

FROM SEEKERS TO SQUATTERS: THE RISE OF KNOWLEDGE ENTREPRENEURSHIP

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Today, the entrepreneurial drive is a key element of the evolving knowledge economy. To maintain their competitive edge in this globalised world, countries are looking to implement policies to heighten their talent pools and increase their innovation potential (Atkinson and Reid 2006). Many such policies address the question of how to increase the number of entrepreneurs, but few actually recognise or target the important, but little-understood category of “knowledge entrepreneurs”. For the purposes of this article, the knowledge entrepreneur is defined in dynamic terms as the entrepreneur of normally small- and medium-sized enterprises (SMEs) that focus on the discovery or interpretation of knowledge. Such individuals typically maintain a business focus while continuously innovating.

Introducing the knowledge entrepreneur

This contribution demonstrates the progression of the knowledge entrepreneur concept to current standards; identifies a variety of knowledge entrepreneurs; and explains the parameters of the topic at the present time. The knowledge entrepreneur (KE) concept is new, although entrepreneurship has been studied academically since at least Schumpeter (1939) and, of course, practised for much longer. Recently, research on the attributes of knowledge entrepreneurs has emerged (Carayannis and Formica 2006; Edvinsson 2002). While the identification of the attributes of these is important in business and the policy-making forum, the identification of the actual businesses and their geographic proximity has been overlooked. This research profile contributes to the attenuation of that gap.

Under the given definition of knowledge entrepreneurship involving dynamic, small- and medium-sized innovative businesses that focus on the discovery and interpretation of knowledge, our research identifies the economic activities in which KEs are particularly pronounced as:

- Innovation generation (IG)
- Digital media (DM)
- Fashion
- Food
- Design industry (DI)

The IG “industry” is a “platform” concept referring to innovation, mostly based on scientific and technological knowledge, which increasingly tends to be pervasive, non-sector-specific and engaging high lateral “absorptive capacity” on the part of users and potential users. For example, innovation in sensor technologies has this pervasive quality, as more generally does information and communication technology (ICT) or biotechnology innovation. The applications of biotechnology, for example, range from medicine to food, energy, environmental remediation, ICT and security, including policing. DM is clearly part of ICT but, like the last three categories, tightly intertwined with creativity and attracting KE engagement accordingly. Indeed, all categories embrace innovation and creativity most profoundly. It may be thought that the food industry is an exception to these criteria but it is not. Whether in relation to the post-war history of agro-chemical innovations in fertilisers, pesticides and herbicides (now themselves subject to critique for endangering consumer health, while nevertheless setting off new rounds of innovation and creative thinking), the contemporary rise of alternatives to such conventional mass products like functional foods (nutraceuticals) on the one hand, or organic food and gastronomy on the other, not to mention change in logistics, distribution, chilling and freezing, nutritional analysis, food technology and varieties of marketing and retailing food, creative or scientific and technological innovation is constantly at its heart and a magnet for KEs accordingly.

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Are there geographic concentrations?

Taking these various industries into account, their geographic areas are frequently specific. It is well-known that there are high concentrations of ICT KEs in northern and southern California – more creative in the latter, more innovative in the former (Scott 1998). Fashion KEs concentrate in Paris, London, Milan and New York. Food regions are remarkably different. Thus St Louis, Missouri concentrates most US agro-food biotechnology KEs, while in Canada it is Guelph, Ontario and Saskatoon, Saskatchewan that have this attribute. In Europe it is Cambridge (UK), Scania (Sweden), Wageningen (Netherlands) and BioValley linking Basel (Switzerland), Freiburg (Germany) and Strasbourg (France) that have this character (Ryan and Phillips 2004; Cooke 2007). But of course, these are mostly high-point clusters, for a key feature of KEs is that they are normally internet-based and in theory can locate anywhere since their customers or targets are likely to be global. Nevertheless, KE practice may be high-tech but is also high-touch, and face-to-face proximity to knowledge sources and expertise moderates the ubiquity often thoughtlessly presumed by those who preached the “death of distance” and the “end of geography” in the Internet Age (Cairncross 1997). So we will see aspects of this KE geography being examined in what follows due to the varying nature of the regions that produce or localize both entrepreneurs in general, and specifically knowledge entrepreneurs. Most of our examples are taken from US and European cases. The high number of European cases marks something of a recent development away from the probably misleading perception or even prejudice whereby the entrepreneurial spirit was said to be stronger in the US, given the stigma associated with business failure in the EU (Eurostat 2003; Shane 2004). However, the EU has clear positive innovation policies and, as will be demonstrated with the further research into knowledge entrepreneurs, these policies were appropriately implemented since it also contains a significant number of KEs (Atkinson and Reid 2006). Finally, it will become clear that despite innovation localization policies in many US and European regions and locales, the companies examined do not all reside within science parks, or university towns; rather, they are typically centred near project affiliates with-

in larger cities. This will be discussed below in further detail (*ibid* 2006).

Identifying knowledge entrepreneurs

The paper clarifies where the knowledge entrepreneur category is amidst the many other entrepreneurial categories. In addition, there is a further refinement of the knowledge entrepreneur, not as just another category; but, addressing the many subsections of knowledge entrepreneurs, ranging from the most dynamic “seekers” to the most disliked “squatters”. Finally, Table 1 provides a few examples adapted from our KnowEnt database compiled for research purposes (see below). While taking these parameters into account, the definition used to identify KE businesses and individuals is narrow for four reasons. First, large businesses are excluded as they are simply not classified as “entrepreneurial” in any of the relevant research literature. Willy-nilly entrepreneurship is an individualist, small-and-medium-sized economic phenomenon in research and practice. In addition, SMEs of 250 or fewer employees are a highly competitive group while being more flexible in terms of network interaction and data sharing (Cooke 2005).

Second, the ability to be “dynamic” is an important trait of knowledge entrepreneurs which sets them apart from more typically “static” responses of one-size-fits-all consultancies – not only the large ones but SMEs. The KEs researched, whether they are self-employees or SMEs, continually innovate, as seen in Boxes 1 and 2.

Third, this definition includes internet and computer related fields. To limit the outliers, the definition must be narrow when looking at such a vast sector that includes programming, software testing, and web design; therefore, the DM group was created to accommodate the few hybrid, standout companies within the larger industry. In addition, the ICT field is largely project based which allows for smaller SMEs, often under 15 employees, as well as more

Box 1

Profile of a Knowledge Entrepreneur-Based Business: BrainStore

“Idea Generating” business started by Markus Mettler and Nadja Schnetzler located in Biel, Switzerland:

- Uses small staff and acquired freelancers, often teenagers, to continuously innovate answers to clients’ problems;
- Clients include independent persons as well as large corporations;
- Delivers a high success rate on an international scale.

Adapted from BrainStore at *BrainStore.com* in 2006.

Table 1

Who are the Knowledge Entrepreneurs?

	Entrepreneurship						
	<i>Entrepreneur</i>	<i>Connect & Develop</i>	<i>Channels</i>	<i>Exploiters</i>	<i>Start Up MNCs</i>	<i>Web-Based</i>	
Knowledge	<i>Seekers</i>	– BrainStore – What If! – Brain Reactions – Big Idea Group	– Yet2.com	– Transitions – Cambridge/MIT Institute – Honey Bee Network – NineSigma – YourEncore		– What If! – Cambridge/MIT Institute – Yet2.com	
	<i>Researchers</i>	– Advanced Fuel Research Inc. – International Technological University – Deveraux & Deloitte – Oxford Business Group – Future Farmers	– Innocentive – Syngene	– Focalyst			– Innocentive – Deveraux & Deloitte – Vantage Law
	<i>Patent Trolls</i>	– Intellectual Ventures			– Intellectual Ventures – Acacia – PAN-IP – Smileyworld – Stealth Industries		
	<i>Digital Media/IT</i>	– Cuttlefish Digital Arts – Thunderhead – RubyRed Labs – FFAB:UK – Magnetic One – 1 st Avenue Machine			– Thunderhead – Password Crackers Inc. – Cision – SpiDynamics – Pure Hacking	– Androme – CreateThe – SpiDynamics – Pure Hacking – Ink.inc	– RubyRed Labs – Music Today – Ink.inc

individual KEs (Box 2), thereby increasing the group's significance while maintaining its size.

Finally, innovation must be the focal business strategy; both within the firm and within any inter-firm networks. This was first derived from the Procter & Gamble “open innovation” strategy of *Connect & Develop* (C&D) (Chesbrough 2003; Huston and Sakkab 2006).

The rest of this paper is structured as follows. The next section reviews the evolution of interest in KEs, starting with the relatively recent exposition of the open innovation strategy and ending with the current knowledge entrepreneur concept. It will also categorise the various types of knowledge entrepreneur. This is followed by a brief presentation of some

Box 2

Profile of a Knowledge Entrepreneur: Max Levchin

- Innovative Internet application designer and independent talent scout:
- Co-founded PayPal and sold it to eBay for \$1.5 billion in 2002;
- United YouTube founders while at PayPal;
- Designed Slide and Yelp, data-sharing internet applications;
- Continues to work independently to enhance PayPal security.

Adapted from D. Frost 2006, *The San Francisco Chronicle Online*.

of the knowledge entrepreneurs that the research has identified to date. Next, based on the KnowEnt database, there will be a section on the issue of KEs and space, focusing on geographic proximity. Finally, conclusions tie together the KE research while highlighting potential future research areas.

Evolution of the knowledge entrepreneur

The Procter & Gamble concept of C&D enhanced the business structure of R&D facilities in research-based companies by utilizing “open innovation”, i.e. external knowledge facilities to create new ideas instead of solely relying on internal researchers (Huston and Sakkab 2006). While this is a change from the previous corporate philosophy of innovating behind closed doors and having company secrets, it is not a revolutionary breakthrough. Basically, C&D “opens the closed doors” of innovation linking the internal researchers with the external researchers. Using this method effectively, Procter &

Gamble has “from 7,500 people working on R&D inside, to 7,500 *plus* 1.5 million outside, with a permeable boundary between them” (Huston and Sakkab 2006, 61).¹ They have had several successful products arise from this method: the Spinbrush, Mr. Clean Magic Eraser, and other domestic cleaning products. Due to this success, several industry competitors and other firms have also adopted the open innovation approaches (e.g. Eli Lilly with Innocentive, Philips with IMEC). According to Huston and Sakkab, the most attractive part of C&D is that the open innovation concept, which was considered radical less than a decade ago due to the restructuring of the division of labour, is positively changing the revenue of large corporations: “C&D (in Procter & Gamble) now produces more than 35 percent of the company’s innovations and billions of dollars in revenue” (2006, 58). In addition, due to the “success of this strategy, Procter & Gamble acquired sufficient profit to acquire Gillette Corporation for \$57 billion in 2005, making it the largest consumer products firm in the world, pushing Unilever into second place” (Cooke 2005, 12).

When reviewing innovation progress, this strategy has increased the productivity rate of many companies including Procter & Gamble, which set up other companies to focus upon certain aspects of their research. Identified in Table 1 are the companies associated with the idea generation, knowledge entrepreneur, and open innovation concepts: the “seekers” or the problem solver companies. As outlined in Box 1, these companies’ clients range from the level of the person to a multinational corporation. This creativity-centred, idea-commoditization business develops solutions through research, surveys, and focus groups, often handled in an assembly line fashion as shown in Figure 1. Each client is a different problem; thereby, needing a different solution and continuous innovation which separates this group of seekers from consultants. There are not many seeker companies; however, the examples listed in Table 1 are very popular and the subject of further research into the idea generation industry.

Following the x-axis of Table 1, the “researchers” are the research companies and individual scientists who independently tackle R&D issues for larger companies as well as individual clients. Despite the varia-

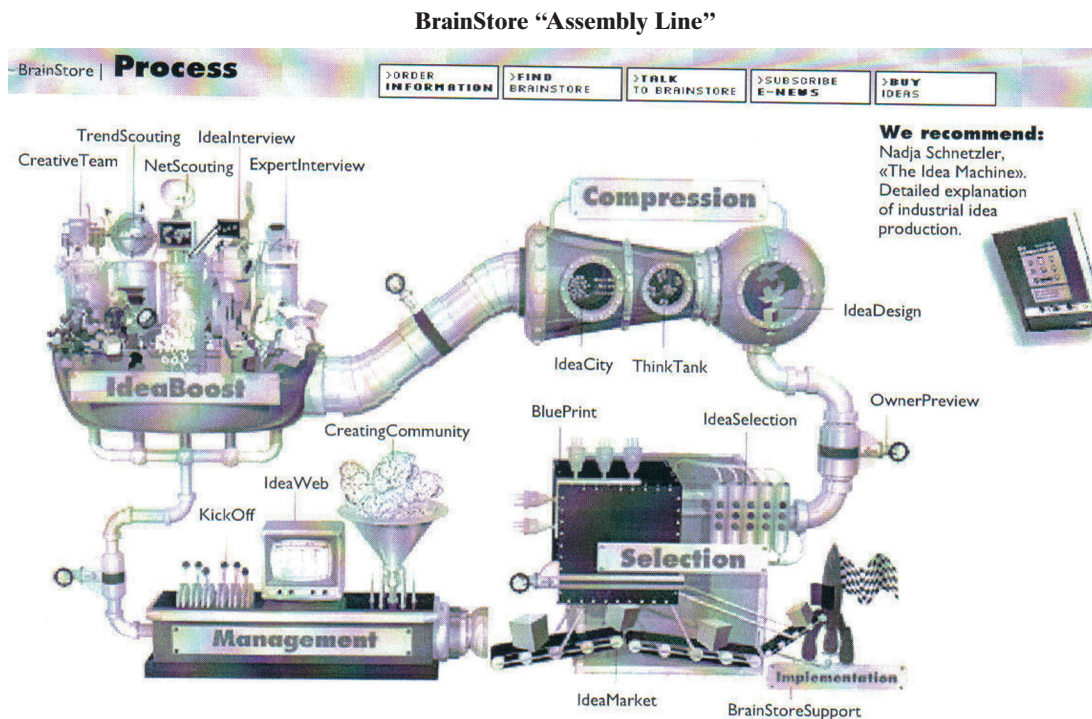
tion in the structure of the research category, the manner in which work is delivered to them is identical. Whether it is a social science research provider or a company which enrolls independent scientists as problem solvers, the client delivers the problem set and the researcher finds the information needed. The concept of researchers is not new as many corporations have their own R&D departments; however, based on the knowledge entrepreneur definition that has guided this research, these researchers are significant as they are independent, SME-type entities. One variation of this independent variable can be seen in the C&D researchers listed in Table 1; more information on the creation of these companies is given below.

Next, the “squatters” are companies that do not produce any goods. Rather, the businesses in this sector exploit the patenting system by acquiring bundles of patents from struggling businesses to exercise those patents and acquire financial gains when finding companies that have infringed on their newly acquired patents. Typically, squatters (or “trolls” as many refer to them) gain their revenue from successful lawsuits or, as many of the companies they are suing are small and cannot afford to go through the lengthy legal process, a settlement is provided in lieu of a trial. Some small companies have fought back, using the Internet as their organizing ground and building funds to fight squatters’ lawsuits (Sayer 2004). In addition, the US Congress has been adding pressure with the potential passage of a law that would severely limit the capacity of patent trolls (Burr 2005).

Finally, the *DM/IT* group exists alongside idea generators as a hybrid group of software producers, computer programmers and web designers that rely on Web 2.0 manipulation to stay ahead of the competition (O’Reilly 2005). The employees of the dot-com bubble of the 1990s now have to be creative in addition to being multi-skilled talents. Initially, film and entertainment took hold of these hybrid companies using DM extensively to convert tedious cartoon drawing to digital animation with computer generated imagery (CGI). Next, DM was used for movies in making lifelike characters perform the impossible in surreal environments, which was capitalized by Peter Jackson and his New Zealand creative development complex. Now that DM has redeveloped the film making industry, moving a large portion of action films from the stage lot to the digital studio, it has infiltrated and now largely influ-

¹ The “1.5 million people” were originally thought to be knowledge entrepreneurs; however, after contacting the authors for clarification, the figure was merely an estimate based upon Procter & Gamble’s experience with industry affiliates, the number of university R&D graduates, and the companies outreach into the international arena. In other words it is a notional and untested statistic.

Figure 1



Source: Copied from BrainStore 2006 at <http://www.brainstore.com/index.cfm?p=1608>.

ences the advertising industry. Through the use of computers to design surreal marketing campaigns, DM has overhauled the advertising industry taking care of brand imaging; consumer outreach; and all aspects of advertising and post-production feedback using a low number of staff on a project-by-project basis. Beyond the infiltration of another sector, as Table 1 demonstrates, the DM firms' latest development is the ability to exist on a project-by-project basis, some starting as multi-location firms, spanning continents.

The x-axis labels for the above table are more simplistic than their vertical counterparts. First, *entrepreneurship* is the process of starting a new business based on an idea or a process that meets the needs of a target market. There is the creation of a business entity, usually with the help of venture capitalists and consultants in order to maximize the exposure of the business to the target market. Second, Procter & Gamble's C&D concept of open innovation identifies the companies that Procter & Gamble, Eli Lilly, and other multinational firms have created as separate, yet joint entities to elicit more ideas from their targeted field of expertise. Third, following in the steps of the open innovation concept, *channels* allow for various companies to engage in the transfer of information openly and

provide "more opportunity for knowledge capability enhancement" to other interested parties who are most likely geographically proximate (Cooke 2005, 8). The ex-Procter & Gamble companies established through C&D are examples, as well as university spin-offs and start-ups. They were created with the help of a large business entity but are now independent while openly sharing information. Fourth, the *exploiters* take advantage of the weaknesses of other companies to achieve financial gains. This category is not synonymous with squatters because exploiters exist in other capacities outside of squatters as demonstrated in Table 1. Along with the squatter persona, the exploiter group can also consist of computer security professionals, penetration testers, or any entrepreneur whose business livelihood relies on the inaccuracies of others. Fifth, the *start-up MNC's*, are SME's, often with less than ten employees, that have multinational locations. Most often these firms are in the DM sector as the ability for an increased market through electronic communication is enabled. Lastly, *web-based* companies have no formal headquarters, they are solely web-based. *Vantage Counsel* is the breakthrough example in this category as it is the first virtual law firm (2006). Despite this last example, and the increased emphasis placed on the globalised marketplace's chosen form of communication being

the Internet, business location is still important, something explored next.

Location is still important

The firm names listed in Table 1, whether they solve problems as idea generators or produce creative advertising campaigns, conduct a large amount of business via the Internet; however, this does not equate to the “death of distance” (Cairncross 1997). A recent article on *Inc.com*, a periodical devoted to entrepreneurship, provided insights into the locations at which entrepreneurs are most likely to start businesses (Kotkin 2006). Loosely based on Florida’s (2002) creative class concept, people associate large cities with progressive businesses due to the diverse talent pool located within the city; however, a rising trend proves that edges of cities are the places to be, no longer making it peripheral. This allows for lower office prices with access to the city talent pool, the project affiliates, and the potential for face-to-face interaction. An *Inc.com* survey listed the locations for entrepreneurs (in America) in 2006, all of which were in the once regarded “periphery” (Kotkin 2006). This trend does not only exist in America. The *BrainStore*, located in Biel near Berne, Switzerland, exemplifies this edge city argument. More importantly, it may be an exemplar for neighbouring EU countries, where many national and regional policies are targeting this kind of endeavour.

When putting policy into practice, the location of a firm, in proximity to similar firms, can provide a multitude of advantages ranging from creative synergy with other companies to positive firm growth associated with competition (Cooke and Hughes 1999). The aspects of cooperation and competition are even more prevalent when looking at SMEs, as their location can determine success or failure. In addition, the location of the firm in response to other business affiliates, whether they are project providers or service providers, is of equal importance. When a firm is competing with other, similar firms for a project contract, location is key

as “human capital and social capital are inextricably interwoven and determine whether an actor either occupies a central or peripheral position or is excluded altogether” (Ekinsmyth 2002). The ability to build social capital, even if a firm’s talent is largely based on the success or failure of its last project, is greatly influenced by its proximity to affiliated companies (Grabher 2002). Furthermore, the importance of face-to-face interaction when working on a project with several different firms should not be underestimated (Scott as cited in Grabher 2002). If all firms involved are located in close proximity this allows for quick interaction if needed. Finally, as demonstrated in Figure 3, the majority of American knowledge entrepreneur firms are located in large cities, specifically New York and Los Angeles, in geographic proximity to their clients and service providers. This is not coincidental; Figure 2 illustrates the spread of knowledge entrepreneurs in Europe, close to, if not in, major cities.

Both of these maps provide a visual representation of the spread of knowledge entrepreneurs; however, it is not complete, as further research will produce more companies to be plotted. In addition, in Figure 2 there is a western harbouring of KEs and in Figure 3 a coastal harbouring of KEs that could possibly be explained by the above location arguments; however, failing these argu-

Figure 2

Major Locations of Knowledge Entrepreneurs in IG and DM Industries in Europe

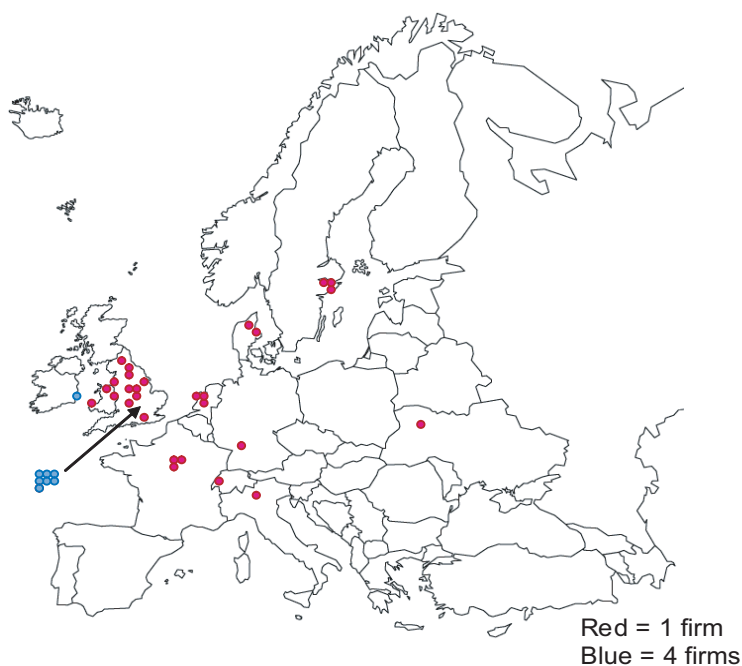
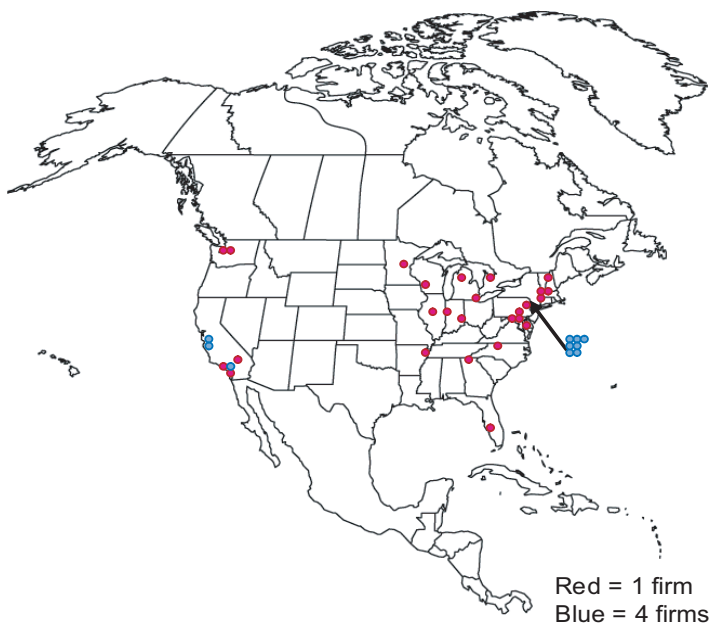


Figure 3
Major Locations of Knowledge Entrepreneurs
in IG and DM Industries in the US



ments, either further research will provide more scattered results or increased understanding of this model will eventually infiltrate these areas thereby enhancing these maps.

Conclusion

This research verifies that knowledge entrepreneurs exist in several countries and through their successful business performance contribute positively to their surrounding economies. Nonetheless, this paper highlights only a finite number of companies that match the KE definition; while filling a gap in the previous research on this topic, this research is not complete for three reasons.

First, the sectors that were identified in the introduction have produced examples; however, the research is ongoing within those fields. This could lead to many more KE examples. Second, there are more sectors to look into, namely biotechnology and finance. The difficulties researching these sectors pertain to the question of company size, as well as the static vs. dynamic question. There are plenty of biotechnology companies that are start-ups or spin-offs making the company size question obsolete; however, their ability to continuously innovate on the same scale as *BrainStore* is largely questionable given the pending approval times of their products

and patent “lock-in”. On the other hand, the finance sector has produced a handful of excellent innovative KEs while also yielding many consultants and specialist businesses, making it a complex sector to research. Finally, with the research focusing on more sectors there is the potential for the expansion of KE groups (i.e. seekers, exploiters, etc.). Although the original definition is narrow to exclude larger firms and the less innovative companies, the research continuously produces new companies that merit the creation of a new group to better describe the businesses. For example, *YTKO*, a UK-based biotechnology innovation company, aids start up bioscience firms by developing innovative

ways to commercialize their products (YTKO, 2006). While this company could not fit in the existing table, with more insight into companies of this kind an “intermediaries” group could possibly contribute more understanding of knowledge entrepreneurs.

As addressed, further proliferation of these business models is needed to better understand the location preferences of the companies, as well as their potential to cluster or not, providing a “one-stop-shop” for businesses in need of innovative ideas. Given this analysis, this research into knowledge entrepreneurs is providing useful information about these companies’ origins, habits, and identities while also providing the foundation for further research into the subject.

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