Viewpoint

Intellectual venture capitalists: an emerging breed of knowledge entrepreneurs

Elias G. Carayannis and Piero Formica

Abstract: Industrial culture focuses mainly on the production of ‘things’ – of static objects. Knowledge, on the other hand, is constantly in flux, like a flowing stream. Conventional industrial notions lead policy makers to believe that the addition of a knowledge-based industry to an existing industrial base makes a knowledge economy. This is not the case. Pieces of knowledge, purchased like objects, do not make a knowledge economy. What is missed in such perceptions is the importance of managing and synthesizing knowledge and of conducting conventional business in innovative ways. Capitalizing the knowledge economy requires an entirely new way of viewing the economic landscape. An emerging breed of knowledge entrepreneurs – intellectual venture capitalists – is setting the scene for an entrepreneurial revolution that will transform that landscape.

Keywords: innovation networks; knowledge clusters; entrepreneurial scholars; intellectual venture capitalists; reformed markets; redefined markets

Dr Elias Carayannis is Professor of Management Science, co-Founder and co-Director of the Global and Entrepreneurial Finance Research Institute (GEFRI) and Director of Research on Science, Technology, Innovation and Entrepreneurship, European Research Centre (EURC) at the School of Business, George Washington University. He may be contacted at the Department of Information Systems and Technology Management, School of Business, George Washington University, 515 C Fuinger Hall, 2021 G Street NW, Washington, DC 20052, USA. Tel: +1 202 994 4062. E-mail: caraye@gwu.edu. Dr Piero Formica is the Marie Curie Professor of Knowledge Economics and Entrepreneurship at the University of Tartu, Estonia, Special International Professor of Knowledge Economics and Entrepreneurship at Beijing University of Aeronautics and Astronautics, PR China, and Visiting Professor of Knowledge Economics and Entrepreneurship at the Link Campus of the University of Malta in Rome, Italy. He may be contacted at the Faculty of Economics and Business Administration, University of Tartu, Narva mnt 4-A211, 51009 Tartu, Estonia. E-mail: formica@cofimp.it.

‘An intellectual capitalist is someone who puts a price on the knowledge he’s accumulated for a world of possible buyers beyond his organization.’

Peter Drucker

It has been said that in the knowledge economy the marketplace is not divided into towns and regions but into affinity groups that emerge from a high propensity to sociability (also known as ‘invisible networks of
peers’ – see Carayannis and Allbritton, 1997). These groups are structured by knowledge creation, diffusion and use modalities (also called ‘knowledge-ducts’ along which flow ‘knowledge nuggets’1) – the modalities include innovation networks2 and knowledge clusters3 (Formica, 2003; Carayannis, GWU Lectures, 2000–2005; Carayannis and Alexander, 1999; Carayannis, 2000; Carayannis and Juneau, 2003; Carayannis and Gonzalez, 2003; Carayannis, 2004; Carayannis and von Zedtwitz, 2005; Carayannis et al, 2006; Carayannis and Sipp, 2005; Carayannis and Alexander, 2006; Carayannis and Campbell, 2006; Carayannis and Ziemnowicz, 2006).

Goethe, in his novel Elective Affinities, adopts a striking scientific metaphor for such creative affinity, drawing parallels between personal and social relationships and the chemical process by which two different substances combine to form a third. In a truly open global economy, no one country is able to dominate others in isolation: knowledge-driven economies and knowledge-based societies can materialize only through the ‘chemistry’ of community.

The transition to such a state of social, political and economic affairs is full of challenges as well as opportunities, and even advanced industrial economies struggle to capture the potential benefits of the modern-day knowledge society, economy and polity. The path from knowledge through business to a new age of prosperity is full of pitfalls that can trigger socio-economically regressive trends and patterns (from nouveaux pauvres to fundamentalists of all hues, including the neo-Luddites – see Carayannis, GWU Lectures, 1996–2005).

Industrial culture focuses mainly on the production of ‘things’ – of static objects. Knowledge, on the other hand, is constantly in flux, like a flowing stream. Conventional industrial notions lead policy makers to believe that the addition of a knowledge-based industry to an existing industry base makes a knowledge economy. This is not the case. Pieces of knowledge, purchased like objects, do not make a knowledge economy. What is missed in such perceptions is the importance of managing and synthesizing knowledge and of conducting conventional business in innovative ways. Capitalizing the knowledge economy requires an entirely new way of viewing the economic landscape. For example, in a knowledge economy it is essential to collaborate to compete. This requires a transformation of the traditional notions of competition, market advantage and adversarial market relationships.

The development of an enterprising culture is a primary objective of all progressive nations. Entrepreneurs, and the small and medium-sized businesses they build, are the backbone, and represent as much as 70% of the economic base of first-world countries. Entrepreneurial activity creates business diversity, reduces reliance on a single industry or natural resource and develops an enterprising culture capable of rapid response to emerging economic threats. A robust entrepreneurial climate – such as is often present in ‘hotspots’ of entrepreneurial activity that appear in the form of real and/or virtual clusters – is one in which people, culture and technology converge to build entrepreneurial activities on firm foundations of charisma, character and culture, the three essential ‘C’s of entrepreneurial success (Carayannis, GWU Lectures, 1996–2005; Carayannis, ECE Lectures, 2005).

Entrepreneurial activities postulate what we call the ‘triadic complex’ of entrepreneurial energy,4 entrepreneurial mass made up of the attributes and motivations necessary for entrepreneurship and creativity in business – see Table 1.

While entrepreneurship may occur regardless of external conditions as a natural result of personal drive, it occurs most often, most robustly and is most sustainable in an environment that is designed to encourage it. Potential entrepreneurs become active entrepreneurs when the conditions are most supportive of their commercial opportunities and their business, thus helping to channel the key qualities they exhibit as individuals – those of the obsessed maniac and

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4. Carayannis and Alexander, 1999; Carayannis, 2000; Carayannis and Juneau, 2003; Carayannis and Gonzalez, 2003; Carayannis, 2004; Carayannis and von Zedtwitz, 2005; Carayannis et al, 2006; Carayannis and Sipp, 2005; Carayannis and Alexander, 2006; Carayannis and Campbell, 2006; Carayannis and Ziemnowicz, 2006.

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**Figure 1.** Spectrum of the stages of economic development: subsistence → emerging → transitional → developed.

*Key:* SF – subsistence-focused economy; CB – commodity-based economy; KB – knowledge-based economy; KD – knowledge-driven economy.

**Attributes of pathways A, B and C:**
- **A:** a faster, easier and better way to move towards a knowledge-based economy;
- **B:** a costly and slow, but more common way in transitional economies to move towards a knowledge economy;
- **C:** the slowest, most costly and most limited way of moving towards a knowledge economy.

**Sources:** adapted from Carayannis et al, 2006; Carayannis and Sipp, 2005.
To date, entrepreneurial scholars who turn into intellectual venture capitalists by founding knowledge-driven companies have remained among the least explored species in the territory of entrepreneurship. Intellectual venture capitalists are in essence knowledge entrepreneurs (Formica, 2005) who hold intellectual capital and are willing to undertake risks investing it towards the pursuit of larger pecuniary benefits — that is, they have the potential to transform knowledge and intangible assets into wealth-creating resources.

They typically do so leveraging two key qualities they possess via a unique combination of nature, talent, experience and fortune (Carayannis, GWU Lectures, 2000–05; Carayannis and Juneau, 2003; Carayannis and Zedtwitz, 2005; Carayannis et al, 2006; Carayannis and Sipp, 2005; Carayannis and Alexander, 2006; Carayannis and Campbell, 2006; Carayannis and Ziemnowicz, 2006):

- **strategic knowledge arbitrage** – the capacity to uniquely create, identify, reallocate and recombine knowledge assets better and/or faster to derive, develop and capture non-appropriable, defensible and sustainable and scalable pecuniary benefits; and
- **strategic knowledge serendipity** – the capacity to uniquely identify, recognize, access and integrate knowledge assets better and/or faster to derive, develop and capture non-appropriable, defensible and sustainable and scalable pecuniary benefits.

Putting knowledge into action requires the development of win–win relationships which, in turn, are the outcome of a context conducive to negotiated exchanges (Carayannis and Alexander, 1999). Under the perspective of relationship building, intellectual venture capitalists play a double role of content and context creators, leading and engendering a process and dynamic leading towards artificial abundance while leveraging and replacing conditions of natural scarcity (see Figure 2).

Table 1. The ‘triadic complex’ of entrepreneurial attributes and motivations and creativity in business.

<table>
<thead>
<tr>
<th>E</th>
<th>MC³</th>
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<td>where E = entrepreneurial energy; M = the attributes and motivations necessary for entrepreneurship and C³ = creativity in business.</td>
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**Components of M:**

**Entrepreneurial attributes**

- Clarity of leadership
- Openness and inquisitiveness, stimulating innovation and learning
- Ability to create new value or organizational capability
- Flexibility and capacity to change
- Relationship-building skills
- Ability to convince others (employees, individual investors, suppliers and landlords) to share start-up risks

**Entrepreneurial motivations**

- Capacity to think for oneself
- Self-confidence: optimism and personal drive
- Sense of autonomy, independence and risk-taking
- Intense emotions

**Components of C³:**

*Creativity in business = creativity in technology x creativity in planning x creativity in marketing*

**Note:** C is the equivalent of the speed of light. C in Latin is Celeritas, meaning ‘velocity’. Creativity in business is like a beam of light that spotlights one or more opportunities to start up a business.
Intellectual capitalists are the Phoenicians of the 21st century, driven by the falling costs of transporting ideas and information. Like the Phoenicians, they make geo-economic changes by navigating longitudinally – see Figure 3.

Entrepreneurial scholars, such as Marie Curie – an enterprising woman who became personally involved in the industrial application of her scientific results – show preference sets that are affected by the convergence of two character profiles: that of *homo scientificus*, breaking away from convention to search for ground-breaking discoveries, and that of *homo economicus*, with a special acumen for marketing and sales. In other words, entrepreneurial scholars have a relatively clear sense of the probability of a successful commercial outcome from their curiosity-driven research – and their research evolves into business-driven, goal-oriented work. This evolution results in both a paradigmatic shift achieved by the adoption of a new intellectual model and a phase change necessitated by the transition from research to entrepreneurship.

Entrepreneurial scholars who have turned into intellectual capitalists open up new perspectives for outsourcing innovation. As Figure 4 shows, if the supply of intellectual capitalists is low, the outsourcing of innovation is a decision that must be taken within a constrained vision – simply that of a tangible-assets-intensive process controlled by companies making outsourcing decisions. Those companies focus on what they know they do not know. Under these circumstances, outsourcing decisions keep to chartered waters: navigation depends on knowing how to keep innovation-induced pressure on tangible assets under control.

Figure 3. The Phoenicians – merchants of light.

Figure 4. Forms of outsourcing innovation.

Key: (1) Tangible assets (TA), such as land, labour and capital, are the traditional pillars of value creation. TA-intensive processes are controlled by companies making outsourcing decisions. (2) The value of intangible assets (IA) leads IA-intensive processes, whereby companies making outsourcing decisions ‘learn’ rather than ‘control’.

Note: Edison developed what became known as ‘invention factories’, the first of which was in Menlo Park. To this day he is known as the ‘Wizard of Menlo Park’ and is celebrated for his creation of the world’s first full-scale industrial R&D laboratory. It was to transform America’s shop-floor tradition of invention.
INeural venture capitalists encourage intangible-asset-intensive processes, whereby companies make decisions for outsourcing innovation ‘learn’ rather than ‘control’.

In this case the focus is on what companies do not know they do not know. To be brave enough to sail in uncharted waters, they have to learn how to govern the impact of leverage on intangible assets. In doing this, they rely on the performance of the intellectual venture capitalist, acting like the ‘merchants of light’ of Phoenician and Renaissance times who saw ‘into distances most could not’ (Rubin, 1998).

The behaviour of both parties thus converges in making the outsourcing of innovation an experiment that brings to the foreground of the company’s business culture the importance of discovering new markets and of radical organizational transformation.

Whereas reformed markets are a terrain for exploration by incumbent entrepreneurs, intellectual venture capitalists redefine market boundaries and norms, and entirely new markets thus emerge. In doing this, the intellectual venture capitalist endangers the status of the incumbent entrepreneur – for the revolutionary business opportunities envisioned by the intellectual capitalist cannot be encompassed within the incumbent’s range of resources, strategies or structures (Figure 5).

Notes
1 We consider the following quotation useful in elucidating the meaning and role of a ‘knowledge nugget’: ‘People, culture, and technology serve as the institutional, market, and socio-economic “glue” that binds, catalyzes, and accelerates interactions and manifestations between creativity and innovation as shown in Figure 1, along with public–private partnerships, international Research & Development (R&D) consortia, technical/business/legal standards such as intellectual property rights as well as human nature and the “creative demon”. The relationship is highly non-linear, complex and dynamic, evolving over time and driven by both external and internal stimuli and factors such as firm strategy, structure, and performance as well as top-down policies and bottom-up initiatives that act as enablers, catalysts, and accelerators for creativity and innovation that leads to competitiveness.’ (Carayannis and Gonzalez, 2003, pp 587-606, at p 593.)

2 ‘Innovation networks’ are real and virtual infrastructures and infratechnologies that serve to nurture creativity, trigger invention and catalyse innovation in a public and/or private domain context (for instance, government–industry, public–private research and technology development ‘co-operative’ partnerships). (Carayannis and von Zedtwitz, 2006; Carayannis et al, 2006; Carayannis and Sipp, 2005; Carayannis and Alexander, 2006; Carayannis and Campbell, 2006; Carayannis and Ziemnowicz, 2006.)

3 ‘Knowledge clusters’ are agglomerations of specialized, mutually complementary and reinforcing knowledge assets in the form of ‘knowledge stocks’ and ‘knowledge flows’, which exhibit self-organizing, learning-driven, dynamically adaptive competences and trends in the context of an open systems approach (Carayannis and von Zedtwitz, 2006; Carayannis et al, 2006; Carayannis and Sipp, 2005; Carayannis and Alexander, 2006; Carayannis and Campbell, 2006; Carayannis and Ziemnowicz, 2006.)

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