessness",[2] was launched to investigate whether outstanding individuals exist who play a key role in their firms' innovation activities. We call these persons *knowledge angels*; their existence in KIBS serves as a working thesis to facilitate the understanding of the impact of individuals on KIBS' innovation trajectories.[3] The underlying assumptions of our

2 Initiated in 2007, the research project was funded by the Fraunhofer Institute for Systems and Innovation Research ISI in Karlsruhe, Germany, for the regions of Baden-Württemberg and Alsace. The research performed aroused the interest of other researchers, so that the case study regions were extended to China (especially the Beijing region), the metropolitan areas of Paris and Montreal as well as to Catalonia (particularly Barcelona). This chapter is mainly based on the surveys performed in Alsace, Baden-Württemberg, the Beijing region and Catalonia.

3 Cf. also Muller (2008), Muller et al. (2009; 2010; 2012).

research can be briefly summarised as follows. Knowledge angels are (or may be) specific individuals, who: (i) typically act as consultants (but not necessarily exclusively); (ii) may have the talent to "sense" things before they happen, or make them "happen" (from the subjective point of view of an external observer); (iii) make a difference in the way knowledge is created, organised and flows within the firm and between the firm and its partners. In other words, knowledge angels are "suspected" of being able to generate their own markets (and/or to create their own jobs and working environments) to a certain extent. It is assumed that these key actors within KIBS have the talent and creativity to evaluate externally available knowledge and to match it with the KIBS' needs.[4] In this respect, there are some analogies to business angels who also – but in different ways – contribute to firms' evolution and innovation (cf. Table 8–1). Both types of angels bring pertinent assets to companies and can substantially contribute to the companies' success. However, though there are certain similarities between the two types of angels, the main difference between them is in the degree of integration in internal company issues: as active investors, business angels are external to the company they invest in, at least in the first phases of their investment. Even if they become increasingly integrated into the company in further phases of collaboration – for instance as board members – they still retain a certain distance to the day-to-day activities of the company. On the contrary, knowledge angels as presented here are wholly "internal" to the KIBS they are employed in.

Table 8–1: Core characteristics of business angels and knowledge angels

Type of angel characteristics	Business angels	Knowledge angels
Core resources	Money and business experience, contacts (and to a lesser extent ideas)	Knowledge, ideas and vision (and to a lesser extent business experience)
Strongest motivation for action	"Fun factor" and financial interest (and a willingness to support younger entrepreneurs)	Quest for freedom, self-realization, "testing" new ideas (and a willingness to support co-workers)
Main forms of knowledge support	Supporting existing knowledge creation processes and situations	Initiating new knowledge creation processes and situations

Source: own compilation; business angel characteristics based on Just (2000), Hemer (2001)

4 So far this seems coherent with other empirical findings (not specific to KIBS but to other firms, especially manufacturing and services SMEs) as described by Andries and Czarnitzki (2012, p. 19): "[...] we show that for process innovation performance, small firms benefit greatly from suggestions by non-managerial production employees. Also for product innovation performance, we find a positive effect of using non-managerial employees' ideas. This suggests that the historical focus on the entrepreneur/CEO which was broadened more recently to the study of entrepreneurial teams does not yet fully capture small firms' innovative potential."

8.3 Tracking and characterising knowledge angels

The primary goal of the KAIROS project was to validate the existence of knowledge angels and identify core characteristics of this group. The investigation was strongly exploratory in nature and did not aim at a high level of exhaustiveness but was intended to maximise the probability of detecting specific features revealing the existence and characteristics of knowledge angels, and to identify pertinent aspects for further research. A phenomenological approach was applied and an explorative and qualitative research design was chosen. The unit of analysis (Yin 2003, p. 22) stretches across both (i) the firm as an entity and (ii) individuals who might reveal themselves to be knowledge angels.

Following this conceptual approach, interviewees were selected in a two-fold manner: (i) the identification of KIBS firms and (ii) the identification of key individuals within those firms. Representative firms were chosen to fulfil the following criteria: 1) different KIBS sectors, 2) different firm sizes, and 3) different locations. Participating companies generally tended to be small to medium-sized with 10 or more employees. In order to identify appropriate KIBS, company databases were consulted and/or personal contacts used. We extracted NACE 72 (data processing and databases), NACE 73 (research and development) and NACE 74 (provision of business-related services) firms in the targeted regions. Additionally, we tried to identify persons within the companies who matched our vision of potential knowledge angels. Whenever possible, these key persons were contacted directly, but in most cases, companies did not introduce their staff on the website and suggested the interview partners themselves.

Altogether, 50 face-to-face in-depth interviews were conducted between October 2008 and the end of 2009 in five different countries focusing on a particular region in each country in order to detect references to certain regional specificities, national environments and socio-cultural influences.[5]

An interview-guideline was prepared for the interviews, which allowed open responses and an interactive conversation in order to collect information along five heterogeneous dimensions (displayed in Table 8–2, which illustrates the interviewees' parameters in each of the five survey dimensions). The main results of the interviews can therefore be displayed along the following five dimensions termed ALPHA to EPSILON: (ALPHA) individual trajectories and professional experience, (BETA) business location and regional environment, (GAMMA) knowledge access and modes of interaction, (DELTA) modes of problem solving and visionary capacities, and finally (EPSILON) firm characteristics.

Without forestalling the key results, it can be stated that there are indeed persons among our interviewees who function as knowledge angels as proposed in Table 8–1. However, depending on their socio-cultural context they perceive their role differently. They describe themselves as "knowledge brokers" (Baden-Württemberg), as "idea

5 15 interviews were conducted in France (10 in Alsace and 5 in the Paris agglomeration), 10 in Germany (Baden-Württemberg), 10 in China (mainly in the Beijing agglomeration), 10 in Spain (Barcelona agglomeration), and 5 in Canada (mainly in the Montreal agglomeration).

Table 8–2: Synthesis of the 30 investigated cases

Case no.	Dimension					Most probable knowledge angels
	ALPHA Professional and personal background	**BETA** Business location and environment	**GAMMA** Knowledge access and interaction	**DELTA** Problem solving and visions	**EPSILON** Corporate frame, enterprise culture	
1	***	***	***	***	***	√
2	**	*	***	***	**	
3	**	**	*	*	**	
4	***	**	**	**	**	
5	***	***	***	***	***	√
6	***	***	***	***	***	√
7	***	***	***	***	**	√
8	***	**	**	***	***	√
9	***	*	*	*	*	
10	**	**	***	***	**	
11	***	***	***	***	***	√
12	***	*	*	*	**	
13	*	**	***	***	***	√
14	**	*	*	***	**	
15	**	*	*	***	**	
16	***	**	**	***	**	
17	***	***	***	***	***	√
18	***	**	***	**	**	
19	***	**	***	***	**	√
20	**	*	***	***	***	√
21	*	***	***	***	***	
22	***	***	***	***	***	√
23	***	**	***	***	**	
24	***	***	**	***	***	√
25	**	***	**	***	**	
26	**	**	**	***	***	
27	*	*	**	**	**	
28	***	***	***	***	**	√
29	**	**	**	***	***	
30	**	*	*	***	*	

Baden-Württemberg: Cases 1–10, Alsace: Cases 11–20, China: Cases 21–30
Note: *** High probability of being a knowledge angel; ** Medium probability of being a knowledge angel; * Low probability of being a knowledge angel.
Source: own compilation

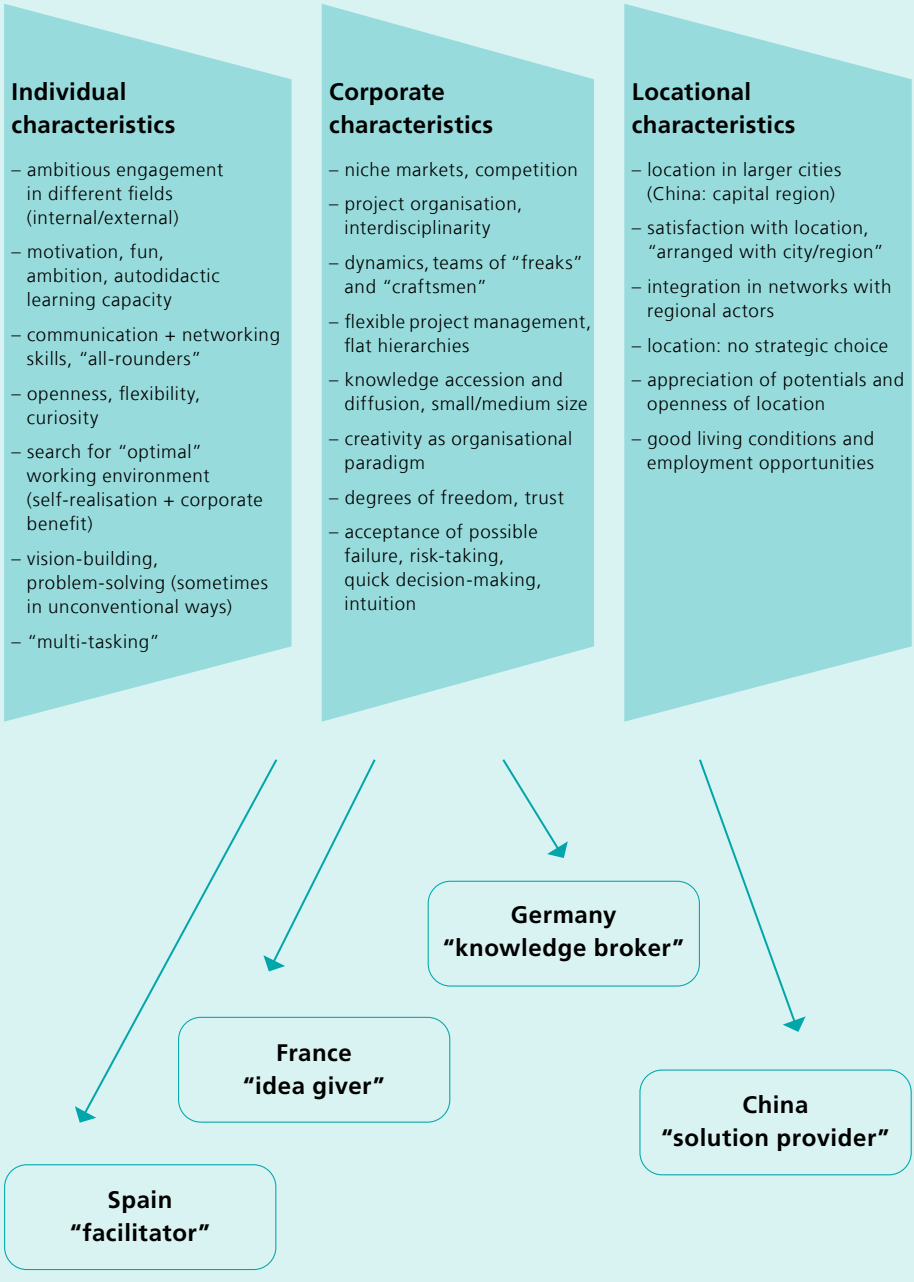
givers" (Alsace), as "facilitators" (Catalonia), or as "solution providers" (China) (cf. also Figure 8–1). They frequently hold a position between management and project level that allows them to relate "field work" with corporate strategy development and market development. Such a mediating, cross-functional position (in organisational terms) seems to be the best fitting organisational position to accommodate their specific needs and outstanding capacities.

From a conceptual perspective, knowledge angels show predominantly above-average results concerning the aspects evoked in our empirical analysis. It was obvious that most of the persons classified as knowledge angels have outstanding characteristics in their professional lives and development. They are generally very active and engaged in different fields and spheres of activity, for instance in business and science in parallel and/or as members/representatives of committees, as (co-)founders of one or several enterprise(s) and so forth. They are very ambitious, hard-working and "networkers", attributes which give them access to diverse fields of information. Perhaps it is their personality that makes them particularly open to and interested in a broad range of domains that they are then able to connect to their central field of activity. In short, it appears that knowledge angels are curious and always on the look-out for new opportunities. Common characteristics shared by all knowledge angels are their high and above-average capacity to develop visions and to solve problems. Both characteristics make them key players in their companies' innovation activities. Not only these capacities as such, but their combination with corporate functions is pivotal.

Persons classified as knowledge angels very frequently also have above-average abilities in accessing knowledge and in interacting, the latter being strongly connected to the above-mentioned aspect of networking, including soft skills and communicative abilities. Their companies developed various tools that are combined and applied in order to access new knowledge and to integrate it into the companies' innovative activities. Generally, the acquisition of external competencies (i.e. through hiring new staff, engaging students and PhD students, integration in scientific networks or visiting conferences) is combined with the development of internal competencies through qualification measures or information searches for instance. In addition, various companies reported innovative tools to diffuse and assemble contract-specific knowledge within their companies. The workers are considered to be the most important asset and capital of the companies.

Very often, the persons classified as knowledge angels work in an environment that allows them to cultivate their abilities and competencies. Generally, the companies' activities are organised in projects realised by (interdisciplinary) teams. Hierarchies are flat – at least in the European KIBS firms visited – and a high degree of exchange and communication between individuals and among teams can be observed. This kind of corporate environment leaves room for knowledge angels' abilities to be developed. Project management is flexible and understood more as a definition of priorities. Knowledge angels are granted considerable degrees of freedom in their activities; this keeps them happy in their positions and motivates them to engage in further efforts for the benefit of their companies. Companies and their activities are considered

Figure 8–1: Characteristics of knowledge angels in their corporate and territorial environments and regional specifics



Source: own illustration

to be dynamic and flexible; one interviewee mentioned the "dictate of change" in this context. Internally, creativity is strongly supported; creative ideas are considered to be the "steam" needed to run the "machine". Consequently, such creative and innovative companies can be characterised as a "mixture of freaks, moderators and solid craftsmen". In this respect, a few knowledge angels consider themselves to be "handymen", or "all-rounders" with the ability to bridge different enterprise functions and play more than one role. However, the interviewed persons are well aware that a favourable working atmosphere is necessary for them to be able to act as such and mention the importance of a positive team spirit between co-workers, motivated, for instance, through joint sports activities, modern office equipment, or financial incentives.

This does not mean that interviewees not classified as knowledge angels do not have excellent qualifications and competencies. They also frequently show above-average characteristics in one or two of our analytical dimensions. However, it appears that the outstanding characteristic of knowledge angels is the ability to combine various excellent assets to the benefit of both their companies and their own subjective well-being. This tends to be an unconscious process: by pursuing personal goals set in relation to the companies' goals – leading to the knowledge angels' success in his or her company – knowledge angels contribute to a higher level of innovation activities in their companies and also determine their own "niche" and professional development path within their firm. Contributing to innovative activities may in this respect be related to unconventional methods, to new forms of collaboration and partnership, new visionary models, etc. that may fail. It is crucial that the corporate environment leaves potential knowledge angels the freedom and scope to pursue novel ideas and visions, which involves granting them a high degree of trust and independence. To sum up, trust, freedom, and the acceptance of possible failures are crucial in this respect, both for the individual and the corporate dimension: individuals (knowledge angels) need to have the courage to introduce and implement (even apparently foolish) ideas – one interviewee spoke of companies' "openness to rebel thoughts" – and the company leaders need to grant their staff a certain degree of freedom to engage in innovative (sometimes foolish) projects. The management not only supports visionary ideas, but it is open to "freaks and visions" and trusts its co-workers, but also has the capacity to take risks and make snap decisions, often based on intuition (leading to trial-and-error-processes), but backed by discussions among a group of persons within the company.[6]

Further, when asked about the immediate spatial environment of the company, location motivations and networks and innovation-supporting factors in close proximity, knowledge angels are generally satisfied. They appreciate the potentials and openness of their companies' home locations and especially the good living conditions (cf. also Figure 8–1). Although the investigated companies are not situated in the capital cities or other well-known "hot spots" in their countries (except for China,

6 Basically, this is the case in the European context; in China, decisions tend to be taken more by the top management.

where most interviews were performed in the capital region and where a location in Beijing is perceived as an important asset in terms of professional success and talent availability),[7] interviewees emphasised the good and partly excellent conditions in terms of creativity, economic potentials, and especially concerning living conditions and the chance to employ high-quality workers (who are then not quick to leave the company for better working conditions elsewhere). They generally find their location attractive, both from a professional perspective and with respect to recreational values. In Alsace, the high density of European institutions is mentioned and appreciated.

This last aspect leads to another important point about the position of knowledge angels in their service companies: they do not necessarily belong to the management board of the company, frequently holding a position between management and project level. They have, of course, insight into strategic processes, but – and this was frequently quoted by the German respondents – they are also engaged in project work. This is very important for them independently of their precise position, because they want to stay in touch "with the base" they like to be engaged in project work. Besides the "fun factor", this is an important indication of their visionary capacity: knowledge angels can better cultivate their abilities if they are able to link "field work" with company strategies and with the market environment. In other regional contexts, this double role playing in different types of activities may have a slightly different form: in Catalonia, for instance, it tends to be realised through professional engagement in different organisations or institutions.

It can thus be stated that knowledge angels actively search for a professional position that best corresponds to their individual talents, abilities and visions. This could be observed in all our (European) case study regions. However, the way this goal is approached may differ. While knowledge angels in Germany tend to search for a "good" position within their company, their French counterparts are to a greater extent engaged in setting up their own firms (that they may also quit again after a certain period), and Spanish knowledge angels "test" several companies before finding the best one. In China, interviewees were passionate about their function as top or middle level managers and offering knowledge services. Knowledge angels have certain similarities in all the investigated regions: high motivation, self-fulfilment, curiosity, the desire to search for work that enables them to develop their visions, talents, ideas and creativity. Strongly related to their position and working mode is their communicative competence. As indicated above, knowledge angels often anchor their professional activity in different "poles", whether these are on the strategic and operative level of the same company or by holding different positions for different

7 The aspect of *Guanxi* should be mentioned in this context. Guanxi can be roughly translated as "business and/or personal relationships", but goes beyond the European understanding of this phrase. It can be described as a form of trust which forms the foundation for the establishment of relationships and networks that are then crucial for professional activities. Guanxi is established through direct or indirect personal contacts (i.e. between persons who have been formally introduced to each other or know the same persons) and is a necessary precondition for interaction.

clients. The latter means that our angels divide their working time between different jobs. This aspect of "multi-tasking" on different levels corresponds to knowledge angels' personalities and enables them to connect different persons and different types of knowledge. It should be mentioned that knowledge angels try diverse jobs in their search for the "best fitting position" (within one company, in different ones or dividing their working time between different engagements) until they find their "optimal" working environment.

8.4 Implications for local innovation-oriented policies

This section looks at some basic assumptions concerning the fact that – as shown previously – knowledge angels do not "emerge" (or "appear" or "reveal themselves") everywhere with equal probability. In other words, the concept of knowledge angels may be useful to reassess the links between knowledge, creativity and trust as well as to rethink the relationship between innovation and territories. Furthermore, this may provide some insights into the design of "knowledge-angel-friendly policies".

The creative capacity that seems to characterise knowledge angels is influenced – at least partially – by the environment in which they act. This is, of course, not specific to KIBS or to knowledge angels. For instance, Heinze et al. (2009), who investigated creativity in scientific research, provided valuable insights into how creative processes "work", including the selection of problems, methods, partners and knowledge sources.[8]

It is obvious that, beside the concept of "trust" which will be considered later on, the notion of "links" (or "ties" or more generally "networks") is central to the analysis. These "links" – which may be distant ones – never take place in a vacuum. Most often, they tend to conglomerate in cities and city-regions as pointed out by Gertler (2004, p. 6): "places have become ever more closely identified with (and by) their cultural stars and the distinct cultural movements and products they produce: their music, their architecture, their films, literature, art, fashion, and so on. This has obvious spillover benefits for both the city-region and the entire country, whose status and image abroad is strongly enhanced." It is even possible to go one step further like Cohendet and Zapata (2009, p. 32) and propose that each city provides, and at the same time benefits from, a sort of "creative underground" which is conducive to innovation: "We view this underground as the set of informal interrelationships that occur within the cities as a sociologically, culturally and historically composed field. It is the relationships that are formed through specialised events that take place in

8 Cf. Heinze et al. (2009, p. 611): "Rather than focusing on innate individual traits, work on creative processes has highlighted the opportunity structures in collaboration networks that facilitate the generation and diffusion of novel ideas. Proponents of network brokerage argue that people who are placed at the intersection of heterogeneous social groups have an increased likelihood of drawing upon multiple knowledge sources, leading to the generation of new ideas [...] In contrast, proponents of cohesive collaborative networks argue for the benefits of trust, shared risk taking and easy mobilization in facilitating information and knowledge transfer. According to these studies, individuals with cohesive social ties are more likely to be involved in innovations."

the city as well as the exchange of ideas that are a source of inspiration that happen within the city's local cultural scene."

More generally, the "emergence" of knowledge angels requires or at least is favoured by a certain type of (business and innovation) climate. One of the most important elements in such a climate is trust. It can even be assumed that knowledge angels generate such a climate of trust within their organisations. In this respect they constitute a kind of link between (firm-)internal and (firm-)external context. In such a climate individuals are more inclined to share knowledge, seek new ideas, express their creativity and, as a consequence, innovation processes become more systematic. As described by Brattström et al. (2012), systematic processes and structures do not hamper creative thinking because they create a climate of goodwill trust in the organisation, since individuals "[...] are also confident that wild ideas are appreciated and will not be ridiculed." (Brattström et al. 2012, p. 746).

According to these researchers and with regard to innovation phenomena, trust can be addressed by considering two components: competence trust and goodwill trust. Generally speaking, goodwill trust is referred to as benevolence and integrity, whereas competence trust corresponds to the other party being capable of doing what he or she promises and according to Brattström et al. (2012, pp. 743–744): "We argue that whereas goodwill trust and creativity are closely related, competence trust does not necessarily stimulate creativity. This finding complements earlier studies arguing for a relationship between trust and creativity."

Consequently, one possible impact that knowledge angels can have consists of the simultaneous enhancement of competence trust and goodwill trust. This very specific contribution from a local and/or individual perspective could be the main way knowledge angels reduce uncertainty and increase creativity. In line with Ramos (2009), the three following mechanisms characterising the interaction between knowledge angels and their environment can be stressed in this respect:

- *Absorption and generation*: based on a combination of experience, skills, vision, intuition, etc., (firm-)internal knowledge is generated by knowledge angels in parallel to acquiring new ideas from the environment.
- *Sharing for development*: knowledge angels as change agents make knowledge accessible to potentially everyone in the organisation, thus allowing new forms of learning. Both implicit and explicit interactions take place.
- *Validation and actioning*: knowledge angels are able to differentiate, in real time, which knowledge is relevant for the organisation. Actioning (in the meaning of Argyris and Schön 1996) includes the implementation orientation of knowledge angels. This leads to an improvement in how people function in the organisation, and, as a result, it supports the organisation's performance.

In a similar way, some insights provided by Heinze et al. (2009) into creativity in scientific research can also be exploited in relation to knowledge angels. First of all, the importance of extramural collaborations must be stressed for both top creative scientists and knowledge angels. In other words, the access to "external organisational boundaries" and "different" sources acts as a reservoir for serendipitous events.

Secondly, the prominence of broader profiles rather than deep specialisation seems to be important. Heinze et al. (2009) describe scientists who were successfully creative because they had changed their research field. The same could apply to knowledge angels whose success is based more on their ability to bridge knowledge gaps than on highly specialised competencies or purely niche strategies. Finally, the influence of a high risk approach must be highlighted, as well as the visionary character of highly creative individuals in extremely competitive organisations (like cutting-edge science research labs or successful KIBS). To a certain extent, some research labs seem curiously similar to innovative KIBS: "While research directors are expected to articulate a research vision, to recruit outstanding personnel, and to motivate scientists (as argued in previous literature), a new type of expectation has emerged: they need the capability to equip research organisations with appropriate funding from diverse sponsors and balance research budgets. Organisational leaders need to be successful in acquiring new grants and opening up additional funding channels. They must be competent in continuously monitoring the complex landscape of funding agencies and sponsorship programs" (Heinze et al. 2009, p. 620).

Altogether, these indications help to draw a picture of how knowledge angels "emerge, work and function" and, to a certain extent, which kind of environment may be supportive to their development as well as to their impact at local level. As a consequence, some ideas can be put forward about rethinking the underlying aims and principles of local innovation-supporting policy. Different ideas could be examined based on the knowledge gained from formulating hypotheses concerning the possible existence of knowledge angels and the implications of the empirical observations detailed in the previous sections. These ideas are presented in Table 8–3 in the form of short injunctions, which are intended to form a "counter manifesto" for local innovation-supporting policy due to their provocative nature. For instance, we assume that cluster policies may be important "triggers" for innovation in a broad range of fields. Nevertheless, cluster policies should not be considered as the "one and only" means to foster innovative actions. Table 8–3 can be considered a plea for open, flexible and experimental supportive measures that also embrace unconventional approaches.

8.5 Conclusions

Starting from a brief overview of KIBS research and the research gap this reveals concerning knowledge- and creativity-driven processes leading to innovation, this chapter provided an introduction to our conception and (explorative) empirical investigation of knowledge angels. This investigation was able to demonstrate that knowledge angels – as a "model" or archetype of creative personality – can indeed be detected in KIBS in different (regional and national) environments. Knowledge angels can therefore be considered as playing a crucial role in innovation systems and significantly enhancing the innovative activities of their companies, as well as that of other actors in an innovation system through the strong networking role of knowledge-intensive business service firms. Our analyses were also able to identify a range of specific characteristics of this type of personality, as well as of their corporate contexts

Table 8–3: Elements of a "counter-manifesto" for rethinking local innovation-supporting policy underlying principles and aims

Standard or usual underlying principles of local innovation-supporting policy	Alternative (or knowledge angel-friendly) underlying principles of local innovation-supporting policy
There is a need to cluster as much as possible!	Wisdom lies in virtually interconnected islands of knowledge!
What matters is the proximity to big science infrastructures!	What makes the differences is the ability to access (close or remote) knowledge!
Clear specialisation is the way!	There is always a need for eclectics!
Bigger is better!	Smaller is faster!
R&D-driven is safer!	Creativity-led is more fun!
Planning is everything!	Expect the unexpected (or just nothing)!
One must be solution-oriented!	Business is always problem-driven!

Source: own compilation by Fraunhofer ISI

and territorial environments. This is of even greater relevance for the investigation of knowledge- and innovation-related activities because it is very difficult to identify KIBS' innovation using conventional innovation statistics, since KIBS rarely have research and development activities comparable to manufacturing firms, and are also rarely referred to in patent statistics. The third part of our contribution derived some general conclusions about supportive measures from the political decision-makers' perspective. However, it is still too early – and not conducive – to propose distinct support measures. Instead, we aim to broaden the view of those involved in innovation support. This should be understood as a rather provocative way of confronting common policy visions with our research findings and should be backed by further studies of innovation and creativity.

8.6 References

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