THE NEW ENTREPRENEURIALISM

Academia, Innovation and Entrepreneurship in the Knowledge Era

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2013

To our parents

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FOREWORD

The knowledge economy propels innovative entrepreneurship into the spotlight. Because innovation is knowledge in action, opportunities for innovation proceed from the scientific work of the knowledge producers to the business actions pursued by the entrepreneurs. Those who create high-expectation, high-growth start-ups and look beyond national borders detect untapped opportunities not perceived by those who take the usual course of business.

Major corporations take primary responsibility for the creation of both entrepreneurial and academic ecosystems which lead to genetic mutations: from multinational to global integrated enterprises, from employees to intrapreneurs, from job seekers to hunters of entrepreneurial opportunities. Once upon a time, working for a large established company like IBM meant a job for life, but now the mutated genes are starting their own firms, leading to a growth in entrepreneurialism.

The global nature of the new entrepreneurialism make the world exposed to brain circulation – that is, the mobility of science-driven entrepreneurial talents and the sharing of ideas across borders which may initiate new businesses.

New players coming out of India, China, Eastern Europe, the Gulf Region, Brazil, South Africa and other fast growing emerging markets, all add fresh 'DNA' to the global economy that will diffuse the effects of the new entrepreneurialism.

Ironically, it is not a new model. In medieval times there was brain circulation between Europe's leading universities, the outcome of which was a new approach to knowledge and learning. We are resuming that type of culture which was very entrepreneurial and was the origin of the Renaissance.

International entrepreneurship breaks down traditional business borders. You might have the founder of a company in Dublin, another one in Stockholm, with some else in Riyadh and Beijing. An embryonic company with a global footprint requires less startup investment and

is better positioned to conquer more markets at launch and more likely to attract talents into the organisation because it is not tied to one place.

Laboratory experiments where the function and performance of high-expectation/high growth start-ups are evaluated give entrepreneur candidates, financiers and policy makers a deeper understanding of the actual workings of real-world new markets. Experiments point out how high-expectation entrepreneurs should cultivate market outcomes, which behaviour should guide trust building between the formers and their potential financiers, and how policy makers should design and test "rules of the game".

We hope that most readers will find in this book motives for other journeys of discovery into the nature of the knowledge economy.

The authors are deeply indebted to Professors Elais Carayannis and Martin Curley for their inspiring thoughts and contribution. A profound thanks also goes to John Edmondson, editor of Industry and Higher Education.

Also, the authors are greatly thank the Ministry of Higher Education in Saudi Arabia for the full support to publish this book.

Piero Formica and Ahmed Alshumaimri
Dublin and Riyadh, Jan 2013

P A R T **1**

ENTREPRENEURSHIP AT LARGE

1

A ROAD MAP TO SUPPORT THE ENTREPRENEURIAL ECONOMY

> Today an educated, self-confident, and achieving generation can see the power of its own genius at work in its own land as a culture of entrepreneurship transforms Ireland's fortunes, creating a new future for our children and an economic success story of remarkable proportions.
> Mary McAleese, Ireland's Former President, 2003

Establishing an entrepreneurial economy means establishing an integrated system with multiple, overlapping dimensions of entrepreneurship. Namely:

• **Technology Entrepreneurship**, which Tom Byers from Stanford University has defined as "a style of business leadership based on the process of identifying high-potential, technology-intensive business opportunities, gathering resources such as talent and cash, and managing rapid growth using principled, real-time decision-making skills. An attractive business opportunity consists of a great value proposition, technically feasible products, strong intellectual property, a sustainable competitive advantage, a large potential market, and a proven business model. It can be based on either a revolutionary breakthrough in technology or an evolutionary advancement; and it can target an existing market or create an entirely new one. This entrepreneurial process is relevant for both independent startups and within established corporations".
As Lester Thurow puts it, "A **technological entrepreneur** brings a new technology to market in the form of new products or new processes for producing old products. For example, satellite TV is a new process for delivering an old product—television programs. The computer is a new product derived from new technologies" (http://www.mansfieldfdn.org/backup/programs/program_pdfs/ent_thurow.pdf).

• **Social Entrepreneurship**, which mainly results in the formation of cooperatives and economic entities of the NGOs, brings into the social sector the principles of entrepreneurship and innovation, blurring the boundaries between economic and social fields.
"A sociological entrepreneur finds a new context in which to sell an old product. The best example would be Starbucks Coffee Company. Using a different context, Starbucks persuaded millions of people to spend $2.50 for the cup of coffee they had been buying for 50 cents" (Thurow, ibidem).

• **Geographical Entrepreneurship**. "Much of the entrepreneurship in Asia today is geographic entrepreneurship, not technological entrepreneurship.
A geographical entrepreneur moves technology and the products and processes that go with it from one place to another. Usually this means moving a technology from the developed world to the underdeveloped world. When Taiwanese firms move laptop computer manufacturing to the People's Republic of China (PRC), they are engaged in geographic entrepreneurship" (Thurow, ibidem).

• **Transformational Entrepreneurship**, which happens at the convergence of Technology Entrepreneurship and Social Entrepreneurship. According to Startup Genome, which has coined the term "transformational entrepreneurship", "An increasing number of entrepreneurs are awakening to the possibility of combining the scalable tools and methodology of Technology Entrepreneurship with the world-centric value system of Social Entrepreneurship. Together they create a new type of entrepreneurship that could become our primary source of socioeconomic value creation" (http://blog.startupcompass.co/transformational-entrepreneurship-where-techn-11064).

• **Recombinant Innovative Entrepreneurship**, which "occurs at the overlap of cohesive structures where different communities (defined by their cohesive ties) intersect without dissolving their distinctive network identities". Creative friction at the overlap "generates new knowledge, and makes possible the redefinition, redeployment, and recombination of resources"
(**Stark, 2009**).

• **User Entrepreneurship**, started by "those who have created innovative products or services for their own use, then commercialize them". In the US, a study released in March 7, 2012 by the Ewing Marion Kauffman Foundation shows that "over 46% of all innovative new businesses that lasted over five years were founded by user entrepreneurs. This figure is even more impressive when you consider that these startups represent only 10.7% of all US startup".
"User entrepreneurs were the first to introduce many key innovative products and services into the commercial marketplace in industries as diverse as medical devices, juvenile products and sporting goods. User entrepreneurs have founded many well-known and successful companies, including Yahoo!, Black Diamond and Medtronic" (ThoughtKast: http://thoughtkast.wordpress.com/2012/03/08/study-funded-by-kauffman-foundation-finds-user-entrepreneurs-are-highly-successful).

• **Civic Entrepreneurship**, started by those who put "their talents to work in revolutionizing local government. That was the beginning of Code for America which now partners with eight cities—Austin, Chicago, Detroit, Honolulu Macon, New Orleans, Philadelphia and Santa Cruz—with 26 fellows whose backgrounds range from back-end development experience to urban design" (**Marich, 2012**)

The following is a road map for supporting the establishment of an entrepreneurial economy. The map is composed of five points.

Encouraging entrepreneurial actions

Competitiveness in the new global knowledge economy is closely related to research & development, technological invention, continuous improvement in products, and human resources with marketable skills and needed qualifications. To maximize the entrepreneurship role in development, and encourage risk capital companies to do their role; several pillars need to exist:

Improving investment climate

The best support for risk capital, and consequently entrepreneurial work, is to ask governments to remove the deficiencies of local markets. Investment flow is influenced by the economic, social, and po-

litical prevailing conditions in the investment-receiving country. Those conditions are called "the investment climate." So, a good investment environment is not just tax exemptions, and facilitation of registration & licensing. It is a complete package of the following:
1- Simplify administrative procedures.
2- Better monitoring of investment environment to enhance the investors' trust in the system.
3- Cooperation and partnership between local & foreign investors, to achieve economic targets:
i. Sharing of expertise via alliances between domestic & foreign corporations.
ii. Growth of local exports.
iii. Absorbing unemployment, and increasing national employment rates.
4- Focusing on developing industrial cities, and facilitating the procedures of allocating industrial plots.
5- Encouraging the establishment of modern technology zones.
6- Activation of economic cities to give them a competitive edge to attract foreign & local partnerships.
7-Simplify governmental procedures in IT licenses.
8- Eliminate the duplication of forms in governmental procedures.

Focusing on innovation-supporting mechanisms
For entrepreneurial enterprises to face knowledge-economy challenges, innovation and creation must be encouraged with a focus on the following:

1- Enhance innovation culture
• Enhance learning environments.
• Reward the learning.
• Facilitate of remote learning.
• Encourage trial & error.
2- Funding for R&D
• Increasing funds by a number of tools: soft loans, grants, and participation in the costs.
• Allocation some part of the budget of R&D institutions to industries with the ability to achieve competitive advantage.
• Obliging research institutes to pay for part of their costs, through corporate research that benefits the private sector.

• Providing tax incentives to R&D performed by the private sector, particularly small & medium enterprises.
• Running awareness campaigns targeting the private sector on the importance of R&D for their competitiveness.
3- Encourage the adoption of new technologies.
Technology is obtained by various methods such as buying, funding of ownership properties, and obtaining franchises. Technical & commercial support structures (such as R&D centres, and technology transfer centres) can play a major role in spreading technology. There are various recommendations for obtaining technology:
• Issuing laws and regulations for organizing work and cooperation between global universities.
• Holding conferences, seminars between domestic & foreign universities in different scientific disciplines.
• Holding meetings between professors in technological specialties in universities.
• Establishing projects, researches, and studies between university affiliates.

2

ENTREPRENEURSHIP FOR TOMORROW'S TIMES

> The best way to predict the future is to create it.
> Peter Drucker, social ecologist

The future revolves around a world without boundaries that will ultimately lead to a "Made in the World" brand. The world business champions are seizing excellence wherever it is available, and weaving networks of international talent (**Box 1**). They're become globally integrated business communities. As the number of customers, especially among the new wealthy classes - from China to India, from Turkey to Brazil, increases the "Made in the World" gives birth to many centres "in" Excellence (from design to logistics). Entrepreneurs must act to ensure they can secure a strong foothold in this new business environment.

Box 1 – Is Capitalism being replaced by Talentism ?

"As I outlined in my opening address at Davos, capital is being superseded by creativity and the ability to innovate – and therefore by human talents – as the most important factors of production. If talent is becoming the decisive competitive factor, we can be confident in stating that capitalism is being replaced by 'talentism.' Just as capital replaced manual trades during the process of industrialization, capital is now giving way to human talent".
Klaus Schwab, Founder and Executive chairman of the World Economic Forum

The Industrial Revolution highlighted how commerce and new technology first became intertwined in coffee houses, which empirically proved the Abbé Galiani's (Chieti, 2 December 1728 – Naples, 30 October 1787) famous assertion that markets are conversations. The Italian entrepreneurial miracle following the Second World Ward had its cradle in the coffee shops. Playing cards in cafés instead of playing by business cards in formal debates, blue collars and technicians acquired some rudimentary knowledge of entrepreneurship. The chain of entrepreneurial

ideas had a life form whose behaviour was organized from the bottom up – from the shop floors and the cafés, inextricably linked to one another.

That time is gone. Vocationally skilled, factory-driven entrepreneurs give way to tertiary educated, science-led entrepreneurs. Complex iterations, feedback loops, and inter-relationships between knowledge builders at the convergent spaces of sciences mould the chain of entrepreneurial ideas. They live symbiotically, conveying the Lemuel Gulliver's profile of a would-be entrepreneur who confers a primary role to intensive and laborious interactions with peers from different cultural and business background. They take advantage from the multiplier effect of sharing – "I am going to use my idea in my field of use, and you are welcome to use it in your own field". They build upon one another's strength, one another's competence, adding value and passing it on. If their ideas succeed and the startups are successful, they become angel investors and early-stage capitalists for the purpose of providing seed capital to the next generation of entrepreneurs and startups. And so the chain of ideas does not break down and the cycle of innovation continues.

3

ENTREPRENEURS AND INTRAPRENEURS

> The word "entrepreneur" originates from a thirteenth-century French verb, entreprendre, meaning "to do something" or "to undertake." By the sixteenth century, the noun form, entrepreneur, was being used to refer to someone who undertakes a business venture.
> Russell S. Sobel, professor of economics and James Clark Coffman Distinguished Chair in Entrepreneurial Studies at West Virginia University.

> Intrapreneur is "A person within a large corporation who takes direct responsibility for turning an idea into a profitable finished product through assertive risk taking and innovation".
> Gifford Pinchot III, grandson of the first Chief of the United States Forest Service.

Small enterprise owners are usually the ones called entrepreneurs. When a large enterprise owner (such as Bill Gates, or Alrahji in the Arab world) is called an entrepreneur, it is because they started their companies from scratch as novice projects. History tells us that entrepreneurs do not normally emerge from the work force of big companies. Big companies are all about manufacturing technologies, accurate planning, efficiency, and massive scale. Entrepreneurs are the opposite. They support disruptive change. They get away from routine, repetition, and planned processes. This is what stifled their emergence in big companies.

It so happened that many forces combined to make us re-focus from BIG to SMALL. The manufacturing sector declined. The service sector experienced a resurgence. The focus of business switched from mass production to customized operations tailored to clients' individual needs. This was predicted by **Norman Macrae (1976)** who said: "operation methods will change greatly in the next decades, in a direction opposite

to the predictions of businessmen and most politicians".
In a poll he conducted, which he described in "The revolution of the coming initiatives", he said that the world was expecting an end to big companies; because it was not logical to have a hierarchical management in few scattered offices and then try to stimulate intelligent employees in a permanent routine work setting. Though it was mentioned that the word "entrepreneur" is connected to small companies, yet it may describe a person who thinks and acts in an entrepreneurial way in big companies. "Institutional entrepreneurship" became a scientific model and a managerial concept to learn.

Today, many big companies try to focus on entrepreneurship by encouraging managers' innovation, in order to keep entrepreneurs in. Many companies succeeded in doing so. The trend of "institutional entrepreneurship" gained acceptance due to the demands of global competition and rapid technological change.

Authors and scholars used some terms to express corporate entrepreneurship: Internal Corporate, Corporate Venture, Internal Entrepreneurship, and Corporate Entrepreneurship.

Therefore, entrepreneurship definitions are various. In fact, the word (intra) means (within). So, "intrapreneurship" is meant to be entrepreneurship inside established institutions. The term "intrapreneurs" appeared in **Pinchot's book (1985)** [intrapreneuring]. One of the widely accepted definitions of entrepreneurship is that of **Guth and Ginsberg (1990)**. They define entrepreneurship as "the birth of new arrangements inside existing situations, and a resurrection of established corporations by the new ideas & approaches" of the innovators.

There are various targets sought by entrepreneurship to be achieved in corporations:

1- Preparing ground for practicing entrepreneurship on the corporate level.
2- Establishing new projects within companies, independence of new projects, or independence of units within organizations.
3- Adoption of initiatives proposed by workers in the organization.
4- Rethinking of the company's orientations & opportunities, or the so

called “strategic innovation”.
5- It is time for entrepreneurship to lead public organizations: ministries, corporations, and authorities. The change towards entrepreneurship is now the driving power for global economies. The new age of change is the age of entrepreneurs. Intrapreneurship is defined as the rebirth of established organizations by renewing their creative impulse.

The prevailing organizational culture in governmental organizations depends on sticking to instructions, “not making mistakes,” not allowing failure, avoiding initiatives, waiting for instructions to be issued, staying within one’s limits and occupational level. Managers are perpetually focused on protecting their backside. This stifling environment cannot foster creative change, because change is disruptive in the first instance. A stifling bureaucracy cannot be consistent with calls for creativity, flexibility, independence, production efficiency, or fair incentives. The organizational behaviour that is based on formal hierarchy with its formal procedures & monitoring, cannot agree with rapid development, rapid response to global changes, exploitation of market opportunities, and the collapse of borders of international communication.

In the history of the management of corporations with nationwide geographic reach, only few people can be called entrepreneurs. Entrepreneurship is not a position to be “given” to individuals within the system. It is a self-choice, that makes them show, through their ideas and dreams, that they want to realize their potential. Entrepreneurs are not just inventors in exploratory mode. They are individuals who can transform their ideas into real projects. They form work teams, have commitment, and are strongly motivated to watch their ideas turn into something tangible. Above all, they are not of the genius type; most of them are of average intelligence. They start their intra-corporate adventures with an idea. The idea soon becomes a vision like a daydream. Pinchot described them as the “achieving dreamers,” when he first called for entrepreneurship in 1985 for the purpose of renewing large, flabby corporations.

The entrepreneurs that we need are achievement-oriented men. They move fast to achieve their goals. They are goal-oriented, not process-oriented. They are generalists, not tied down to any narrow specialty. They abound in new ideas. They assign themselves to do the impossible. They are not hindered by obstacles, no matter how big. They don’t stop

at constraints, no matter how solid looking.
Whereas the typical executive seeks promotion, and bonuses, entrepreneurs are driven by independence, the ability to create & innovate, enjoy success & make history. While typical executives tend to protect themselves from mistakes and calculate every risk, entrepreneurs gladly go forward and fail and make mistakes- but they learn and pick themselves up. They do not seek the approval of the boss, as their work objective. Their boss is not everything in their work life. They have a network of allies and supporters whose influence extends far. Entrepreneurs don't blame others, nor attribute failure to people around them. They see themselves as the only essential player in this game. They focus on improving performance and learning from the "probing" mistakes & slips.

Entrepreneurial corporations, if they want to harness this energy, must have the following properties:
• Be aware of the big picture. Change is constantly demanded in our age, in our competitive environment. Competition is the tool of progress and prosperity, and it creates pressure to perform.
• Respond to citizens' needs, and have faith that public service is not given gratuitously by civil servants, but a civil right granted by living in one's homeland.
• Entrepreneurship may require creating administrative alternatives. Such alternatives challenge the creeds of typical governmental organizations. Go beyond the constraints of bureaucracy. Bypass the literal rules, to be able to reach for the skies.
• Entrepreneurs are action-oriented, not empty-talkers, not theoretical. They are practical people who make immediate moves. They tend not to waste time in implementing their ideas,. They have no use for filling up forms, waiting for someone to endorse their proposals. Their passion for transformational ideas makes them take short-cuts to implement the plans.
• A good entrepreneur is the one who can go past a failure, overcome disappointment, and raise the morale of co-workers. He views failure as the path to stimulation, learning, and development or changing the path.
• One more thing: an entrepreneur is an executive so dedicated that he may sacrifice personal time, health, social life, and his life savings. The projects he adopts are at the top of his priorities & interests. He wants to achieve them as soon as possible.

4

ENTREPRENEURSHIP AGAINST UNEMPLOYMENT

> "We need reforms such as better access to capital, visas for STEM graduates and foreign-born entrepreneurs, and regulatory improvements for new firms to start, hire and innovate".
> Robert E. Litan, Kauffman Foundation Vice President of Research and Policy.
>
> On average, one-year-old businesses create nearly one million new jobs a year, while ten-year-old firms generate just 300,000. And in 2007, the last pre-recession year, young firms accounted for two-thirds of the U.S. economy's new jobs.
> Jonathan Ortmans, Policy Dialogue on Entrepreneurship, May 21, 2012.

Unemployment is a well-known phenomenon all over the world. It takes different forms & patterns. It is an acute disease embedded in societies, causing various types of harm to development. Its deep impacts are social, economic, political, and security. All countries attempt to solve this problem by programs and legislations designed to reduce its impacts, and reset it to acceptable global limits. According to the WLO statistics there are 193 million unemployed persons in 2008. Youth represent 40% of those, i.e., 77 million. According to the economic unit report in the Arab League, unemployment in Arab countries is 15%. The number of unemployed people is expected to number 80 million in 2013.

Thus, unemployment is a complex multidimensional problem that poses a threat to stability and prosperity. In the lines below, we will present some non-traditional solutions for facing this problem.

In the early 20th century, scholars indicated the important role of entrepreneurs and small enterprises in the economic system. Yet this dissertation was not widely accepted by western decision makers till the world went through economic shocks, recessions, unemployment, and encounters with labor unions. Work in big entities led to isolation, bore-

dom, higher rates of strike & absenteeism, and a wide-spread low quality production. At the same time, the role small enterprises played in the success of Japan &Asian tigers is clear to everyone.

Thirty years before now, Asian countries were isolated from global trade in manufacturing and services. Then many, led by South Korea, chose to take part in global competition and started to reap the fruits of intelligent knowledge use. The declared Korean economic growth was part of the " East-Asian Miracle". Korea jumped to the twelfth rank between world economies & trade partners. For the first time, Korea came eighth in world exporting countries with exports increasing from 25 billion $ in 1980 to 355.1 billion $ in 2009. In those countries, small enterprises contribute 43% in South Korea, 56% in Taiwan, 60% in China, and 70% in Hong Kong. Studies indicated that inventions registered by those working in small enterprises are 13-14 times that of workers in large corporations. Also, the world average of small enterprises contribution to employing new labour is 60-80%. In Japan, small enterprises employ 70% of the total labour force, and 84% of the industrial labour. In Ireland, the percentage was 90%.

Thus, the world knew the role entrepreneurship could play in reducing unemployment. Global successful examples followed. The US made a short term plan (1992-1998) to reduce unemployment by focusing on supporting small enterprises (small& medium industries). The result was more than 15 million job opportunities during that period. Small enterprises now take more than 70% of the American labour force. China, Japan, Italy, and Brazil also resorted to entrepreneurial solutions. No long ago, they focused on small (1-5 persons) and medium (5-50 persons) enterprises. Such enterprises produce simple unsophisticated products which do not require huge capitals or big administrative systems such as: clothes, furniture, leather products, carpet, toys, spare parts, simple cameras, glasses, cosmetics, and home-based working. They were supported by a package of laws, protection, and facilities: banking, administrative, and tax. As a result, unemployment was reduced in those countries. In Brazil, unemployment reduced from 12.3% in 2004 to 9.3% in 2008, and 8.1% in 2010. In return, the Brazilian GDP was 2023 billion $ in 2010. This made Brazil the ninth largest economy of the world, and first in Latin America; with an average individual's share of 11220 $ in 2010. In Italy, unemployment was reduced from

11% in 1999 to 6% in 2008. Italy had more than 2.3 million small individual enterprises, then.

The role of higher education

Also, education plays an important role in building entrepreneurial knowledge and teaching bases of scientific concepts; such as applied learning. Robert Hesrsh and Michael Peter (2008) stated that surveys indicated that the percentage of establishing a private enterprise for individuals studying entrepreneurship is 4 times that of those who do not study entrepreneurship. Also, those who study entrepreneurship are expected to gain 20% to 30% income more than that of those studying other specialties.

Due to the important role education plays, educational and training programs in the field of entrepreneurship started to show up in many world universities. Thus, entrepreneurship became involved in administrative education since the 1990s. This was reflected in increased numbers of honour positions funded from outside the university in entrepreneurship and the numbers of colleges providing entrepreneurship courses; as well as other corporations, organizations, journals, training programs, etc.

As a result of this trend, some universities share in the GDP equalled that of whole countries. MIT university alone, establishes 200-400 start-up companies (from the outcomes of R&D) annually (**Box 2**). This leads to the creation of 150,000 jobs. There are more than 25,800 companies established by the university, with 3.3 million jobs created and $ 2 trillion annual global sales. Assuming that those companies are a "country," then this country would be ranked 11th among the world's largest economies. It is a very strong evidence of entrepreneurship's ability to reduce unemployment – an important tool, overlooked by many developing countries.

Box 2 – Spinning-off companies from universities

"American universities are now spinning-off companies based on university intellectual property at a clip approaching 600 per year. In addition, as demonstrated in a recent white-paper authored by a team led by MIT's legendary Ed Roberts, this number of 600 per year is actually dwarfed by the thousands of other companies being launched each year by university entrepreneurs forming companies of their own that are not based on their university's intellectual property. Another important development is the well-known fact that as the costs of launching a company continue to decrease due to the advent of cloud computing and the like- so has it steadily become much easier for university-age students to try their hand at entrepreneurship".

Source: Lerner (2012)

5

NO ECONOMY WITHOUT SMALL BUSINESSES

The beginnings of all things are small.
Cicero, Roman philosopher

Small & medium enterprises are a major economic sector in all emerging market - especially under the global changes - because of their extremely important role in production, operation, income, innovation, and scientific progress.

Such enterprises are the focus of policies that aim to reduce unemployment. Economies that aspire to be global, still have to plan locally—to build up their small enterprises and lead them to growth. Many have expanded their educational systems to get an educational product that prepares people for all the available job opportunities in all sectors. Various training centres have been established for the purpose of preparing youth to work in different sectors. Small enterprises are getting help from these training centres, to be able to tap reliable manpower, when the need arises.
Funding for small entrepreneurial enterprises is one of the major obstacle facing such enterprises, as many funding bodies hesitate to invest in untested small companies. Future cash flows are uncertain; the competitive advantage of the small firm is questionable. Funding agencies are extra careful in offering such loans.

There arose the urgent need for the risk capital or “venture capital”. Venture capital usually provides funds to enterprises which have great potential in a high-growth sector. Such funding has helped many enterprises to stabilize and grow, until they could find capital on their own.

Providing the necessary funding by risk capital for such enterprises is good for economic growth & activity. It contributes eventually, to reducing unemployment.

Great developments in industry – as well as boom times in electronics, information, and modern technology – all flourished because of easy access to risk capital. In a few years, a startup firm can become a medium-sized firm, ready to invade the world with their products. In the process, they reduced unemployment. Risk capital providers are now specializing. Sometimes they target early-stage companies, those who have growing sales, but not yet declaring net profits. At other times, as in the case of large private equity funds, they target late-stage companies, those who already are able to claim two or more years of rising net profits. They are well past the break-even point.

6

CASH AND BUSINESS EXPERTISE "NUTRIENTS" FOR NEW FIRM FORMATION

Venture capital

> Public subsidies of venture capital are ineffective when fund managers are not culturally attuned to foster symbiotic relationships between investors and investees. Public attempts to foster innovation that do not focus on changing human behaviour are doomed to fail.
> Victor W. Hwang and Greg Horowitt, The Rain Forest.

The modern origin of risk capital is attributed to the Frenchman Georges Doriot, who established the first risk capital corporation in America, in 1946. His corporation specialized in funding electronics companies. Thus, the activity of risk capital started in the 1950s as a response to the needs of small & medium enterprises, and the advances in technology--particularly computer industry. As for the historic origin of risk capital; that Europe took from the Islamic economy for funding projects, it started to show up in the form of risk capital companies. Such institutions spread in other countries for the purpose of serving investment-funding needs. Risk capital aims to overcome the deficiency of capital supply (where banks hesitate to lend) for new ventures or high-risk projects. Thus, risk capital is a special technique for funding companies at high interest rates. Such rates are profitable, by the time the invested company is sold. Risk capital is recovered in the end of the investment program after introducing a rate calculated based on the achieved profit, without providing any guarantees. The investor takes partial or complete risk: loss when the funded project fails.

Countries most interested in new technologies, with their appropriate investment climate, attract the most risk capital. Companies find the right financing for making their experiments and making a lot of profits. Examples are the US and some European countries. They had risk-taking financers who were always backing various inventions. If it was not for such people, the world would not have reached its present level of

technological development. This implies that risk capital has always been there, even before the 1960s. The new thing is the establishment of entire companies for that purpose, which took place for the first time in the 1960s in the US.

Supporting economic reform programs

Countries that apply economic reform programs, leading to the privatization of the public sector, need capital of a special nature. They need capital to be provided by corporations who are ready for taking risk and providing support for privatized public sector institutions which need to be restructured both technically and financially. Such corporations provide the money, technical and administrative expertise necessary for that sector. They provide funding for economic projects without excessive bank credit or fees. Such corporations attempt to mobilize capital and direct them towards productive investment.[1]

According to the OECD report, the global risk capital industry provides a funding cover exceeding $100 billion annually. Thus, risk-capital corporations emerged as the prime funder of long-term development projects.

Support for funding new corporations

Supporting new corporations is the natural field of risk capital providers. They provide technical, financial, and administrative support to new corporations at their onset, without guarantees or constraints on funds, banking only on the effectiveness of the project and its people. This job is extremely important in developing countries, as such projects do not meet loan criteria set by banks there.[2]

Support for troubled corporations

Risk capital corporations provide technical, financial and administrative support for troubled corporations. They also attract investments to them because they are business partners of the firm. So they are keen

1 - Abdullah Belabdi. MSc " Funding by risk capital: A comparison with partnership", Faculty of Islamic & social sciences, Hajj Khdr University, Algeria, p 21.
2 - Ibid.

on performing the technical & financial monitoring to reform the path of the troubled firm, in order to stimulate investors to benefit from the speculated capital profit after their business recovers.

Angel investors

Whereas venture capitalists invest $4 million on up, angel investors, who often are entrepreneurs, are willing to invest in the range of $100,000 to $1 million. To the "nutrient" in the form of cash they add business expertise – they know about how to run a successful business – to feed the process of converting ideas into products (Box 3).

The term 'angel investor' "was coined in the early 1990s to mean extremely wealthy businessmen who invested in Broadway productions. Historically, those with enough money to invest in businesses were difficult to find, so they were considered angels to those they invested in. Angel investors gave people the chance to open their businesses when they otherwise might not have had the financial resources" (http://www.ehow.com/about_6591305_definition-angel-investor.html).

Box 3 – Angel financing and high-growth firms

"An OECD report examines why angel investment continues to be relatively overlooked despite the fact it is the primary source of outside equity financing and support for startups in a number of countries. Financing High-Growth Firms: The Role of Angel Investors points to a couple of underlying reasons for the general lack of understanding: angels prefer to keep details about their investments private, making accurate data collection difficult; and fuzzy definitions and labels used to differentiate true angel investment from other types of early stage funding.

Based on more than 100 interviews with investors, entrepreneurs and others in 32 countries, the book points to a persistent and growing gap between angel investing and venture capital that was exacerbated by the global financial crisis.

So which countries have been successful at promoting angel investment through public policy and what did they do?

The Australian government reduced regulatory barriers that were holding back investment. The 'Angel Law' in Israel allows investment deductibility in support of private high-tech companies. Japan has had tax incentives in place to promote angel investing since 1997. In the United Kingdom, a new GBP 50 million co-investment fund will invest alongside business angel networks.

The report's author, Karen Wilson, a consultant for the OECD Directorate for Science, Technology and Industry, argues that whatever the approach, governments would be wise to foster the growth of their angel networks.

Source: Mark Marich, Kauffman Foundation, April 30, 2012

Crowdfunding

Raising money through relatively small contributions from a large number of people ("crowdfunding") is a new way to fund new firm formation.

As a business startup method, "crowdfunding has its roots in charity work, and indeed works similar to a public television pledge drive. You put out a certain amount you want to raise for your business and family, friends and acquaintances pledge as much or as little as they want until the goal is reached. This differs from using an angel investor or microloan because your funding comes from several different sources" (http://www.crowdsourcing.org/document/crowdfunding-as-a-business-startup-method/2870).

Is crowdfunding an effective traction as a viable way for startups to bypass venture capitalists and angel investors (Box 4).

People who show a positive bias argue that "Crowdfunding for entrepreneurs has the potential to deliver capital, mentoring, and resources virtually anywhere. The opportunity is large:
The US VC industry ranges from $20 to $30 billion of invested capital per annum, according to the NVCA, and it's concentrated where most entrepreneurs are not. Imagine if we take the $43 per person of VC invested per year outside Silicon Valley and double it to $86 by bringing the capital and mentoring and resources to entrepreneurs across the US. If that were done, the amount of new capital deployed would be $13 billion per year" (Rod Turner, 2012).

According to the negative argument, "in a crowdsourced model, no one investor has substantial money in the venture. So there's no one who could insist on a board seat as part of their deal, or otherwise make an entrepreneur take their ideas seriously for how to grow the business. That makes the startup a riskier venture, both for the investors and the entrepreneur. Maybe that entrepreneur will find mentors in other places. But nothing's compelling them to do so. Often, connecting with angel investors or a venture capital firm brings a business owner some high-quality expertise in the deal. It's unclear if entrepreneurs would get the help they need to be successful if their funding comes from hundreds of

individuals each putting up $50" (http://www.dawori.com/xmlpage?name=business&cata=entrepreneur).

Box 4 – Crowdfunding: pro and con

"Pro: Crowdfunding may make it easier for start-ups that would otherwise not have access to funding to get off the ground. Crowdfunding will likely prove most useful for companies that can be successfully launched with less money than the dollar thresholds of most VCs. Some areas within the internet and mobile industries, for example, have a history of doing more with less, and may see crowdfunding as an attractive option. The availability and low cost of cloud computing has made it easier for an internet or mobile development-focused company to get off the ground as they no longer need to spend precious capital on hardware. For companies that will need more than the $1 million per year that can be legally raised through crowdfunding, however, traditional venture capital will remain the better option.

"Con: Crowdfunding could end up crowding out angels and seed VCs. For venture capitalists focused on seed investing, crowdfunding could potentially "crowd out" these seed investors. Seed investors have typically not had much competition and the appeal of raising money from multiple people through an internet portal, as opposed to going through the VC pitch process, could change that. In addition, if a firm later reaches the point where it seeks to raise VC funding, there could be problems. Will a VC want to have dozens of unsophisticated shareholders to deal with regarding voting rights and other shareholder issues? There may be pressure on companies to buy out or unwind their "crowd" shareholders and to have this plan ready to execute before they seek VC funding"

Source: Elderkin, 2012

7

BRANDING FOR STARTUPS[3]

> The purest treasure mortal times can afford is a spotless reputation.
> William Shakespeare, English poet and playwright.

Searching the literature, there is a lot of material about branding and corporate branding, as well as a lot of literature about startups and entrepreneurship, but the intersection between the two is a pretty unexplored area (Bresciani and Eppler, 2010).

This area of intersection between branding and entrepreneurship is unique and interesting for a number of reasons (Pietrobon and Dai, 2012). At the creation of a new venture there is no established identity, reputation and internal structures are unformed; moreover, Small businesses do not have knowledge of what branding is, and they might even fail to recognize that they are themselves a brand (Bresciani and Eppler 2010; Rode and Vallaster, 2005). Another series of unique facts is that new ventures typically have low resources, low know-how and a little amount of time, as it happened for instance during initial steps of brand building of Dyson in the UK (Boyle, 2003) (Rode and Vallaster, 2005). Moreover, considering that branding is considered as not strictly necessary, entrepreneurs usually oversight it and instead focus on finance and production in the early stages of establishing a new venture (Bresciani and Eppler 2010). However, many companies have realized afterwards the importance of branding and of a clear brand vision, and they admit that an early investment in branding is important, even more given the fact that subsequent changes of their corporate identity could reach very high costs (Bresciani and Eppler 2010).

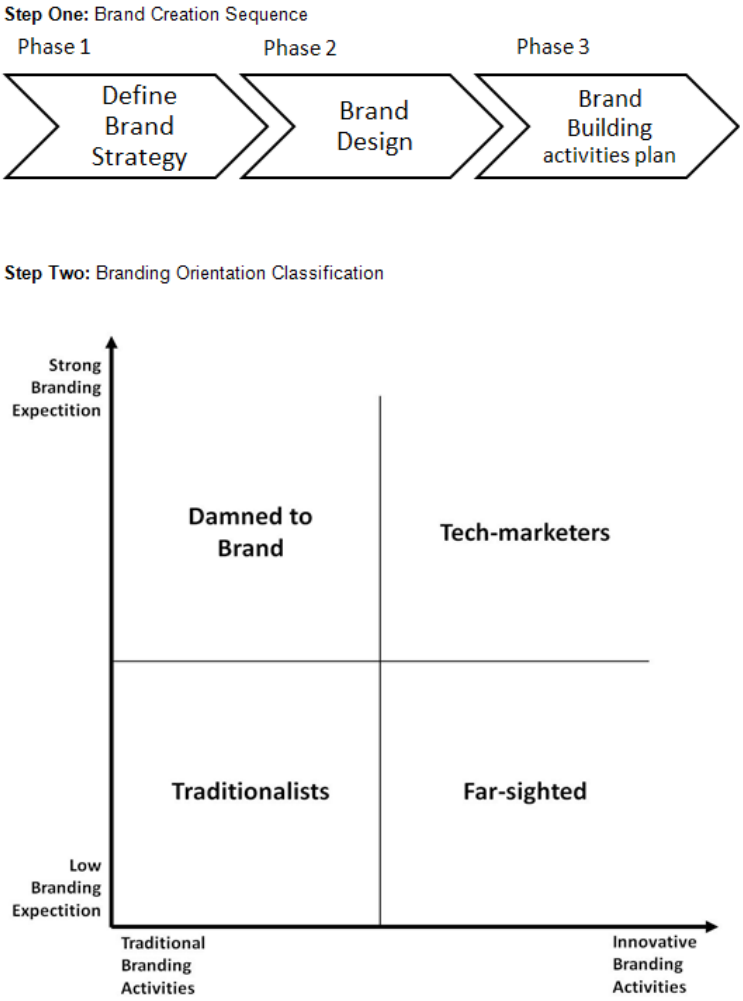
The study of Bresciani and Eppler (2010) proposes a framework that should be followed by startups when creating their brands. This framework is made by two steps: the first is about brand creation and it has

3 - This Chapter has been written in collaboration with Alberto Pietrobon, Consultant at IBM, London.

three phases within it; the second is about the activities that should drive the brand building process, and it divides them into four clusters (Figure 1).

Step one. Define Brand Strategy is the process of alignment of the brand strategy with the strategy of the new organization. Brand Design is about name, logo, colours, and visual elements. Brand Building specifies the activities that have to be undertaken to build the brand, and this Phase is enlarged in what is the second step, the Branding Orientation Classification.

Figure 1 - Branding for startups



Source: Bresciani & Eppler, 2010

Step Two. The typical approaches to branding utilized by startups are divided in four clusters, which are defined by two criteria (the two axes).

• **Damned to brand**: companies that have no options but commit heavily in both traditional and innovative activities; they sense branding as an obligation rather than an opportunity.

• **Tech-marketers**: Technological firms that have a very clear brand vision. They do not rely on traditional branding activities, instead they focus strongly on innovative activities that includes online presence, events' participation or road-shows.

• **Far-sighted**: firms that operates in industries where in order to survive there is no need for a large branding effort; nonetheless they decide to take a strong creative approach to branding.

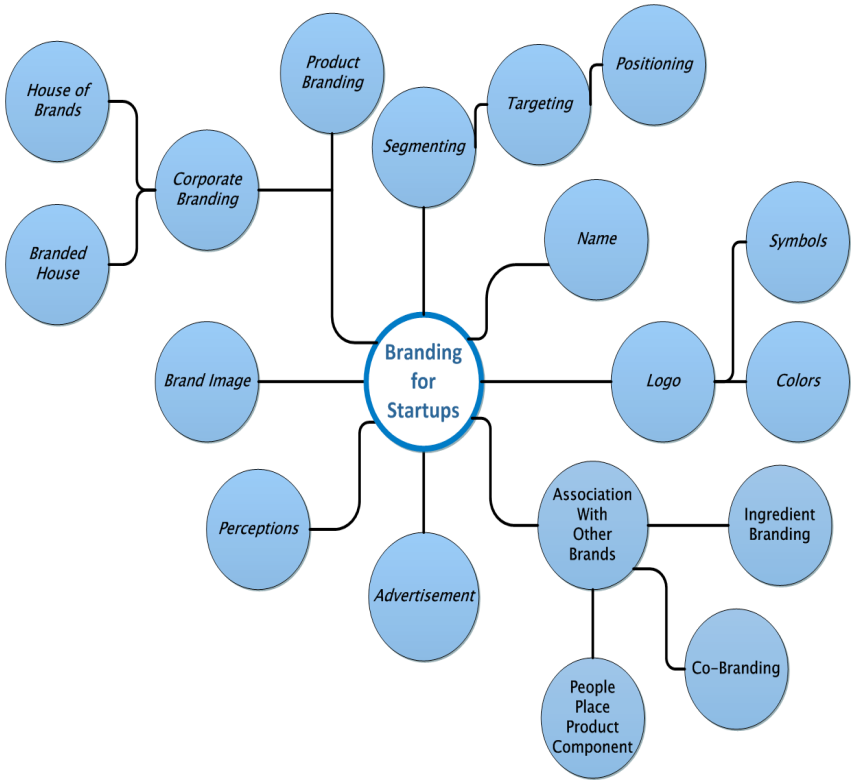
• **Traditionalists**: firms in this cluster do not believe that branding has a great importance for the successful development of the company, and accordingly they opt for a traditional product-centric approach for communicating with their customers.

Academic literature reveals that most new entrepreneurs are not well conscious of the concept of branding, also that there is little literature about branding for SME (small medium enterprises) and the papers that talks about it focuses on already established SME, and not about the process of brand creation (**Merrilees, 2007**). The research in the field of entrepreneurial brand-building is "still in its infancy" (Boyle, 2003). Even though these researches were performed few years ago, from our search of literature on the matter we still found little material about it.

Another important fact about branding for startups, particularly given their usually limited initial resources, is that if they fail to establish their corporate brand on the market in a relative short amount of time, they will soon disappear from the market (**Timmons and Spinelli, 2003**).

The following conceptual map (**Figure 2**) visualizes the key aspects that the entrepreneur has to ponder when engaging in the branding process for the new startup.

Figure 2 – Conceptual map of branding process for startups



P A R T **2**

ENTREPRENEURSHIP AND INNOVATION

8

ENTREPRENEURIALISM IS THE OTHER NAME OF INNOVATION

> "If invention is a pebble tossed in the pond, innovation is the rippling effect that pebble causes. Someone has to toss the pebble. That's the inventor. Someone has to recognize the ripple will eventually become a wave. That's the entrepreneur".
> Tom Grasty, digital entrepreneur

There is a direct link between the entrepreneur and the innovation process. Innovation is knowledge turned into action through creative endeavour that hugely depends on the willingness of individuals to start new companies. Thus, entrepreneurialism accelerates that process by increasing the opportunities for the successful commercialization of innovation.

In the 19th entrepreneurial scholars, such as Marie Curie – an enterprising woman who became personally involved in the industrial application of her scientific results – showed preference sets affected by the convergence of two character profiles: namely, 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. During the 20th century, self-made men like Henry Ford revolutionized the mobility industry by manufacturing groundbreaking vehicles. Ford did not listen to current customers by trying to make the horse and buggy go at 60 miles per hour. And inventors like Thomas Edison, the wizard of Menlo Park, fostered interactions and networking conducive to successful business models by "selling customers the fewest number of light bulbs necessary to supply them with the light they wanted".

The 21st century is the century of intellectual venture capitalists, those who make geo-economic changes and move to new places by acquiring a sense of discontinuity. Intellectual venture capitalists are in essence

knowledge entrepreneurs who hold intellectual capital and are willing to undertake risks investing it towards the pursuit of larger pecuniary benefits – that is, they have the ability and the potential to transform knowledge and intangible assets into wealth-creating resources.
Over the century, an abundant supply of such intellectual capitalists would encourage intangible assets-intensive processes, whereby companies making decisions for outsourcing innovation 'learn' rather than 'control'. 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 capitalists acting like the 'merchants of light' of Phoenician and Renaissance times who saw into distances most could not.

Intellectual venture capitalists encourage brain circulation, which is the best way to get an exchange of knowledge, and therefore they help entrepreneurial spirits to embark on innovation journeys. The resulting intellectual exchanges foreshadow processes of cultural integration, knowledge creation and result-oriented innovation actions that will be unfolding all through the century.

The international mobility of talented individuals helps countries, regions and territorial communities close their productivity gap vis-à-vis the most advanced economies, since it promotes entrepreneurship-led innovation. This reduces the risk of talent drains into the most advanced economies. The international mobility dimension we are experiencing at the dawn of the 21st century is the precursor of societal breakthroughs that, respectively, the Phoenicians and medieval communities of scholars made by intuition rather than through a laborious linear logical process, which was the style of innovation embraced by the ancient Greeks.

9

ENTREPRENEURIAL EXPEDITION WITH SPECIFIC ASSIGNMENT

> The innovation point is the pivotal moment when talented and motivated people seek the opportunity to act on their ideas and dreams.
> W. Arthur Porter, American educator and businessman.

Innovation is impeded by path dependencies. To be effective, innovation requires a willingness to move into new and often unknown territories. Due to high levels of complexity and uncertainty of the innovation process, collaborative entrepreneurial teams are much better than siloed teams at supporting the effectiveness of innovation at both micro and macro scales.

Collaborative teams are nurtured by experimenters who gain new insights by sharing and learning from each other in an experimental laboratory – resulting in a dynamic, adaptive ecosystem (Box 5) that creates, channels and transforms ideas into effective innovation via the continuous formation of relationships among aspiring entrepreneurs.

Box 5 – Natural and human ecosystems

In nature, an ecosystem is an environment in which numerous species of flora and fauna can thrive by interacting in a dynamic, self-adjusting balancing act.

Human ecosystems are "complex cybernetic systems that are increasingly being used by ecological anthropologists and other scholars to examine the ecological aspects of human communities in a way that integrates multiple factors as economics, socio-political organization, psychological factors, and physical factors related to the environment" (http://en.wikipedia.org/wiki/Human_ecosystem).

Effective innovation originates from the activity of matching innovative solutions with problems and opportunities detected in both the actual markets (market watch exercise) and the future markets (market foresight). Its sound reputation emanates not from selling ready-made solutions, but from the mastery of tailoring innovation to the current demands and potential needs of customers.

Effective innovation is entrepreneurial and entrepreneurial execution is an atomic reaction, fully adequate if the innovation agent is an entrepreneur with enough energetic power, persistence, and disciplined fantasy (an apparent contradiction since "our mind's constructions are one form of disciplined fantasy" – see Davies and Hoffman, 2002 http://www.cogsci.uci.edu/~ddhoff/ Topic RealityCheck.pdf) in utilizing time and brainpower to create a pathway for an idea's success.

Thus, effective innovation is an expedition with specific assignments such as why innovating; what kind of innovative concept (evolutionary or revolutionary) in product, service or business model; which criteria should the innovation satisfy; who and where is the target group; and when is the market-entry time. Given these conditions and under the assumption of rational expectations, there would be a high probability for innovation to produce the desired effect.

Bridging Micro and Macro Domains

Innovative entrepreneurs strive to bring to market novel ideas with commercial appeal. The act of bringing to market new inventions by implementing them in a way that creates value to customers, producers, or both, depicts the character of innovative entrepreneurship. Yet, commercial success in a company can provoke externalities that negatively affect growth, productivity, and prosperity at a macro level. Under these circumstances, working towards a more integrative micro and macro approach is what innovation needs in order to be effective. In building healthy economies, taxes, regulatory burdens, intellectual property rights, and other policy tools in the hands of policy makers are incentives that unleash collaborative possibilities between risk-takers who embark on innovative initiatives and the surrounding society.

Innovation for an Imperfect Future

Innovation agents lack perfect knowledge and information about future events. Think of what could happen by jumping from one S-curve (which illustrates the introduction, growth and maturation of innovations as well as the technological cycles that most industries experience) to the next. If guided by a business plan model that is consistent with the rational expectations hypothesis, the innovation agent performing that jump sees a 'mathematical' coincidence between his/her expectations and the business plan's predictions (statistical expected values). Considering all errors to be random, the new scenario from the business plan is plausible and the act of jumping promises to enact innovation effectively.

The unpredictable elements in the future (i.e. in the new S-curve) are too great to be captured by rational expectations, namely, consistent business plan models. In this respect, business plans look like a static collection of facts (i.e. 'known unknowns', 'things that don't move' – Taleb, 2007), the predictability of which succumbs to unexpected events (the 'black swan' in Taleb's terminology) that may occur in the uncertain and dynamic environment.

How to innovate effectively implies the recognition and acceptance of a culture of how to handle uncertain expectations. Stepping outside the boundaries demarcated by rational expectations is the challenge innovation agents have to face. The effectiveness of innovation is dependent on its execution, which occurs via the innovation agent's ability to navigate the incertitude of the future.

10

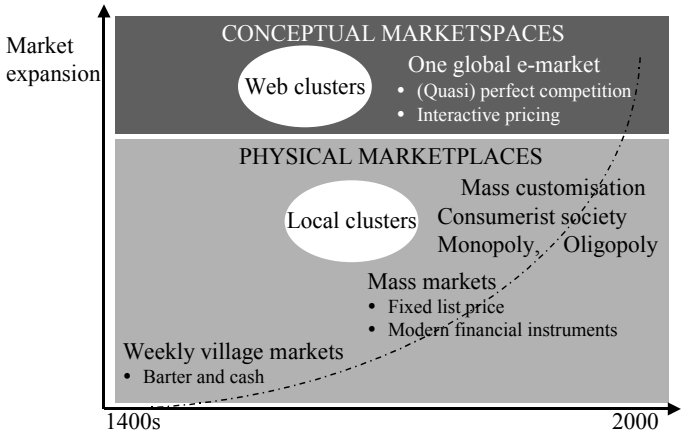
WEBENTREPRENEURS TAKE THE LEAD IN THE DANCES OF CAPITALISM

> Herein lies the makeup of a (Socially Conscious) Digital Entrepreneur. He or she is a new kind of animal – more resourceful, more dynamic, more connected and more evolved than any previous type of Entrepreneur.
> Arman Rousta, Founder & CEO of digital agency, Blueliner

> The Internet is becoming the town square for the global village of Tomorrow.
> Bill Gates, Co-founder of Microsoft

The dances of capitalism mark 500 and plus years of market creation, from the weekly village markets to the 24 hours/7 days-global village e-markets (Figure 3).

Figure 3 – The dances of capitalism



Source: Chip Bayers, "Capitalist Econstruction", Wired, March 2000; Andersson, Curley and Formica, 2010

What we are seeing nowadays is a radical change both in consumer and producer behaviour. New electronic markets are reshaping the capitalist structure. In the spaces of web clusters, innovative entrepreneurs will be making the most from the potential of unbounded-by-geography connections.

The Internet makes the economy more exposed and transparent. The international borders narrow down. Companies can evolve an unrivalled ability to monitor every movement on their webs. New markets, new services or add value to existing ones, and new revenue streams are created. Small firms can find niches that were not previously possible. Relationships with customers and suppliers are redefined. Overall, the road to change the way business is conducted and firms compete is being taken at a faster pace.

A (quasi) perfect market seems a feasible goal. The business practice of a fixed list price settled by the vendor might be replaced by interactive pricing through negotiation between seller and buyer. That is, the customer too will determine price.

Webentrepreneurs acting as personal shopping agents for the consumers will profoundly affect the concept of brand. Not less dramatic will be the effect on the concept and use of time and space.

Individuals and organisations keen to share the experience of the new dance will be able to multiply.

11

ENTREPRENEURSHIP IN DIGITAL MARKETS

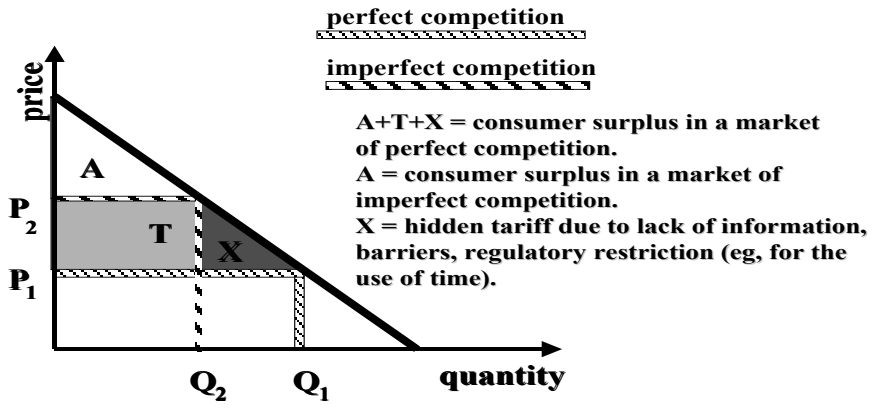
> The Internet is a shop window. The goods on display may be tempting, but if the shop doors are closed we can't purchase and if the storekeeper is inattentive we will leave. Online retailers must provide easy access to merchandise and the ability to transact conveniently at every opportunity to make the Internet truly profitable as a delivery channel.
> Howard Plaatjes, MD of Independent Online.

Digital markets are expected to work in a way similar to that of the ideal competitive market – that is "perfect competition". **Box 6** shows how a perfect market ought to be. Lack and imperfection of information, entry and exit barriers, regulatory restrictions, such as those for the use of time enforced by guilds in the retailing markets, and the like, make the difference between real and ideal markets. Consumers in terms of a reduction of the consumer surplus pay for imperfections (**Figure 4**).

Box 6 – The world of perfect competition

- Products are identical.
- Free entry/exit: no barriers to entering or leaving the market.
- Large number of buyers and sellers.
- Full information about supply and demand.
- Customers are perfect informed: no search costs, no time wasted seeking the right product).
- Every buyer would be matched with the supplier that could best meet his needs.
- Prices would be at exactly the level that would keep supply and demand in equilibrium.
- Sales are priced at the marginal cost of production.

Figure 4 – Market imperfections harm consumers



In the today's Arab bazaars, as once upon a time in the medieval marketplaces, a vast number of potential buyers and sellers use to gather together. One-stop shopping, in which all information is immediately available, transaction costs are almost equal to zero and prices are never fixed once-for-all, makes possible a continuous interaction between a buyer and a seller. Both dealing for price as well as other factors beside it, until they find the best match between demand and supply.

Digital markets are in some way the worldwide web version of Arab bazaars and medieval marketplaces. Vis-à-vis conventional markets, online consumers can be more easily informed about prices and other dimensions of competition, bearing lower search costs on Internet. Thanks to digital technologies such as request-for-quote (a patented technology developed by Perfect.com, a dot company unveiled on February 17th 2000[4]), consuming a very short time, just seconds, buyers can describe what they want in many different aspects: for instance, speed of delivery, supplier's reputation, warrant period, and price. Automatically the technology is capable to get the best deals. In the 1990s, Certiland.com, a pioneer in digital markets, conceived an information technology tool that verifies the reliability of online product information and makes available to consumers the information related to manufacturers quality system.

4- See "Frictions in cyberspace", The Economist, November 20th 1999.

This does not mean that the Holy Grail of perfect competition is or might be in the consumer's hands. Digital markets are far from being frictionless. A seminal research by **Michael Smith, Erik Brynjolfsson, and Joseph Bailey, 1999** has shown that "prices dispersion online is no smaller than it is in conventional markets" (**Box 7**).

Box 7 – Price dispersion in digital markets – second half of the 1990s

Online price dispersion
At different online retailers prices for:
• Identical books and CDS differ by as much as 50%.
• Airline tickets differ by an average of 28%.

Reasons for Online Price Dispersion
• Search engines are not always much use:
• Yahoo's book retailer section lists 6,219 sites.
• Altavista returns 5,173,884 possibly relevant web pages for online bookstores.
• Consumers go directly to the most known retailers: Amazon.com or CDNOW, even though they charge 7-12% more on average.
• Consumers are reluctant to change site, especially when their usual site is customised to suit them.
• "The more customers know about a product, the bigger evangelist they become" (notHarvard.com's founder, Mike Rosenfelt).

Source: "Frictions in cyberspace", The Economist, November 20th 1999.

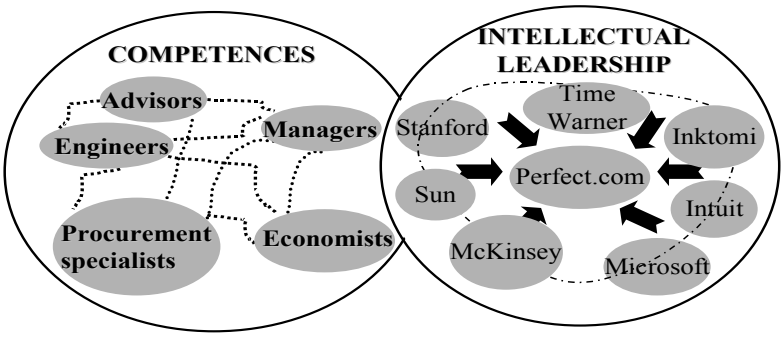
Pioneers in digital markets

Perfect.com

Perfect.com is a seasoned team of advisors, managers, engineers economists and procurement specialists from Stanford University, McKinsey Consulting, Microsoft, NEC, Oracle, Inktomi, Intuit, Sun Microsystems, Time Warner Interactive, Walt Disney and more. The team collectively holds twenty masters and doctorates in Computer Science and Economics.

Perfect.com type of companies build networks of alliances or coalitions for the creation of new businesses, rather than a series of one-by-one relationships for the survival of existing market position. Within coalitions they share the same view of the future and compete for market learning. The novel company's intellectual leadership, supported by a range of competencies, is the magnet of renowned corporations that are attracted into her universe (Figure 5).

Figure 5 – Perfect.com network



The cradle of Perfect.com type of companies is a cosmetic rather than a taxonomic community in which orders, rules, procedures and collusion are replaced by chaos, serendipity, knovation (knowledge & innovation) and co-opetition (co-operation & competition). These are the best social endowments a cosmetic community provides to outsiders such as fresh startups to gain a foothold on the economic-growth ladder.

New business ideas generation is the outcome of a greater social interaction. Which means that a cosmetic community reduces mental and not only geographical distances, as well as distances between basic and applied research, between researcher and entrepreneur.

Certiland.com

"The more customers know about a product, the bigger evangelist they become", says notHarvard.com's founder, Mike Rosenfelt.

The established markets for consumer goods make either impossible or too expensive for consumers the search of specific item features, and the knowledge of product contents, such as the quality and the marketing

information. For this reason, even well informed consumers have difficulties to make a customised choice. This situation is no longer acceptable to many consumers under the current circumstances of ill-famed events (i.e., “mad cow disease”, “dioxin chicken”, “GMOs”, as well as pollution and nature contamination etc).

In the purchasing process of a good or service, a key role is played by one’s knowledge and experience. The more a good is valuable and durable, the more its purchase is wary. As a consequence, number and quality of the sources of information consulted increases.

The brand acts as a warrant of the product good quality – it plays an active part, annexing to itself the product assets and communicating them. But the brand warrant is not enough when detailed and dynamic product information is needed. It cannot promptly provide information about those steps of the manufacturing process that may differ depending upon the production requirements (for instance: origins of raw materials, chemical analysis results, et cetera).

Beyond that, despite brands still acting as warrants of a product’s good quality, small and micro companies which have no brand advantage are trying to create consumer confidence by making their quality controls and product quality clear and transparent.

As far as consumer goods are concerned, is not easy for companies to communicate how their product differs from similar products available in the marketplace. Often, information on the quality choices of companies and their policy of quality control does not reach the consumer. The main problem is the lack of possibility to communicate what makes a product unique.
Traditional media are inclined to transmit standard information, so that, when required to meet new needs, they prove to be inadequate, unreliable, too slow and too expensive. Traditional media cannot supply continuously and promptly, in a detailed and customised way, the information and warranties that are required with regard to a specific product.

Innovative efforts undertaken by companies are addressed to the exploitation of their “content” production. “Content” such as quality control, ingredients traceability and product features is a generator of added

value and substantive information on goods, offering consumers the potential to make customised choices.

One example of those innovative efforts has been Certiland.com's B2B model, based on the notion that producer and consumer can be more effectively linked.

Certiland's entrepreneurial project has been a business case born from that peculiar cultural melting pot that is the Italian way to clusters: the so-called industrial districts. Founders were the marketing manager and the business lawyer of an Italian pasta-maker family company located in the northern-east part of Italy, the cradle of industrial districts.

Certiland's cultural roots has show that opportunities to exploit ICT can also originate from the development of unsolved problems encountered by key people who may not be technical experts in the Internet cluster of technologies. Both are entrepreneurs aware that problem solving may derive from years of market experience or other type of business knowledge, and not necessarily linked directly to the familiarity with the Internet technologies.

Certiland's B2B aimed at:

• Creating consumer confidence.
• Making clear and transparent to consumers information, such as product features, ingredients' "traceability", production process and quality control, based on manufactures' voluntary rules.
• Giving added value to the manufacturer's information.
• Offering consumers a flow of information to enable them to make a customised choice among the multiplicity of products or services offered in the marketplace.
• Restraining the possibility of unsatisfactory purchases as well as product rejection.

The information crucial to the consumers' purchasing process Certiland drew from companies information systems and made it available through the Net. The Certiland's provision of information was so detailed that it focused on each single package, because every package had its own unique name code to distinguish it (Box 8).

Enabling consumers to accede to all the information related to a specific product in a way that is, at the same time, authoritative, quick, continuous, correct, economical and personal, Certiland.com achieved a new quality standard and quality control over information communication, for greater consumer care and protection.

Box 8 – Certiland.com: Mission and Information Technology System

Mission
Certiland® synchronises products or services assets with consumer needs by creation of a new system and method to reach customer satisfaction. Certiland® aims at creating consistent experience for customers by offering a personalised customer service, where virtual products information lives together with a material and direct consumer interaction with products on sale.

IT System
- Combines and updates a flow of information for each item of a product in an organised way, where the information can be highly detailed.
- Provides a standard of "traceability" for consumer goods' information, where information is always pertinent and refers to an identified product/service item.
- Verifies the reliability of a product's information available online.
- Completes the company information system, making it available on the Net to the extent determined by the producer.
- Allows any user, by means of the unique code printed on packaging, to go back, through the Internet, to the information linked by the manufacturer to each item of a specific product.
- Enables the consumer to have an information flow on any consumer good quality feature, whose content consists of any perceptible product or service asset. The service may be provided for the purpose of informing the consumer before the product's purchase, for example where products are available on shelves. Shoppers can physically handle items and the delivered information becomes a substantive part of that item.

P A R T **3**

FROM ACADEMIA TO ENTREPRENEURSHIP

12

UNIVERSITY CORPORATION

> …….a global network of like-minded entrepreneurs, technologists and young leaders to participate in crafting a road map to guide the evolution of….disruptive technologies.
> Singularity University

Modern universities today are not limited to education. Their role extends to contributing to the GPD, and establishing the sustainable principles of the future knowledge society. The last decade of global higher education was a turnover in university administrative systems and the organizing culture to go along with globalization and international status between educational institutions. Partial abandonment of dependence on complete public subsidies & services to knowledge investment and global marketing became common. Recent studies indicated that the widespread popularity of the organizing culture in American, European, and Australian universities, who were calling for commercialization, was greater than expected. Target led universities became numerous. Indirect university activities were expanded. In the same time, the typical hierarchy of research councils and multiple administrative committees was declining. According to entrepreneurship studies, future universities will invest in five main directions: globalization, international education, e-learning, entrepreneurship, and modern technology research.

Finally, making use of global successful university corporations is necessary. Leaders at those companies should be invited to meetings and workshops for the purpose of establishing unique university corporations in concord with the requirements of the domestic setting. Famous examples are those of Harvard & MIT.

Such universities are literally private. They are good at profit & competition. This is contrary to many universities in developing countries, which are driven by government subsidies. A visit to both models reveals the wide gap between those who charge fees for every tiny service

provided, and those who spend money generously on free services and rewards – not to mention the difference between cultures, systems, procedures, and thinking. Taking such universities as examples is nothing but for stimulation, not for adoption.

It is worthy to benefit from the experience of the companies which came out of public universities, and succeeded very much in striking a balance between public service and sustainable investment in knowledge.

13

ENTREPRENEURIAL UNIVERSITY: THE ARAB PERSPECTIVES

> The concept of the "entrepreneurial university" captures the need of linking more closely together university research with the R&D market activities of firm. As important, as the entrepreneurial university, is for us the concept of the "academic firm" which represents the complementary business organization and strategy vis-à-vis the entrepreneurial university. Excerpt from the Manifesto for the Third Millennium University (Carayannis and Formica, 2007).

I was lucky to attend the international exhibition of higher education in the Kingdom of Saudi Arabia in 2011. It was an unprecedented success and was praised by all participants, both local and international. The exhibition reflected the great educational momentum, and enhanced a true will for investing in manpower to form a knowledge society and catch the train of development. I was motivated, during my visit to different university sections, by the desire for competition and global entrepreneurship. Above all, most universities claim to be materializing the build-up of knowledge economy. Such different views encouraged me to introduce the basic requirements for establishing an entrepreneurial university. This new concept started to take a scientific form in the new millennium spreading in Europe & Asia after America for a decade, now. This concepts emphasizes that one major role of the university is to take part in economic development by launching innovative production enterprises.
The requirements in brief are:

Turning the university's focus away from "preparing for employment" and towards "creating job opportunities". Typical universities seek to match their outcomes with the requirements for the employment market, whereas entrepreneurial universities build and design courses to produce graduates who can start companies. This latter trend

was known by Europe when the 1970s & 1980s were considered the decades of employment. The 1990s was the beginning of an era of change. Higher education promoted the creation of job opportunities. They supported the private enterprise culture. This new role implies that curricula and pedagogy focus on investing research & inventions to enable the university to contribute to the state's global competitiveness, prepare graduates to a more sophisticated, exciting practical life in accord with the nature of the temporary job, the aptitude-based work contract, international travel, cultural connection, multinational company affiliation, and greater emphasis on self-employment.

Real partnership with interest groups: public, private, and graduates. A balanced partnership is required to make universities benefit from different sectors of the community, giving priority to graduates. Such graduates are considered investment assets when the university communicates with them as if they were "clients." This is a good start to spreading the sustainable culture of entrepreneurship, emphasis on small enterprises. The organizing culture and behaviour of the university requires focusing on the community and local entrepreneurs.

Transfer of knowledge and technology. This is done by fostering cooperation with advanced universities in the field of entrepreneurship. Methods of technology transfer include: scientific oases, innovation centres, intellectual ownership programs, and multi-sized virtual and real incubators (Box 9). The role of such incubators extends from encouraging small private enterprises within the university to providing consulting services, office equipment, and even hosting a young enterprise till they can stand on their own.

Innovation-based education. Traditional methods of education are no longer appropriate for university education. They even hinder the construction of entrepreneurial universities. Entrepreneurship takes innovative, idea-generating education. It is free from typical styles, framed thinking, and dull logical progression. Europe was pioneering in that field when, in 1988, a number of programs were induced to encourage the concept of " starting a company" in higher education by partnership with local & regional private entities. The result was a youth generation with entrepreneurial spirits.

Box 9 – Oasis500

"Oasis500 is an Arab-owned high-tech accelerator, looking to nurture 500 new startups in Jordan. It has dangled seed money for any Jordanian or Arab who wants to create a new company here, and, like a flash rainstorm in the desert, Oasis500 has already helped dozens of Arabic-content Internet startups to blossom practically overnight. Only 1 percent of global Web content is in Arabic today, but 75 percent of it is produced in Jordan. The Arab world needs to create millions of nongovernment jobs to satisfy its youth bulge. Alas, though, there are no employees without employers — high-I.Q. risk-takers ready to start companies — and that is what Oasis500 is trying to multiply, fast.

There is no tradition of venture capital in the Arab world, so Oasis500 is a pioneer. It invites any Jordanian or Arab to come with a startup plan. Any plan that is accepted receives $15,000 in seed capital. Then the starter-uppers have to go through Oasis500 boot camp, an intense five-week course in how to build a company. The survivors are given office space at The Business Park for three to six months. For those who manage to grow after their first stage of incubation, there is more angel funding, legal advice, mentoring and networking opportunities with local business leaders. Oasis500 invests in each company that makes it that far. Fayyad said that since Oasis500 started in 2010, it has received 2,000 applications and has invested in 49 companies. Of those, they have harvested one profitable exit, 45 are still active and only three have failed. They are now getting hundreds of applicants a month for boot camp.

A leadership capable of providing support for entrepreneurs. The existence of a leadership, aware of the importance of entrepreneurship orientation, is a major factor in constructing an entrepreneurial university. Spreading entrepreneurial culture takes time, various programs, and dedication. Such leadership would be characterized by deep faith in the idea, and serious adoption of the entrepreneurial university concept. In conclusion, there is one bright side: the concept of entrepreneurial university is still in its early decades in Europe and the US, so diligent universities in our dear homeland can still "catch the train", save time and become competitive by adopting entrepreneurship.

Challenges facing university's incubators

Research institutions have focused in recent years on establishing incubators for sponsoring creative persons. Yet, the trial is only beginning and needs time to bear fruit.

Scientific incubators face various challenges:

• The lack of legislation organizing incubators & Science Parks.
Lack of legislations is a problem that faces such scientific entities. Also, easy legal texts are needed to facilitate creation & invention activities.

• Bureaucracy
Science parks and incubators work is basically one of invention, creation, innovation, and development. So, mangers of such institutions must be distinguished scientists & intellectuals. Appointing bureaucratic managers for such entities could kill the spirit of innovation & creation in entrepreneurs. This eventually leads to failure of incubators in achieving their goals.

• Financial challenges
Investment in incubators and science parks is a form of investing in innovation and entrepreneurship. Such investments usually require huge capital. This poses a threat to the growth of incubators and parks. Also, R&D budgets are small in major industrial corporations of the developing world. The private sector is not doing its assumed role. For example, in Japan, the private sector provides 80% of the R&D budget. The percentage never exceeds 10% in most developing countries. Therefore, cooperation is needed for providing the necessary funding for incubators, science parks, and other R&D institutions.

• Weak administrative experience
As mentioned before, incubators and science parks are relatively new in developing countries if compared to a pioneering country such as the US. If the staff is inexperienced, they might not be able to manage those entities well. It also influences other aspects such as: new markets for incubators products, contacting funding authorities for supporting entrepreneurial enterprises, and inviting bold capitalists to invest in entrepreneurial technological projects.

14

SPOTTING THE NEXT ENTREPRENEURIAL SOCIETY: TUNING RESEARCH AND EDUCATION ANTENNAS ON

> The infrastructure for entrepreneurship has critical elements that are tangible…….But the most powerful elements are intangible: What supports entrepreneurial thinking?
> Norris Kueger, entrepreneur in academic's clothing.

Knowledge pools and brain circulation and are two important tools to be used by companies and policy makers to foster innovation and entrepreneurship.

Knowledge pools are collective networked intelligence of knowledge workers forging relationships to prove the power of their business ideas and to stretch out their capabilities.

Brain circulation (**see the next Chapter**) can be defined as the international mobility of entrepreneurial scholars, teachers and students, which gives birth to a collegiate society that incorporates a variety of influences, trades ideas and makes easier the movement of the entrepreneurial knowledge nomads instead of forcing people to emigrate.

Until now, a common understanding, notably in Europe, has been that the public sector must be deeply involved in financing research. However, innovation is knowledge in action – every time knowledge is put in action it results in an evolution process that gives birth to innovative solutions and startups.

It is known that public sector driven research has produced budget-driven, risk-averse, research. Authorities like to give incentives to research in order to tie funding to their perceptions, and research projects are determined by and closely linked to the funding authorities. This must change, as there is a requirement to broaden the scope of research to include the needs and behaviours of the potential users.

This infinite game in the innovation process is a great challenge. In a world where it is a common understanding to support elite universities, it represents a particular challenge for the academia. The prestige and authority of the traditional mainstay of academic institutions are going to be eroded by the reduced importance of physical access to productive research, for the decline in communication costs have changed the localized nature of research interaction.

For centuries, physical proximity to other researchers has been a great advantage for elite universities and has long been thought to increase research productivity. Advances in information technology, however, have greatly diminished the importance of physical proximity. ICT enables collaboration among researchers around the world and from different environments and has established a platform for a broader competition in research.

Not less relevant is the creation of a full knowledge value chain. It is not enough to spend money on research. Research has to rely on a down stream approach towards the potential customers and users. To create a knowledge value chain reaction, it is necessary to bring all expertise together.

The third aspect concerns the importance of "brain circulation" based on a circulation process of people. This happened for instance in the Middle Ages with the "clerici vagantes" (wandering students) who were scholars travelling around Europe. Nowadays, most parts of Europe are outside the international circuit of both scholars and highly educated, talented young students and graduates. Brain circulation (mobility in a physical sense that stimulates face-to-face communication) and brain waves (mobility in a virtual sense that takes advantage from new open space technologies) are the basic premises for combining competition with cooperation.

Universities should embrace the creation of a co-opetitive trans-cultural and trans-disciplinary context of mobility and integration, opposed to a sheer competitive multi-cultural context of emigration and separation.

New foundations should set the stage for an innovative learning environment that will epitomize the clever polis or the knowledge city of the

21st century renaissance. Here, academics will indeed become entrepreneurs of the mind, in the business of 'growing' people intellectually, culturally and spiritually. Knowledge and skills will be encouraged, the love of learning and an inquiring mind will be fostered, and creativity and imagination will be emphasized. And a digitally-connected collective intelligence will maximize the creative collaboration of 'knowledge nomads', who will come together in dense groups of scientists, researchers, graduates, students and entrepreneurs to address issues that concern them and compel them. **Andersson, Curley and Formica, 2010**).

The forth aspect is the creation of a catalyst environment for the generation of "glocal" (local and global at the same time) startups and the creation of spin-offs through brain circulation allowing students graduating from different disciplines, cultures and from across the world to interact and to create companies. If a startup is created by different strategic areas transaction cost can be reduced.

15

REINVENTING LEARNING AND RESEARCH IN THE 21ST CENTURY VIA THE ACADEMIC FIRM AND THE ENTREPRENEURIAL UNIVERSITY:

"Mode 3" and "Quadruple-Helix" Architectures of Government, University, Industry and Society in the GloCal Knowledge Economy.[5]

Universities were a European "invention" to explore, seek and develop new ideas and knowledge starting with the Socratic "Peripatetic School" and then moving on to the religious or monastic type institutes of higher learning that evolved into the modern universities world-wide (the names Bologna, Oxford, etc come to mind). In the year 1088, was founded in Bologna, the major educational innovation of the second millennium, known as "academic university".

Universities have evolved in a Darwinian-almost sense to become fully global/local (gloCal) engines of knowledge generation and drivers of economic development and prosperity worldwide via the transfer and commercialization of this knowledge which alludes to the role of the "entrepreneurial university" and the "academic firm" as conceptual starting points as well as "Mode 3" knowledge production and the "Quadruple Helix" (**Carayannis and Campbell, 2009**).

"Mode 3" emphasizes the co-opetition, co-specialization and co-evolution (ibid) of a pluralism of knowledge production modes (as juxtaposed to Modes 1 and 2 (**Carayannis and Campbell, 2006**). "Quadruple Helix" extends the university-industry-government interrelations by a fourth "media and culture-based helix" (paraphrased as "public" or "civil society").

5-This Chapter has been written in collaboration with Elias G. Carayannis, Professor of Science, Technology, Innovation and Entrepreneurship – George Washington University, and Editor-in-Chief, Springer International Journal of the Knowledge Economy.

Debates in recent years underscored the importance the "entrepreneurial university" (**Carayannis and Campbell, 2009**) plays for advanced knowledge creation, diffusion and use and for innovation in the gloCal (global and local) knowledge economy and society. That discourse obviously challenges or provokes the following set of research questions: The entrepreneurial university could be seen as a one-sided adaptation of universities to the world of business.

• Therefore, does the entrepreneurial university not demand the "academic firm"? (**Carayannis and Campbell, 2009**)

• Should we expect a co-evolution of entrepreneurial universities and academic firms – in the increasingly hybrid overlapping and diverse knowledge architecture (Mode 3) of university-business interrelations (Quadruple Helix) in the gloCal knowledge economy and society? (**Carayannis and Campbell, 2009**)

Student mobility and intellectual exchanges are qualifying elements of "Mode 3" and the "Quadruple Helix". In particular, in the years to come, student mobility – a notion that is at the same time new and traditional – will be the product of matchmaking 'academic firms' and 'entrepreneurial universities' operating in different countries. These institutions should reflect on it in a more thorough way to account both for the new avenues to entrepreneurship – as it is that of global born/stateless/cross-border/cross-cultural international startups – and new challenges start-ups incubated in their environment have to face in the years to come.

Terms and Concepts

"The challenge for a lot of business schools is how to develop leaders and not managers," said James Tran, a candidate for an M.B.A. and a master's in public administration at Harvard. Many of the top schools are moving in that direction, he said, but "I don't think they have actually figured out how to do that in the most effective way".
"Re-training Business Schools", New York Times, March 14, 2009

Universities can be rightly considered the heart and soul of sustainable entrepreneurship leading to robust competitiveness as they act as generators of new and unique knowledge and as global trade shifts increasingly from the trade of commodities goods to the trade of knowledge-

based tasks and services in terms of total value added.

In that sense, universities play a very important role in the knowledge economy that is now taking shape. As society changes, the role of universities inevitably changes as well. New capabilities are becoming essential. There is no given single model to be applied, but for universities to fulfil their potential, there must be room for dynamic and complex processes and competence development and leveraging pivoting on higher order learning (**Carayannis, 2000**) as well as sustainable entrepreneurship leading to robust competitiveness (**Carayannis, 2009**) in a socio-economic and political framework of democratic capitalism (**Carayannis and Kaloudis, 2009**).

We define sustainable entrepreneurship as the creation of viable, profitable and scalable firms. Such firms engender the formation of self-replicating and mutually enhancing innovation networks and knowledge clusters (innovation ecosystems), leading toward robust competitiveness (**Carayannis, 2009**).

We understand robust competitiveness to be a state of economic being and becoming that avails systematic and defensible "unfair advantages" to the entities that are part of the economy. Such competitiveness is built on mutually complementary and reinforcing low-, medium- and high-technology and public and private sector entities (government agencies, private firms, universities and nongovernmental organizations) (**Carayannis, 2009**). Robust competitiveness results from an emerging 21st century Innovation Ecosystem (also called "Mode 3" Innovation Ecosystem) (**Carayannis and Campbell, 2006; Carayannis and Cambell, 2009**).

The concepts of robust competitiveness and sustainable entrepreneurship are pillars of a regime that we call "democratic capitalism" (as opposed to "popular or casino capitalism"), in which real opportunities for education and economic prosperity are available to all, and especially—but not only—younger people. These are the direct derivative of a collection of top-down policies as well as bottom-up initiatives (including strong R&D policies and funding, but going beyond these to include the development of innovation networks and knowledge clusters across regions and sectors) (**Carayannis and Kaloudis, 2009**).

The Academic Firm vs. the Entrepreneurial University: Implications for Policy and Practice

"It is so obvious that something big has failed," said Ángel Cabrera, dean of the Thunderbird School of Global Management in Glendale, Ariz. "We can look the other way, but come on. The C.E.O.'s of those companies, those are people we used to brag about. We cannot say, 'Well, it wasn't our fault' when there is such a systemic, widespread failure of leadership".

"Re-training Business Schools", New York Times, March 14, 2009

The "academic firm" should be understood as a concept or thought. Whether academic firm exist or diffuse and proliferate in the real world of business still represents an open question. Principles of the academic firm can address a whole firm and/or only a subunit of a firm. Similarly, as universities are confronted with different demands (teaching, research and innovation), also firms may have to balance the following two paradigms either within the boundaries of the same company or within a cluster of firm arrangements: the "commercial firm" (maximizing/optimizing profit) and the "academic firm" (maximizing/optimizing knowledge and innovation). Also firms represent a type of organization that must integrate a diversity of (partially competing) paradigms.

We propose the concept of the academic firm as a reaction and adaptation to the increasing importance of knowledge and innovation. Knowledge clusters and innovation networks of entrepreneurial universities and academic firms (academic and commercial firms) generate the synergies and "creative milieus" for triggering and advancing performance in the knowledge-based knowledge economy and society. Important is the hybridization, which adds on to the diversity and pluralism ("Mode 3"), and does not imply a simple conversion of universities and firms, which in fact would be misleading (and wrong). The academic firm would demonstrate an extension of the world of academia to the world of business (e.g., "academic culture and values", high-quality publishing, and life-long learning).

The entrepreneurial university also demonstrates a partial extension of business elements to the world of academia. Implications of the academic firm are that some concepts or strategies (such as publishing versus patenting) may be discussed in parallel for academia and business.

"Academic entrepreneurship" is being granted with an expended meaning. Hybrid configurations of knowledge clusters and innovation networks may be approached from an organizational (university and firm) perspective or from the perspective of the individual (the individual entrepreneur). Academic entrepreneurship ties such features together, creating an academic knowledge entrepreneur.

The more money governments put into elite universities, the better those institutions will perform, with the associated benefits for the national R&D system, and the more likely it is that their academics' work will be published in highly reputed journals. This is a cherished tenet of most European public educational and research policies, which are currently under attack (**Aghion, 2006; 2008**).

Yet, the strategy of concentrating public money on the 'citadel' of a few select academic institutions for the dual purpose of education and research (as is done, for example, in Germany, Sweden and the UK) is highly questionable. What matters far more is the creation of a free and 'co-opetitive' environment which, through the interrelated forces of competition and cooperation, will spur all universities - not just the most prestigious - to innovative excellence across all aspects of their activities.

In the 'gloCalizing' (globalizing and localizing) knowledge economy and society, the ideas and knowledge marketplace is not divided into towns and regions but into affinity groups that derive from a high propensity to sociability and are structured by knowledge creation, diffusion and use modalities (in other words, 'knowledge-ducts' along which flow 'knowledge nuggets' such as innovation networks and knowledge clusters - see **Carayannis and Gonzalez, 2003**).

We therefore propose that universities, university-related institutions and firms should join together in innovation networks and knowledge clusters (**Carayannis and Campbell, 2006; Formica, 2004**). The complementary and mutually reinforcing roles of academic firms and entrepreneurial universities are crucial for advanced knowledge-based economies and societies - and they should be at the heart of any strategy to reinvent learning and research in the 21st century. Despite the significant functional differences between universities and firms, there

is the potential for productive overlap between entrepreneurial universities and academic firms, thanks to the fact that such organizations can engage more easily in university-business research networks.

National governments should deploy public resources in accordance with three key strategies (**Carayannis and Formica, 2008**):
• increasing the independence of universities,
• introducing more competition between universities, and
• channelling funds to departments that excel in multiple ways.

To stimulate competition between universities, national governments should liberate them from the rigid regime of tuition fees and student recruitment. Each university should have the right to specialize as it chooses, fix its own fees for tuition and select its own students. Quality control and measurement are needed, but not in ways that stifle differentiation, innovation and renewal. To achieve a state of successful competition, the lifelong tenure of professors must also be ended. This would trigger a healthy process of horizontal and vertical mobility for scientists, researchers and teachers (ibid).

Wandering Students Thrive in the 'Academic Firm' and 'Entrepreneurial University' Contexts

> Academics are "Entrepreneurs of the Mind" in the business of growing people intellectually, culturally and spiritually.
> Elias G. Carayannis, Invited Lecture, World Bank / IFC, April 2001

Diversity makes the power of difference. It creates an inter-cultural context of mobility and integration rather than a multi-cultural context of emigration and separation. Open boundaries, education without borders, new connections, both physical and virtual journeys into other places and disciplines: all these are ingredients that foster new ideas. Thanks to mobility within the network, informal circles of exchange take shape that are sources of creativity and cross-fertilization of ideas.

The "brain circulation" concept has been recognized by a number of scholars and development agencies as a central one to catalyzing and accelerating sustainable development driven by science, technology and innovation including a recent conference at the World Bank (April 30, 2009) – see Box 10.

Box 10 – Dr. Kurokawa promotes "Multilayered Brain Circulation": The role of STI partnerships in capacity building

Dr. Kiyoshi Kurokawa, Former Science Adviser to the Japanese Cabinet and leading Japanese advocate on science and technology innovation, led discussions at the World Bank with experts from government, academia and the private sector, on Science, Technology and Innovation (STI) capacity building for sustainable development and the potential role of the World Bank Group in brokering these strategic partnerships. STI partnerships have been established in order to reduce poverty, achieve the Millennium Development Goals, generate wealth, create better paying jobs, and foster sustainable development.
Innovative proposals for STI partnership programs include: A visiting professor program, referred to as a "Professor Corps" where accomplished professors spend a significant amount of time in a developing country, focusing on building capacity for the indigenous scientific community; and a Venture Capitalist in Residence program or "Venture Corps" where business innovators and entrepreneurs create an interface between the scientific and financing communities for the innovation of new products and services based on local scientific achievements.

The university cities of the Middle Age used to harbour for a while students from other communities. Each of them played to his or her strengths, rather than ape the host university city. Along the route the clerici vagantes (wandering students) were pollinators of new ideas and projects that made the university cities wealthy.

Today, students move from one learning location to another and, in each location, the diversity and ethnic mix of both the student population and the faculty members play an important part in reducing the risk of a brain drain from developing countries and regions and enhancing the

opportunity benefits resulting from the increased mobility or "brain circulation" and manifested as strategic knowledge serendipity and strategic knowledge arbitrage events and processes (Carayannis, 2008).

Students networks are international platforms for the mobility of the higher education communities of practice. These communities bring together in cross-functional teams academics and practitioners from around the world. The integration of thinkers from industrial and consultant backgrounds with their academic counterparts strengthens the quality of educational programmes. Each partner adds value to the network, but the real value of it is greater than the sum of the individual parts. What makes the difference is a synergistic collaborative process involving people with complementary competencies, which results in a symbiotic learning network.

Appropriate actions should be implemented through a combination of 'academic firms' and 'entrepreneurial universities'. "This is a matter in regard to which responsibility has to be placed upon the shoulders of those who are responsible for changing the academic foundations on which human capital has been built during the machine age.

16

UNIVERSITY ECOSYSTEMS DESIGN CREATIVE SPACES FOR STARTUP EXPERIMENTATION

> When the winds of change come, some people build walls, other build windmills.
> Brian and Sangeeta Mayne

The role of universities is changing. In the last century the primary focus areas of Universities were education and research with key goals of creating and diffusing information and knowledge. Now, a third an equally important role, expectation and responsibility is emerging – that of value creation. Value in this context refers to both business value and societal value. With increasing scrutiny of funding into the third level sector, governments and the public alike are expecting more accountability and proof of value add from Universities. The use of a university ecosystem approach can unleash much of the potential energy in Universities and transform it into kinetic energy, with graduates not just emerging in a state of readiness to be an employee, but often as highly motivated entrepreneurs with business or social innovation initiatives in flight.

Religious roots marked the medieval university, alma mater of the Second Millennium higher education institutions. For centuries, the 'ivory tower' syndrome, a reminiscence of their monastic lineage, has affected academic institutions. In these early decades of the 21st century a new type of universities is emerging which resembles a windmill whose power is provided by the collective energy of multi integrated players, each of them being the maker of one or more blades.

Once upon a time were the monks the forerunners of the modern university. Today, the winds of change bring to the forefront the corporations that, having experimented throughout the 20th century with corporate education initiatives ("corporate universities" – see **Andersson, Curley and Formica 2010**), are now sowing the seeds for the Third Millennium of higher and advanced education with a new type of academic institution - the "university ecosystem" whose mission is cross-disciplinary

education in the field of convergence[6] science and technology[7] . It is this type of ecosystem that ignites exponentially growing technologies and societal transformations. Among the numerous examples that could be cited, are the Innovation Value Institute (IVI) and the Singularity University.

Co-founded in 2006 by Intel and the National University of Ireland Maynooth, IVI embraces 75 members drawn from top global organizations including BP, Chevron, Cisco, Fujitsu, SAP, Chevron, Ernst & Young and Genzyme to name a few. The Institute "helps drive the transformation of IT management with the aim of creating a global gold standard for IT professionalism".

In a broader view of new patterns connections between Industry and Academia, Intel aims at weaving a worldwide network of university research communities, which the Santa Clara-based chip-making giant calls "multi-university communities". "Forming a multidisciplinary community of Intel, faculty and graduate student researchers from around the world will lead to fundamental breakthroughs in some of the most difficult and vexing areas of computing technology," said **Justin Rattner, Intel's CTO**[8] .

Co-founded in 2008 by Autodesk, Cisco, Google, ePlanet Ventures, Kauffman (the Foundation of Entrepreneurship) and Nokia, the Singularity University "assemble, educate and inspire a cadre of leaders who strive to understand and facilitate the development of exponentially advancing technologies".

The emerging university ecosystem

In transitioning from standalone research and education to integrated solutions along the knowledge value chain (from ideation to exploita-

6-Science: from Latin scientia, meaning knowledge.

7- Examples are nano science and technology, digital contents convergence, intelligent convergence system. See the case of the Graduate School of Convergence Science and Technology at Seoul National University (http://gscst.snu.ac.kr/introduction/aboutus_eng.php).

8-http://newsroom.intel.com/community/intel_newsroom/blog/2012/05/24/intel-invests-more-than-40-million-in-worldwide-network-of-university-research-centers-to-drive-innovation

tion of scientific discoveries), universities will have to reconfigure in order to construct the necessary new rules, roles, actors and links. It is no longer sufficient to manage in-house research and education. The university must manage an ecosystem, which is the outcome of an increasing interdependence among all partners, internal and external to the university, involved in the knowledge process (Box 11).

Box 11 - The rise of the university ecosystems

An university ecosystem is an environment of interdependent organizations (faculties, departments, laboratories, spin-off startups, companies) and people (professors, researchers, graduates, students, entrepreneurs, managers, professionals) with partly shared perspectives, resources, aspirations and directions. The ecosystems with the biggest critical mass and fast velocity will have the most linear momentum and will ultimately win.

Academic barriers are being overcome, with some universities reconfiguring their intellectual property rights policy in order to facilitate the formation of a more powerful ecosystem. Penn State University, for example, no longer owns intellectual property created by industry-sponsored research. "In short we consider the net present value of the interactions and relationships that our faculty and students have with industrial professionals to be real and therefore greater than the apparent future value of the proceeds from such IP," wrote Hank Foley, Penn State's vice president for research. "Our goal … is to flatten any and all barriers or impediments to innovation and that includes our own past stance on intellectual property" (**"Jumpstarting University Technology Innovation Ecosystems", Innovation Daily, April 11, 2012**).

Other universities start and sustain a movement toward social networking in science or help the scientific community to bridge the gap between high-powered ideas and their beneficial impact on the market. Paul Thompson, a professor of neurology at the University of California, has highlighted the effectiveness of pooling together world expertise of more than 200 scientists in the field of brain function. "This is not usually how scientists work, and it gives us a power we have not had", said Thompson, chairman at Innovocracy – a "network of universities, colleges, innovators and supporters that connects people who want to support innovation in academic research and those innovators found on campuses around the world " (www.innovocracy.org).

The US National Science Foundation has launched in May 2012 the Global Research Council, a knowledge commons ecosystem. This knowledge-based interactive global community, "which will work virtually, is designed to foster discussion on how the principles and aspirations of science might be unified across the globe. The council's first product is a set of common principles for the peer review of project proposals that will ensure that the most worthy research projects are selected" (http://twas.ictp.it/news-in-home-page/istitutional/global-research-council-launched).

A body of knowledge, research and education are key parts of the university. Yet, a detailed understanding of each constituent component fails to convey an understanding of the whole. The whole, which is greater than the sum of its parts, is the "University Ecosystem" (UE) – a community of organisms (professors, researchers, students) interacting with one another and with other organisms of the external environment pulled into its sphere of influence. The flow of knowledge is the medium that links all the organisms. In the university, knowledge is attained through study and practice, observation and experimentation. Discovery (the act of observing or finding something unknown) and invention (the process of creating a new technology), which are products of science, are turned into entrepreneurial innovation (the process of effectively bringing discovery and invention to market). This is the knowledge value chain through which UE achieves truly meaningful success.

To land on the entrepreneurial planet – "the convening place for participants in today's global entrepreneurship movement", as imagined by the Babson College –, the UE needs a 'spacraft' that harbours knowledge for a while, during which different stages of business development are completed: from the entrepreneurial opportunity recognition to the setting up of a new venture. Science-driven entrepreneurs are the 'pilots' who convert that knowledge into innovative products and services. Their profiles display a vast variety of facets, such as those of academics, scientists (the scientific entrepreneurs who start out doing university-based research) and emerging postdoctoral entrepreneurs, researchers and students, or those of leading experts from idea factories and industrial labs, R&D managers and innovation facilitators.

Search for identity

The sustainability of a university ecosystem is determined by its intellectual identity. This, in turn, depends on the social norms and beliefs that prevail in the ecosystem. UE oscillate between the more ordered ('centralized') and the less ordered ('decentralized') identity.

A centralized identity is the outcome of higher-order social norms, codes and power relations that favour the command-and-control regulation of the ecosystem. Borrowing the metaphor of **Brafman and Beckstrom**

(2011), we call it a "spider-like" identity. Under these circumstances, the ecosystem is configured as a centralized 'linear machine' set in motion by a policymaker's toolkit that encompasses regional and local clusters, science and technology parks, incubators and other initiatives – all of which put a big emphasis on public spending. Under the jurisdiction exercised by the CEOs of those organizations and filtered through top-down bureaucracies, the emphasis is placed on the command-and-control regulation.

A decentralized identity ("starfish" identity in the language of Brafman and Beckstrom) comes from non-hierarchically ordered social norms and spontaneous social interactions that change when new forces take action in the ecosystem.

In today's economic environment there are several mutating, non-linear forces that impact adversely on the effectiveness of a linear machine model in producing a knowledge chain reaction. That is, the process of converting the latest research outputs into new entrepreneurial ventures, which, in turn, fuel further rounds of research from their success (via both tangible and intangible resources). Today, the prevailing forces on the playing field of knowledge economy are surrounded by uncertainty, ambiguity and ignorance about the likelihood of occurrence (if and how the new ventures grow, shrink, expire, re-emerge).

Heavily affected by forces such as information asymmetry, fast-changing research and market dynamics, barriers to research and market entry, the UE sustainability depends on its ability to swing with agility between a closed and centralized approach to an open and decentralized model. This will facilitate the UE in, for example, quickly tackling the challenges or needs of the mutating forces, and back again to centralization once those forces are appeased. Therefore, a sustainable UE works following the accordion principle, by changing its norms from those appropriate to a spider-like centralized to those that fit with a starfish-like decentralized identity. And vice-versa.

Trading ideas in the global knowledge economy

Business communities trade mainly in goods and services. In contrast, the trading commodity of the academic communities is ideas, and the

domain in which they are traded has been transformed by a knowledge intensive globalisation process accelerating the already high mobility of ideas disembodied from goods or services. Quasi-perfect mobility moves the centre of gravity of the university ecosystems from a centralized to a decentralized identity. In a world without walls raised to protect the good ideas, UE operate as starfish-shaped organizations that replace purely competitive mechanisms with openness and connectivity. By sharing, communicating and renting out cutting-edge ideas to each other in a variety of forms (common research projects and papers, people-to-people and patent exchanges, cross-licensing agreements, shared copyrights, blueprints and intellectual brands), decentralized UE are the entities which spread knowledge-intensive contents more evenly around the world, and in turn driving the flows of global trade with ever greater speed.

Research and entrepreneurship: a double trust dilemma

To be effective, university ecosystems need to overcome a double trust dilemma. First, the thinkers who generate and refine ideas for research projects and papers must trust the doers who bring research results to the entrepreneurial light. In turn, a stream of confidence must pass from the latter with their ability and capacity to start knowledge-intensive businesses to the former with their new ideas. This virtuous circle is essential in order to facilitate the sustainability of the process in the longer term.

The categorisation of thinkers and doers into specific compartments must be eliminated. From the idea generation perspective, new discoveries bring together chemists, physicists, biologists, physicians, engineers, economists and other researchers. From the entrepreneurial angle, innovations in business models create convergent spaces where scientific entrepreneurs and technological artisans, gradpreneurs (post-graduate/graduate entrepreneurs), enterprising graduates and drop-out entrepreneurs work shoulder to shoulder. The importance of developing an inter-disciplinary environment that is functional cannot be overemphasized.

As karl Erik Sveiby says “trust is the bandwidth of communication”.

Experimentation spaces

For the purpose of exploring problems and their solutions from multiple perspectives, UE set up cross-disciplinary experimentation spaces where the interdependent partners are put together in a very free environment. On the one hand, by manipulating objects of the physical sciences, controlled experiments are conducted with the intention of pushing the scientific frontier. While on the other, actions are also taken to reduce the gap between idea generation and idea exploitation, and how to mediate the conflict between the high cost of producing knowledge and the low cost of using it (**Lerner and Stern, 2012**). As those actions involve the complexity of human behaviour that falls short of the physical sciences' standard of controlled experiments, in the experimentation spaces people experience a multiplayer game of sharing ideas.

Frontrunners are innovation-based growth industrial partners who leverage UE to accelerate and amplify technologies that have been identified and investigated within the ecosystems. Intel's 'Lablet', for example, are experimentation spaces crossing different UE where academic and Intel scientists meet. "The space allows the two groups to explore new technological fields. As soon as a marketable idea emerges it is taken out of the Lablet and potentially incubated using corporate venture funds or transferred to one of Intel's business units". Intel has no claim on the intellectual property produced by the labs, because it is interested in "helping to grow the technology and seeing where there is a usage for it within Intel" (**Van Dick, 2012**).

The process of accretion

UE are considered accretive if they add to discoveries with a commercial potential to be rapidly deployed on a large scale as a viable business. The process of accretion is put in motion by the co-existence of and collision between diverse talents. In particular, two personality types: respectively, those individuals whom Nicholas Donofrio, Senior Fellow of the Ewing Marion Kauffman Foundation, has called "I"- and "T"-shaped (**Donofrio, 2011**). The first, having a deep but narrow knowledge in a specialized field, are lock-in in their expertise. By combining depth with breath across multiple disciplines, a chaotic mode is a distinguishing feature inherent to the latter. From the "I" and "T" encounters

and clashes come out the creative expertise that pushes both knowledge and market boundaries.

The process of accretion puts on display the utilitarian facet of UE. Study and research are not only opportunities for learning for the sake of learning – which match with the classic liberal-arts model of the universities that has continued to prevail till the late 20th century. The expertise gained through study and research is expected to lead to and forge fresh connections with the entrepreneurial experience. Contemplation and investigation are not compartmentalized and confined to the "the disinterested pursuit of truth", but intertwined with different spheres of interests that urge both faculty members and students to launch startups or invest in those created by peers and outsiders revolving around their ecosystem.

Since they are open to performing any act which has the consequence of bridging the gap between intellectual ideations and commercial exploitations, members of UE are entrepreneurial consequentialists who are at the center stage of the accretive process.

17

INCUBATION OF RESEARCH BASED STARTUPS

> It is always the start that requires the greatest effort.
> James Cash Penney, American businessman and entrepreneur (1875-1971).

The sustained phase of transition to economies characterised by considerable, and sometimes revolutionary, advances in science, technology and related industries, coupled with subsequent profound changes in economy and society, has increased the importance of the knowledge-intensive phases of production for value-creation. As enterprises, in fact, become more reliant on technology, they will become more dependent on knowledge. Accordingly, policy makers in a growing number of countries have become increasingly concerned with the management of the entire knowledge chain: from creation to the diffusion, conversion and entrepreneurial exploitation of scientific and technological knowledge. The knowledge chain also has profound implications for higher education institutions and business schools, which to be successful, need to help companies create knowledge and become part of knowledge streams.

Universities and other higher education institutions that put knowledge into action are often also interested in embarking upon a process of incubation ventures through which knowledge based opportunities flow across conventional intellectual and business borders. By doing so, they support ventures that originate from scientific research.

The incubation process, in general, is embedded in a physical and organizational infrastructure called an “incubator”, which measures the success of higher education not only in graduates but also in faculty-student promoted real business startups. Scientists, academic researchers and talented students, who perceive practical implications from their findings, often lack the strategic vision and profit-seeking approach that a would-be entrepreneur should have. The incubation process brings together, in a single organisation, these entrepreneurial scientists, researchers and students, and enhances their ability to interface knowl-

edge and innovation. Research findings and novel technologies, which are the result of their curiosity-driven research projects, are re-directed toward business concepts that can be converted into viable commercial products and services.

The overriding concern is the conflict of interest that develops as research teams give birth to spin-off phenomena. As **Strandburg (2005)** has observed, "Commercialization of spin-offs of curiosity-driven university research may involve the active participation of the scientist inventor. It is not clear what impact the involvement of scientists in such entrepreneurship is likely to have on the market for curiosity-driven research. One salient concern is that an entrepreneur-scientist might seek to suppress the work of another scientist if that work had the potential to threaten the commercial success of his entrepreneurial project. The usual personal preferences and social norms that mitigate such a scientist's desire to suppress competing work in the basic research community are still operative, of course, but they may be less effective against the entrepreneurial scientist because of the added personal incentives to suppress that the commercial enterprise provides. The basic research community might effectively avoid this potential distortion of the curiosity-driven demand function by using more stringent conflict of interest screening of peer reviewers. Scientists with commercial stakes in enterprises related to particular areas of curiosity-driven research could be precluded from reviewing proposals and publications in those areas".

Spin-in

Developing spin-off firms based on sharing university potential is not the sole role of the incubation process. The same process can also spin in creative ideas from local businesses and help to form partnerships for new venture creation with the pool of knowledge-rich scientific and technical personnel, and talented students, backed by the incubator infrastructure and its support staff (**Powell, Harloe and Goldsmith, 2000**).

Licensing

A good number of university spin-offs that have the status of a joint closed stock partially or fully owned by both an academic institute, which is committed to the exploitation of its research results, and one or more scientific entrepreneurs (entrepreneurial scientists included) may

not prove to be sustainable. Rather, this increases the likelihood that something negative will occur, and therefore the propensity of universities to shift the emphasis from developing commercially viable academic spin-offs to being much more focused on licensing.
MIT, a leading institution in the transfer process, has been a pioneer of policy efforts designed to tackle the issue of licensing. As observed by the Lambert Review (**HMSO, 2003**), "Unlike many UK universities, MIT has no business incubation activities at all. The strategy of the technology licensing office (TLO) is to encourage as many invention disclosures as possible from faculty members by minimising the barriers to disclosure – currently MIT discloses about 450 inventions per year. MIT's TLO then licenses these inventions as nonexclusive or exclusive licences to industry and local venture capital firms. Rather than getting involved in the complexities of spinout formation, the TLO provides a shop window for industry to view its IP and agrees as many licence deals as possible".

A licensing policy opens up opportunities for incentives that motivate inventor academics to patent as a means of maintaining control over future research (**Strandburg, 2005**).

P A R T **4**

INTERNATIONAL ENTREPRENEURSHIP

18

SEEDS OF INTERNATIONAL ENTREPRENEURSHIP

> Opportunities, many times, are so small that we glimpse them not and yet they are often the seeds of great enterprises. Opportunities are also everywhere and so you must always let your hook be hanging. When you least expect it, a great fish will swim by.
> Augustine "Og" Mandino II, American author

Since the early writings of the economist-philosopher Adam Smith (1723-1790), author of " The Wealth of Nations," economists have studied what makes "economies rich". Theories and arguments have been developed, about global practices and socioeconomic relations. Such practices & relations have indeed led to tremendous changes in the development of nations. Global economic thinking went through various Eras that were based on economists' arguments.

One of those eras was in the 1880s, when the science of economics, turned away from the macro picture, to focus on the micro-economy. The Equilibrium Theory prevailed at that time. Individuals were classified as "producers" or "consumers." The search for equilibrium dominated many dissertations. During that era, the role of entrepreneurs in economic analysis was overlooked, despite the emergence of Schumpeter's studies (1883-1950). Schumpeter held that, when the economic system is held in equilibrium between demand and supply, only entrepreneurs can break this equilibrium by their innovations. Entrepreneurs introduce modern production methods and develop new markets. Schumpeter expressed his view by launching the term "creative destruction": where entrepreneurs manage to break old chains, overpower an economic recession by dint of their innovations. Then others follow their method, leading to a positive economic upswing for society.

Yet the end of World War Two, followed by great industrial developments, led to new learning. This new learning was based on huge pro-

duction patterns, equally big consumption patterns, and governmental economic policies. Prevailing concepts, at that time, led to the establishment of big companies along socialist principles. Governments controlled the tools of production. There were various assumptions linking economic power and "economies of scale." By putting together small and medium-scale businesses in big entities, costs would be shared and should decline, leading to greater productivity. Economists called for direct state intervention in national economies: establishing companies, setting wages, planning companies' investment processes, and labour relations. They emphasized that States should take over businesses, and offer financial incentives to firms by providing funding. The government would end up owning business after business. People thought this was the best way to promote national economic growth. The role of entrepreneurs and small businesses was overlooked. Small business was considered inefficient. Big companies were "better" because they use scientific management. They can afford to hire professional managers. They had large budgets for research & innovation.

Then, in the 1970s and 1980s, the West went through economic shocks, recessions, unemployment, and continuous confrontations with labour unions. Theories of "integrative cooperation" between the government, big companies, and organized labour, began to lose credibility. It turned out that big companies, contrary to this theory, were neither innovative nor creative enough. They did not create enough new jobs. Nor did they help to achieve the economic targets of their home governments. Work in big entities led to a feeling of isolation among workers, boredom, higher rates of strike & absenteeism, and a low-quality production.

New thoughts for a solution emerged: a need for corporate culture, and the return to a liberal economy that is free from governmental intervention in economic affairs. Some scientists promoted the idea that mass production and growth should be differentiated. The asserted that the true aim of the state should not be to "increase Production" but rather to "promote Growth and Sustainability". Other newly emerging ideas were largely adopted by various nations. Robert Solow (a Nobel laureate in economics) stated that the US and other industrial nations need to abandon growth by "brute force." Instead, they should adopt "smart growth," which is based on innovation, creation, and development.

Decision makers in great nations found out that small enterprises do have an important role to play in the economic system. Such small enterprises could very well provide the impetus for an economic renaissance, especially given the evidence of the economic resurgence of Japan and Germany in the 1950s to 1960s.
The British Thatcher government looked closely at their stagnant economy. They decided to abandon governmental intervention. There began a wave of privatizations. Economic reforms led to a smaller role for government in the economy, a larger role for the private sector. The US promoted business entrepreneurship and gave support to small enterprises. New terms flourished: "outsourcing," "downsizing," "re-engineering," "franchising," and "subsidiaries."

New markets emerged. Companies discovered that they themselves were capable of renewing themselves faster. They could change direction quickly, in response to market demand. They could outsource a business process. They learned to entrust sensitive work to others, such as the manufacturing process, or the accounting & payroll process. Successful experiences were reported by Australia, Finland, and the Asian Tigers: they had provided conducive environments for their entrepreneurs. Ideas promoted by entrepreneur-friendly scientists, such as Pearce (1980), became widely accepted. Entrepreneurs were acclaimed to be the first component of wealth creation at all levels: individual, institutional, regional, and national.

When entrepreneurs succeed, the results benefit the whole society: in the form of personal wealth, institutional growth and new jobs. A small computer program, created by two young men of modest means, led to the establishment of software company Microsoft, surpassing Big Blue (IBM). Such initiatives of entrepreneurs became examples of the role of entrepreneurs in global economies. Their role was central in the development of Information Technology and the emergence of the World Wide Web, "The Internet". In his celebrated book The Achieving Society, McClelland (1917-1998) indicated the relationship between a state's need for achievement and its economic development. He emphasized that a state's achievement is translated into economic growth, only with the intervention of entrepreneurs. A high rate of achievement in a state necessarily means that many entrepreneurs are active within it.

The early 1990s started the age of entrepreneurs. Educational institutions, governmental organizations, businesses and the whole society focused on entrepreneurship. A great amount of literature was published on these topics. Published works emphasized the importance of entrepreneurship for the national economy. David Audretsch (2006, 2010) argues that entrepreneurship is the largest contributor to economic growth by spreading knowledge that would otherwise be idle, gathering dust on a desk, until someone puts them to commercial use.

In an important book, William J. Baumol, Robert E. Litan, and Carl J. Schramm contend that the answers to questions of growth, lie within capitalist economies, though many observers make the mistake of believing that "capitalism" is of a single kind. Writing in a highly readable style, the authors dispel that myth. They documented four different varieties of capitalism, some "Good" and some "Bad" for growth.

The authors identify the conditions that characterize Good Capitalism—the right blend of entrepreneurial ventures, and established firms. This blend can vary among countries. The authors also describe the features of Bad Capitalism. Then, they examine how countries that are catching up to the United States, can move faster toward the economic frontier. At the same time, the authors, urge the United States to stick to the recipe for growth that has enabled it to be the leading economic force in the world.

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TOWARDS INTERNATIONAL ENTREPRENEURSHIP

> As with international entrepreneurship the world is our community, people mobility and intellectual exchanges are qualifying elements of the international dimension of entrepreneurship.
> Thomas Andersson, Martin Curley and Piero Formica, 2010

There are various factors that help spread and support entrepreneurship. Alshumaimri (2010) argued "such entrepreneurial factors are born with man, and grow by refining one's talent with scientific vision, practical expertise and emphasizing interacting abilities with environmental changes". Such argument means that, developing an entrepreneurial culture, depends on some factors, both socially and individually:

1- The entrepreneurial drive.
2- The role of the family.
3- The entrepreneurial culture.
4- Education.
5- Expertise.
6- Supportive authorities.
7- Opportunities in the environment.

The entrepreneurial drive

The entrepreneurial drive is a major individual factor that must be present, for society to achieve an entrepreneurial culture. The more entrepreneurial properties that individuals have, the greater the possibility that this society could "engender" entrepreneurs. In other words, the fostering of entrepreneurial properties is a major factor for building entrepreneurship culture.

Having such properties is necessary in many aspects related to enhancing entrepreneurial culture. For example, creativity, boldness, and risk-

taking are required, for all projects to support entrepreneurship, such as incubators and funding agencies. This adds to the importance of differentiating "small enterprises" from "true entrepreneurship"; if an investor is not creative, risk-taking, and tough, then he is just a "small enterprise owner."

The role of the family

Many studies prove the influence of childhood on personality in work life. Family plays an essential role in developing entrepreneurship characteristics in children. Entrepreneurs tend to be sons of parents who have their own projects. Also, family plays a major role in fostering ambition, desire & single-minded pursuit of goals, therefore leading the boy to look upon entrepreneurship as a future career.

The entrepreneurial culture

The concept of entrepreneurial culture is "a positive social trend for personal enterprise that aids and supports entrepreneurial activities".

The researcher **Batman (1997)** argued that flourishing economies of the late 20th century are all characterized by a common business culture, a culture which is entrepreneurial.

Entrepreneurial culture is a huge factor that determines individuals' attitudes to entrepreneurship opportunities. Will they take advantage of these opportunities, or not? A culture which encourages and appreciates entrepreneurial behaviour is helpful for promoting radical positive changes in society. On the other hand; a culture which supports obedience, emphasizes the interests of the collective, close monitoring, and jealous control over events, is not expected to spread the behavioural traits of endurance, risk-taking, and creativity – i.e., entrepreneurial behaviour.

A true entrepreneurial culture will encourage members of society to practice entrepreneurship. It will help if the government supports theoretical and applied science, as well as entrepreneurship, by the right policies.

Education

Education is a major component in fostering entrepreneurship, because it develops many related skills. Education can be used to foster entrepreneurship, from an early age, starting at kindergarten. Naturally, there are more opportunities at higher levels of education.
College courses should focus on encouraging and developing independence, innovation, risk-taking, professionalism, time management, etc.

Also, education plays an important role in building entrepreneurial knowledge and teaching bases of scientific concepts; such as applied learning. **Robert Hesrsh and Michael Peter (2008)** stated that surveys indicated that the likelihood of establishing a private enterprise (for individuals studying entrepreneurship) is 4 times that, of those who do not study entrepreneurship. Also, those who study entrepreneurship in college, are expected to gain 20% to 30% more income, at work, than those who don't study it.

Experience

Entrepreneurs who invest in their field of specialization & expertise tend to eventually succeed. This even leads retired people, who have been innovators, to establish their own enterprises. They get to achieve independence. They harvest the benefits from the expertise that they have gained from all their past years of work.

Supporting authorities

Entrepreneurial culture does not emerge from a void. It is part of the fabric of society. Therefore, public & private sectors play an important role in developing entrepreneurial culture. For example, governmental programs can provide entrepreneurs with financial support, training, and back their entrepreneurial activities.

Opportunities in the environment

We mean here the investment setting: the legislative & institutional framework, and the economic climate that serves as the incubator of the

entrepreneurial culture. These factors include:
• The existence of microeconomic & macroeconomic policies.
• Laws & regulations.
• Infrastructure.
• Information & Communications Technology.
The main reason for directing the macro-economy, in a state, is to promote economic stability. Examples of macroeconomic policies are: low inflation, low interest rates, and stable exchange rates. Also, the macroeconomic policies aim at reducing the bureaucratic hindrances to the establishment of small enterprises. Even the tax systems should be supportive of small enterprises. Access to the markets is highly important: the macro-economy needs to create investment opportunities for small & medium-sized enterprises. For example, in Japan, big companies are required to make strategic alliances with small enterprises which serve as subcontractors or suppliers.

Meanwhile, microeconomic policy aims to develop & support healthy competition through the investment setting. Tangible material support includes: funding, buildings, equipment, etc. Other forms of support are education, skills development, etc.

Investment enterprises are usually grateful for support in the form of tax exemption, and technical & financial assistance. Infrastructure projects - such as transportation, electricity, road networks- are necessary for the success of entrepreneurial culture, especially in the local market. Also, market data must be available to assist in investment decision-making.

The emergence of the Internet, with all its applications, caused a revolution in the concept of entrepreneurs' projects. Effective e-commerce tools opened large markets for entrepreneurs. The Internet will give small enterprises the opportunity for crossing borders, and tapping overseas markets. One entrepreneur who runs a tourism agency can now sell tour packages, to the whole world. Customers don't care about the size of the company as long as it provides high-quality services. E-commerce paved the way for small companies to compete with big ones in various fields.

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FROM 'NATIVE' TO 'INTERNATIONAL' ENTREPRENEURSHIP

> ……a viable startup company today is a multinational corporation from the day of its founding, drawing upon the right people with the right ideas, talent, and capital, wherever they happen to be located.
> Victor W. Hwang and Greg Horowitt, 2012

A new anatomy of the entrepreneurial body is emerging with increased mobility of people who travel, visit, study or work without restraint outside their native countries. Moreover, the Internet-mediated economy facilitates personal ties and continued access to one's home culture. Physical proximity is therefore no longer the most important factor in discouraging networking on a world scale.

Mobility across borders and novel scientific-technological capabilities are driving a transition from the traditional form of entrepreneurship (we call it "native entrepreneurship", to typify the locally oriented and static behaviour of the entrepreneurial context) organized along lines of geographical proximity and cultural identity to a new form, called international entrepreneurship – that is, the discovery and exploitation of business opportunities across national borders. This is one of the most visible manifestations of a process of cultural integration that happens through a global spread of ideas.

Native entrepreneurship resembles an island whose borders are dictated by the natural barriers of its physical space. What is more, the proximity effect creates other types of barriers happen –those raised by family favouritism, crony capitalism ethnic, racial or religious factionalism, which have oftentimes prevented native new ventures from succeeding.

International entrepreneurship is embedded in a borderless context where innovations are spawned by science-based revolutions and turned into networks of new products and services that are simultaneously launched all over the world. Natural barriers are no longer borders to communication and trade. The most significant barriers are symbolized by differences in language, customs, legal systems, religions and, notably, trust building beyond the family context and cultural contiguity. Because international startups can become frustrated by these cultural barriers, forming and strengthening shared cultures would lend a decisive contribution to their lowering and make it more likely for any one person anywhere to cooperate with any other person elsewhere.

Thus, international startups are emerging as an innovative breakaway pattern of entrepreneurial activity. Instrumental in setting the trend for international startups has been the dramatic shift in entrepreneurial environment from a local to a trans-national focus ("startup ecosysystems – see **Box 12**) The new pattern of entrepreneurial activity makes traceable a divide between the "one man show" – the solo entrepreneur surrounded by rigid firewalls – and a range of complementary entrepreneurs for complementary innovations. This new species of entrepreneur creates international and stateless companies.

We picture founders of international startups as "intuitive entrepreneurs" who make choices based on situational knowledge within simplified mental frames. Knowledge communities are the context that helps them to build an understanding of international new venture creation from the ground up.

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EXPERIMENTING INTERNATIONAL ENTREPRENEURSHIP

> ……experiment in the marketplace from day one with the lowest-cost possible viable product and improve the product or service according to how customers react—the critical 'pivot.' This approach is less linear in the sense that students are no longer encouraged to follow the process of first drawing up a business plan, building a final product and then taking it to the marketplace. It is a lower-cost, much more "iterative" approach that quickly transforms mistakes and failures into business insight.
> Steven Blank, serial entrepreneur

People mobility and intellectual exchanges are qualifying elements of the international dimension of entrepreneurship International entrepreneurship spans cultural boundaries, emerging as a breakaway pattern of entrepreneurial activity with high expectations to grow. Instrumental in setting the trend for global born/stateless/cross-border/cross-cultural international startups has been a dramatic shift in the entrepreneurial environment from a local to a trans-national focus.

Global student mobility is a pre-condition of the millennial generation of entrepreneurial nomads. It is a vehicle for borderless thinking, cultural curiosity and cross-cultural activities, which trigger a process conducive to the creation of startups whose operations are across borders. They are endowed with a mixed background that covers both cultural diversity and regional identity.

The challenge is how to get a small organisation formed by students who decide to pool their resources almost from the start to think like a global organisation. By playing the role of matchmakers and thereby building networks of contacts with students, the co-evolution of entrepreneurial universities and academic firms may have much to contribute

to the creation of small entrepreneurial student teams that are cross-cultural and cross-country. The co-evolution can also serve the purpose of providing experimental labs which help limit the exposure to risk and uncertainty in the course of actions once field experiments must be carry out in the marketplace (**Curley and Formica, 2008**).
In experimental labs Knowledge-to-Business Achievement Teams (KBATs) of international students aiming at the creation of cross-border and across cultural boundaries firms make experiments in evaluating the performance and function of markets. The results give them a deeper understanding of the actual workings of real-world markets. Experiments also point out how vitally important the "rules of the game", laws, regulations, customs, truth and honesty, are in affecting both individual behaviour and market outcomes (**Box 13 and Figure 6**).

Each KBAT constitutes a knowledge pool – a collective networked intelligence of knowledge-driven individuals with an entrepreneurial mindset, who can extend their knowledge to recognize business opportunities where others don't, to prove the power of their business concepts and to stretch out their capabilities by forging relationships with other KBAT members.

The following intangible assets contribute to build the platform for the KBAT:

- Teambuilding to form a tight team:
  - o Each player covers a specific but not rigid role.
  - o Each player comes to terms with strengths and weaknesses of all the other players.

- Creativity and curiosity for exploring key driving forces of the business environment.
- Brainstorming to generate business ideas and to make business simulations.
- Observatory to get the maximum of information and knowledge of business opportunities.
- Co-opetition, a judicious mixture of competition and co-operation, to shape new business relationships and new forms of enterprises as well.
- Implementation and action to devote more energy to achieving gain than to avoiding loss.

In the KBAT context, connectivity and conductivity nurture a sense of community. By driving toward the access of everyone to everyone, everything to everything and everything to everyone, connectivity creates circles of exchanges and facilitates journeys into other disciplines and business fields as well (see also the chapter "Knowledge of Culture and Culture of Knowledge from Low-Tech to High-Tech" by Carayannis and Popescu in **Carayannis and Chanaron, 2007**).

Box 13 – Experimental labs for a competitive advantage

An aspiring entrepreneur who is a player in innovation today creates the pre-requisites for gaining a competitive advantage tomorrow. This is particularly true in the case of a would-be entrepreneur with high ambitions for growth. She/he is eager to launch a high-expectation startup, which is an encounter between exponential technologies and entrepreneurship. Such a new venture has a significant impact on the nature and speed of economic development, driving the growth of high-technology industries and helping to make the economic system open, complex and adaptive.

Experimental labs are the innovative environments where aspiring entrepreneurs from different education streams, cultures, industries and professions look at what one of them is doing with fresh eyes, and most changes come about through the adaptation and repurposing of one person's unfettered ideas to other people's ideas. Thus, by building upon one another's ideas, experimental labs increase the number of ideas that can win out. Strong networks of people freely exchanging ideas are made possible by decreasing opportunity costs of interaction and an increase in the interaction's capacity as well. For a small input into a network, a large output of entrepreneurial outcomes can be produced.

From this perspective, an experimental lab is an open and evolving complex system, which uses free entrepreneurial energy to turn relatively low-ordered rough business ideas (comparable to raw materials) into highly ordered startups with high ambitions for growing (exponential startups). Experimenters transform that energy from one state (a rough idea) into another (a new venture) with the goal of creating economic values. By value-creating trans

formation, experimental labs reduce the entrepreneurial entropy. In other words, labs reduce the state of disorder in processing new ventures. Fewer ideas are wasted, dissipate and crumble. Fewer aspiring entrepreneurs have to moan and groan.

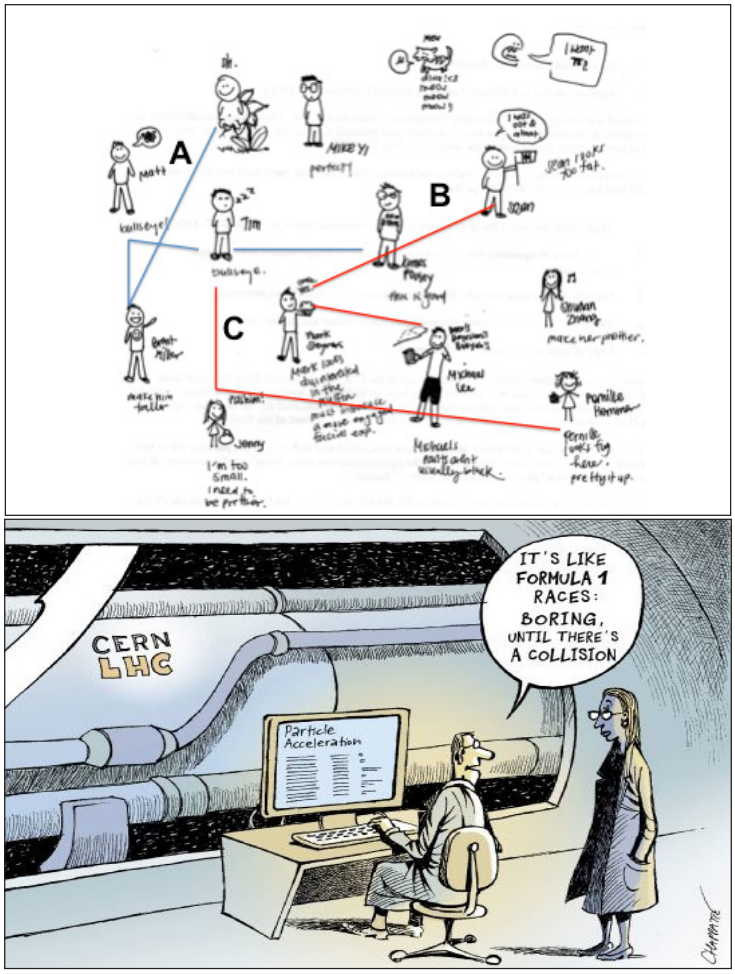
All in all, an experimental business laboratory approach is a means of accelerating the creation, incubation and testing of new venture ideas. The goal is to create a mini idea-supercollider, in which a microscopic Frans Johansson's Medici Effect can be achieved, with aspiring entrepreneurs with different ideas, experiences and disciplines meeting in a spirit of open innovation – the sum of the whole being much greater than the sum of the individual parts.

The spirit of free discussions, open criticism and wide collaboration within the experimental lab enhances the speed of creativity, which is like a beam of light that spotlights one or more opportunities to start a business. By experiencing experiments, aspiring entrepreneurs learn if and how the same idea could be used in different fields. Thus, they take advantage from the multiplier effect of sharing – "I am going to use my idea in my field of use, and you are welcome to use it in your own field". People with different backgrounds and expertise are so connected that they can proof their business ideas working together. The results of one's choice are strong enough intertwined with the choices of the others to produce social influence.

For aspiring entrepreneurs with high ambitions, tomorrow's competitive advantage is the outcome of today's immersion in an innovative environment. Experimental labs meet this requirement.

Source: Martin Curley and Piero Formica, The Experimental Nature of New Venture Creation, forthcoming

Figure 6 – Aspiring entrepreneurs in an experimental lab context



Interactions are apparently boring until there is a collision, which means "I am going to use my idea in my field of use, and you are welcome to use it in your own field".

Laboratory participants experiment combination of business ideas and permutation and business ideas through the exploration of adjacent connections. The lab creates an environment where information can spill over from one project to another.

Source: **Curley and Formica, forthcoming**

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