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STORIES OF INNOVATION FOR THE MILLENNIAL GENERATION

The Lynceus Long View

Piero Formica

Stories of Innovation for the Millennial Generation

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To the new generation of innovators, whose attitudes contradict the pessimism of conservatives, for whom the balance between economic and social life makes it too precarious to embark on revolutionary experiments.

To the explorations and improvisations of the new innovators, we offer these stories.

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Foreword

Since the beginning of the development of language people have created and told each other stories. The point of stories is both entertainment and education and very often stories have a moral, a judgement about the goodness or badness of human action or behaviour.

Stories are also a very effective way of diffusing memes – behaviours or ideas that spread across a culture or society from person to person and vehicles for transmitting societal or cultural practices, concepts or ideas. Long, long before Richard Dawkins coined the word 'meme' stories were the most popular mechanisms for diffusing ideas to advancing society. Indeed the Bible records Jesus Christ often using parables – short allegorical stories – to share his teachings and principles.

The origin of the word 'meme' is the Greek word 'mimema' which means 'imitated thing'. It turns out that 'imitation' is the core verb in the diffusion and adoption of innovations – and it is only in the adoption of an innovation that value is created. The very practice of innovation adoption is about imitation, imitating the adoption of something that was successful for someone else. The Bass Diffusion equation models how products are diffused across a market and we find that the coefficient of imitation is much more influential than the coefficient of novelty.

In learning any subject the retention of the content is always an issue, with the half-life of retention of factual content being quite short. Stories are very effective ways of enabling students to retain knowledge longer – many

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of us still remember Hans Christian Andersen's 'Ugly Duckling' story from our childhood, a case in point.

In this book Professor Formica uses fictional stories to convey both innovation lessons and to help students retain the lessons. I encourage you to read these learned fictional stories from one of the master innovation storytellers of our times. Generous sprinklings of Latin and Greek references connect us to core principles distilled and learned over centuries.

Fact can sometimes be stranger than fiction. Perhaps these stories will inspire you to turn your fiction into fact and to bring into being new innovations which can improve all of our lives.

Innovate and . . . live happy ever after!

Martin Curley
Vice President
Director, Intel Labs Europe
Intel Corporation

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Note from the Author

Lynceus, one of the Argonauts who accompanied Jason to Colchis in his quest to find the Golden Fleece, was said to have excellent sight. The voyage of the Argonauts, taking them to terrae incognitae (unknown lands), is a voyage of discovery. Discovery is at the heart of innovation.

This book is a narrative of a fictional voyage to the terra incognita of Innoland – the island of innovation – and other mental travels that make sense of events and actions that spur innovation.

The use of storytelling as a research tool to enhance our understanding of knowledge creation and acquisition, and its conversion into innovation and innovative business activities, is the methodological underpinning of the narrative approach.

The book has been written for the Millennial Generation, for those willing to assimilate and grow dynamic, innovation-driven capabilities that lead to the creation of high-impact start-ups.

These fictional stories expose the reader to volatility, randomness and disorder – characteristics of the world of innovation in which we live today.

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Introduction: Making Connections – Charles Dickens, Twenty-First Century Innovation and the Magpie Tactic

> If people are not going to be rewarded for their inventions, then why should they invent at all? . . . We need to value inventors, otherwise more will end up with nothing.
>
> Trevor Baylis, inventor of the wind-up radio, quoted on 17 February 2013.[1]

> Finance is a major obstacle to the commercialisation of technology in the UK. . . . Government grant funding is often highly bureaucratic to apply for and only enough to 'get an idea off the ground'.
>
> UK Parliament press release, 13 March 2013, announcing the publication of the Science and Technology Committee report, *Bridging the Valley of Death: Improving the Commercialisation of Research*.[2]

> Thereby I say nothing of my being tired of life, while I was Patenting my invention. But I put this: Is it reasonable to make a man feel as if, in inventing an ingenious improvement meant to do good, he had done something wrong? How else can a man feel when

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> he is met with difficulties at every turn? All inventors taking out a Patent must feel so. And look at the expense.
>
> Charles Dickens, 'A Poor Man's Tale of a Patent', 19 October 1850.[3]

> What I mean is, that however this comes to be the regular way of our government, it is its regular way. Have you ever heard of any projector or inventor who failed to find it all but inaccessible, and whom it did not discourage and illtreat?
>
> Mr Meagles to Arthur Clennam in Charles Dickens's *Little Dorrit*, 1857.[4]

These four quotations, two from the early twenty-first century and two from the middle of the nineteenth, express a common sentiment and stem from the same essential concern. While the social, commercial and regulatory contexts may have changed dramatically, the fundamental message remains constant – innovation and innovators must be supported, not constrained; they must be respected, not treated with contempt.

Charles Dickens wrote his article 'A Poor Man's Tale of a Patent' in protest against the procedural complexity, the time and the expense involved in taking out a patent, all of which, besides discouraging innovation in general, made it especially difficult for working people to benefit from their ideas and inventions. The piece was published in Dickens's weekly journal *Household Words* in 1850. It takes the form of a monologue by 56-year-old John, a working man, 'a smith by trade', who has spent 20 years 'completing an invention and perfecting it':

> I perfected of it, last Christmas Eve at ten o'clock at night. Me and my wife stood and let some tears fall over the Model, when it was done and I brought her in to look at it. . . . All the money I could spare I had laid out upon the Model; and when times was bad, or my daughter Charlotte's children sickly, or both, it had stood still, months at a spell. I had pulled it to pieces, and made it over again with improvements, I don't know how often. There it stood, at last, a perfected model as aforesaid.

Dickens portrays a poor but ingenious and creative man with a flair for innovation, which he has combined with his technical skill to refine his invention through a process of trial and iteration until it is ready for

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market. Now, he needs to patent it. For the remainder of the article, John recounts the sad history of his wanderings and struggles in the labyrinth of government bureaucracy, where each office he visits provides him with a document or service and levies a fee and directs him to another office that provides him with another document or service and levies another fee: 'I went through thirty-five stages. I began with the Queen upon the Throne. I ended with the Deputy Chaff-wax.'[5] In the end, John obtains his patent and his invention is taken to market, but his story is of the battle between the dedicated innovator and a short-sighted, self-serving and anti-creative system:

> How hard on me, and how hard on the country if there's any merit in me (and my invention is took up now, I am thankful to say, and doing well), to put me to all that expense before I can move a finger!

The portrayal of John's plight in 'A Poor Man's Tale of a Patent' prefigures the story of the engineer and inventor Daniel Doyce in Dickens's novel *Little Dorrit*, first published in monthly parts between 1855 and 1857. In the meantime, the Patent Law Amendment Act of 1852 had been passed. This legislation simplified the patent application process, reduced the costs of filing a patent, introduced a clear indexing of patents and facilitated access to patent information.[6] Nevertheless, patent law continued to be a subject of heated debate[7] and, more importantly, the negativity and destructiveness of administrative bureaucracy remained a matter of major concern for Dickens.[8]

The action of *Little Dorrit* is set in a period 'thirty years ago' (the first three words of the novel) and so Doyce's experiences predate the 1852 legislation. However, the specific context is far less important than the overall point that creativity and innovation are ill fostered in a culture that protects the *status quo* and fears the new. Daniel Doyce is, in contemporary parlance, an innovator and an entrepreneur:

> though a plain man, [he] had been too much accustomed to combine what was original and daring in conception with what was patient and minute in execution, to be an ordinary man.[9]

Like many entrepreneurs of our own time he would be able to include in his CV substantial practical work experience, appropriate study and international networking. After being apprenticed to a 'working engineer',

> …he had 'worked in the shop' at weekly wages seven or eight years more; and had then be taken himself to the banks of the Clyde, where he had studied,

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> and filed, and hammered, and improved his knowledge, theoretical and practical, for six or seven years more. Then he had an offer to go to Lyons, which he had accepted; and from Lyons had been engaged to go to Germany, and in Germany had had an offer to go to St Petersburg, and there had done very well indeed…[10]

After his years abroad, Doyce returns to England and, as explained by his friend Mr Meagles to the novel's protagonist Arthur Clennam, 'perfects an invention (involving a very curious process) of great importance to his country and his fellow creatures':

> 'Well, Mr Clennam. He addresses himself to the Government. The moment he addresses himself to the Government, he becomes a public offender! Sir,' said Mr Meagles, in danger of making himself excessively hot again, 'he ceases to be an innocent citizen, and becomes a culprit. He is treated, from that instant, as a man who has done some infernal action. He is a man to be shirked, put off, brow-beaten, sneered at, handed over by this highly-connected young or old gentleman to that highly-connected young or old gentleman, and dodged back again; he is a man with no rights in his own time, or his own property: a mere outlaw, whom it is justifiable to get rid of anyhow; a man to be worn out by all possible means.'[11]

The powerful administrative bureaucracy that thus tortures the inventor Doyce is represented by the Circumlocution Office, Dickens's famous satirical characterization of official obfuscation and protection of the *status quo* – a consequence of the blinkered and self-perpetuating conservatism embedded in the social and governmental system. The great expertise of the Circumlocution Office is in 'how not to do it' (by which Dickens means how to ensure that it is not done at all, rather than how to do it the wrong way): 'Whatever was required to be done, the Circumlocution Office was beforehand with all the public departments in the art of perceiving – how not to do it.'

> The Circumlocution Office was (as everybody knows without being told) the most important Department under government. No public business of any kind could possibly be done at any time, without the acquiescence of the Circumlocution Office. Its finger was in the largest public pie, and in the smallest public tart. It was equally impossible to do the plainest right and to undo the plainest wrong, without the express authority of the Circumlocution Office. If another Gunpowder Plot had been discovered half an hour before the lighting of the match, nobody would have been justified in saving the parliament until there had been a half score of boards, half a bushel of minutes, several sacks of official memoranda, and

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> a family-vault-full of ungrammatical correspondence, on the part of the Circumlocution Office.[12]

In the case of Daniel Doyce, the inevitable consequence is that he takes his creativity and ideas elsewhere, so that another country, with a system oriented towards the new, which encourages and respects the innovator, reaps the competitive advantage. He travels abroad to an unnamed state (easily identifiable as Russia) which 'had occasion for the services of one or two engineers, quick in invention and determined in execution'. This country acts on the 'most decided and energetic notions of How to do it; and never showed the least respect for, or gave any quarter to, the great political science How not to do it':

> Accordingly, the men who were wanted were sought out and found … Being found, they were treated with great confidence and honour … and were invited to come at once and do what they had to do. In short, they were regarded as men who meant to do it, engaging with other men who meant it to be done.[13]

As these glimpses into Dickens's writing demonstrate, and returning to our opening four quotations from past and present, the most powerful expressions of fundamental and perpetual concerns are often to be found in fictional narrative. As we all know, telling a story can be a vivid and engaging way to tell a truth. In *Stories for the Millennial Generation*, Professor Piero Formica takes this notion as his guiding principle as he wings his way, magpie-like, through world literature, art and music, through stories fictional and factual, snatching narratives, episodes and characters and transporting them to his own imaginary world, where he adapts and mutates them for his purpose – to explore the nature and practice of innovation and entrepreneurship.

Professor Formica's approach bears some similarity to 'Steampunk', the literary sub-genre associated with science fiction that foregrounds anachronistic narratives featuring nineteenth-century technology (hence 'steam') in, for example, futuristic scenarios or counter-factual histories. *Stories for the Millennial Generation* too makes a virtue of anachronism and counter-intuitive context – so, in one chapter, we have Robinson Crusoe and Lemuel Gulliver, refigured as two start-up entrepreneurs, discussing the benefits of innovation networks. These are innovative stories for innovative people; the book itself emerges from a disruptive and transforming creativity.

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If we can borrow the long sight of Lynceus, the Argonaut, whose symbolic special gift sets him at the core of *Stories for the Millennial Generation* and gives it its subtitle, we should use it to gaze into the past as well as into the future. The true innovator works with connections that others cannot see.

John Edmondson,
Director, IP Publishing Ltd
Editor, Industry and Higher Education
Independent Scholar in Victorian Studies
London
June 2013

Notes

1 Richard Gray, 'Trevor Baylis: I've Wound Up Broke Despite Inventions', *The Daily Telegraph*, 17 February 2013, available at www.telegraph.co.uk.
2 'UK Entrepreneurs Being Failed by Lack of Government Support', UK Parliament Press Release, 13 March 2013, on the release of the report by the House of Commons Science and Technology Committee, *Bridging the Valley of Death: Improving the Commercialisation of Research. Eighth Report of Session 2012–13*, The Stationery Office, London.
3 Charles Dickens, 'A Poor Man's Tale of a Patent', *Household Words*, 19 October 1850. Both the original article and a transcript are available at 'Dickens Journals Online', http://www.djo.org.uk/. It is also published in Michael Slater, ed., *Dickens' Journalism. Volume II: The Amusements of the People and Other Papers*, J.M. Dent, London, 1996, pp. 284–290.
4 Charles Dickens, *Little Dorrit* [1857], Penguin, London, 2003, Book the First, chapter x, p. 137. (Hereinafter *LD.*)
5 The Chaff-wax, or Chafe-wax, was an officer of the Lord Chancellor whose task it was to prepare the wax for sealing documents.
6 An article in *Household Words,* 21 February 1857, entitled 'A Room Near Chancery Lane' summarizes the main changes and welcomes the new legislation and its effects, with the reservation that 'it does not sever us from contact with routine and redtape'. (Articles in *Household Words* were published without bylines – Lohrli identifies the author of this piece as George Dodd, a fairly regular contributor to the journal on diverse topics. See Anne Lohrli, *Household Words: A Weekly Journal 1850–1859 Conducted by Charles Dickens, Table of Contents, List of Contributors and Their Contributions*, University of Toronto Press, Toronto and Buffalo, 1973.)

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7 For example, the editors of the Pilgrim edition of Dickens's letters note that questions were raised in the House of Commons in 1856 about 'the amounts paid to the Attorney and Solicitor Generals and their clerks for patents (over £21,800 that year). On the answer that £90,000 had been paid to the Exchequer for patents, thus leaving the public with the balance, one MP said he thought it "monstrous that the mechanical ingenuity of the country should be taxed to the amount of £90,000 a year"' (Madeline House, Graham Storey and Kathleen Tillotson, eds, *The Letters of Charles Dickens, Volume Eight, 1856–1858*, The British Academy Pilgrim Edition, Clarendon Press, Oxford, 1995, p. 122, note 7.)

8 See, for example, his speech to the Administrative Reform Association of 27 June 1855. (K.J. Fielding, ed., *The Speeches of Charles Dickens: A Complete Edition*, Harvester Wheatsheaf, Hemel Hempstead, 1998, pp. 197–208.)

9 *LD*, Book the First, chapter xvi, p. 206.

10 *LD*, Book the First, chapter xvi, pp. 206–207. Doyce would have gone to the banks of Scotland's River Clyde to work in the famous shipbuilding yards.

11 *LD*, Book the First, chapter x, p. 134.

12 *LD*, Book the First, chapter x, p. 119.

13 *LD*, Book the Second, chapter xxii, p. 703.

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Introducing the Stories

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1

The Wonder Generation: Adolescent Entrepreneurs of Generation Y, New Stars of Innovation

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THE Y GENERATION

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Those of the Wonder (Millennial) Generation – born between the start of the 1980s and the early years of the present century – are the true protagonists of innovation. They were preceded by three important, and different, generations. First, there is the 'silent' generation of workers and technicians born between 1925 and 1945 who, without making a fuss, rolled up their shirtsleeves and contributed to the post-war reconstruction, especially in Western Europe. Then there were the 'baby boomers', children of the so-called economic miracle, born between 1945 and 1964: they were, first and foremost, a generation of managers. The third generation, Generation X, produced the entrepreneurs of the new economy. These are well-educated people, highly motivated to exploit knowledge acquired at university, willing to change jobs frequently to enrich their personal portfolios of skills and experience.

The Millennials are young, and some are very young indeed – teenagers, in fact. They have discovered the seeds of entrepreneurship in the crevices between digital tales, adolescent novels and naïve love stories. As toddlers they played and taught themselves on computers, videogame consoles and mobile phones. We can call them the 'digerati' of the Worldwide Web: the new elite of creative technologies, entrepreneurial talents 'in clover', future serial entrepreneurs and knowledge nomads. Generation X was prolific in starting entrepreneurial projects: four out of five founders of new businesses in the USA are of this generation. Notably, however, Generation Y appears intent on entering the arena of business creators at a far earlier age.

In Silicon Valley, California, in 2001, Ben Casnocha – aged 14 – founded Comcate Inc, a software company which facilitates the online exchange of information and services between public administrations and citizens. At the age of 19, Ben wrote about his experiences in a successful book: *My Start-Up Life: What a (Very) Young CEO Learned on His Journey through Silicon Valley*. Another 14-year old, Anshul Samar, one of many young IT prodigies from India who have breathed life into American entrepreneurship at the forefront of technology, invented an online game for teaching chemistry. Anshul sought angel investors to support – and bless! – his business idea, business people and managers who were already successful and who, thanks to having access to funds and services, were able to help launch and find markets for Anshul's ideas.

In the USA and in England these young entrepreneurs in the world of technology are recognized and promoted as role models. For example the

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Kaufman Foundation, based in Kansas City, which introduced Global Entrepreneurial Weeks, offers funds and experience to primary and secondary schools, with the aim of exposing young minds to the processes of business start-ups and entrepreneurism at an early age. Such initiatives have been dismissed as 'Anglo-Saxon eccentricity' by the conservative ruling classes who lack the ability or desire to recognize and accept the role these intelligent and clever teenagers can play in the social and economic life of a nation. In the boardrooms, where decisions are made which will shape the future of the community, there are still many who regard these budding teenage entrepreneurs in the same manner as the Mayas perceiving Spanish vessels on the horizon as no more than some strange, climatic phenomenon.

The prospect arises of entrepreneurs lucky enough to be successful establishing a movement to support these 'digerati' teenagers. Surely it would be a good idea if they engaged in dialogue with this new cyberspace élite – these young architects of the new technological frontier –, gave them a voice in the media, helped them gain access to international talent, supported their first, tentative steps into the world of entrepreneurial innovation. It would undoubtedly be an elegant way of countering the arguments of those who cling to the Mayan view.

The Millennials will not be fooled by the conservatives. They will continue to set their sights further ahead: as with Lynceus, their vision is of the far horizons.

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The Lynceus Long View

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THE LYNCEUS LONG VIEW

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The coevolution of ideas (the 'content') and their historical, social, organizational and institutional manifestations (the 'context') has always been the main source of economic growth. That this is so is exemplified by those whose vision is so far-reaching that they are able to see beyond the restrictions of everyday routine. In Greek mythology, Lynceus, one of the Argonauts, was gifted with penetrating vision: we might find his contemporary equivalent in Superman, among whose many powers is 'X-ray vision'.

We can liken Lynceus's vision to a flow of energy which, in the Industrial Age with its new infrastructure and new means of transport – railways, ocean-going steamships replacing those under sail, asphalted roads used by automobiles – greatly facilitated the movement of goods and people. Now, in the age of knowledge and with the help of that vision, we are able to construct digital infrastructures that enable people to identify, from the seemingly endless resource that is the Internet, the information they need and then to assess its relevance and usefulness.

The language of discontinuity

The *tableau économique* of the Knowledge Age requires enterprises to learn the language of discontinuity. For the smallest of companies – predominantly family-run businesses – the innate passivity often associated with these enterprises is coupled with a reluctance to embrace novelty, that is, to deal with uncertainty. The concepts of determinism and continuity are becoming obsolete as the need to accept uncertainty increases, involving as it does considerations of probability and possibility. In the age of uncertainty it is unrealistic to expect to know, let alone master, all the variables at work in this new economic system. Paradoxically, the desire of governments, international bodies and forecasting organizations – whose job it is to plan for the future on the basis of a detailed knowledge and understanding of past events – to reduce the degree of uncertainty can result in companies being restricted in their ability to innovate. If businesses are to survive and grow in this new age of knowledge, they must learn how to deal with uncertainty.

Heisenberg's Uncertainty Principle contributed much to the enrichment of science (for a fuller exposition see, for example, David Lindley's

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Uncertainty: Einstein, Heisenberg, Bohr and the Struggle for the Soul of Science). We anticipate that the enhancement of our understanding of economic phenomena will follow a revolutionary and sometimes contrary path, similar to that lucidly presented by Lindley in relation to the development of quantum physics variously in Munich, Gothenburg, Zurich and Copenhagen in the 1920s. This greater understanding, having surmounted the barrier of economic forecasts developed using deterministic econometric models, will lead businesses to the frontiers of knowledge of possibility and probability: that is, to the point of knowing whether certain events *could* happen (possibility) and whether or not they *will* happen (probability). In Germany in particular, the 1920s was a decade of confusion, conflict and creative dissonance. It was in such a climate that the concept of the physical world changed. Today, global geo-economics is gripped by major traumas and upheavals: the spirit of creativity, necessary to change the concept of economics in the Knowledge Age, is aroused. These precursors of change are most welcome.

Knowledge in action

The new age of knowledge is generating an important understanding of the value that derives from innovation, the process by which knowledge is translated into action. Shared knowledge and collective intelligence are replacing the three traditional pillars of value creation: land, work and capital. These three resources – now increasingly scarce – were the mainstay of progress in the industrial economy, with knowledge being largely expressed in the design and operation of machines and other physical or tangible assets. In the age of knowledge, the main source of value creation resides in the hyper-mobility of knowledge, which both controls access to opportunities and determines the rate of progress. While industrial culture focuses primarily on the production of things, of static objects, knowledge – in contrast – flows constantly, like an electrical current, reforming and redefining markets.

Innovation is knowledge in action. Cultural change and new technological inventions make feasible the idea that knowledge really is something that anyone can acquire. As Theodore Zeldin writes in *An Intimate History of Humanity*,

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> . . . for most of history knowledge has been rare and secret, and this esoteric heritage, with its dream of mastery and mystery, survives in the jargon with which every profession protects itself. Knowledge is still a serpent eating its own tail.

In Italy, for example, protectionism supported by the professions coupled with extreme regulation of the economy arising from excessive state intervention has generated a creature rather like Diplodocus, the dinosaur with a tiny brain in a gigantic body: in other words, a bureaucratic body that is not interested in solving problems because, if it did, it would have no reason to exist. This has caused its disproportionate growth, with the resulting increase in tasks and the number of people required to carry them out, and yet the brain is tiny and cannot understand the cultural, social and economic changes that are taking place. It is this Diplodocus that has impeded innovation in countries which, in the past, were extremely innovative. This is the case with Italy, which now faces the challenge of making up much lost ground, inside and outside the Euro Zone.

The new protagonists of entrepreneurial fertilization

Once diverted from the protectionist, dinosaur corporations to the agile gazelles of the new, creative, entrepreneurial class, social and human capital resources can create virtuous links between inventors, academics, researchers, young graduates and entrepreneurs. All of these are the protagonists in a process of entrepreneurial fertilization, in university classrooms and laboratories, liberated by radical innovation in academic establishments. The process is somewhat akin to the transition from monastic education to the establishment of universities. The fruits of entrepreneurship hang from the tree of research: to gather them, we must increase the number of enlightened entrepreneurs prepared to join with the researchers and other talented individuals who are willing to take business risks with innovations produced by their research. This collaboration is a virtuous dance, with the potential to overcome the seemingly perennial problem of restricted research budgets. Through such collaboration entrepreneurial businesses can emerge, with high expectations of growth, whose employees are co-creators and are themselves potential young entrepreneurs.

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Gulliver's watch

Innovation rejects the *status quo,* proposing as it does new ideas that question established and accepted custom and practice. Custom and practice prevented the Lilliputians from understanding the innovation represented by Gulliver's watch. The long sight of Lynceus sees beyond tradition and enables innovative entrepreneurs to reduce the gap between research and its applications, between the worlds of academia and business. The familiar path is likely to be a cul-de-sac: the rate of progress is now determined by business people equipped with high levels of technical and scientific competence, whose enterprises have high expectations of growth.

These pioneers of innovative entrepreneurship meet at the frontiers of innovation. They are explorers who build bridges between the old entrepreneurial generation, the creators of, for instance, the German *Wirtschaftswunder*, the Italian *miracolo economico* and other similar economic and social successes in Europe after the Second World War, and the age of knowledge with its micro-technologies, robotics, new materials, nanotechnologies, biotechnologies, computers, telecommunications and the Web.

Absent Lynceus

Sadly, those of acute vision, the emulators of Lynceus, are few and far between in many communities on our planet. Or, rather, they are no longer to be found in countries where in the past such individuals have been in evidence. In Italy, for example, in the last decade of the nineteenth century, we find the very young Camillo Olivetti – engineer and founder of the Olivetti company, a paradigm of modern twentieth-century design in manufacturing business machinery. Camillo attended Stanford University and then 'stood on the shoulders' of the giants of science and industry of that time. In so doing he was able to keep his vision fixed on distant horizons. Earlier still, in 1603, the Italian Prince Federico Cesi and three companions – the Dutch physician Johannes Van Heeck, and two fellow Umbrians, Francesco Stelluti (a mathematician) and Anastasio de Filiis (a polymath) – founded the *Accademia Nazionale dei Lincei* in Rome, promoting free experimentation that was respectful

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of tradition but not restricted by unquestioning obedience to authority. The Academy continues to function according to that ethos.

Talent flocks towards Asia

In his opening address to the World Economic Forum 2012 in Davos, the Forum's founder Klaus Schwab said,

> . . . 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.

This is why there is an acute need now for a Lynceus, able to scrutinize the directions in which talent is moving. Until recently the winds of innovation and entrepreneurism carried scientific and business talent towards the USA, mainly in the direction of California's Silicon Valley. Nowadays those talents, together with their risk capital, are moving rapidly in the direction of India and China. China already has the same number of researchers as the USA (1.4 million in 2013) and is producing science and engineering graduates at a prodigious rate – some 2 million each year, five times the number in the USA. With innovation so widespread and important in Asia, global companies such as Intel and business angels and investment companies are using Asian talent to add value to their businesses.

On 28 January 2013 Jonathan Ortmans of the Kauffman Foundation confirmed this in his Policy Dialogue on Entrepreneurship: '. . . an initiative to promote a greater understanding of the public policies necessary to stimulate an environment conducive to entrepreneurial growth – whether on a local, national or global level. Innovation knows no boundaries'. As Ortmans states,

> In recent years, there has been a growing trend in the US of Indian and Chinese highly skilled immigrants leaving to return to their home countries. These returnees are relatively young (aged between 35 and 37) and most of them hold Master's and PhD degrees in management, technology or science. In an often cited Kauffman Foundation study, 56.6 percent of Indian respondents indicated that they would be likely to start a business in

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> the next five years, and 53.5 percent of them believed their best opportunities for entrepreneurship were in their home country.…Capital for entrepreneurs is still scarce, but a lot of early-stage venture funds have been coming from offshore investors. Once again, returnees bring enormous value to the creation of more elaborate global networks of angel and VC markets. For example, Mumbai Angels started in 2006 with just two investors and today there are 150. Other angel networks are popping up in Delhi and Bangalore. (http://www.entrepreneurship.org/en/Policy-Forum.aspx)

Software of prosperity

A short-sighted and restricted view inhibits us from paying attention to the 'software of prosperity'. Innovation in public institutions, policies and regulations is the software that, if present, could result in contented and prosperous communities, or, if lacking, in unhappy and impoverished communities. If the software of prosperity is lacking, it is because the society's leaders do not take the long-term view and have difficulty in, or perhaps are hostile towards, attracting suitably able people to manage public affairs. With leadership closeted in the *status quo* fortress, with the drawbridge up, innovation is slow and occurs more by force than on its merits. Equally, if there is a low rate of change of those employed in public administration, a small, self-contained group, led by politicians and administrators, tends to be rotated around positions of command in public institutions, professional associations and foundations.

When an ineffective government neglects the sources of creativity that feed innovation, the culture of the imagination is less lively, celebrated and prized than it should be. In the garden of civil society the seeds of imagination remain unsown and if, by chance, they sprout spontaneously the shoots are left unwatered or are trodden down by the 'gardeners' in charge. Is it laziness and indifference that cause such people to ignore the dreams of the younger generation, of people who can use their imagination and make plans for business with the best of new scientific discoveries and technological developments?

Swept along by the strong currents of change, we have entered a highly integrated world, in which not only raw materials and production but also design and distribution are now accessible to all, regardless of location. However, creativity and good governance remain unique values; they can neither be copied nor reduced to mere chattels. Our future depends on how and whether both of these values are cultivated.

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Digital life and digital intelligence

The Finnish government has decided that a good 'second life', a digital one (www.secondlife.com), must be included in the pantheon of citizens' rights. Helsinki is already a digital city. At lunchtime on any day of the week in the Finnish capital, crowds of young – and not so young – people navigate the Internet readily and easily in the streets and public places. These people, let us call them 'Internauts', make use of superfast network connections. Access is free in bars, restaurants and hotels: computers are available free of charge for anyone who does not own a portable computer. How many people, strangers to the digital life or not interested in taking advantage of it, are content to navigate the waters of the Internet very slowly? More than 200 years since Joseph Marie Jacquard invented his revolutionary punched-card system, which was some 25 times faster than the systems commonly in use in 1804, for controlling looms, it is a sad fact that many people are suffering a technological delay in Internet participation because of access limitations and connection speeds.

If we had the vision of Lynceus, we would be able to cultivate a new human ability, of 'digital intelligence'. Scientific advances and related technological applications are propelling the next generation to be more digital than its predecessors. Distinctions between physical and virtual reality become blurred and in some cases simply cease to exist. In the great World Wide Web, the most skilled Internauts are the very young. They use computers and cell phones creatively and readily, and quickly learn and teach new applications. The communities that fall behind are those that, although curious, fail to commit themselves to the digital revolution: their managerial classes are culturally rooted in the terrain of the professions and entrepreneurship of the twentieth century. At that time people lived in a material world, a world of tangible, concrete objects with clearly defined boundaries. Companies and professions now find themselves in a world with no boundaries, in which intangible values predominate, measured by numbers of bits – the tiny 'one' and 'zero' – that travel at the speed of light.

In the Western world, our sights are set on the emerging markets of Asia. But failure to view them through digital intelligence glasses will result in our vision being restricted and false. Asian markets are growing like digital tigers and China is the country with the sharpest teeth. Asia online presents a multitude of opportunities and the continent already

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accounts for half of the Web users in the world. At the end of the first decade of the twenty-first century, China was the Internet market leader with 420 million network users – a number destined to double in the next 15 years. Eighty per cent of the Chinese have accessed the Web from their homes; 230 million have used hand-held devices and these, together with personal computers, have been used by 70% of the user population. Blogs have become popular in China (at the time of writing there are some 100 million bloggers there) and they have spread to the rest of emerging Asia, along with instant messaging, social relations on Facebook (which has attracted 15 million Asians a month), games and video broadcasts via the Internet.

Captain Lynceus in command of *Technologies & Entrepreneurship*

Acute eyesight is required to enable us to weave entrepreneurial values into the fabric of our human capital and to ensure that enough young people, at present forced to navigate in the sea of the old industrial economy, are given access to the riverbed of innovative entrepreneurialism. Unfortunately, too many vessels still fly the flag of *Employment* without a Captain Lynceus on board and without a radar system to save their passengers from shipwreck, seeking aid instead from the transatlantic ship *Technology & Entrepreneurship*. In the absence of Lynceus at the helm, *Employment* navigates along the route of efficiency, to cut costs. Human and financial resources and time are all employed in constantly improving the things we already know how to make and do. Nothing is as important as the hammer of experience used decisively on the nail of continuous improvement. Experts are completely ensnared by their own certainty of knowing what to do and how to do it. Not immune to doubt, they do not focus on 'anti-knowledge' – what they do not know – and so, without realizing it, they raise insurmountable barriers against innovation. With the technological revolution in progress, the ship risks crashing into the rocks. That was what happened to the builders of sailing ships, made largely redundant by the advent of steam technology.

If, rather than persevering along the route of improvement, a significant proportion of the available resources were dedicated to a change of direction, creativity would win over experience. We would begin to

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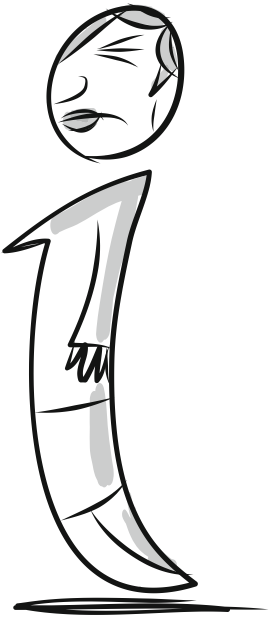

"I-SHAPED"
INDIVIDUAL
THEIR EXPERIENCE
IS PROFOUND
AND ONE
KILOMETRE DEEP,
BUT THE VISION
IS JUST
ONE CENTIMETRE
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"T-SHAPED"
INDIVIDUAL
WHO ADDS TO
A DEEP EXPERTISE
A WIDE RANGE OF
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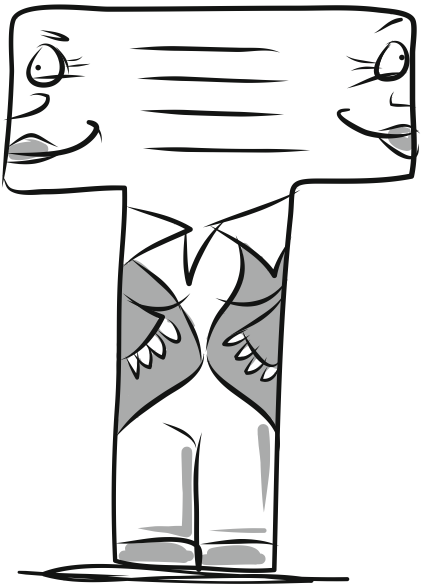

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see young creative individuals in commanding positions, setting up entrepreneurial ventures in the lands of new technologies as yet little explored. If they were to shed the trappings of authority, there is little doubt that many older people would prove to be adept at embracing new ideas; indeed, many would no doubt be enthused by the spirit of revolution. Creative thought would prevail over the sterility of conventional wisdom, the anesthetic of creativity.

Despite the conventional wisdom, it is not true that the cargo of increased productivity on board the *Technologies & Entrepreneurship* is a toxic agent that kills jobs. By raising profits and earnings and lowering prices, growth in productivity injects energy into consumption and thus supplies oxygen to companies and stimulates the development of entrepreneurial projects. It is employment itself that benefits: with higher levels of productivity, corporate products and services become more visible and attractive on international markets. The ship named *Employment* would then need to be re-equipped to navigate both the Job Sea (the workplace) and Jobs Sea (original and innovative entrepreneurship typified by the late Steve Jobs, founder of Apple). In other words, combining a dynamic employment market with an equally mobile business climate will encourage the creation of new and better jobs.

With Lynceus's vision, moving from one job to another, or from one business to another, will be perceived as an action dictated by the desire to take risks, to become more autonomous, to enrich oneself professionally and to raise one's self-esteem. With Lynceus on board, the ship *Employment* would be equipped with a gymnasium for entrepreneurs, where young people would be trained to search for business opportunities. The energy of youth would be combined with the knowledge and experience of masters with long-term vision, sensitivity, open-mindedness and the will to take risks.

Educating for entrepreneurship

'Becoming entrepreneurial' should be the focus of an entrepreneurship education campaign aimed at the new generations. The message must be sent from policy makers and the campaign must be launched in communities where unemployment and insecure jobs prevail, where there is financial hardship due to poor economic growth. Entrepreneurship education, starting in primary schools, can stimulate inventiveness in

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young people, even at a very early age, and help them to take control of their own futures.

To counter the dampening of the entrepreneurial spirit and the low rates of growth of business start-ups, the European Commission has identified investment in entrepreneurship education as a priority action. It is an investment with potentially high returns: some 15–20% of students who participate in 'mini-company' programmes organized by secondary schools go on to launch a start-up. This rate is some three to five times higher than that for the population as a whole. In Finland, where even primary schools are equipped with 'entrepreneurship classrooms', students' achievements appear to be significantly better, at a relatively small overall cost per student. Equally, Harvard University has found that young people's interest in attending university increases by 32% if they have taken part in an entrepreneurship course, and the desire to find a job that combines employability with entrepreneurship increases by 44%.

Lynceus and the university

Should not Lynceus have a home in academia? It is, after all, *Alma Mater Studiorum*, the 'Nourishing Mother of Studies', that feeds our most distant future. Alas, from the deafening silence that typically greets innovation – which, in theory, should turn many universities upside down – it seems that Lynceus does not reside on the campus. So many universities do not look beyond a very limited horizon and work on the assumption, which may become their epitaph, that a university is a place for public research and private research is relegated to a secondary role. In Italy, where for many people these words constitute an act of faith, the private sector finances 40% of research and development expenses, compared to an OECD average of 53%. Since it is less contaminated by private companies interested in obtaining remunerative short-term results, university research in Italy should be located near the top of the OECD country league table in terms of citations and references and the number of patents and Nobel Prizes per capita. And yet this is not the case. On the contrary, those universities at the top of the league table are in countries where the private sector makes generous contributions to research. In the USA industry funds 65% of R&D; in China, 70%; and in Korea and Japan, 75%. Universities in these countries are among the top

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50 in the world in international classifications: no Italian university has risen so high.

Academic firms in Talentopolis

Where voluntary and therefore willing interaction occurs between scientists in academia and their colleagues in science-based enterprises, there is mobility of employment in both directions. These elective affinities – the term comes from the eponymous novel by Goethe – are the virtuous, interwoven activities that increase the pressure of public research to open doors in the private sector, which promotes scientific entrepreneurship: demanding more pressure while keeping the doors firmly shut makes no sense. Universities are thus renewed as cradles of 'academic enterprises', the businesses that stem from academic research and constitute the commercial arm of the university. The research staff involved in promoting the start-up, taking part in its founding and supporting its launch, should be suitably rewarded: such activities should be regarded as no less important than being published in the most prestigious academic journals.

Whether it deals with food, medicine, healthcare, energy, the environment, construction techniques, clothing, furniture or indeed many other disciplines and sectors, the imprint of scientific research on innovative start-ups is visible to all. Materials science, chemistry, biology and earth sciences are just some of the categories in which new discoveries have resulted in outstanding, often brilliant, business ideas to be exploited by the Talentopolis, the centres of gravity of transnational and trans-cultural entrepreneurship led by science.

With the vision of Lynceus we would be able to observe the movement of highly educated, qualified and well-paid individuals from one Talentopolis to another. It is these creative talents, 'knowledge nomads' and intellectual capitalists who create new professions and who plough and sow the fields of the knowledge economy with entrepreneurial ideas for markets still untouched, weaving social networks as alternatives to traditional trade associations.

Different generations of innovative entrepreneurs live together in Talentopolis: the 'X-Generation' of the late Industrial Age, the 'Y Generation' of the young Digital Age and the two 'M Generations', one the digital teenagers of the new Millennium, improvising as

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entrepreneurs, and the other the over-60s. Above all it is the intellectual support infrastructures that sustain the newborn, innovation-led companies. Unusual scenarios would be explored thanks to the power of dialogue and the beauty to be found in the mingling of individuals of different ages, geographic origins, languages, cultures and religious roots. Examples of this are the Helsinki School of Creative Entrepreneurship and the Helsinki Metropolitan Entrepreneurship Academy.

The ultimate horizon

Since the collapse of Lehman Brothers in America in September 2008 we have been overwhelmed by continuing news of the Great Recession. But these stories have not projected us into the future. For that, we must turn to innovation stories at the frontier between reality and fantasy. In fact, the future of each one of us and of the community in which we live lies in the space between the gravity force of facts, which keeps us with our feet firmly on the ground, and the antigravity force of the imagination, which allows us to leap over the hedge described by the Italian poet Giacomo Leopardi, '*che da tanta parte dell'ultimo orizzonte il guardo esclude*' ('which excludes so much of the distant horizon from view').

The stories told in the pages that follow will take us along the intersecting pathways of innovation, woven inextricably together like the strands in a great spider's web, a web that grows larger and denser as interpersonal and intercultural relationships among those on the pathways grow. As we travel along these routes, we rethink our everyday personal and working lives. The Cuban writer Fernando Ortiz called this phenomenon 'transculturation', denoting a process of mutual influence by which the protagonists of innovation allow their respective cultures to interact.[1]

Note

1 See also: Timothy Brook's work, *Vermeer's Hat: The Seventeenth Century and the Dawn of the Global World*.

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The Stories

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3

Self-Portrait with Thoughts of a Millennial, Youthful Knowledge Nomad

Formica, Piero. *Stories of Innovation for the Millennial Generation: The Lynceus Long View.* New York: Palgrave Macmillan, 2013.
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At the end of a lecture tour at Beihang University School of Management in Beijing, one of the students, a young man from the West, handed me a pen portrait of himself, complete with his thoughts on the Millennial Generation. This is what he wrote.

I am a knowledge worker, one of those people who leave universities and research centres to enter the entrepreneurial world where fertile ground is to be found in intangibles.

I am a young well-educated European with lengthy and varied experience of studying and I have worked in many countries where companies are, from the start, designed to be international. I belong to online communities with no physical or cultural boundaries. Each day I set up and take part in virtual and face-to-face meetings in Internet cafés. I have learned the lessons on knowledge of Jkujiro Nonaka and Hirotaka Takeuchi as set out in *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Therefore, I do not limit my learning to explicit knowledge of the kind that concerns official, codified rules as presented in books and manuals: explicit knowledge is formal and systematic, expressed in words and numbers. Instead, and thanks to my encounters with people very different from myself, I am able to acquire and use tacit knowledge – that mixture of intuitions, perceptions and impressions obtained through the use of metaphors, images and experiences. It is subjective knowledge, not easily perceived or expressed; it resides at a level below awareness and is thus difficult to communicate. I have taken up the challenge, putting on the mental attire of the nomad of knowledge.

In the eighteenth century, Naples was a crossroads of European cultural currents and was an obligatory destination on the Grand Tour for the talented and/or wealthy individuals of the time. It was there that abbot Ferdinando Galiani, an Italian economist, said that value consisted of relationships between people. He had in mind economic value, and more: no less important are the ethical, moral and social values fostered through those relationships. In our present times, on the Grand Tour of the World, in which globalization has – above all – accelerated the international movement of students and neo-entrepreneurs, value is created by the connections woven by globetrotting talent: knowledge nomads, or 'New Argonauts' as they have been termed by AnnaLee Saxenian.

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I am a New Argonaut. I was born in 1986, and I started navigating the international waters of entrepreneurship on board the YEAM, the Young European Avant-garde Minds, a vessel launched in 2006 by a creative European of the Millennial Generation, the Italian-born Nicola Farronato. He was searching for innovative entrepreneurial opportunities at the intersections of business, art and social networks. Since then I have broken down barriers and crossed geographical and cultural boundaries to create value, forming relationships from California to China. Those who preceded me took part, in China, in the long march towards modernity of the Middle Kingdom. Along the way the entrepreneurial troops of the Western world could be seen transferring their manufacturing activities to China. Thereafter, major multinational corporations set up laboratories and research centres there and in India, supported by substantial amounts of venture capital. That is why they are now able to draw from the Asian cultural mix of brains and know-how: technical, in India for the most part, and commercial, in China in particular.

Among my Asian contemporaries are brilliant minds immersed in the circulation of talent. They no longer need to abandon their country for long periods, or indeed forever. Chinese and Indian Millennials plan a stay in the West of no more than five years, compared to the twenty years of their parents. The Indian government encourages this behaviour by conceding dual citizenship to those on the move who travel to America or Europe to learn research techniques. They then return to their native country to transform the know-how they have acquired into ambitious commercial applications. The new oriental shores lapped by the waves of the 'sea of talents' are to be found in: Bangalore, Pune and Hyderabad in India; Chongqing and Zhongguancun in China; and Incheon and Daejeon in South Korea. Then there are the cosmopolitan cities of Mumbai, Shanghai, Beijing and Seoul.

The Western world must come to terms with the geography of innovative entrepreneurship. The era of the draining of talent from oriental lands is gone and I feel I belong to an age characterized by multidirectional movements. Large Western enterprises are setting up research centres and laboratories in India, China and South Korea to meet the needs of the rapidly evolving middle classes equipped with greater purchasing power. And we, youthful Western talent, journey to oriental shores to mix with our Indian, Chinese and South Korean contemporaries.

The location of research and development is more important than decisions concerning the localization of manufacturing activities. At

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Intel, people say it was relatively simple to choose where to establish a production facility; the real skill lay in choosing where to plant the tree of research. Everything depends on the available talent, a more important factor than consumers and government policies. To navigate the innovation currents on the 'sea of talents', agile fleets are needed, of large globally integrated enterprises and small global enterprises for transporting intangible goods. No less important is the movement, to and fro, of knowledge nomads between the various key locations of innovation which, in developing countries alone, depend upon some 400 million members of the global middle-class, and, according to the World Bank, this number is expected to increase to 1.2 billion by 2030.

I am part of the innovation caravan that has started to travel the Silk Road once more. It seems that the rediscovery of the Road occurred, after a century-and–a-half of neglect, when the *North China Herald* published an article entitled 'Notes on the Silk Trade in Shanghai'. Once, long camel and pack-pony caravans set off from Loyang in the north of China, crossing the arid high plains of central Asia towards Iran, Southern Russia and the Middle East. Nowadays, the Silk Road is a network of 'streets of dialogue' whose foundations are in the literature and history of previous great voyages. In the seventeenth century, the Chinese writer Wen Zhenheng published his *Treaty on Superfluous Things*, a text on cultural consumption and good taste. Centuries before that, Marco Polo travelled the Silk Road and reached the China of the Mongol Emperor Khubilai Khan. This was the fabulous Cathay, epitome of wealth and power, which presented the West with a vision of such a revolutionary world that Marco Polo was accused of being an imposter by his contemporaries. It was centuries after Marco Polo, in 1877, that the German geographer and explorer Ferdinand von Richthofen invented the expression 'the Silk Road'. These days, it is we, the knowledge nomads, who trigger a process that conveys lifestyles, values, goods and services from one culture to another. Some 150 years ago the Cuban historian Fernando Ortiz described this process as 'transcultural': we now refer to it as globalization, of which the legendary traveller of the Silk Road, Marco Polo, was a pioneer.

I have seen the Road reopened and adapted to the era of globalization. The new Silk Road will strengthen ties between China and the republics of Central Asia. Together with China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan will be able to weave a dense, articulated

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fabric from petroleum and natural gas, using the renewed Silk Road as the commercial shuttle. The Chinese authorities want to encourage the flow of innovative projects to and from their country along this Road, acknowledging and accepting the '5 Rs' (recycling, reuse, reduction, restoration and rethinking) of natural resources, with the objective of widespread sustainable development across the whole of Central Asia. Other knowledge nomads will move through these projects: young Chinese and Central Asians who see the emerging opportunities to create sustainable businesses as the means of realizing their professional aspirations. Multiple visas for different destinations will encourage new ventures, including tourism along the Silk Road. Commercial exchanges and the flow of talent will increasingly go hand-in-hand. I have decided to keep a careful watch on what happens on and to the Silk Road in its role as the rediscovered path to competitiveness.

For this reason I have chosen Beijing as my home. I have done so because I want to contribute to the success of innovative and entrepreneurial Millennials in China. For a West capable of coming to terms with the changes taking place throughout Asia and becoming a complementary player in the process, such individuals do not, I believe, represent a threat. Being complementary means understanding that we in the West will not be able to retain for ourselves the intellectual power and the management of research and business while relegating the tasks of production and manufacture to developing countries. We are entering an era of transnational communities in which the 'knowledge of others' will help West and East to understand each other and dance together thanks to physical, social and digital mobility. Innovation will act as a magnet, attracting one to the other. The interweaving of knowledge and its organization in entrepreneurial and social networks, which transcend geographical, cultural, religious and ethnic barriers, will help us learn how to exploit differences, creating advantages for everyone. Difference, after all, is the key to capitalism.

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4

An Italian Millennial Fleeing His Country

Formica, Piero. *Stories of Innovation for the Millennial Generation: The Lynceus Long View.* New York: Palgrave Macmillan, 2013.
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Monastic schools sowed the seeds of the medieval university and Italy was at the forefront of that development: the Alma Mater Studiorum of Bologna was its cradle of higher education. Centuries later, the Prussian Wilhelm von Humboldt created the modern university where the new physical and natural sciences were mastered alongside the classics. In the 1950s Peter Drucker introduced the concept of managerial science, thereby bestowing upon us the business school. At the dawn of the twenty-first century a new academic structure began to take shape, in which scientific discoveries existed in symbiosis with high-growth enterprises. My country, Italy, adhering to the Humboldtian ideal of a university, was extremely slow to embrace managerial schools and it continues to lack truly entrepreneurial universities. This inadequacy forced me to leave my native country and I now find myself in Ireland, a nation bursting with entrepreneurial energy, where I participate in an experimental laboratory of start-ups with high expectations and strong potential for growth. This is where innovative entrepreneurs are moulded: this is what I dream of becoming.

David in the land of Goliath

I feel as if I am David in the land of a new Goliath, a giant marble statue sculpted by monopolists and corporations, hybrids of the political and economic systems and protected by public funding. They take many forms, such as public transport, public utilities, the large-scale retail trade and companies that govern the nerve centres of everyday life, from trade fairs to air transport.

I, David, am the child of parents who dreamed of becoming entrepreneurs and who were eager to find a way to harvest the fruit hanging from the trees of the great orchard of innovation. Now that I am an adult, I am trying to transform their dreams into reality.

But Goliath is threatening, casting a shadow of tyranny that seeks to stifle new entrepreneurial ideas and innovations that would erode the boundaries of the *status quo*. Hiding in the shadows are the few heroes of revolutionary entrepreneurism, riding on the waves of innovation – from digital technologies to life science – that are changing everyday life.

Goliath's creators obstruct innovation and stifle competition. Those monopolies and corporations do not supply the financial, entrepreneurial or managerial resources needed to increase the birth rate of new

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knowledge enterprises, to reduce the infant mortality of those founded in the wild or even to fuel the growth of those that survive.

What would encourage me would be to meet people who are more interested in the opportunities innovation offers than the dangers it poses, for opportunities that are exploited prevent an otherwise irreversible decline. But the shadow of Goliath obscures opportunity. Goliath is my problem.

Forced flight

Enterprises such as Westinghouse and General Electric strengthened the American higher education infrastructure with the introduction of management culture and practice, helping individual universities to achieve worldwide academic excellence. In Italy the university world has largely failed to react, ignoring or reacting with hostility to the words and works of enlightened entrepreneurs like Adriano Olivetti. This is a severe handicap for a country deeply imbued with the culture of the small business owner with little formal education, characterized by family enterprises. These businesses are now becoming overwhelmed by high-growth companies in emerging economies that are developing international markets for their goods and services.

The delays of the past are paid for with inadequacies in the present. I was educated at a first-class university and my professors guided me towards postgraduate managerial studies so that I would be trained in the rapidly expanding world of business case studies. This is how my generation was trained: looking in the rear mirror – observing and analysing things that had already happened. We learned what we knew we did not know, but this approach ignores what lies ahead and the uncertainty in exploring unknown, dark spaces. There was no thought of creating, for example, business laboratories to simulate and experiment with new entrepreneurial ideas, to balance the emphasis on case studies. So, as you will understand, I had no choice but to flee.

In the Irish garden of entrepreneurship

I now find myself in a university campus laboratory just outside Dublin. I call it a 'garden of entrepreneurship' in which start-ups with high

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expectations of growth are cultivated: plants from seeds that are different from those sown by the entrepreneurs who manage companies that remain small due to isolation and the inability to grow through networking. These start-ups provide employment and productivity. In the USA, they account for twice the percentage of new companies compared to Europe and Japan. The cause of this difference lies in the organization of postgraduate studies. In Italy, for example, doctorate programmes are tailored to suit the training needs of new university researchers and lecturers. Candidates are required to prepare a thesis, certainly not to create an enterprise. The provision of business doctorates alongside research doctorates would surely open the door for setting up companies such as Hewlett-Packard and Google in the IT and media businesses and Genentech and Amgen in cellular and molecular biology. However, such a goal is as ambitious as it is distant.

The laboratory–garden that hosts me is the first of its kind to be established in Ireland. Its programme includes business doctorates based on diagnostics and, most importantly, therapies for entrepreneurial initiatives that one would like to implement. In the laboratory we, doctorate students, are experimenting with highly innovative approaches for the creation of economic value. The therapies are clinically tested through interaction with private and public organizations and with potential clients. Thus the experiences of medical schools, where the impact of different learning models becomes integral to study and research, have been imported into the field of entrepreneurship.

The presence of talent from various countries in the laboratory facilitates the creation of international start-ups. It is likely that by 2020 some 80% of middle-class consumers will be living in countries that are not industrialized and so entrepreneurs have no choice but to explore the whole range of world markets. Companies set up by entrepreneurs from different geo-economic areas will be at an advantage because they will be able to rely on both the benefits of localization and the opportunities offered by globalization.

The road that would take me back home

The formation of entrepreneurs in the knowledge economy occurs through the interaction between research activities in scientific laboratories and experimental activities in business laboratories. Established

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multinational corporations that mutate into entrepreneurial constellations invest in human and financial capital to create such laboratories within faculties of business economics and social sciences. This is what Intel has done with its Innovation Value Institute at the National University of Ireland.

Ireland plays the innovative entrepreneurship game across the board. Italy will enter the game once its academic bodies have become familiar with the new activities of simulation and experimentation as they relate to rapidly evolving markets.

The road that would take me home would be paved with investments in the experience economy. Then I too would be able to contribute by founding a start-up that would be conceived globally: it would be co-founded with two of my colleagues – one from Bangalore, the other from San Francisco – who have worked with me in the experimentation laboratory. Thus I would be able to harvest in Italy the fruits of these new globally integrated enterprises, provided that growth were not jeopardized by lack of water (venture capital) and the newly sprouted plants were not trodden down by excessive bureaucracy and high rates of taxation.

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5
Innovation: A Disquieting Muse

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Innovation is a muse admired by some, loathed by others, deceived by many, disquieting for all. Her enigmatic character provokes disturbance, anxiety and discomfort amongst the champions of the status quo: the same agitation as we ourselves may feel when we look at the metaphysical strangeness of Giorgio de Chirico's 1916 painting 'The Disquieting Muses'.

Here the Muse of Innovation reflects on the long period of the Great Recession that began in the second half of the first decade of the twenty-first century.

Many are those who court me, hoping that with my help they will improve their performance. Among them are the most famous and celebrated entrepreneurs. And so I am welcomed, for example, in Maranello, near Modena in Italy, where Ferrari was founded – seeking to make faster, more reliable products offering more choice to consumers. Sometimes – not often – I am approached by explorers of unknown lands, those who open up new paths with revolutionary effects on the market, founding enterprises that exploit the new culture of the knowledge economy.

Until recently these entrepreneur–explorer companions were guided by intuition and imagination, not restricted by formal, standardized education and codified research. But, now, we need to chart a different course if we are to travel into unexplored regions. The increasing complexity of the environment and cumulative nature of knowledge and information technology demand that entrepreneur–explorers continually recognize that they will need training in exploration itself if they are to meet the challenge of what lies ahead. Alas, I am surrounded by many seemingly seductive explorers who, in reality, are no more than managers who follow well-trodden paths equipped with tools handed out by business schools.

I am surrounded too by a crowd of admirers hoping to obtain tax reductions and incentives from the government. Sadly, experience has taught me that these measures benefit only the incumbents. They do little to lighten the heavy burden of taxation and other charges that rests on the shoulders of the entrepreneur–explorers, the founders of new, highly innovative and high-risk enterprises. The burden of these taxes poses a major threat to the start-up and continuing existence of such businesses.

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How to read the book of the Great Recession

In the long years of the Great Recession I grew more disquieting than ever. As we celebrated the bicentenary of the birth of Charles Darwin and the 150th anniversary of his masterpiece, *On the Origin of the Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, first published in 1859, the economic and social climate was akin to the coldest and driest seasonal extremes that the great English biologist considered the most effective means of controlling the numbers of living species. Individuals, communities and enterprises needed to prove that they were open to the changes provoked by the creative storm of the Great Recession before they could take shelter from the heavy rains of the crisis beneath a Darwinian umbrella.

According to informed speculation, at the time of the origin of the human species in Africa, 8 million years ago, a geological rift occurred that separated the forest from the savanna. The strong 'apes' remained in the forest: so-called man migrated to the savanna. There were no trees in the savanna, just open space, which meant it was necessary to stand, to be erect and to look ahead, to anticipate dangers and avoid traps. At the time of the Great Recession I was invoked by many who were afraid of being lost in the forest of the crisis and who wanted me to free them from their past knowledge which had brought them safety and, to a limited extent, prosperity. I made them cultivate the qualities of adaptability, often much more effective than physical strength and intelligence. It is not the supposed nobility of strength and intelligence of (now endangered) species such as the eagle or the bear that should be emulated; rather, it should be the ability to adapt, so aptly displayed by little creatures such as the beetle.

The trajectory of the Great Recession is different from that of previous events. I ask you: will you be able to adapt through an ordered modification of your behaviour? Will your desire to escape from the forest of crisis be strong enough to make you climb high enough to see the distant clear spaces of new opportunities otherwise hidden by the dense undergrowth of the forest? Remember that Darwin's thinking clashed with that of another great biologist and naturalist, Jean-Baptiste Lamarck. Unlike Darwin, Lamarck believed that living things evolved in a continuously upward direction, from dead matter, through simple to more complex forms, towards human 'perfection'. Darwin, in contrast, proposed a process of selection regulated by chance. So, do you consider

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yourself Lamarckian or Darwinian? Do you want to be able to determine your future? Do you like the prospect of being able consciously to devise winning plans so that you will not be suffocated by everyday aspects of the crisis? And yet, how many entrepreneurs and company managers have had to admit in the end that their plans were defeated by casual events, by fortune or misfortune, by omens or by blind panic?

Heraclitus from Ephesus, the pre-Socratic Greek philosopher, said that nothing is permanent apart from change. In biological systems, evolution occurs over long periods, longer than the average life span of the single organism. Social and economic systems, on the other hand, undergo continuous modification during their lifetimes. The current crisis will trigger mutations in our ways of producing, working and consuming. So, in accordance with Darwin, I ask you to question the role of chaos, which changes the state of the real world. Equally, I urge you to learn the games of reciprocity and thus of cooperative behaviour to avoid a head-to-head fight for survival. The supremacy of the strongest will fail against the adaptability of those who cooperate successfully with others. The first condition for your success is the success of your antagonist.

Your younger generation should be the pioneers for excellence in the post-crisis world, emulating Darwin who, at the age of 22, set off on his five-year journey of exploration around the world aboard *HMS Beagle*, to discover the secrets of a changing world.

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6

A Voyage to Innoland, Island of Innovation: Tales of a Modern Gulliver

Formica, Piero. *Stories of Innovation for the Millennial Generation: The Lynceus Long View.* New York: Palgrave Macmillan, 2013.
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A VOYAGE TO INNOLAND
ISLAND OF INNOVATION
tales of a MODERN GULLIVER

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Sailing in uncharted waters can result in accidental discoveries. Cast ashore on an unknown land, our modern Gulliver discovers a highly innovative civilization. This is his story of his journey, reflecting as it does his strength of will, his abiding curiosity and his willingness and ability to interact with strangers.

The Author gives an account of his first inducements to travel. He is shipwrecked and arrives safe in the Country of Innoland.

Many people claim to be familiar with Innoland – the land of innovation. Indeed, the maps of Europe are replete with sites called 'Innoland'. But, I pondered, these 'Innolands' are, despite their pretensions to innovation and change, in reality governed by rigid and unchanging systems. Thus it was that I determined to make a voyage, to see if I could discover an economy capable of recognizing the demands of the marketplace and able to adapt quickly to change – these would surely be the true features of a genuine Innoland.

I set sail from London and was driven by a violent storm, a frequent occurrence in the raging seas of innovation, to the South-East, finding myself at last on the shore of an unknown island. It was to become apparent that this island represented the quintessence of the challenges, of considerable magnitude, with which contemporary societies are currently confronted. This island, to which the stormy seas of innovation had carried me, was in fact the real Innoland that I had set my heart on discovering.

The Country is run by gentle revolutionaries who create, and think creatively, to promote the commercialization of innovation and know-how. They found entrepreneurial universities for this purpose.

The first sign of inhabitants I discovered was a group of young people playing with balloons of different colours. They explained to me that each balloon represented a type of knowledge translated into innovation. Innovation, they argued, is not about contrivances or artifices that replace the substantial funds of intelligence and creativity human beings can use.

Later, I was informed by government officials that the Country was embarking on a major effort to change the school curriculum. The *gentle revolution* (as it was called) sought to '… sharpen the ability of

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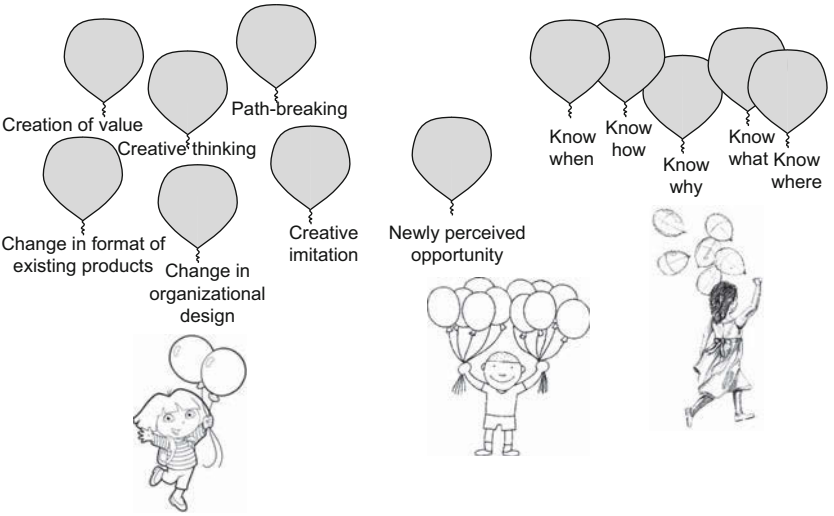

FIGURE 6.1 *Commercialization of innovation and the knows*

pupils, not to memorize and regurgitate, but to think for themselves'. Instead of amassing facts and figures in school, they should '… learn how to prioritize information, generate new ideas and apply them quickly'. A pilot scheme, involving secondary schools and tertiary-level colleges and universities had already provided for 'thinking skills' lessons to be held once a week. It was easy to see the parallels here with the innovation policy introduced and endorsed by the government of Singapore.

From the tree of this gentle revolution the fruits of entrepreneurial universities, whose purpose was to function as leading companies in the knowledge industry, were beginning to ripen. In showing me one of these universities in action, the Rector brought to my particular attention the experimental laboratories for testing ideas and innovative start-ups initiated by professors, researchers, and graduate and undergraduate students in collaboration with industrial partners and international investors. These laboratories added business value to the academic studies and research conducted at the entrepreneurial university. What struck me most was the start-up phase of the trial that the Rector illustrated with a diagram similar to the one pictured here.

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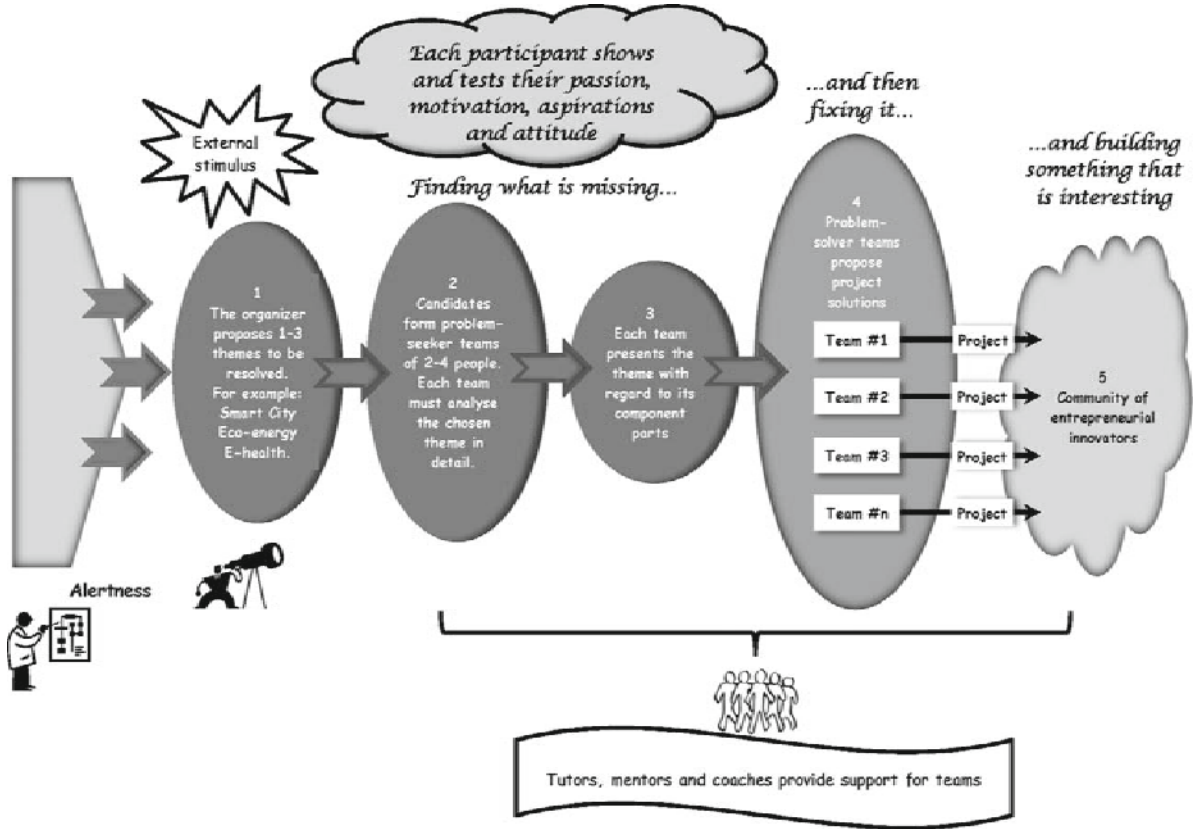

FIGURE 6.2 *Developing a community of entreprenurial innovators*

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Thanks to the entrepreneurial universities, Innoland entered the market for international talent, attracting teachers and students from many different places, recording more and more students enrolled in higher education and witnessing the birth and development of many academic spin-offs. I was happy to acknowledge the Innolanders' ability to accomplish that which, in Western, and mostly European countries, remains but wishful thinking: radical proposals and action for the restructuring and realignment of universities.

An account of their learning – the oneness of mind and body. The manner in which the work environment is designed for organizational knowledge creation.

I was later impressed by the Innolanders' aptitude to learn with both the mind and the body – that is, from direct experience and from trial and error as well as from rather more formal and systematic procedures and processes. I therefore came to the conclusion that, to the Innolanders, knowledge is perceived as a blend of explicit and tacit attributes, that is, intuitions, insights and hunches. In doing so, and to paraphrase the seminal work of Ikujiro Nonaka and Tokyo Hirotaka Takeuchi (*The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*), I was obliged to accept the extent to which creativity was lost by Western civilization in replacing knowledge that is tacit – that is, not easily perceived or expressed – with that which is explicit – that is, is articulated in words and numbers, as part of its process of development.

I observed that the Innolanders were concerned more with how researchers interacted than merely with how they worked. They have given work teams a primary role; notably, inventive teams in which researchers, business strategists and patent experts are brought together. As a result of hard work and concerted action between team members – which provided for dialogue and discussion, conflict and disagreement, and questioning of the *status quo* – the Innolanders were experimenting with the transformation of personal and tacit knowledge into organizational knowledge. Indeed, many Innoland companies had already been successful in creating organizational knowledge and applying it as '…a means of breaking away from the past and moving into new and untried territories of opportunity', as Nonaka and Takeuchi have expressed it.

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The creation of organizational knowledge has resulted in Innoland becoming a nation of continuous innovation and one endowed with commercially valuable technology, a state of affairs scarcely to be imagined by we Europeans.

The Innolanders' great improvements in the knowledge economy. Their method of commercializing innovation and know-how.

In the past the success of the Innoland economy had been based on making things and, therefore, its main trade activity had been exporting and importing 'atoms' – that is, physical objects. Producing more hardware than software, more machines and apparel than information, Innoland companies had survived on the basis of the efficiency and effectiveness of their carriers in delivering these 'atoms'. But, at the time of my visit, they had moved beyond the industrial age and had entered a new era of information. Innoland has become dependent on ideas-based businesses, that is, on 'bit-based' activities such as design, marketing, finance and the commercialization of innovation.

I was amazed to note the skills of the Innolanders in the knowledge process, which enable them to assign meaning to data and thereby generate information to sell in the marketplace. In doing so they are aware of the substantial opportunities offered by this new age of information.

From my diary, written during what was, at first, a reluctant and unavoidable visit (later to become one of great pleasure), I note the following.

First, by trading in bits the Innolanders expect to retain their knowledge. They have a saying that 'Knowledge is not given up in exchange for money in the same way as a cream cake. You can't have your cake and eat it, but you can sell your knowledge and keep it.' This sentiment has, as I recall, been latterly developed by Charles Hampden-Turner and Fons Trompenaars in their book *The Seven Cultures of Capitalism: Value Systems for Creating Wealth in the United States, Japan, Germany, France, Britain, Sweden, and the Netherlands*.

Second, thanks to economic growth driven by the generation of ideas, Innoland is no longer subject to the law of scarcity and diminishing returns. As a businessman there explained (he had been a student of the physicist, economist and academic entrepreneur Paul Romer), their monopoly in the management of knowledge gives Innoland companies the power to charge prices high enough to pay for the – very

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expensive – exploratory phase of a new bit-intensive product or service. Having produced the first unit – for which the price might be 1 million putos (the puto is the local Innoland currency, from the Latin *putare*, which means 'to think' or 'to estimate') – the production cost of subsequent copies progressively decreases until it becomes almost nil. With the price kept at its high level, the company can reap the substantial benefits of the resultant increasing returns.

Third, in their knowledge society previous psychological barriers had been eliminated. Local scientists and researchers had become accustomed to work with industry on applied research, and, from such a process, new ideas were generated. Maintaining that '… applied goals also tackle the basics', they were keen to define themselves as 'Faraday's followers'.[1]

Fourth, the establishment of the Country's international hub for knowledge carriers has effectively eliminated the problem of geographical distance so that the economy has developed as an open system. Innolanders are global traders and this trade represents a very large portion of the Country's gross domestic product. It is knowledge, in a variety of forms, that goes out to the market. The Innolanders have mastered the 'knows map' designed in Utrecht by two geographers of knowledge, Rob van der Speck and André Spijkervet – an illustration of the markets for know-how (selling the knowledge of how information must be processed), know-what (which information is needed), know-why (why specific information is needed), know-where (where information can be located, to achieve a particular result) and know-when (when the required information is needed).

Equally and finally, the Innolanders are highly proficient at creating profit through the commercialization of innovation. They market all manner of innovation, from novel goods and services to incremental changes to existing products. What they call 'commercialization' is the activity of matching innovative solutions with problems identified both in the actual markets (market awareness) and those likely to arise (market forecasting). Their strong reputation in this respect does not result from selling ready-made solutions, but rather from the mastery of tailoring innovation to the current and potential needs of clients.

The outcome, I perceived, was a continuous and increasing flow of wealth into the Country.

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The Author travels up country. A strange sort of river – the 'river of knowledge and information' – is described.

Travelling into the countryside, I came across a river whose non-linear shape was singular and unusual, flowing as it did through both time and space. I realized it was a river of information embedded in the knowledge industry I have already described. This river flows through individuals and companies: it influences and is influenced by them.

The information the river supplies is carried through a network of pipes and conduits, so that the information flow is continuous, rich, rapid, free and reciprocal. I had to acknowledge that this infrastructure for information was far more advanced than the 'water-well' architecture so common in my own country; think, for example, of our 'industrial districts', where, through geographical proximity, many independent small firms are locked into a set of operations for manufacturing a specific product. As the reader will know, those who own information behave as if they were the owners of these 'wells'. The only information available is therefore that which the owner of the well is prepared to supply. Such a policy of restricted and opportunistic disclosure of information fosters a climate of uncertainty in customer–supplier relationships.

Watching a game played on a meadow of the information river I saw that Innolanders liked to cooperate. As I remarked to the businessman who sat next to me in the stadium, 'In Innoland what really matters is the *club*'s score, although my own scores might count.' Even competitors share information. My new acquaintance told me that it was a common habit among entrepreneurs in Innoland to provide information about the financial status of potential clients and, when they were unable to solve clients' problems, to disclose the names of competitors who could do so.

It then occurred to me that many entrepreneurs of my acquaintance play a shooting game – 'one shot only: if I win, you lose'. The predominance of the individual precludes companies from overcoming the reluctance to open their business to outsiders – and competitors in particular – and so they cannot accept the idea of sharing experiences with them.

In Trustopolis, capital of Innoland. The spontaneous sociability of the inhabitants; and their notion of trust.

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Having travelled about one hundred miles, I came to Trustopolis – the Capital City of Innoland. I noted that the river of information flowed into Trustopolis faster than in the rest of the Country. I heard that the speed of information, as well as its transparency, was the result of a lasting, public campaign to spread and promote the correct use of language amongst the inhabitants of the City.

The Innolanders were no longer willing to receive information that left them worse off than if they were ignorant. They did not want to hear that something was black when it was white, or short when it was long. However, I found them ready to accept that there might be statements which appeared to be simultaneously true and false: in brief, that 'A' and its opposite, 'not-A', could coexist. This logic, which has Buddhist roots and is defined in the Country as 'multivalent' or 'fuzzy', in contrast to Aristotle's 'bivalent' logic, has been rejected by many Western scientists as wrong and pernicious, despite the number of innovations originating from it.

Having lived happily in Trustopolis now for some three years, I can offer the reader the reason for the success of the campaign: I ascribe it to the perseverance of the local government in encouraging the formation of social capital – an experiment subsequently extended to the entire Country which, as a result, is now a 'high-trust society'. The underlying assumption is that social capital, '…the ability of people to work together for common purposes in groups and organizations', is a key factor of endogenous growth together with human capital, knowledge, infrastructures, physical capital and production. Thus, local policymakers had rearranged Western theories of endogenous growth and added social capital as a further, primary component.

The Author meets a scholar of the Institute of Complexity. His description of the Innoland economy as an evolving, collectively autocatalytic system. The conversation returns to the subject of entrepreneurial universities.

The Institute of Complexity is the country's most influential institution, where economists, physical and biological scientists come together to discuss the laws of complexity. The conversations I had with them were very stimulating. Referring specifically to the models of Stuart Alan Kauffman, an American biologist, an eminent member of the Institute, had sketched what he termed 'a collectively autocatalytic system…one in which' – to repeat here the words taken from Kauffman's book

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(*At Home in the Universe: The Search for Laws of Self-Organizing and Complexity*) – 'the molecules speed up the very reactions by which they themselves are formed: A makes B; B makes C; C makes again A. Now imagine a whole network of these self-propelling loops. Given a supply of food molecules, the network will be able to constantly re-create itself'. As another scientist at the Institute stated, the Innoland economy is itself a set of autocatalytic, self-sustaining and self-reinforcing networks of activities.

The entrepreneurial universities, it was noted, are the food molecules for the formation of the twenty-first-century autocatalytic networks. Ploughing new fields of entrepreneurship, these universities are eradicating those stubborn and inflexible attitudes that have promoted vocations which in the past have been obstacles to innovation. To innovate, the Innolanders recognized that they needed to escape from dependence on previous successes. The entrepreneurial universities encourage the adoption of policies to diversify the economy through the creation of innovative companies in emerging sectors.

The Author takes his leave of the reader.

At the time of my departure from Innoland, I heard about a 'regionalization programme' – a new initiative of the Innolanders eager to extend and expand their economic zone beyond the physical confines of the island and into emergent nations.

The Innolanders are determined to put into practice what they proclaim about knowledge – '*The more I give you, the more I have*' – and about innovation – '*The more you change, the more you have to change*.'

I could, with great pleasure, enlarge further upon the manners and virtues of this excellent nation and its people. But I am aware that I may well be censured for having detained you too long. Thus, gentle reader, I conclude.

Note

1 Michael Faraday was born in London, into a relatively poor family, on 22 September 1791. Largely self-educated, in 1813 he was given the job of chemical assistant at the Royal Institution by Sir Humphrey Davy, a critical turning point in Faraday's career. In 1821 he published his work on electromagnetic rotation (the principle behind the electric motor) and, in

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1831, discovered electromagnetic induction, the principle behind the electric transformer and generator. This discovery was crucial in allowing electricity to be transformed from a curiosity into a powerful new technology. Faraday's scientific knowledge was harnessed for practical use through various official appointments, including scientific adviser to Trinity House and Professor of Chemistry at the Royal Military Academy in Woolwich. See also: http://www.bbc.co.uk/history/historic_figures/faraday_michael.shtml.

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7

In Praise of the Black Sheep: The Country that I Would Like

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> 'It must be horrid to be a man,' said the Black Sheep, 'and not to have any wool grow on you at all. I'm sorry for that little boy that lives down the lane, for he will never be able to keep warm unless we give him some of our wool.' When the farmer came to the field again, the Black Sheep said to him, 'Master, how many bags of wool did you cut from my back?' 'Two bags full,' replied the farmer, 'and it was very nice wool indeed.' 'If I grow three bags full the next time, may I have one bag for myself?' asked the sheep. 'Why, what could you do with a bag of wool?' asked the farmer. 'I want to give it to the little boy that lives down the lane. He is very poor and needs a new coat.' 'Very well,' answered the farmer, 'if you can grow three bags full I will give one to the little boy.'
>
> (*The Black Sheep*, by Lyman Frank Baum).

Black sheep make a difference thanks to their generous and unconventional ideas. A friend of mine is a black sheep and he once let me read a long entry in his diary about 'The country I would like'. Here are a few extracts.

I am a black sheep – by which I mean an employee who is chased out of the pen of white sheep because of her unconventional ideas. The white sheep are the ones that live comfortably in the shade of the tree of habit, the ones who say 'but we've always done things this way in this company'. By encouraging open debate and allowing for the creativity of the black sheep, companies can navigate the waters of the Ocean of Innovation without suffering the fate of the supposedly unsinkable *RMS Titanic*; this ship, I would suggest, sank not just because it collided with an iceberg, but because also of titanic thinking imbued with arrogance. (Brad Bird, a highly talented animator, director and producer with Pixar, has a lot to teach us on this subject.)

I imagine a country in which the majority of companies regard globalization as an opportunity to exploit areas of excellence in various parts of the world rather than being principally concerned with low labour costs – yesterday in China, tomorrow in Vietnam. There is much to learn from a company such as Whirlpool which decided to locate its manufacturing plant in Germany despite the fact that labour costs were higher there than in the United States.

I dream of a country which is no longer ruled by the cult of the 'self-made' entrepreneur, a person with practical skills but little formal education, who is surrounded by equally practical managers and employees. The cult of 'practice' has resulted in a seemingly insurmountable barrier

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being raised with regard to the recruitment of graduates and talented, highly educated individuals. The practical person must come to terms with the fact that rapidly changing social mobility has already created a new generation of entrepreneurs who have studied in scientific laboratories and business schools. These entrepreneurs extract commercial value in innovative sectors from creative ideas hatched in university classrooms and research centres. The more succession in business takes place by departing from the culture of the practical person, the longer will be the future of family-run companies. These latter include many that need practical experience in conjunction with exposure in depth and at length to related theories and the acquisition of skills through familiarity with new disciplines.

I envisage a country where enterprises no longer act with the mindset of someone who, having only a hammer, treats all problems as if they were nails. The pace of business is significantly slowed by the 'nails' of 'take-and-run' and 'short-term' deals which have acted as the metronome in investment decisions. I would like to see more entrepreneurial companies that take deep breaths, aware that company value is determined by long-term performance. It is the short-term view that suffocates so many innovative projects, discourages leadership for change, tramples on investment in human capital and, last but not least, encourages financial gymnastics at the expense of the industrial core of the company and its good governance.

I dream of a country in which the government adopts policies which attract talented individuals and promote the circulation of intelligence and know-how, fostering a border-free environment for new talent from across the globe.

This is the world I would like.

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8

War and Peace: Destructive Creativity and Creative Destruction

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> *Creativity is an act of rebellion in the service of good, but also of evil. We see the good in the creative destruction that sweeps away the stagnant smell of the old and brings the scent of novelty: new markets, new consumers, new goods and services, new methods of organization, production and transport. The evil is manifest in the destructive creativity of war.*

During the three days in September 2009 of the Festival of the Mind in Sarzana, Italy, Alessandro Barbero, Professor of Medieval History at the University of Eastern Piemonte, presented a dissertation on the destructive creativity of war, as illustrated by three great battles: Campaldino (1289), Lepanto (1571) and Waterloo (1815). In Barbero's thesis these historical events represent the tragedy of destructive force, an explosion of violence intended to achieve the annihilation of the opponent. 'I win, you lose' is both the temptation and the intention of the serpent that is the competition between the warring enemies.

Cooperation and games of reciprocity, designed to result in all participants 'winning', find their ideal home in the world of perpetual peace that Kant elaborated in 1795. Nevertheless, in Barbero's presentations of the three battles, *conflict* is introduced as the principal driving force that shuffles the playing cards, reinvigorating environments that were stagnating. The evil of destructive creativity is replaced by the good of creative destruction, which takes different forms in different periods of history.

At the time of the battle of Campaldino, when the Italian municipal world was a complete novelty in medieval society, entrepreneurs fought alongside noblemen. At that time, Barbero says, the respect of the people was given to the military aristocracy. The knights were the stars of that world and the theatres of war were the media of the time, which the entrepreneurs exploited to invest in image, assigning their profits to expensive military equipment rather than to innovation. When the battle took place, let us remind ourselves, neither the formula for gunpowder, refined in 1249 by Roger Bacon, nor the first spectacles, invented in 1286, had appeared. Barbero recognizes the creative destruction of the winners, the Guelfi, in the harmonious blending of the interests of the ideological authority of the papacy, French imperial power and the money of Florentine bankers.

At the battle of Lepanto (7 October 1571) a Christian fleet triumphed over the Turks. In this last major sea battle fought with boats propelled

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by oars, the Arsenal of Venice – an advanced factory that anticipated by several centuries the production-line method of manufacture – provided the Venetians with the opportunity to test their *galeasses* (galleons evolved from oar-driven galleys) in the waters of the Gulf of Patrasso. These *galeasses* were different from traditional galleys: they carried large-calibre cannons. However, following the battle of Lepanto, it was not the Venetian Arsenal that led the race to innovate. Situated as Venice is, overlooking the shores of the *Mare Nostrum*, Barbero notes that the galley remained for a long time the favourite vessel of Venetian navigators. The creative destruction represented by the galleon was to be exploited in full by the countries of the Atlantic coast, including Spain, allied to Venice at the time of Lepanto. To innovate, you have to be in the right place at the right time. Venice was disadvantaged, because of its geographical location at the northern extremity of the Adriatic Sea, with respect to the new trading routes. Many years were to pass before the sun would be seen setting on shipping traffic on the Venetian horizon.

How Venetian traders fixed their gaze on the horizon

> A separate circle, the horizon marks the '*finis terrae*' – the end of the earth. It is the limit of our sight. Within that boundary we sail to charted lands.
>
> The ambition of Venetian traders for rapid growth had an impact on their entrepreneurial paths to success. Previous economic outcomes were of such resilience and self-reinforced existing custom and practice that highly motivated entrepreneurs chose not to move away from traditional ways. Established practices and preferences continued to prevail over exploration and speculation. Once circumstances had dramatically changed, however, resilience and the self-reinforcing effects that previously drove companies onwards were dissipated. Achievement of superior results depended on the pursuit of opportunity beyond resources under current control. Ambitious traders had to deviate from the preferences, practices and sets of decisions in which they were embedded. The search for alternative paths was essential for survival; but Venetian traders did not seem to have the necessary energy and drive to create new paths.

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In 'path dependency' mode, these traders benefited from what they already knew. Exploitation required them to play the game of incremental innovation by focusing intensely on the tasks that need to be mastered in order to optimize performance and efficiency. Venetian traders placed the horizon – that is, the line beyond which their companies were doomed to fail – far from their perceived position. The stronger the assumption that the future will function much as today, the greater is the 'gravitational force' of three innovation zones – breakthrough, game-changer and disruptive[1] – which can make escape from the point of no return impossible. Businesses set in their ways slow down and never strive for horizons new. They are doomed to die.

Path creation, in contrast, is a mode that generates new sources of knowledge. Entrepreneurs escape the 'current success' syndrome and explore new ways and means for the purpose of exploiting emerging technologies and business models. They see the big picture by looking at things from an unbiased 'third person' point of view. This perspective helps them promote unconventional ways of thinking and of solving problems and challenging the *status quo*. Ultimately, they see when and how the horizon line moves as they approach it.

It was on 18 June 1815 that the wind of the Industrial Revolution blew across the terrain of Waterloo. In that battle, Barbero argues, the process of rallying the troops was like a gear in a large machine in which nothing was left to chance. Nevertheless, Wellington and his allies defeated Napoleon by exploiting the power of accidental events, taking advantage of the news of the defeat of the French forces at Ligny two days before. The whole of the nineteenth century, and also a good part of the twentieth century, was to pass before a key element in the force of creative destruction would be recognized as the skill of the explorer who, in a forest of ideas, encounters something not deliberately sought but then immediately perceives and acknowledges its meaning and importance. In our present times, so burdened still with conflicts and war, the battles of Campaldino, Lepanto and Waterloo continue to lead us to question the inevitability of the interaction of the destructive creativity of war and the creative destruction of peace.

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Note

1 See Jim Kalback's *Clarifying Innovation: Four Zones of Innovation,* (http://experiencinginformation.wordpress.com/tag/disruptive-innovation/). Specifically: 'Incremental innovations [which] involve modest changes to existing products and services. These are enhancements that keep a business competitive, such as new product features and service improvements. Incremental innovations help keep a company in the game and provide short-term revenue. Breakthrough innovation [which] refers to large technological advances that propel an existing product or service ahead of competitors. This is often the result of research and development labs (R&D), who are striving for the next patentable formula, device and technology. Disruptive innovation, a term coined by Clayton Christensen, usually entail[s] a change in a business model . . . Game-changing innovation [which] transform[s] markets and even society. They introduce new product categories, for instance, which can ensure long-term success for a business. These innovations have a radical impact on how humans act, think and feel in some way.'

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9

Three Visitors in the Emerald City

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THREE VISITORS IN THE EMERALD CITY

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One day, three foreigners arrive in the Emerald City. Their intention is to be received by the Great Wizard, a good and wise governor, in the hope that he would give each of them what they long for but do not possess: courage for the first, a brain for the second and a heart for the third. We shall name them the Cowardly Entrepreneur, the Bureaucratic Scarecrow and the Tinplate Monopolist.

The tale of the Cowardly Entrepreneur

The Cowardly Entrepreneur: Great Wizard, I wish to start new activities, to harvest the bountiful fruits from the trees in the great forest of innovation. But, to do so, I must rid myself of the knowledge that made me a rich man and my company very productive. For this, I implore you to give me the gift of courage. I would like to be as brave as the person who said, 'We must do what others think is crazy. If ordinary people are satisfied with what we are doing, then there must be competitors who are also doing it.'

The Great Wizard of Oz: I will try to give you courage by accompanying you on a visit to my kingdom of Oz and its capital, the Emerald City. You will find there a dynamic community whose companies are growing, conquering new markets and executing international projects: they are also sought by the largest corporations worldwide.

The Cowardly Entrepreneur: No doubt you have in mind leading companies, those that operate as pathfinders in their markets. Do you really think that these might welcome and help me and the other entrepreneurs? It is clear that the success of your kingdom is rooted in tradition, with a sense of duty to preserve what has been achieved. I am fearful that by visiting the Land of Oz, I might reinforce my prejudices about the value of the pessimism of reactionaries who – if I remember correctly what John Maynard Keynes suggested – think that the balance of our economic and social life is too unstable to risk experimenting with something new.

The Great Wizard of Oz: In our land, and especially in its capital city, new generations are breaking with the past. The children of business people leave their family businesses to start new enterprises; innovative entrepreneurs emerge from social classes with no tradition of starting or doing business; the professional demands of the new knowledge economy are attracting well-educated young people.

The Cowardly Entrepreneur: Certainly, young people are a vital part of any society. Tell me, is the population of these individuals increasing or decreasing in the Land of Oz? Are there new businesses able to fill the gaps left by those

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who have failed, and, perhaps, able to increase the rate of entrepreneurial development? The more new companies that are started, the fewer will be the opportunities for those of small-minded attitudes to proclaim that '…the entrepreneur is an adventurous person without scruples who threatens the established, family-based businesses'.

The Great Wizard of Oz: Whilst our younger population has decreased in size, with a smaller number of young people we can develop *ad hoc* initiatives such as those for improving the quality of public education. So, if the number of new companies being started is smaller than in the past, new, highly educated entrepreneurs are emerging who are enthusiastic about gaining international experience – and not simply from a commercial point of view. This will make the move from an industrial-based economy to a knowledge economy – with its industry of content – less traumatic than was the case, for instance, with the move from literal manufacture to the factory system during the Industrial Revolution.

The Cowardly Entrepreneur: The knowledge business is certainly a powerful tool that can be used to topple the scaffolding built with the iron law of the economy of scarcity, the so-called law of scarcity, which deals with the problem of those who have unlimited wants and needs in a world of finite resources. I know that in other kingdoms, in competition with yours, innovation is like a river sustained by many currents: linking successful and new entrepreneurs; the availability of risk capital and start-up funds for new entrepreneurial activities; innovative and trailblazing technological infrastructures for hosting business incubation or start-up phases; and many others. For example, in Holland, the Ministry of Economic Affairs has approved a programme called 'Twinning', an initiative aimed at encouraging entrepreneurship in the developing information and communication technology industry and making available incubator spaces, funding, tutoring and general support for start-up businesses. In doing so, the government seeks to motivate an increasing number of people to invest in these companies. Some 20 successful Dutch and American managers working with new technologies have committed to support the Twinning programme in full, as instructors. Is anything similar taking place here in Oz?

The Great Wizard of Oz: Not yet, but we are moving in that direction. Consensus is important, so we need to eliminate conflict and its sources. Whether affective or cognitive, conflict is always unfortunate and unwelcome. We do accept the view of those who support the supposed benefits of cognitive conflict and regard opposing ideas and controversial opinions as the best routes to success.[1] Given consensus amongst the different protagonists of innovation, we might be able to accelerate our actions and recuperate time that has been lost.

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The Cowardly Entrepreneur: During my visit, I hope I will meet many people more interested in opportunities to be seized rather than the dangers they might meet in the forest of innovation. This would give me some courage. When the balance is in favour of danger, the process of decline cannot be stopped. In such a situation, those who are in a position to generate good news can be reluctant to do so, while those who do want to be positive are prevented from achieving this.

The Great Wizard of Oz: I will show you that in the Land of Oz, and in the Emerald City, innovation is regarded as a necessity. And, to quote from Cardinal de Retz's *Memoirs*, '…whatever is necessary ought not to be reckoned hazardous'. I am sure that at the end of your visit you will be extremely brave!

The Bureaucratic Scarecrow visits the Emerald city

The Bureaucratic Scarecrow: Because I have a head full of straw instead of a brain, people think I am stupid. Great Wizard of Oz, can you give me a brain so that I can do my work?

The Great Wizard of Oz: You will see all aspects of the Emerald City and as a result will acquire knowledge and facts about what constitutes the *polis*. But what you will learn will not be enough. I will offer you the opportunity of knowing people: 'the people you know' are more important than 'knowledge', or what you know. You will come to have a 'democratic' brain, promoting the particular interests of the 'majority'. With such a brain you could use force, climb the pyramidal hierarchy, raise artificial barriers against competitors seeking entry to your markets, and maintain and support privilege on the basis of social status.

The Bureaucratic Scarecrow: I have heard a rumour that the bureaucratic tribe in the Emerald City has given rise to a new species, *homo bureauensis*. Is this true?

The Great Wizard of Oz: It is true and we are very proud of this social invention. *Homo bureauensis* makes rules, but does not make culture; maximizes budgets by avoiding mistakes, but is not entrepreneurial and surviving by mastering the risks; is receptive to the exacting demands of pressure groups but pays no attention to the seemingly impossible wishes of ordinary citizens. *Homo bureauensis* is a master of ambiguity, using vaguely written laws and policies to ensure that the majority of voters are able to identify and agree with his politics. Such a thing would not happen if, on the contrary, his goals were clear and lacking in uncertainties.

Moreover, *homo bureauensis* flees from potential mortal danger because he has obscured the possibility of achieving the objectives of his policies. In this way he nurtures inefficiency which, if it increases, will have the effect of raising

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prices, costs and personal gain, and more such gains result in more power to control, and this is what really counts for him. Do not forget that *homo bureauensis* is successful because he dictates the rules and generates deficit: the more numerous the former, the greater is the latter – and his reputation, too. The ordinary citizen is powerless to protest but, equally, cannot live without the public services that rest in the control of our bureaucrat. The activities of *homo bureauensis* are so important that we offer him a simple but effective incentive to play 'heads or tails' with the toss of a coin: if it ends up heads, he wins; if it is tails, taxpayers pay.

The Bureaucratic Scarecrow: I think that in our Kingdom, democracy has given way to *demarchia*, a form of government dedicated to promoting ideas and opinions to achieve general goals. We have the saying, 'You can't have five wolves and one sheep voting for the menu at lunch: the sheep would always lose!' So, our hierarchy is flat and crisscrossed with competitive networks: it is possible to enter or exit markets without hindrance; political power and that of pressure groups is limited; people's true interests predominate. The effectiveness of public administration is measured by results and not by how much it costs. *Demarchia* generates *eterarchia* with the growth of external relations involved, by means of the Internet, Extranet and Intranet networks, in creating small or medium-sized global communities, exactly as was the case at the time of the Greek *polis*. The market opportunities of distant 'competitors' no longer exist: all markets are regarded as being at the same commercial distance, irrespective of their actual geographical location.

The Great Wizard of Oz: You can only be considered as stupid coming from a society exposed in the way that yours is. In a protected society like ours, market forces have a major influence on the political–economic establishment. *Homo bureauensis* ensures its continuity by maintaining the *status quo* and striving to avoid problems. This absence of problems is a sign of the stagnation necessary to survive. With the brain that I will give you, you will be able to destroy the monster governing your nation: the *Cosmos,* the spontaneous, endogenous order that is self-regulating and that renews itself through metamorphosis and, by giving voice to the ordinary citizens, reduces your power. Once the monster is killed, you could rule with *Taxis*: the constructed, unchanging, exogenous order nurtured by external forces, with laws that you will impose from on high, mediating between the interests of oligarchies and groups supporting the protected society.

The Bureaucratic Scarecrow: Where I live, those who receive public funds also contribute to the costs. Nothing can be done without the consent of the consumer, a consensus that comes from their appreciation of the quality of the intervention. For example, if the public hand helps beekeepers and as a result of that intervention neighbouring orchards thrive, it is the owners of the orchards who pay for this positive external beneficence.

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The Great Wizard of Oz: Here, things are different. To take your example, our *homo bureauensis* would consider the owners of the orchards and the users equally. Income would come from a remote source: the taxpayer. *Homo bureauensis* seeks to manipulate power; so, is it not better to deal with passive subjects than with careful consumers and taxpayers?

The Bureaucratic Scarecrow: But this method does not reflect reality.

The Great Wizard of Oz: Never mind. Remember that you will exist in the space between appearance and reality, as does *homo bureauensis*. After all, we like to behave as if we are following Albert Einstein's saying at the time of the first atomic bomb: 'The bomb has changed everything except for our mindset.' With the brain that I will give you, you will be able to develop ideas according to the principle offered by Ennio Flaiano, which effectively states that 'reality is what we believe it to be'. And if one day you consider introducing changes, you will not modify reality for those acting upon its representation, on image: reality will not change. In this way you will never have to repeat to your children the words of the seventeenth-century statesman Axel de Oxenstiernato to his offspring: 'You will see my son, with how little wisdom it will be possible to rule the world.'

The Tinplate Monopolist visits the Emerald City

The Tinplate Monopolist: Being made of steel, I have no heart; thus I cannot love. If you gave me one, I could nurture good feelings towards those I serve.

The Great Wizard of Oz: I know of no other public administration more generous than that of the Emerald City. Our City Hall takes great care of the public service monopolies that I so much desired. It is sensitive to the influence of organized groups shaping these 'sovereign monopolies'; it is very generous towards its workers; it protects users by setting them free from making difficult choices between competitors offering the same services. If, as has happened on rare occasions, a private company has been awarded a contract to deliver a service, the risks involved have not been the responsibility of the company but rather of the community, despite all the recommendations of the European Union on such matters. I will give you a heart as big as that of the Emerald City's City Hall.

The Tinplate Monopolist: Without a heart, I feel guilty whenever a person, reflecting the views of von Mises,[2] accuses me of being no more than a cog in a vast bureaucratic machine, or when I am accused of not following Confucian precepts which seem to suggest that newly elected public administrators should change titles. For instance, I would have not changed the term 'user' to 'client'; indeed, I would have opposed this change with all the strength of a heartless monopolist.

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So, believing that under my authority the citizen–users have no choice but that of complaining, I remind myself always of George Bernard Shaw's epithet: 'Do not do unto others as you would that they should do unto you. Their tastes may not be the same.' Many other thoughts fill my mind. I keep repeating to myself that perhaps those who suggest that the public purse should concurrently support the supply and demand of services are correct: that company directors and not merely the owners should make markets competitive by changing their organizations, for our citizens will otherwise always be subject to monopolies.

The Great Wizard of Oz: You have produced quite a long list of virtues that produce more mistakes than idleness does vices. When you receive your heart, you will become a passionate defender of public service rules, from which everybody will benefit.

We 'rulers' sell access to markets, receiving in exchange financial contributions for our electoral campaigns, jobs for those who abandon politics and for the unemployed, not to mention the votes of the families of the 'ruled', and even you, my dear Tinplate Monopolist, and all your peers, surrounded by the reassuring atmosphere of the details of administrative processes and procedures. Success in securing your interest – as producers – is the result of our ordinances, similar to those promulgated by Colbert during the *Ancien Régime*.[3] In fact, you – notionally our 'agents' – become more important than us, your 'supervisors'.

But – I say again – the users are happy: by organizing themselves into united minority groups, they transfer the costs of your inefficiencies to the non-united majority. Can you imagine how the world would be spoiled if we had to achieve the consensus of our consumers?

The Tinplate Monopolist: In the capital of my Kingdom, what you might define as distortion of the marketplace has already begun, with a foreign company providing public transport services being allowed to penetrate local markets in competition with the local monopoly supplier.

The Great Wizard of Oz: With your new heart, you will fight with all your might to curtail such activities in your Kingdom – even if the remedy is administered in homeopathic-strength doses – to the extent of agreeing to become a colony of a greater nation. It is no coincidence that on the main entrance door of the Emerald City we have emblazoned our version of a saying of Ralf Dahrendorf, in our view one of the most brilliant intellectuals of the millennium: 'The hare that is Initiative will never reach the hedgehog that is City Hall'.[4]

Notes

1 Cognitive conflict can be regarded as task-oriented disagreement that arises from differences in perspective. Affective conflict, in contrast, is individual-oriented disagreement arising from personal disaffection.

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2 Ludwig von Mises (1881–1973) was an Austrian School libertarian economist prominent during the first half of the twentieth century. In his book *Bureaucracy*, first published in 1944, he mocks Lenin's '…ideal of taking the organization of the government's postal service as the pattern of society's economic organization and of making every man a cog in a vast bureaucratic machine', and goes on to say that such a proposition '…makes it imperative to unmask the inferiority of bureaucratic methods when compared with those of private business. The aim of such a scrutiny is certainly not to disparage the work of tax collectors, customs officers, and patrolmen or to belittle their achievements. But it is necessary to show in what essential respects a steel plant differs from an embassy and a shoe plant from a marriage license bureau, and why it would be mischievous to reorganize a bakery according to the pattern of the post office'.

3 The *Ancien Régime* was the '…political and social system in place in France prior to the French Revolution. Under the regime, everyone was a subject of the king of France as well as a member of an estate and province. All rights and status flowed from the social institutions, divided into three orders: clergy, nobility, and others (the Third Estate). There was no national citizenship.' See also: http://www.britannica.com/EBchecked/topic/23266/ancien-regime.

4 Ralf Gustav, later Lord, Dahrendorf (1929–2009), was a liberal sociologist whose reputation, mindset and loyalties transcended national boundaries. An authority on class divisions in modern society who served as a European Commissioner, he was Director of the London School of Economics from 1974 to 1984, and subsequently Warden of St Antony's College, Oxford. See also: http://www.telegraph.co.uk/news/obituaries/politics-obituaries/5571140/Lord-Dahrendorf.html.

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10

The Expulsion of the Oblomovs: From the Cult of Concealment to the Practice of Innovation

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THE EXPULSION OF OBLOMOV

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This is an account of the special place that innovators' action plans reserve for the rooting out of 'Oblomovs' lodged in public administration. When Ivan Goncharov invented the character of Ilya Ilyitch Oblomov for his eponymous novel, the aristocrats in power in Russia were vigorously resisting reform and their efforts were supported by a large number of Oblomovs whose laziness made them incapable of making decisions, let alone of taking decisive action to bring about change.

What we want to do is to expel the Oblomovs from public administration. Laziness, apathy and the refusal to act have played a large part in slowing the pace of change in society. Because so many fundamental reforms are needed, we welcome the struggle against shirkers in the public sector, but the action to be taken must go far beyond the boundaries defined by these heroes of apathy. An excess of prudence, whether alone or combined with falsehoods, is a vice of no less importance. It is an ancient wrong, dating back to the cult of concealment as practised by courtiers of the Baroque age. It is time for the shirkers to come out of hiding; for excessive caution to be discarded.

So, what is to be done to combat the scourge of concealed conservatism that is cleverly hidden beneath the garments of change? The only way forward is on the path marked by innovation breaking with conservative tradition. It is on this ground that those who govern should act, offering incentives which reward both the search for new ideas and the rebellion of innovative entrepreneurs. Measures must be put in place which reward a new generation, in terms of age and ability and strength, in equal proportions, for challenging and defeating the multi-headed monster that is the *status quo* and for creating new ventures in as-yet undiscovered territories. But, the rate of change will be too slow if the Oblomovs prevail: without rapid change, developing an entrepreneurial economy with an expectation of high rates of growth will be difficult, if not impossible.

There are three conditions if a sustainable, high rate of growth is to be achieved. We need to be rid of the Oblomovs; we need to confound the expectations of the Baroque courtiers; and we need to transfer control to the Renaissance innovators. The 'Oblomov' countries are as children of a lesser God. Their structure of economic growth is not solid enough to withstand the stresses of the pace: its load-bearing walls will start to show inflationary cracks. The potential for growth is slight and diminishing.

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With shrinking salaries and earnings, these Oblomov nations are falling to the bottom of the rankings in terms of everyday satisfaction.

The ultimate goal of many people is not to be rich but to be happy, living well in a conducive social and natural environment. We are not so Jacobin by nature as to expect that the art of governing and human happiness can go hand in glove but we do expect, at the very least, the Oblomovs to be expelled from public temples, the courtiers to be confounded and the Renaissance innovators to be exalted, and that this should become the everyday practice of all those who have been chosen by the electorate to manage public life, safeguarding ethics and ensuring constant improvement of performance in public administration.

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11

In the Kingdom of Zenda: Prisoners of Success

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In the Kingdom of Zenda, scientific foresight and entrepreneurial creativity remain apart. The vocation of manufacturing, the passion for production, of artisans and technicians lies at the heart of this failure to connect. What is missing is entrepreneurial talent, like that of Akio Morita, founder of Sony: someone who can bring foresight and creativity together. We find the Kingdom of Zenda as we travel along the technological corridor of the Via Emilia, the Italian road that follows for much of its length its famous and influential Roman predecessor, whose name it retains.

Scientific clairvoyance and entrepreneurial creativity

Clairvoyance exudes the perfume of science. Pure scientists and researchers yearn to pass between the Pillars of Hercules to the knowledge beyond. Their long-term commitment is to search for answers to scientific problems that seem insoluble.

Creativity in business is sparked by entrepreneurial ingenuity. In a lecture (the first United Kingdom Innovation Lecture) given at the Royal Society in London on 6 February 1992, entitled '"S" does not equal "T" and "T" does not equal "I"', Akio Morita asked, 'What difference does it make how fantastic and innovative your new technology is if you do not have the ability to design a useful, attractive, "user-friendly" product?'

In his view, progress in our knowledge of business is no less relevant than advances in scientific and technological fields.

Creativity in business involves the generation of new ideas that are converted into entrepreneurial activities. In business, Morita states, creativity is also concerned with technology, product planning and marketing. These three types of creativity need to be supported by an established and secure entrepreneurial culture. Once a new idea has been developed, it has to be proven commercially. It is at this point that other factors come into play: the creation of a prototype, the evaluation of the competitive environment, information gathered from potential customers, fine tuning of the concept and the search for industrial partners and financial investors.

A tourist in the Kingdom of Zenda

A tourist named Lean, accomplished as a swordsman and adept at cutting back unwanted stock, arrived one day in the Kingdom of Zenda.

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It happens that Lean is the physical double of prince Flexible, heir to the throne of the Kingdom, who has been kidnapped. With the help of loyalists, Lean thwarts the kidnappers' plan to gain control of the Kingdom.

Once on the throne, Flexible assumes constantly changing forms. Sometimes he appears as Ability to adjust, with Lean, production volumes. On other occasions he impersonates Speedy, changing the production mix of the range of products and models. Taking on the role of Kinesis, he moves production from one site to another. Then, assuming the role of Kronos, he reconfigures production timing.

Together, Flexible and Lean scan the horizon of change – changes in demand, in salaries, in taxes, in transport costs, in exchange rates and so on. As they gaze at the horizon, prosperity and progress appear to be assured. But then, one day, a strong cold wind blows from the coast of China to the Gobi Desert, bringing with it low-cost goods. At the same time, new algorithms of the age of knowledge force many provinces of science to converge to form the business empire of NIBC – Nanotechnologies, Information and communication technologies, Biology and Cognitive sciences.

Our tourist has read about and listened to many business success stories from small-scale entrepreneurs of Zenda who, although not highly educated, have deep knowledge of manufacturing and commerce, gained from experience in workshops and from seeking customers in the street. These are stories that connect the artisan of the production workshop and the sales representative with a suitcase of samples.

The winds of change have swept these stories away: new ones are rare. Very few in Zenda have used the knowledge acquired in university classrooms to set up knowledge-driven, innovative enterprises. The old paternalistic ways are still followed; work goes on according to set routines, with an ageing workforce, in companies established many years ago, and so they remain imprisoned in their fortresses of past success. This is why Zenda is losing contact with the Millennial entrepreneurial generations – highly ambitious young people, motivated to benefit from intangible assets purchased in the international market of higher education. These young people interact with colleagues from many countries and different cultures; in doing so they breathe life into globally conceived companies free of boundaries, with high expectations of achieving rapid, secure, sustainable and scalable growth as a result.

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Raw materials now consist of the ideas generated and flowing in research laboratories, in art and design workshops, in networks woven by young talented individuals inhabiting the digital world. Something is knocking at Zenda's door: it is the need to provide creative education, to instigate and instil in young people the desire for creativity, to provide resources to discover talent, to set up a 'find the talent in you' programme. This is the shock treatment, the injection of stimulant that Zenda's government needs to give to the ailing body of its Kingdom.

In the meantime, the gloom of the economic crisis that has descended on the world has prolonged night in the Kingdom. It will require renewed courage to survive, but that courage seems to be absent – little is being done and on too small a scale. In the meantime, pompous speeches are made on productivity and prosperity, innovation and progress, and on projects to be activated to put the Great Crisis behind us.

On productivity and prosperity, innovation and progress

Productivity and prosperity, innovation and progress: two interrelated pairings and key indicators of the state of a nation. If productivity and innovation are not in good health, prosperity and progress languish. When productivity fails to increase, it is because it is not receiving sufficient impetus from technological changes, innovation and the liberalization of product and labour markets.

Some keen observers argue that productivity and innovation data are too 'soft' and that there is a risk in laying such unstable foundations on which to build seemingly solid structures that are as sophisticated as they are distant from reality. These two pairings of productivity and prosperity and innovation and progress, though subject to qualitative evaluation claiming to be objective, appear to be strongly dependent upon subjective behaviours that coalesce around them: sometimes consensus; at other times, social dissent. It is when consensus prevails, as happened in Italy after the Second World War between the 1950s and the 1960s, that a successful entrepreneurial generation can stride out: in the case of Italy, such a generation conceived, produced and took 'Made in Italy' all over the world.

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On projects

Projects do not always become artefacts and, sadly, their reputation is mixed. Because of the range of possible meanings derived from the Latin roots of the word – which include 'reproach' (*proiectare*), 'expose' and 'throw forward' (*proicere*) – a 'project' is frequently perceived as a displaced fantasy, a means of escaping from the suffocating grip of routine.

It is the fashion in Zenda to consult the journal of the siege of Montalcino (1553) in which, on the subject of projects, we read this definition: 'Idea, proposal which may be vague, bizarre or difficult to realize'. Sceptics often refer to the question posed by Giovanni Papini, an Italian journalist and essayist, in *The Tragic Everyday*: 'Is a project not the tea, the coffee, the opium, the hashish of life? Is it not the substitute, the surrogate, the down-payment of reality?'

Some reasonable people, motivated by good intentions, discuss *The Sciences of the Artificial* by economics Nobel Prize winner Herbert Simon. Here the project appears as an artefact, involving phenomena regarded as conditional, being subject to change according to their environment. We learn that these artificial phenomena, concerned with the 'possible' ('how things could be'), are contrary to the natural phenomena that address the 'need' ('how things are') and that give an impression of necessity in complying with the laws of nature.

So, reasonable people discuss projects that extend far beyond their normal areas of expertise – engineering and architecture, for example – spreading to many other fields: the economy and the world of business, medicine and law, and so on. From the results of their projects they draft more speeches about the actions required to transform the existing state of the nation into another, desired state. In other words, they dream up artefacts not just to modernize but to redefine the economy of the Kingdom.

Impracticable projects

Our tourist Lean discovers that there is a long list of projects that prove to be impracticable trial balloons. These range from transport and digital network infrastructures to innovative enterprises for innovative markets and collective goods managed mutually by competitors. Sometimes these trial projects may be outstanding: it is their implementation that

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is mediocre. However, well-implemented mediocre projects are rarely to be found.

The fact remains that there are as yet few leaders in the Kingdom of Zenda who implement ambitious projects with strongly shared objectives. In an age in which the indicator of the level of confidence in the Kingdom, already low, is pointing downwards, few are able to erect solid buildings, constructed with bricks of confidence and peopled by members of the national community. There are few leaders who are pumping oxygen into the lungs of their project teams, instilling in them a sense of responsibility. There is, however, an abundance of tyrants who defend the *status quo* at all costs, preventing the emergence of new players in the entrepreneurial life and new actors in civil society. Explorers of the new have been obliged to set sail on a journey to other shores: in the past, westwards to America and north to Scandinavia; now, towards the Kingdom of Chinindia, the emerging China and India Corporation.

It is entrepreneurial leaders who can imprint a distinctive emblem on the fabric of an economy. It is political leaders who can render the nation they govern different from other countries. Leaders who create entrepreneurial and civil differences are those who favour and support the peaks and valleys of a meritocratic terrain, a landscape in stark contrast to the flat plains of bureaucratic equality which stifles those who, because of their competence, are well-connected in the borderless networks that strengthen the fabric of the knowledge economy. Alas, leaders of this calibre are hard to find in the Kingdom of Zenda.

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Stories from the 'Sea of Crises'

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12

Mr X, or, the Anxieties of the Forgotten Man

Formica, Piero. *Stories of Innovation for the Millennial Generation: The Lynceus Long View.* New York: Palgrave Macmillan, 2013.
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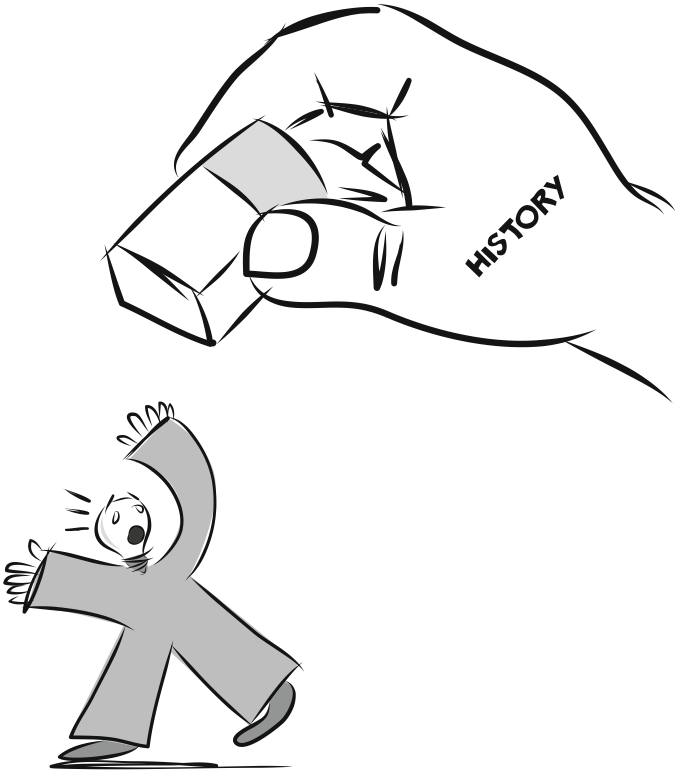

MR X: THE DISTRESS OF THE FORGOTTEN MAN

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In the beginning they are anonymous members of the crowd; then they are recognized and admired. Innovators achieve success having travelled a long distance, emerging from the ranks of ordinary people. Could they be far more numerous? Are too many innovative men and women relegated to oblivion? It is around one such forgotten man that this first story from the 'Sea of Crises' revolves.

Blown on the winds of the Great Depression, the forgotten man is filled with anguish, afraid that he will begin to soar to success only to be dispatched once more into oblivion. His story is a latter-day *Gone with the Wind*. Margaret Mitchell's 1936 novel chronicles the fall from the dizzy heights of the Roaring Twenties to the depths of the devastating economic depression of the 1930s.

We await a writer who will tell the story of the recent trajectory of the Western world: from the courage of fathers and mothers, authors of the success stories of the twentieth century, to the fears of their children and grandchildren in this first part of the twenty-first century. In the meantime, I shall tell you a tale of an anxious man, Mr X, who does not belong to a political party, or an interest group and who does not hold any position in an association. Nor is he member of a professional order. He is not the 'son of' anyone in particular. Mr X is a knowledge industry professional who operates in the commercial world, exposed to the often harsh winds of international competition.

Our man could equally be an aspiring entrepreneur who uses his previous work and educational experience as a lever, or a researcher, who, having spent time abroad, returns home and seeks to establish where his future lies. In other words, he is one of the many who are not part of any political or corporative constituency, but simply a free spirit wishing to board the train of innovation.

During the long cold winter of the Great Recession of the twenty-first century, which has been chilling the economy of planet since the latter part of 2008, Mr X has been subjugated by organized groups that have decided how much he has to pay the state in taxes and other contributions to support programmes of expenditure from which he is excluded. Professional Body A, in agreement with Political Party B and Association C, decided to introduce a programme that would benefit D. And who paid for it? Our forgotten man. And what subtle pressure was exerted

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on poor Mr X by these institutional forces, giving a superficial gloss to programmes of dubious social value, under the banner of 'progress'?

Many other programmes have followed, dressed up in the guise of welfare, ordained by politicians, made to look elegant and profitably implemented by interest groups, all the while paid for by the forgotten man. Thus it was that the number of civil servants and tax collectors swelled. The red tape of new laws, regulations, standards and codes strangled our forgotten man. Conservative, planned, state capitalism triumphed, serving powerful interests and thus restricting the free movement in the economy that provides a rich source of interaction for and amongst free men – who become, in their turn, the forgotten men.

If you want to find out more about the events that led another Mr X to the sacrificial altar, in the time of another major economic crisis, we suggest you read *The Forgotten Man: A New History of the Great Depression* by Amity Shlaes. Her Forgotten Man is the lamb that Franklin D. Roosevelt sacrificed in the name of programmes for the planned economy of his New Deal.

After a long line of failures, it was during the summer of 1937 that intellectuals in charge of Roosevelt's New Deal read Sinclair Lewis's *Babbit*, first published in 1922. In 1937 everyone was trying to work out who exactly this 'Babbit' was: perhaps the common forgotten man, exposed to the ups and downs of the economic rollercoaster, sacrificed on the altar of taxation and forever required to satisfy the insatiable appetite of public expenditure.

Those were the days when America, following the 1929 crash, abandoned free-market capitalism, replacing it with public interventions and expenditure supported by a range of laws and regulations enforced by government agencies. The more of these there were, the larger and more collectivist the state apparatus became: the fiscal activism proposed by Cambridge economist John Maynard Keynes became very popular.

But, to return to the times of our Mr X: the wind of collectivism has started to blow in Europe, particularly towards the western shores of the old continent. In the lands of the former USSR few traces remain of *Homo Rooseveltianus* and *Homo Sovieticus*. Eastern European countries, moving towards a market economy, have chosen to adopt flat-rate taxation, at a rate of around 20% for all. Welfare services have been subjected to equally radical reforms. In contrast, taxation and welfare reforms in Western Europe have been blocked, as a result of ideological hostility to state intervention arising from memories of Roosevelt and Stalin.

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Mr X and many like him – the new Babbits – have ceased to believe that increases in public spending can occur in conjunction with a reduction in rates of taxation. If, earlier, Mr X cast his vote in the hope that he would be caressed by a benevolent, invisible public hand, it seems that at the start of the second decade of the twenty-first century he has decided not to cast his vote at all. Meanwhile, the Great Recession is causing the value of our latter-day Babbit's earnings and savings to plummet and Mr X is asking himself which form of capitalism – entrepreneurial or its opposite, state capitalism – will offer the best, perhaps the only, effective remedy.

To try to find an answer to his dilemma, our man has counted, day after day, the forgotten men; as he sees their numbers rise, he is aware of the increasingly threatening shadow of an interventionist economy, with its tail of public bureaucracy and its sharpened teeth of protectionism, poised to plunge the already brief day of innovation into prolonged night.

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Extracts of a Report of the Ambassador of Αριθμόσ to Oeconomicus

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In the archives of the Foreign Ministry of Αριθμόσ (Arithmós), the country of numbers, I found a letter from the Ambassador to Oeconomicus, capital of the country of the same name, also known as the country of economy, where the Ambassador lived at the time of the Great Recession. It was written during a record cold winter; only the oldest inhabitants could remember a colder time, the winter of the Great Depression in 1929.

I offer here a selection of the most salient passages of the Ambassador's letter.

Market numbers

Having had words with senior officials at the Ministry of Economy, I am now persuaded that the market economy of Oeconomicus is in the grip of data gone mad: those bearing the name 'prices' send out weak, equivocal and distorted signals. This is in stark contrast with what occurs in Αριθμόσ, where price mechanisms lead to the efficient and effective allocation of resources.

Variables – which are used to monitor the state of health of the markets – are also in a state of chaos. These variables are reliant upon data that reflect improvements in the state of national affairs. Regardless of whether the economy is doing well or is in dire straits, as was the case at the time of my diplomatic mission, the objective for Oeconomicus is improvement, not change.

In contrast, so-called parasite numbers, which feed upon the operation of the market to such an extent that expansion of economic and political power is hindered, enjoy instead an excellent state of health. These parasite numbers clearly indicate that in Oeconomicus an average citizen's principal pursuit is not the creation of wealth, but rather seizing wealth produced by others.

Data still to be seen

Because the market functions so badly, newcomers promoting outstanding business initiatives are rarely welcomed. Equally, those seeking to change the *status quo* are paid but scant attention. I wondered who,

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among the politicians, bureaucrats, senior executives of large enterprises, top-class consultants and lobbyists in Oeconomicus, would have been interested in the visions of an unknown Bill Gates (Microsoft), Michael O'Leary (Ryanair) or Jeff Bezos (Amazon) regarding respectively computer software, European air transport and online retail industries?

Trend data

The citizens of Oeconomicus take an almost fanatical interest in historical data trends: these trends determine their actions. During a period of economic boom, production in Oeconomicus is better than average. At such a time, the previous course of action becomes unsustainable and so, as a reaction to this, the public budget goes into credit. In a recession, the opposite occurs: production drops below average and the public budget runs at a deficit.

Trend data present a symmetric world to the citizens of Oeconomicus. Unfortunately, such a world does not exist. During past Great Recessions in particular, which arose when a crisis in the financial sector affected the 'real' economy, it is a fact that the loss of production that occurs during the crash is permanent and that the derailed train of the economy will not be restored to its track. So, farewell, historical trends! It is to be noted that during one of his previous visits to Oeconomicus, Samuel Brittan wrote a very similar note in his travel diary, 'Goodbye to the pre-crisis trend line', published in the *Financial Times* on 29 October 2009.

End data

Oeconomicus is currently going through a period of 'end data' – that is, numbers that describe rare and catastrophic events. Graphically, these can be found in the long tail of the curve which records in its early region a series of more frequent but less disastrous events.

Without question, end data show that in Oeconomicus division and subtraction signs abound, whereas the multiplication sign, a symbol of confidence, has disappeared. Other than that taken by the Governor of the Central Bank, neither heed nor trust is given to action aimed at increasing confidence. In his latest annual report the Governor writes, 'The open wound that is destroying confidence in the market and

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affecting the future for millions of people and the social contract binding us all must be healed. Restoring confidence is the prerequisite for dealing with the crisis.'

Oeconomicus will rise again provided the country is able to restore its social capital, that is, the ability of people to work together, in groups or organizations, with the aim of reaching shared and agreed objectives. Intellectual, social and entrepreneurial forces are required for joint collaborative efforts in the absence of the debilitating pursuit of non-innovative consensus. Only on the basis of increasing social capital will these forces be able to act together and equally, for both self-interest and altruism, in both competition and cooperation. Beyond the borders of crisis are to be found joint objectives shared by individuals who choose to cooperate freely and spontaneously. Each does what has to be done for the well-being of the entire nation and not for the sake of their sense of belonging to a group or association.

Post scriptum

Readers should not be misled into thinking that the country of numbers is safe from the misfortunes suffered by Oeconomicus. The lands of Αριθμόσ are burnt by inflation because the supply of numbers cannot keep pace with demand, so great is the latter. Citizens of Αριθμόσ judge everything according to quantity. To them a building is not handsome because its bricks are pink, or its windows are decorated with geranium pots and pigeons are perching on its roof. They are convinced that what makes something beautiful is a label on it saying 'worth one million Euros'. The passage in Antoine de Saint-Exupéry's *Little Prince* concerning adults' love of numbers ('adults are obsessed with facts and figures and fail to understand the real meaning of things') will perhaps help you understand this better.

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‘On Beauty’: Three Scherzos Played on the World Economy Stage

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In the fairy tale 'Beauty and the Beast', the evil fairy transforms the young prince into a beast. In our tale, Beauty has dual faces of good and evil: here, good brings an Aladdin's lamp to illuminate the road and the winding pathways of innovation. Thanks to this magic lamp, we can take the best routes.

Beauty in times of recession

Recession has a bleak, grey face – but with red lips. While dominating the world economic stage, Recession indulges in lipstick. Despite current bad economic news, it has been reported that seven out of ten women in Singapore are reluctant to give up using cosmetics – at least the cheaper ones, such as lipstick.

Leonard Lauder, the President of Estée Lauder, coined the phrase 'lipstick factor', having observed that in times of economic hardship the sales of lipstick tend to increase. For example, in 2001, in the aftermath of the 9/11 attacks on the World Trade Center in New York, lipstick sales apparently doubled.

What changes, if any, are to be expected in the lipstick index in the forthcoming months? We shall keep an eye on this, because recession has its appeal. Lipstick consumption is a sign of faith in the future; and, some say, faith makes the world go round.

The beauty of ideas

It is in periods of serendipity that explorers of the forest of ideas discover things they were not looking for, but the meaning and importance of which they immediately recognize. More often than not fortuitous events lead to success rather than failure.

The appeal of world-changing ideas lies within the energy circuit they initiate, a circuit that accelerates the metabolism of society and economics. Henry Ford, an explorer of the forest of ideas, ignored customer demands for a horse able to run at 60 miles per hour: thus was triggered the circuit of the automotive industry. A circle, although potentially virtuous, can be broken by innovation; and a new one is started.

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The beauty of money

As faith would have it, there is beauty in money. Cosmetics, fitness centres, holidays in the Southern Seas or tropical islands: there is a host of possibilities. Thanks to money, overweight people can become slim, wrinkled faces transformed to be pearly smooth, tense bodies are relaxed. Unsurprisingly, Beauty climbs up the social ladder, striving for aesthetic perfection. Without that ladder, the poor become uglier; in contrast the rich, who have access to it, become superficially more handsome.

But money is a poisonous potion: it weakens intellectual activities. Lying on the sofa of the 'state of things', sooner or later you will fall onto the floor. In the movements of innovation, we stumbled and fell: our beauty broke into pieces. It was not a graceful luxury yacht that provoked our fall, but plain and unassuming boats, driven by ambitious and creative-minded young people capable of overthrowing the rules of society.

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The War of the Two 'F's and the Decisive Intervention of 'E'

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It was during the first decade of the twenty-first century, when the turning point had been reached and the Industrial Age was giving way, irrevocably, to the Age of Knowledge, that a worldwide conflict flared up. It was started by the Financialization of the Economy, a deliberate and malicious event concocted in financial engineering laboratories in a remote secret venue comparable, some would say, to Los Alamos – where the first atomic bomb was perfected during the Second World War.

Historians referred to this new conflict as 'The war of the two "F"s', from the initial letters of the two nations involved: the land of Finance and the land of Factory. It was the first of these that assaulted the second, speculating on the greed of the Manufacturers. The attack was sudden, rapid and successful. A vast region of Factory – Real Economy – was subjugated by the magnates of Finance.

In the third year of the conflict, E – the land of Entrepreneurship – entered the battlefield, to support Factory. Whether or not its intervention was decisive continues to be debated by historians, years after the eventual armistice. No peace treaty acknowledging the unconditional surrender of Finance was ever ratified. The ultra-conservatism of Factory's Old Guard and the greed of its influential spokesmen kept alight the flame of financial speculation, first ignited by Finance. Meanwhile, the members of Entrepreneurship's New Guard were too busy dealing with the relentless upheavals triggered by innovations, on which their fortunes were founded, to bring Finance back to its senses.

Finance assaults Factory

It was Finance's government that ignited the powder-keg. After years of tension and incidents at the frontier posts, Finance's tycoons put into action the Italian Fascist doctrine of 'Vital Space' (which mirrored the Nazi concept of *lebensraum*) and invaded Factory. The first thing Finance needed to do to succeed was to annex Real Economy, a vast region of Factory inhabited by a significant minority of its compatriots.

Finance had been continuously seeding the financial economy fields with innovative instruments. At the time of the invasion, it was equipped with weapons of mass financialization to deploy against the enemy. Factory, in contrast, was investing too little, and unwisely, in innovation in Real Economy. Its entrepreneurs fed the financial innovations of its

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future mortal enemy with company profits. Its trade unions defended factory jobs to the utmost: the oldest amongst them repeated to the youngest the opening lines of *Il Posto* (*The Job*), a film written and directed in 1961 by Ermanno Olmi: 'For people living in the small towns and villages in Lombardy, surrounding the large city, Milan means above all a job.'

So, Factory was suddenly invaded and the Manufacturers were reduced to servitude. The outbreak of the conflict, followed by the occupation of Factory by Finance's troops, provoked a Great Recession in the world. Nothing similar, as alarming or serious, with such disastrous consequences for the economy, had occurred since the Great Depression of the twentieth century.

Entrepreneurship enters the conflict

During the third year of conflict, Entrepreneurship entered the war. Whilst less overwhelming than those it had used in Factory, the lures that Finance had applied to Entrepreneurship territory, for the purpose of looting its wealth, had nevertheless achieved a result. With Factory by now crushed under the occupier's heel, Entrepreneurship suffered from the backlashes of both Finance's malicious innovations and Factory's boorish ultra-conservatism. The former led to the diversion of human and capital resources from the main path that Entrepreneurship had identified in the regions of high entrepreneurial fertility. More entrepreneurs, more opportunities to create enterprises with high sustainable growth prospects, more jobs in the entrepreneurial economy: this was Entrepreneurship's golden formula, threatened by the attraction of money and people to the easy, high and instant profits offered by Finance.

Factory's ultra-conservatism resulted in financial speculation, to Finance's advantage, and in subsidies protecting redundant jobs. As a result, terrain that otherwise could have been cultivated for entrepreneurship dried up and there was an increasing danger that the drought might spread from Factory to Entrepreneurship.

Entrepreneurship had entered the conflict alongside Factory. Its government was naturally determined to defeat Finance. But that was not all. Once the coalition had secured victory, Entrepreneurship would have introduced profound changes in Factory, using as leverage a transition government loyal to the principles on which the economic development

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of Entrepreneurship was based. It must be stated unequivocally that Entrepreneurship did not seek domination over Factory. Rather, what inspired its action was the extension, beyond its boundaries, of the laws and regulations of an entrepreneurial economy. In brief, the goal was an international alliance of entrepreneurship amongst equals, with a view to establishing a world government through which pathways to the splendid destiny of the human race could be opened by a renewed real economy, shaped by myriad entrepreneurs, with the World Bank minting Talenton, the currency of the knowledge economy.

If, by misfortune, the victory were to fall to Finance, the paper economy – manipulated by a handful of its tycoons – would exercise hegemony worldwide. If the Central Finance Bank were to mint the Toxicon, a currency whose circulation would poison the wells of the knowledge economy, the entrepreneurial economy would suffer irreversible damage.

Finance relied upon the crushing strength of a *blitzkrieg*, thanks to the virus of its toxic financial products, which could spread rapidly across the planet. Factory was the first victim. The virulence of those products, and a multitude of their derivatives with subordinate financial instruments, struck with the desired effect. The real economy of Factory was on its knees. Entrepreneurship prepared itself for a long conflict on a large scale, facing it with its mutant companies.

Mutant companies and intrapreneurs

The high rate of entrepreneurial metabolism in Entrepreneurship had produced enterprises capable of rapidly changing their strategies and structures. The mutant companies regularly and systematically revised their relationships with their employees, having eliminated the previous implicit contracts between employer and workers, whereby the latter had reason to expect a secure job for life.

For Henry Ford of Factory, workers carried out tasks passively, in accordance with methods devised elsewhere by a dedicated, specialist team. For the mutant companies in Entrepreneurship, the mobilization of smart minds was the key. They recruited 'intrapreneurs', so that knowledge professionals were in charge of new venture creation and growth.

In the ancient world of Factory, it was the Employability–Ability duo that shaped 'the job'. The first of these, the capacity of a person to seek

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work actively, supported the other, the value of the person as measured by training and levels of experience. In the new world of Entrepreneurship, with its ambitious and equally seductive logo 'K&2I', the economy of Knowledge, Intangibles and Innovation, the duo was transformed into a trio, reflecting Entrepreneurship's entry into the orchestra of work (for Entrepreneurship is the composer of the music we call 'jobs').

Resourcefulness, willingness to take risks, the desire to experiment and the search for collaboration were all enabling the intrapreneurs to travel with agility along the road of entrepreneurship. These individuals were immersed in the interface between creativity, culture, economy and technology. They created and manipulated images, sounds, texts and symbols. They formed ecosystems – innovative entrepreneurial communities at the meeting point of industrial sectors, sciences, technologies and different but converging disciplines. They were not slaves of the future because they knew how to master the present.

With deep roots established in the soil cultivated by enterprises, the intrapreneurs spilled over the company's embankments into the fertile plains of science. Having penetrated the scientific laboratories, they trained scientists, researchers and graduates in the practices of experimentation and simulation of spin-offs, new enterprises springing up as a result of innovations produced through research. So it was that entrepreneurial behaviour was strengthened in the scientific community. Disparate fields of science were producing plentiful harvests of start-ups from the alliance between intrapreneurs working within a company and budding intrapreneurs of scientific intelligentsia, using the fertilizer of discoveries. Materials and earth sciences, chemistry, physics and biology were among the numerous disciplines in which new discoveries acted to drive innovation, with physicists, chemists, doctors, biologists and engineers transforming ideas into enterprises powered by knowledge.

The three types of capital in Entrepreneurship

The many entrepreneurial communities that had formed in Entrepreneurship enjoyed a wealth of intellectual, creative and social capital which they blended with nutrients secreted from the behavioural 'glands' of business and scientific intrapreneurs. A great deal was contributed to the formation of intellectual capital by knowledge nomads: international, talented individuals navigating the waters where the

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currents of science and entrepreneurship met. They were swept along, eventually to disembark on the coasts of Entrepreneurship, by the winds of innovation, bringing dry economic weather, clear skies and excellent visibility of the markets. The social capital found nutrition in the desire to collaborate. Each entrepreneurial community brought together around 7,000 members who shared experiences and learned from each other. The creative capital drew strength from the inventors and builders of the future. The former were constantly searching for what to make happen tomorrow; the latter, in line with the opportunities identified by the inventors, sought to create radically new products, services and business models.

The balance sheets of households and family businesses in Entrepreneurship

The many Manufacturers who had made fortunes with the 'Made in Factory' brand, socialized with Mr Snob and Mr Veblen, inviting them to their homes.[1] They learned from both how satisfying it was to own status-symbol material goods: in fact, they rejected anything that was not intended exclusively for the wealthy few. They loved to buy at prices high enough to assure themselves of the luxury and exclusivity of what they acquired. It was then that the prices they paid started to escalate: prestigious properties, luxury cars, yachts, fine art, precious carpets and the rest were acquired and ostentatiously put on show.

In contrast, Snob and Veblen did not enjoy a very good reputation amongst the wealthy and the upper middle classes in Entrepreneurship – they were tolerated, but barely so. Many people reflected on the words written by Lucius Annaeus Seneca a Roman philosopher and statesman, in a letter to Lucilius Junior, procurator of Sicily during the reign of Nero: 'Disregard all ornaments and embellishments obtained through useless labour; consider that nothing is extraordinary apart from the soul and for a great soul nothing is great.'

The average household was largely unfamiliar with Snob and Veblen. Their cupboards were not stocked with luxury status symbols. Rather, the average household used personal resources such as imagination, time and money, to invest in the higher education of their children. These families sought education in the best schools and universities in the country, or even abroad. International study visits were important dates in the

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academic calendar. Taught from a tender age, at home and at school, to cultivate opinions and to develop entrepreneurial points of view, skills and interests, the young generation in Entrepreneurship invested in finding out about others, those with different cultures and traditions.

Thanks to online communications, journeys extended into space and stretched over time: as a result, an important item of the family budget was the cost of equipment for high-speed mobile network connections. This is how young people in Entrepreneurship prepared themselves to create globally conceived enterprises involving both physical and virtual contact with peers from other countries and continents.

To use the terminology of air travel, in the critical phases of taxiing on the runway and take-off of an enterprise, the young people were able to turn on the engines of family savings. Parents preferred to provide money to fund the start-up of their children's entrepreneurial excursions rather to buy a new house.

The same was true in family enterprises where the budget was distinctly entrepreneurial in nature. The entrepreneur attracted talent from within the nation and from abroad. The profits provided the bricks and mortar for new initiatives and the company premises grew horizontally by adding new partnerships, rather than vertically by the addition of layers of bureaucratic management.

The traction force exerted by business angels in Entrepreneurship

Deaf to the siren songs of Finance, the entrepreneurs from Entrepreneurship did not divert company profits into speculative activities nor did the profits add to the family budget to accumulate status-symbol possessions. On the contrary, the entrepreneurs took from their silos the seeds of money, competence and experience, to scatter onto the soil of Entrepreneurship to develop new species of entrepreneurial plants. In brief, they were 'business angels'.

The business angels enjoyed deserved fame in Entrepreneurship. It was they who erected a bridge, constructed with their own money and that of family and friends, between the lower bank of the river 'Enterprise Creation' and the other, much higher bank, erected with funding from institutional investors. With the additional capital, the funds from the business angels, and enriched by their knowledge of the entrepreneurial

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terrain and their keen sense of direction, the aspiring creators of new enterprises could now test their new entrepreneurial ideas. With action providing impetus to the aspiring entrepreneur's vehicle, the business angels of Entrepreneurship facilitated access to venture capital, without which it would have been impossible to launch start-ups with high growth expectations and high levels of employment, and many aspiring entrepreneurs would have been forced into self-employment. It was exactly this that was, unfortunately, happening in Factory.

The danger posed by 30% caused Entrepreneurship to enter the war

The high toxicity of Finance's financial innovations gave rise to considerable alarm in Entrepreneurship, where 30% of the population did not recognize and were even hostile to the economic entrepreneurial model – a model shaped by the principles of the free market and founded, according to this minority, on the supposition that the inhabitants in Entrepreneurship had a genetic inclination to accept potentially highly profitable entrepreneurial risks. The public authorities in Entrepreneurship feared that the 30% minority could be easily attacked by the financial virus propagated by Finance. They were even more afraid that the virus might eventually affect the health of the nation, and in doing so disrupt the elegant architecture of family and company budgets that encouraged the creation of new, secure entrepreneurial buildings and continuous innovation.

And so, Entrepreneurship was forced, reluctantly, to enter the conflict alongside Factory.

The hardships of the war and its outcome

In the long unravelling of the Industrial Age, between the mechanization of textile manufacturing in the late eighteenth century and the invention of the World Wide Web by British scientist Tim Berners-Lee in 1989, several generations had entered the game of the factory economy before the outbreak of the two world wars of the twentieth century. The premeditated aggression of Finance towards Factory, and the ensuing conflict, shook the immature certainties of the emerging Knowledge Age at a time when

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its first generation had only just entered the playing fields of the New Economy: the economy of Knowledge, of Intangibles and of Innovation.

In the first act of this new performance Great Moderator entered the scene, that combination of stable growth and low inflation that opened the doors of entrepreneurial dreams, first and foremost to Entrepreneurship's younger generation. The Great Recession provoked by the conflict shattered many dreams.

Entrepreneurship reacted with determination: its entrepreneurial weapons overcame the panoply of shares and their toxic derivatives delivered by Finance. The ensuing armistice reopened the doors of the entrepreneurial dream. In Entrepreneurship the number of aspiring entrepreneurs, intending to integrate the various technological tools and business models that had developed in the infancy of the New Age, grew once more. In Factory, Entrepreneurship's public authorities introduced a radical innovation to the organization of work, which they called Factory 'Novus Ortus' (or 'New Birth'), recalling the splendour of the Italian Renaissance.

Factory 'Novus Ortus' changed the vision of work. If the structural crises resulted in job losses, it was argued in Entrepreneurship that the (almost) barren mother-figure known as 'short-term economic recovery' could do little to create new jobs. And yet not all was doom and gloom; or rather, there were different sorts of tempest. What the Manufacturers were experiencing was the tempest caused by the guillotine of the old Factory, ruthlessly efficient in dispensing with workers. However, the tempest that arose with Factory 'Novus Ortus' was the tempest of innovation, carving out new pathways for intrapreneurial and entrepreneurial activities. Thus Factory 'Novus Ortus' acted as a therapeutic community, allowing the Manufacturers to embrace Entrepreneurship's entrepreneurial vision.

Innovation is a rapid and forceful river. Rafting along it, the Entrepreneurship team failed to defeat, once and for all, the Finance virus, and the tycoons that propagated it continued to flirt with the Old Guard of Factory, subdued but not tamed.

Note

1 Leibenstein, H. (1950), 'Bandwagon, Snob, and Veblen effects in the theory of consumers' demand', *Quarterly Journal of Economics*, Vol. 64, No. 2, pp. 183–207.

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16

Autobiographical Sketches of Kidnapped Europe and Titanic Asia: A Tale of the Future Foreseen

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For a long time the concept of a global common currency remained a dream. From the vision the English economist John Maynard Keynes presented at the Bretton Woods conference in July 1944 to the post-war theories of Robert Mundell, the Canadian Nobel Laureate in economics and 'father of the Euro', it took more than a hundred years for the dream to become reality. When it happened, the question arose as to how to appoint members of the Executive Board of the new World Bank which was to mint the common currency known as the Globe.

The following is a brief summary of the written proposals of Kidnapped Europe and Titanic Asia for membership of the Board.

The reader should note that, compared to Titanic Asia, Kidnapped Europe was somewhat restrained in its proposal, possibly because it suffered from a superiority complex, which may have been the result of previous European supremacy, or perhaps it was a re-emergence of the spirit of its colonial past, or based on its pride in having created the European Currency Area through the introduction of the Euro.

Titanic Asia, in contrast, adopted a somewhat more defensive tone, albeit with clearly articulated arguments, almost as if to justify its titanic strength, which had brought it many successes – some of them unexpected – after long centuries of near-oblivion.

Kidnapped Europe

I, Europa/Europe, was abducted by the deceit of Zeus and I was subsequently ravaged by many violent wars. However, I was enriched and enlightened by revolutions in thinking and swept along by new intellectual trends. Nowadays I am perceived as Great Switzerland because of my comforting and pleasing ways, reluctant to leave home to explore the outside world.

My name, Europa, was given to a moon of Jupiter. It would be a beautiful and appropriate name for the moon, were it not for the frequent absence of my own light. What does give me light, however, is my creation of the Euro. How did I do it? To start with, I was swept off my feet by the vision of the English economist John Maynard Keynes. Shall we say that I was inspired by his international monetary unit, the Bancor, a forefather of our Globe? Then I espoused the reasoning advanced by the Canadian economist Robert Mundell, a theoretician specializing in monetary dynamics and optimum currency areas.

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The experiments carried out and the experiences gained with the Euro are more than enough to secure a place of honour on the Board of the World Bank. Of these, I think it will suffice to point out the painstaking negotiations that were required to impose a monetary budget discipline on the various members in the Euro Zone, not to mention the creation of both the minimal fiscal union (of the order of about 5% of GDP) and an unemployment benefits system which acted as an automatic stabilizing device for coping with asymmetric shocks. The mooring systems at the implementation ports for the actions undertaken were only partially effective – and sometimes they failed to work at all; but that is not what matters. What makes me reliable is the mixture of wisdom and ingenuity I used to hold fast the rudder when navigating the turbulent waters of the Euro Zone through constantly rough seas as a result of strong currents fed by the arguments and differences of opinion between the partners.

Titanic Asia

I am the daughter, bride and mother of Titans. It is my achievements, however, that prove my worthiness for the title 'Titanic'. Was not the effort I made to shake off the dust that had accumulated over time, and which had been covering me for many years, truly Cyclopean: both substantial and extraordinary? First China and then India have achieved miracles in restoring the bright colours of ancient times, when Western explorers such as the Venetian merchant traveller Marco Polo and the Jesuit priest Matteo Ricci discovered inventions, ideas and ideals that I had nurtured.

Is there, as the English historian Arnold Toynbee proposed, a natural life-cycle of civilizations and societies? A cycle, equal in length to the age of the human lifetime, which can be neither stopped nor reversed? Is it because of the natural evolution of things that the rampant imperialism of Europe, which held me in a suffocating embrace, has disappeared? – the same embrace that Jawaharlal Nehru, first Prime Minister of the newly independent India from 1947 to 1964, accused of removing the oxygen from the Indian textile industry, thus stifling the modernization of both industry and society in the newborn sub-continent. And is it also because of this cycle that the 'American century' came to an end, the century which, after the Second World War, with a new constitution

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imposed on defeated Japan, instigated my cultural change in the name of 'Americanization'?

My titanic strength forced nature to make a leap, accelerating the transition to the 'Asiatic century' at the dawn of the Third Millennium, proving Toynbee's theory to be correct. Titanic indeed were the muscles of the Asiatic workforce, trained in Western factories relocated to my continent. Titanic are the minds of our young talent – pioneers of the digital age, knowledge nomads travelling freely across the Pacific Ocean, budding entrepreneurs who have removed geographical and scientific boundaries, creating global businesses driven by new discoveries and their many applications.

I have been accused by those from the West of having harnessed my titanic strength to economic egotism. China, Japan, South Korea and Taiwan are economies that have grown as a result of exporting: clear proof – my rivals have been declaring loudly for many years – that China insisted on keeping the Yuan undervalued and stifling internal consumption. I am accused of having played so skilfully with the increase in exports and the containment of consumption so as to increase my foreign currency reserve by US$4,000 billion between 1998 and 2009. In 1998 the reserve stood at US$1,000 billion, and it had risen to US$5,000 billion by 2009. And yet, at the time of the Great Recession triggered by the biggest default in history – I refer to the crash of Lehman Brothers in September 2008 – Chinese consumers continued to spend more, with a growth rate in double figures, so much so that in 2009 the Chinese were buying more cars and cell phones than consumers in the USA. But that is all in the past now. It has been a long time since the USA was my main export market. Now it is China, with more than a billion consumers. My 'Asiatic dream' has become a 'Chinese dream'. My days of begging at the doors of the West have truly passed into history.

And, is it not true that it is the people of Kidnapped Europe who, although ideologically anchored to the free market, are in practice wary of free trade? If feelings of protectionism exist, they are to be found in the West. We Asians converted to competitive liberalization: globalization, born in the West, was raised by me. This fact is recognized by the many Western commentators who speak about the 'Asianization of globalization'. So, I shall not come to the Board of the new World Bank with marked cards to play against a commercial policy that exalts the value of free exchange, without which the Globe, our single currency, would crumble.

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Last, but not least, I am proud of our ancient culture, which reflects a group spirit (how else could the Great Wall of China have been built?), and the desire for dialogue, to listen in depth and interact with others, different from ourselves. As a member of the Board, I will be able to build trust, instil a sense of belonging to the community on which the World Bank depends, nurture a spirit of understanding, encourage informed conversation and create harmonious relations amongst all members of the Executive Board.

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17

Innovation in the Academic World: A New Mission for University Old Stars

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Should universities act as intellectual sieves, sifting out the best brains, and as a flywheel of investment in human capital to generate competence, or, first and foremost, as bureaucratic machinery for the manufacture of qualifications? The international circulation of brains and the hunt for talent taking place in the most advanced economies and emerging nations tip the balance in favour of the first option.

The oldest university of the Second Millennium questions itself about its new mission.

I was entrusted with the mission of bringing knowledge and culture out from the monasteries. I am the *Alma Mater Studiorum*, the University of Bologna. Founded in 1088, proud of being the oldest university in the world, the mother of the universities of the Second Millennium, I was the favourite destination and centre of gravity for students wandering along the pathways of knowledge. Nowadays I find myself on the periphery of the new routes of knowledge which is being transformed into scientific entrepreneurship, routes that connect the new entrepreneurial economies of India and China with the United States and parts of Old Europe.

A stronger, more frequent presence of scientists and researchers, of scientific entrepreneurs and intellectual capitalists from the rest of the world would restore to me that international status which made me pre-eminent in the medieval times of the wandering clerics. It remains to be seen whether I would be able to exploit fully the endowment of first-rate human capital from abroad. This is not just a matter of improving my research performance through the interplay of different cultures and experiences. The contribution of foreign talent can yield far greater benefits. It should not escape the attention of my academic authorities that increased international openness offers a large window of opportunity on to the world of internationally conceived new enterprises, the fruits of collaboration between talented individuals from different nations.

The wandering clerics of the twenty-first century: new knowledge entrepreneurs

Contemporary, talented individuals circulating internationally are the wandering clerics of the twenty-first century. It is they who create and

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participate in networks that exist without borders on the value-added flow of collaborative advantage which connects research at its source to downstream commercial exploitation through the creation of companies involved in the new markets for knowledge. This international free flow of talent enables knowledge-intensive, globally conceived start-ups to flourish. These are the people and the enterprises that shape the highly dynamic, emerging knowledge zones populated by new, creative professionals.

By entering this stream, I would enable our young talent to migrate from university lecture halls and laboratories towards entrepreneurship built on innovation: in short, to become intellectual capitalists, driving the knowledge economy through entrepreneurship.

Highly educated entrepreneurship without frontiers is becoming increasingly important in economies that are sufficiently open to accommodate the waters of a large river fed by numerous tributaries: international twinning of scientists and successful entrepreneurs; researchers and students exploiting their international mobility to create unorthodox entrepreneurial alliances with colleagues from other countries; investors who provide risk capital to internationally conceived entrepreneurial projects; experimental laboratories for new venture creation; pioneering technological infrastructures that host newly launched enterprises in incubation; and other tributaries.

It is at the meeting point of this mobile talent and the new international entrepreneurship that the results of research translate into commercially viable goods and services, offering significant financial rewards for universities and, above all, with a beneficial, entrepreneurial effect on the research communities.

The recovered mission

Back in the first decade of the twentieth century, Giovanni Papini, whose stories Jorge Luis Borges included in his *Library of Babel*, anticipated the prototype of the university of the twenty-first century with these words:

> So here is how I imagine the university of the future, founded on total freedom. To begin with, when a young person embarks upon life at university, he will not be required to enrol for a fixed amount of teaching right from the very first year…it will be possible, for example, to enrol for a single course if one chooses to dedicate all one's time to one particular subject of particular interest…. The system I propose turns the current approach

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> upside down. The important thing is that university ought not to be, as is the case today, state manufacture of candidates for bewilderment or employment…rather, universities should become less like academies and more like collections of special seminars with special libraries and special laboratories – what I mean by laboratory is a class where students present the results of their studies to their companions and teachers….'

To convert the energy that would be released by putting Papini's thoughts into action, I am considering setting myself up as a Foundation, partly financed by enterprises intent not only on renewing themselves but also on investing in the vitality of entrepreneurial culture. This, I consider, is the best way to contribute to the training of young people, first in research laboratories and then in experimental laboratories for new venture creation so that, finally, they enter the most promising, open-economy markets as scientific entrepreneurs.

The governance of the Foundation will draw inspiration from innovations that universities of different epochs have already experienced. I shall mention a few of these. The ancient Universities of Oxford and Cambridge have each recently named a non-native as Vice-Chancellor, both of them senior members of Yale University in the United States.

The University of Oxford launched an international campaign through its graduate network to collect US$2.5 billion to invest in research, teaching and salaries for teachers and administrative staff.

Professors and students of the National University of Ireland live in symbiosis with research and innovation in the laboratories and institutes that Intel has created on the university campus.

In the United States, the President of Arizona State University has radically changed the university structure such that there are now cross-disciplinary institutes, not faculties, in what he defines as the 'new American university'.

Epigones of Marie Curie

As I have already said, the mission I have assigned to myself gives a key role to the process of transforming academic knowledge into entrepreneurial practices. This is why I shall recruit academics involved in industrial applications of their own scientific discoveries. As spiritual descendants of Marie Curie, a scientist with a notable propensity for entrepreneurship, my academic entrepreneurs will operate under the

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influence of the convergence of two character types: *homo scientificus*, who defies convention to explore unknown territories, searching for fundamental discoveries; and *homo economicus*, equipped with a special acumen for achieving commercial success based on research driven by curiosity.

A tribute to the community

I was born in Bologna and it is here that I put down roots and thrived. The community of Bologna owes a great deal to me: I owe just as much to it. I am committed to repaying the community with an original scientific and entrepreneurial edifice, in the hope that it may prosper for many years to come.

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18

A Dialogue Between Start-up Entrepreneurs Crusoe and Gulliver – Gulliver Teaches Crusoe the Physics of Entrepreneurship

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GULLIVER TEACHES CRUSOE THE PHYSICS OF ENTREPRENEURSHIP

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Robinson Crusoe is the insulatus, psychologically stranded on an island, whose communication is limited to the elementary phenomenon of the isolated economy in which he lives. Lemuel Gulliver is the inclusivus, with a hybrid cultural identity, an explorer of different lands where the similarities and differences between individuals overlap and interact.

For the purposes of this narrative, Crusoe and Gulliver are fictional embodiments of the characteristics of different types of aspiring start-up founders. They differ in the ways they are attuned to and are adept at entrepreneurship. Crusoe is the aspiring entrepreneur who makes and derives meanings in isolation about the relevance, practicability and profitability of the business idea being pursued. His own predilection (dependent upon disposition of the mind, patterns of behaviour, motivations and attitudes to entrepreneurship) is for the exclusion of the impact of peers, such as happens in strategic interaction. Thus he is constrained by artificial boundaries and shows no interest in establishing interactions because he believes that their costs exceed their benefits, such as learning from other start-uppers.

In stark contrast to Crusoe, Gulliver is a would-be entrepreneur who values purposeful and lasting interactions with his peers from different cultural and business backgrounds. All such players focus on building their company, which fosters comradeship and shared understandings. Gulliver exploits to the full the potential of aligned interaction. The assumption is that the more he is connected, the more intensive are dialogue and discussion, conflict, disagreement and the questioning of existing propositions and theories, and the more he can gain experience by combining the knowledge and insights derived from experiments conducted by his network of peers.

The corollary to this assumption is that a Gulliver-type experimenter, embedded in a wide-ranging and diverse peer group, has a better chance of successfully riding the waves of change and achieving creative breakthroughs. Building upon one another's ideas is the process that guides Gulliver's energies toward reaching his goals and making entrepreneurial achievements sustainable. In short, Gulliver, unlike Crusoe, perceives the world of entrepreneurship as heterogeneous, a view that arises from his varied experiences of interaction with other entrepreneurial cultures.[1]

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The dialogue

Crusoe and Gulliver, who have not seen each other for some time, meet in a local coffee house. They take the opportunity to catch up on each other's news and views, especially concerning their various business and commercial ventures.

Crusoe: Greetings Lemuel: how goes the world with you? I have recently moved into an incubator where my business idea and business plan are coupled together. I am learning that a business idea is like an ocean-going ship that must be readied to leave the safety of the harbour and that the business plan is the tugboat that will slowly lead it out to the open seas of the marketplace.

Gulliver: Greetings in return, dear Robinson. So, in this coupling you mention, the business idea is the dependent element? In fact, to reach open water, your ship must rely on the perfunctory procedures and calculations of the business plan? As for me, I regard myself as an aspiring entrepreneur with high expectations, an early bird in the marketplace. I have taken a different route. I have joined an experimental laboratory so that I can experience a multi-layered reality as well as the irreducible uncertainty of a market that does not yet exist or, at best, is still in its infancy. This is the right approach for me, if I am to develop my idea – I need to understand the complexity of the endeavour and to examine the probabilities properly – not the conventional approach, based on 'I will do my best to ensure that my idea is the one that wins out' and 'I will be guided by the specific measurements of my business plan'.

Crusoe: I'm finding it hard to follow your reasoning. Tell me, what is better than an incubator – a start-up accelerator with long and consolidated experience and practice, which allows the potential start-up to be divided into its elements, such as the aspiring entrepreneur's demand for information and assistance; a supply of consultants (a cohort of intermediaries, if you will) to assess and improve the entrepreneurial capability of drafting a business plan; and the provision of office premises and related business support services? Come, give me your answer!

Gulliver: The experimental laboratory is a new type of high-expectation start-up accelerator that shifts the focal point from the demand for and supply of information and assistance in writing a business plan to a merger of the various elements of the start-up process. Unlike the price-led coordination of demand for and supply of information and assistance in an incubator, where consultants are alien or external to the entrepreneurial ventures, the experimental laboratory melds different personality types, high-expectation aspiring entrepreneurs included, into an experimental team.

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In the laboratory we are all active experimenters and we live in a sort of symbiotic relationship with each other, built on a solid foundation of trust. Relationships are dynamic and fluid, depending on the changing needs that arise during the process of experimentation. The focus is on finding the shortest path to gain experience with the as-yet unknown aspects of making a business out of a new idea. Relationship ties, based on shared vision and objectives, replace the price mechanism as the glue that holds it all together.

Crusoe: Lemuel, these are words on the wind. The business plan is the one key that makes all the difference. Without the tugboat, my business idea cannot leave the harbour of my island where it is confined. And the incubator is the shipyard where I can build my own tugboat.

Gulliver: Robinson, you say that your business idea is confined to an island, which – let me put it another way – is the incubator where you are housed. This is not my case. In the experimental laboratory where I live, the nexus of relationships between aspiring entrepreneurs with high ambitions for growth is the major source of influence, the driver of innovation and indeed the regulator of changes. This gives rise to the experiential knowledge (having experience) and experiential learning (gaining experience) that occur in processing a business model set to sail into the uncharted waters of 'unknown unknowns', 'things that move', 'unexpected events' or 'black swans' – to mirror, if I may, Nassim Taleb's view in *The Black Swan*. You, on the other hand, are the insulatus who runs the risk that the business plan will culminate in a static collection of facts – that is, 'known unknowns', 'things that don't move' – whose predictability succumbs to unexpected events, Taleb's Black Swan, occurring in the dynamic environment outside the incubator. That is where your business plan will need to be executed.

Crusoe: What you are suggesting, then, is that I break free from conventions woven into the fabric of the incubator, among which are protection from risks rather than earlier exposure to them, superficial rather than intensive interactions with peers, and the preparation and completion in this insularity of a formal and static document in the form of a business plan?

Gulliver: Indeed, Crusoe, entrepreneurship is not a mere set of conventions, or *nomos* as the ancient Greek philosophers would have it. It has a real nature, or *physis*, visible in the process of the conversion, or transmutation, of input into output resources that occurs through an 'entrepreneurial reaction'. When we look closely at how the process works for high-expectation start-ups, which move at lightning speed, we need to examine the 'reaction' on a very small scale. The principles and lessons we derive from this scrutiny are far more important than simplistic conventions.

Crusoe: Good fellow, can you tell me clearly what you mean by 'entrepreneurial reaction'?

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Gulliver: You should know that the entrepreneurial reaction leads to the exploration of an emerging science – 'econophysics', as it has been dubbed, which borrows tools from physics to study markets. By analysing the reaction, we highlight microscopic elements whose configuration resembles an atomic structure.

Although this application to entrepreneurship of a construct from physics may at first seem a little forced, in fact I think I can convince you that business ideas, which are the units of entrepreneurship, are like atoms, the units of matter. At the centre (the 'nucleus') of a new venture creation there is a positively charged idea whose initiator has to make sense of it and have a vision. Almost all of its 'mass' derives from the strongly interactive 'particles', not easily distinguishable from one another I admit, and made up of entrepreneurial motivations and attributes, in the 'nucleus' around which active experimenters are arranged in orbits. The orbiting experimenters are responsible for the 'chemical' properties of the idea, such as practicality, profitability, sustainability and so on.

It is necessary for these 'particles' of motivations and attributes to be placed in a 'magnetic' entrepreneurial field so that the would-be entrepreneur gains entrepreneurial energy and the capacity to do entrepreneurial work to make the transition from entrepreneurial intention to entrepreneurial action. 'Entrepreneurial energy' and 'mass' are interrelated. The cube of creativity in business – that is,

> (creativity in technology) x (creativity in process) x (creativity in marketing)

– is the conversion rate between the two. The spirit of free discussion, open criticism and wide collaboration in the experimental lab intensifies creativity, which, like the beam of a searchlight, illuminates opportunities for starting a business.

An entrepreneurial reaction occurs when the 'nucleus' undergoes a change, releasing the energy needed to transform business ideas into real, commercially viable ventures.

In experimental laboratories, people from different industries and professions each look at what the others are doing with fresh eyes. Change comes about mainly through the adaptation and repurposing of one person's unfettered ideas to fit the ideas of others. By allowing us to build on one another's ideas like this, experimental laboratories increase the number of ideas that can lead to success. Such strong networks of people freely exchanging ideas are made possible because the opportunity costs of interaction are reduced and because the capacity of the interaction is increased. A small input into a network can produce a large output of entrepreneurial outcomes.

Crusoe: You know, in the long term I may venture into the physics of entrepreneurship. In the near future, for certain, I gladly accept your recommendation of experiencing experiments in a laboratory that connects aspiring entrepreneurs with different ideas and personalities. I must find out whether and how

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the same idea could be used in different fields. To take advantage of the multiplier effect of sharing – in plain speaking, 'I am going to use my idea in my field of use, and you are welcome to use it in your own field' – I am also going to give up my bad habit of working in a closed environment that is stifling my creativity and restricting my ideas.

Thank you, indeed, Lemuel. You are a good and trusted friend.

Note

1 This story is derived from and based on: Curley, M., and Formica, P. (2012), 'Experiencing Experiments – A Multiplayer Game for Sharing Ideas: Crusoe Gives Way to Gulliver', *Industry and Higher Education*, Vol. 26, No. 1, pp. 7–14.

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19

The Spider's Webs of Mr F and Mr M

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The history of humanity has been profoundly affected by the mobility and freedom of movement of people, goods and ideas. The two main characters of this tale – Mr F and Mr M – contributed much. At approximately the same time, at the end of the nineteenth and the beginning of the twentieth centuries, they wove two different webs that were both so innovative that they had a significant effect on the lifestyles of millions of people.

It is possible to identify Mr F as Henry Ford and Mr M as Guglielmo Marconi. In doing so, one must remember that in story-telling, and sometimes also in real life, reality and fiction, events that really happened and those born of the imagination and rumour, are often inextricably linked.

Mr F's web resulted in the exaltation of the self-centred conduct of car owners. Mr M's web, in contrast, gave impetus to the social and collaborative behaviour of today's 'digerati', the generation of the New Millennium sailing on the open waters of the Internet Ocean.

Mr F's web

Mr F had no intention whatsoever of complying with the wishes of people who demanded carriages and coaches. Rather than submitting to the demands of customers and attempting the impossible task of breeding horses capable of pulling gigs, carriages and coaches at 60 miles per hour, he reflected on the meaning of transport. At that time, the road network connecting villages, towns and cities was designed to be used by horses and carriages, with paved, rutted roads. There were blacksmiths' workshops, post houses and hotels for weary travellers and exhausted horses. The 'how' that occupied his mind was a vehicle so innovative that it would require a new road network, fundamentally different from that developed for the coach and horses. So it was – some might find it surprising – that our man started to look carefully at spider's webs. Of the various forms these took – spiral, funnel-shaped, tubular and leaf-shaped – it was the tangled ones that attracted his attention most. It was the tangle of interests that Mr F was questioning in his project to find a solution to his problem. This project revolutionized the concept of 'with what': no longer the horse-drawn carriage, but the automobile.

Mr F, who was passionate about mechanics and clocks, was no expert when it came to carriages and horses, but even if he had been he would have cast that experience aside. His fervent desire was to immerse

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himself in the infancy of a new world. As the Spanish philosopher George Santayana might have said, a real innovator is an eternal child who does not cling to accumulated experience.

It is in this spirit, liberated from the dross of the *status quo*, that Mr F prepares to weave his web. At first the result is small and fragile, as we find from an article in the *New York Times* of 22 June 1902.[1] The columnist wrote: 'Five or six years ago . . . there were fewer than fifty motor vehicles of various patterns (types, models) in the whole of what is now Greater New York', commenting somewhat sceptically that it would not be easy to persuade people accustomed to travelling by horse and carriage to change to the car. A mere two decades later, however, Mr F's web had spread beyond expectations. The *New York Times* reported on 6 June 1924 that the US$23 million of capital invested 20 years earlier in the automotive industry was worth almost US$2 billion in 1919, and that the number of workers in the industry had increased from 13,000 to 161,000. At the same time, capital invested in the horse-drawn carriage industry had fallen from US$152 million to US$97 million and the workforce had decreased from 91,000 to just 30,700.

Not only was the industrial landscape affected; the relationship of the driver of a car with the land was also different. A car could, in the same time, travel 15 times farther than a horse-drawn carriage. Mr F's web effectively reduced distances and created new links between markets, traders, producers, suppliers and customers. The world encompassed in that web became simultaneously larger and smaller: larger because it included more people, and smaller, because it brought together individuals, families and companies hitherto geographically far apart.

Life and death: horse-drawn coaches and carriages were the prey that became trapped and perished in Mr F's web. From this same web a new social class was born: middle-class car owners, from the first decade of twentieth century onwards, showed greater interest in material goods and confirmed the destiny of mass production as epitomized by the Ford Model-T – a mass-produced car that was simple in design, reliable and affordable.

Mr M's web

While Mr F's web is heavy, based on *terra firma* and dedicated to the movement of people and things, Mr M's is light, airy and used to

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transport information. Where the former creates a ready acceptance of nearness and proves to be a formidable trap for ensnaring competitors and customers, the second represents a new era in which trade relations flourish and mutual interests and obligations concerning social relationships are generated.

Mr M's web is spun without thread: it is woven with radio waves that can travel long distances with little to impede their path – not even the curvature of Earth itself. The young Mr M, not confined to academia, engaged in orthodox studies of physics and electromagnetism, but with his sights fixed well beyond the limits of his home near Bologna, he avoided the pitfalls of conventional wisdom. For instance, there were those in the 1890s who believed that the earth's curvature was an insurmountable obstacle to long-distance radio-wave transmission. But the young Mr M was an explorer of *terra incognita*, proceeding by trial and error. We can imagine him lost in his laboratory activity and receiving no enlightenment or guidance from existing theories. One moment he is busy trying to combine different concepts in an unorthodox manner, the next, he is busy assembling, modifying, changing and substituting different physical components.

Mr M's web doubles reality, adding the cognitive dimension of mass communication to Mr F's tangible dimension of vehicles and roads. The first radio waves received by Mr M's equipment in 1895 showed how fragile and small his network was. It was to expand in 1901 when, on the twelfth of December of that year, Mr M was able to link two antennae located on opposite sides of the North Atlantic, in Cornwall and Newfoundland. Since that fateful day a crescendo of signals, voices, words, pictures and images has been captured in the web and then disseminated around the globe. From the dawn of the twentieth century to the late 1990s, from radiotelegraphy and radio communication to the World Wide Web, Internet technologies and mobile phones, the yarn of the web first spun by Mr M has become increasingly taut, thick and strong.

When interviewed by the *New York Times* 25 years after the experiment he had carried out in December 1901, Mr M said that he wanted the choice of how this network would be used in the future to be left to people's imagination. A century later, Millennials relegated to second place the pleasure of 'going it alone' by car, travelling routes traced by Mr F, in favour of 'sailing together' in the network conceived by the creativity of Mr M. In cyberspace, in the spaces of shared knowledge, the Millennial

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generation continues Mr M's painstaking weaving, placing the right of access to information and knowledge at the top of its value scale and downgrading ownership of a particular means of physical transport. Mr F's network reinforced the value of the exclusive possession of things for safeguarding the interests of the individual, of 'well-having'. Mr M's web represents an interlude played between a Fordian scene of the modern age of mass production and the vista that Marconian sound waves revealed to the new age of knowledge, where value is measured by acting together to reach common interests, protecting life itself and 'well-being' on, and of, the planet.

Note

1 Extracts of articles from the *New York Times* quoted here are taken from *The Story of America Business: From the Pages of the New York Times*, edited by Nancy F. Koehn.

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The Red Thread of Coffee

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The world is an experimental outdoor laboratory for supporters of innovation. Here, we can imagine a long, red thread unravelling from the skein of events which, by means of stories, historical facts, writings and organized or casual occurrences, has acquired many characters. Our present theatrical tale, performed in the theatre of innovation, concerns a universal commodity: coffee. Our red thread has at one end a Yemenite shepherd of ancient times and, at the other, a latter-day entrepreneur of the digital era who has given a unique and special taste to the two aspects of coffee: the place and the drink.

The characters

In order of appearance, the characters of this story are:

Kaldi: a young shepherd of Ethiopian origin.
Avicenna: an Arab doctor of high repute.
Prospero Alpino: a botanic doctor.
Leonhard Rauwolf: a doctor of Augsburg.
Procopio dei Coltelli: a Sicilian nobleman.
Various: English and French cultural representatives and businessmen, workers and technicians of the Bologna engineering industry.
Starbuck: First Officer of the 'Pequod', the whaling ship hunting Moby Dick.
A trio: Jerry Baldwin, Professor of English; Zev Siegel, Professor of History; and Gordon Bowke, writer.
Mr Howard Schultz: a manager and entrepreneur.

What is unique about our characters? What do they have in common? Each is a rare member of its species, living in our story in a period of time different to their usual environment. History – the steamroller of time – has forced together, in our virtual world, natives and non-natives alike, innovatively combining their characteristics so as to create a vision that is always greater than the sum of its parts. Coffee is the name of the whole: its parts are coffee as a drink and coffee as a place of entertainment.

On the routes of coffee

The next 'big idea' might arise in any part of the world, from any individual – even one unaware that their idea has started an irreversible

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process of change. Do not seek places and individuals having a monopoly on ideas: you will not find them. Our story starts with an inexperienced drover who, without realizing it, releases the innovative potential contained in some seeds.

Once upon a time there was a young Yemenite shepherd named Kaldi who fed his flock with coffee berries. 'Those fruit must be the work of the Devil,' he pondered, noticing how the animals became agitated after eating them; and it was known that monks at the nearby Cheodet monastery regarded the berries as devilish and put them on their fires.

Great ideas travel on the wagon of chance. Seated on the wagon, supported by the wheels of casual occurrence and unpredictability, the idea of coffee began its journey through time and space. The roasting process of the Cheodet monks caused the aroma of coffee to fill the air. Time passed, places changed and others were discovered, but, from that moment, the coffee cup entered society, marking time in the mornings and then encouraging socialization – with people enjoying it whilst engaged in idle chatter, or playing cards – wherever coffee was made.

The first to benefit from this natural harvest were the monks. Scientists then arrived and started to reveal the book of nature and understand its secrets. Reading that book, Avicenna, a Persian scientist and doctor of the eleventh century, promoted the therapeutic qualities of coffee, including it as a remedy in his *Canone di Medicina*. Many other doctors were to follow his example and prescribe coffee as a medicine, especially at the end of the seventeenth century.

Ideas and things run with the mind and legs of human beings. From Islam to Catholicism, from the Arab peninsula and the Eastern world to Italy, coffee continued its journey through different, changing places and times. Towards the end of the sixteenth century, men (and it was men) from the Middle East would be the first to start conversations and read from books about coffee. The Venetian botanical doctor, Prospero Albino, having been to Cairo, taught his fellow Venetians about coffee as a medicinal plant: Leonhard Rauwolf, a doctor of Augsburg, published one of the first books about coffee after visiting the East between 1573 and 1578.

The coffee machine effect

In public places, at work and elsewhere, ideas spread spontaneously, are developed and give life to entrepreneurship. This is the 'coffee-machine

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effect', particularly prevalent it seems amongst students and academics in universities and colleges in the UK and the USA. However, the effect is older than Anglo–Saxon places of learning.

Coffee, then, is (if it ever was) an ancient medicine that many people now like and enjoy drinking. Above all, it is a very pleasant drink to share with others, to sip during meetings – which gatherings, in the Age of Exploration, can be regarded as the intellectual counterpoint to geographical discoveries.

This is how meeting places, where it was possible to take 'Vino d'Arabia' or 'Vino dell'Islam', were founded. These names reached Europe by way of the Ottomans who brewed and served coffee in place of alcoholic beverages which were prohibited by Muslims. Between 1683 and 1686, a period of war and peace between the West and the East, 'Viennese coffee' was first served (in 1683, the year the Turks were defeated); the first 'coffee shop' opened in Venice (also in 1683); and, in 1686, the first 'literary café' in Paris – Le Procope – was opened by a Sicilian nobleman, Procopio dei Coltelli. With customers such as Voltaire, Diderot and Fontanelle, Le Procope became the cradle of literary, philosophical, scientific, political and artistic events. Since that time, coffee has become a seemingly indispensable accompaniment to intellectual discourse and debate, to the extent that Pellegrino Artusi, the Italian master chef of his time, was moved to observe that '… this precious drink spreading a joyful excitement throughout the body was called the intellectuals' drink, the friend of academics, scientists and poets because by shaking nerves, it clears ideas and makes imagination more lively and thought quicker'.

The cook Francesco Procopio dei Coltelli was gifted with a blend of entrepreneurial spirit, efficiency and artisan flexibility. All of these qualities allowed him to transcend the 'provincial' barrier, transporting him from Sicily – where he created Italian ice-cream – to Paris where he gave life to the café, a place for meetings, discussion and debate and the exchange of ideas and thoughts and where, in the eighteenth century in England, these new 'coffee houses' would play their part in the industrial revolution, underpinning advances in science and engineering with the liberal revolution taking place in general society.

In the period of Enlightenment and Rationality, the so-called Age of Reason, people like Joseph Priestley, who discovered oxygen, James Watt, the Scottish engineer who refined the steam engine, and Josiah Wedgwood, an entrepreneur who developed ceramic tableware and

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decorative items, would meet in the English coffee-houses to drink coffee and smoke tobacco ('drink the smoke', or 'chi yan', as the practice was called by tobacco smokers in China in the seventeenth century).

Thus it was that in Europe in the eighteenth century, immersed as the continent was in the scientific method of Newtonian physics, the introduction of coffee, to be sipped in company, was volcanic in effect. Inventions and discoveries seemed to spread like molten lava, arising from conversations between intellectuals stimulated by caffeine to such an extent that the historian Tom Sandage has described the coffee houses as the Internet of the Age of Reason. Here was the starting point of the phenomenon which was to become known as the cross-fertilization of scientific, industrial and financial ideas.

The Age of Enlightenment and the first Industrial Revolution had come and gone before Italy became involved with modern industrial development. In the 1920s, coffee, tobacco and card games would be the three key ingredients of socialization between ordinary working people, whatever their employment. More so than with current academic and professional conferences, with their rituals of exchanging business cards, the ritual of drinking coffee while playing cards in city bars gave rise to informal relationships amongst different people, often with unexpected results. For example, in just such bars in Bologna, general and specialist employees first developed and then launched packaging machines that would eventually reach global markets.

From the artisan 'suspended' coffee to the Starbucks global brand

In Italy, Naples and Palermo are reputed to have the best coffee-houses in the world: naturally their native clienteles, as frequent visitors, know this. Everyone has their own preferred coffee-house, usually run as a small, self-contained business. There are numerous coffee bars in these cities, with many local clients, in contrast to the few foreign tourists and business people who visit such establishments generally on their way to somewhere else.

These small, artisan coffee houses in the historic neighbourhoods of Naples and Palermo provide not only companionship for the regular customers but also genuine concern for the welfare of their less-fortunate neighbours. Naples has became famous for its 'suspended' (that is, 'to be

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drunk') coffee. Here is how Tonino Guerra, an Italian poet, writer and scriptwriter described an experience in one such coffee house in his book *The Kamasutra Valley*:

> Vittorio invited me into a bar. Somewhat later, two people came in and ordered four coffees: they paid for all of them but drank only two. The other two were left 'suspended', that is, available for those who could not afford to buy a cup of coffee. And, in fact, a minute later, a tramp came in and asked, 'Excuse me, is there a suspended coffee?' Of course, there was, and they gave it to him. There are many examples of these good deeds in Naples.

Geographical distances are also cultural distances. In Naples and Palermo, drinking coffee is a pleasure, a symbol of the spontaneity of an oral tradition that encompasses casual conversation at the bar and social solidarity. The artisans are like a brotherhood, protecting traditions in order to pass them on to their successors. Their world is ancient: their cities have high walls to defend the status of their craft.

If Italian artisans keep alight the flame of tradition, intellectuals in the USA can be considered as having started a latter-day fire of innovation. In 1971, in Seattle, thousands of kilometres from Naples and Palermo, Jerry Baldwin (a professor of English), Zev Siegel (an historian) and Gordon Bowker (a writer) opened their 'Starbucks Coffee, Tea and Spice' stall in the city's main market square. Initially they sold only the raw materials – coffee beans, leaf tea and spices – and did not offer brewed drinks or food. Unlike the neighbourhood-based artisan coffee-houses in Naples and Palermo, which thrive on close relationships, with nicknames or family names often being used as the name of the shop, the three founders of Starbucks chose to create a corporate logo with no reference to themselves at all.

Legend has it that the name Starbucks derives from Starbuck, the First Officer under Captain Ahab of the whaling ship *Pequod,* in Herman Melville's novel *Moby Dick*. The prudent Starbuck, a Quaker, stands in stark contrast to the demented character that is Ahab. So, Starbucks is a coffee house where imagination rides on waves of romanticism, roams and hunts in deep waters on the routes of the pioneers of the coffee trade between East and West. It is an enterprise arising from driving and deep ambition and similar to Captain Ahab's quest, but always with the controlling influence of a First Officer such as the fictional Starbuck. The true story of Starbucks is as epic as Melville's novel, a story which, from its beginnings in 1971, contributed to innovation and change in

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coffee-houses worldwide, resulting in the now instantly recognizable, international brand and logo, that are Starbucks.

The chain reaction which led to Starbucks becoming a global brand started when the creativity of Baldwin, Siegel and Bowker came into contact with the commercial acumen of Howard Schultz. Schulz contributed business efficiency, complementing the intellectual skills of the three founders. He visited Milan in 1983 and was struck by the fact that, as in Palermo and Naples, coffee houses there were rooted in their local communities. As such they commanded the loyalty of their customers, with strong relationships being formed between these customers and the owners and staff of the coffee shops. Schulz had a vision that Starbucks could emulate this on a global scale, irrespective of locality or political, religious or cultural influences. The common factor would be the Starbucks brand and what it represented.

The thread linking Kaldi, the Arab shepherd, and Schultz, the American entrepreneur, is long. It represents the distance between 'suspended' coffee and global coffee. All the characters along this thread have been participants in a tale of innovation that has influenced the lifestyles of many generations.

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21

Subterranean Currents: Trade Relations between the Middle Kingdom and Arabia Felix in the Digital Age

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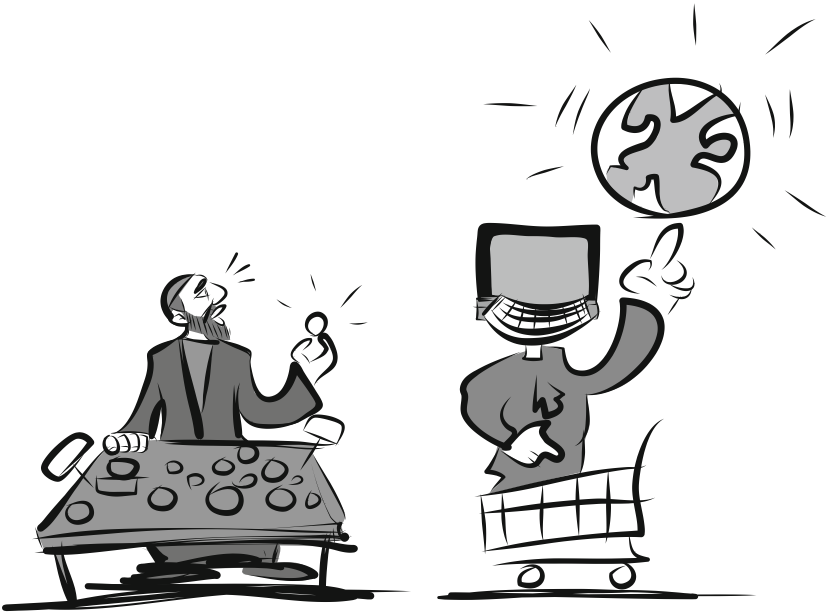

GRAND BAZAAR VS E-BAZAAR

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> Now I will believe
> That there are unicorns; that in Arabia
> There is one tree, the phoenix' throne, one phoenix
> At this hour reigning there.
>
> *The Tempest*, William Shakespeare

> We send missionaries to China so the Chinese can get to heaven, but we won't let them into our country.
>
> (attributed to) Pearl S. Buck

Mythical creatures in Arabia, mystical priests in the Middle Kingdom: it really is an amazing combination of legends and beliefs that creates bonds between two extraordinary re-emerging economic powers at the dawn of the twenty-first century.

Streams of trade between China and America, China and Europe, China and Asia, and China and Africa look like swollen rivers on the world map of the 'meteorology of economics'. No less powerful, albeit invisible to the naked eye, are the subterranean currents of trade relations between the Middle Kingdom and Arabia Felix, the peninsula at the junction of Africa and Asia which plays a critically important geopolitical role because of its vast reserves of oil and natural gas.

The following narrative concerns an Australian forward-looking trader, who divides his life between Beijing and Perth, and a young Chinese Muslim geek who dreams of digital markets for enhancing trade relations with Arabia Felix.

From the bazaar to e-commerce

Once upon a time traders drove camels in long caravans on their way to bazaars – the places of prices. Today, it is bits, not camels, that move goods. Businesses are seeking the best ways to integrate e-commerce into their operations. Even those businesses that have already dipped a toe (or even a whole leg) into the e-commerce waters are recognizing that this is just the beginning of a long journey rather than an instantaneous solution.

China's growth shifts the geopolitics of oil

The rapid economic development of China clearly has major implications for its foreign relations with the oil producing countries of the Middle

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East. Strong bonds of mutual dependence are being created. The Chinese government, which officially inaugurated diplomatic relations with the Kingdom of Saudi Arabia in 1980s, has in recent years expended considerable effort in laying the basis for a close and cooperative relationship. At the heart of this relationship is the economic dimension, focused on oil and petrochemicals.

This is not just a matter of importing oil from Saudi Arabia, with commercial goods being exported in exchange, but also of far-reaching investment deals. On the one hand these relate to Chinese investment in Saudi oil production and, on the other, to Saudi investment in the development of petrochemicals in China. More Saudi oil currently goes to China than to the USA. Saudi sales to China surged above a million barrels a day in 2009, nearly doubling from the previous year. The Kingdom now accounts for a quarter of Chinese oil imports.

These trends impinge on security issues: for example, Saudi Arabia has increased the purchase of military equipment from China. From the Chinese government perspective, this is presumably intended to empower China's ability to foster stability in the Middle East region – in keeping with its own interests.

The Australian trader reports a new impetus to Sino–Arabic relations forged by Muslim communities

The 2010 China Investment and Trade Fair and the first China–Arab States Economic and Trade Forum opened in the north-western city of Yinchuan, capital of Ningxia Hui Autonomous Region, with the aim of developing and increasing investment activities in and trade links between China and the Arab states. As Chen Deming, Chinese Minister of Commerce, stated at the opening ceremony of the five-day event, 'The forum will certainly strengthen and deepen the traditional friendship and win–win cooperation between China and the Arabic states, as well as the Muslim regions, to realize mutual development.' Wan Jifei, chairman of the China Council for the Promotion of International Trade, said the Forum was being held 'in the right place' because Ningxia had a large Muslim population and the region had historically played a significant role in Sino–Arabic relationships. Ningxia is home to at least 10 per cent of China's 20 million Muslims. It has drawn up plans to expand trade and economic cooperation with

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the world's Muslim community. According to Nader Al Dahabi, former Prime Minister of Jordan, 'We hope the future cooperation between the two sides will not be limited to trade. We hope to strengthen cultural cooperation, based on better mutual understanding of society, education and people.' The five-day forum and fair attracted more than 6,000 government officials and business people from 66 countries, regions and international organizations, including Chinese Vice Premier Hui Liangyu. At the summit meeting of the Forum, Jaafar Hassan, Minister of Planning and International Cooperation of Jordan, said, 'We welcome China's enterprises [which plan] to invest in energy and water resources and also in other promising fields, including hi-tech industries, food processing and electrical manufacturing.' He continued by confirming, 'China has offered US$116 million of interest-free and preferential loans to the country as of the second quarter this year [2010].' Abdullah Bin Ahmed Al Saleh, Director-General of the Ministry of Foreign Trade of the UAE said,

> The Chinese economy and the United Arab Emirates (UAE) are complementary to each other. The export of Chinese labour services has extended from construction to other fields, including medical treatment and sea transportation. More and more Chinese workers can be seen in the UAE. At the same time, China has opened its door to the Arab states with its 1.3 billion potential consumers.

Su Jing, commercial counsellor of the Department of Foreign Trade of the Ministry of Commerce of China, echoed these views:

> The Arab states taken as a whole represent a large market with a population of 339 million. The states rely on oil and gas production but lack a manufacturing base, while China is a large importer of oil and its machinery exports take up a large market share of the states.

The total volume of Sino–Arabic trade grew to US$132.8 billion in 2008 from US$5.8 billion in 1996, but decreased slightly in 2009, due to the global economic crisis, to US$107.4 billion. However, the volume of trade made a rapid recovery in the first six months of 2010, reaching a value of some US$69.1 billion, he said.

Chinese Vice Premier Hui Liangyu said that there was significant potential for future, wider cooperation between China and the Arab states, as two-way trade continued to grow. He said that, as of the end of June 2010, direct investment from China to the Arab states had reached US$3.78 billion and the areas of investment had extended from resource

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exploration and exploitation, food and textiles to those such as leather manufacturing, automobile assembly and petrochemicals. At the same time, investment from the Arab states in China was valued at US$2.15 billion, covering fields such as petrochemicals, food, real estate and investment framework. In addition, other sectors which had received investment from the Arab states, including finance, tourism, aviation and new energy sectors, were booming. Hui said that, in order to strengthen this mutual cooperation, more strategic partnerships had to be developed.

A young Chinese Muslim geek thinks hard about the space where the Arab bazaar meets e-commerce

Digital markets are, in a fashion, the World Wide Web version of Arab bazaars: vast numbers of potential buyers and sellers use the Web to gather together. One-stop shopping, in which all information is immediately available, insignificant transaction costs and constantly changing and negotiable prices all make continuous interaction between buyers and sellers possible. Both parties negotiate on price and other factors until they achieve the best match between demand and supply.

Thanks to digital technologies, buyers can, as they would in an Arabian bazaar, set out their various requirements – speed of delivery, evidence of the supplier's reputation, a warranty period, the right price and so on. The technology is automatically and by design capable of helping those involved to secure the best deals.

The bar code, Internet and last-mile delivery systems have been merging to form a cluster of innovations that has resulted in radical changes in warehousing, ordering and delivering goods. The Internet has affected front-end operations, reducing transaction costs substantially. The bar code has changed back-end operations into automated, machine code-driven warehousing. And, finally, last-mile delivery systems provide an innovative infrastructure consisting of aircraft equipped with all-weather navigational equipment, road vehicles and satellite links, all of which help to guarantee just-in-time shipping. The bar code and the last-mile delivery systems together have contributed to cut the average transaction time – that is, the period between the time of ordering and the moment the goods are received – from several weeks to a few days.

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Whilst lower transaction costs and reduced transaction times in e-commerce generate cost savings for customers, social interaction is needed to enhance and improve overall customer satisfaction. Digital markets do not operate as self-service gas stations. The human touch of the Arab bazaar remains a vital ingredient. The Internet age has created a new job profile, that of the sales adviser who will eventually replace the 'order-taker' of old.

If history offers any indications, there exists – behind the emergence of today's e-commerce – the formation of a long-lasting process for exploring alternative paths for market creation and trading. Major changes in the way companies do business have been driven by consecutive waves of digital innovation. The Internet is not the e-commerce revolution, but one of its key components.

The Chinese Muslim geek dreams of becoming a 'Web-entrepreneur', acting as a personal shopping agent for consumers. Knowing that those who share multiply, he is keen to share the experience of the 'Digital Arab Bazaar' with his peers in Arabia Felix.

Moving towards the middle

Travelling into the future, we see the Middle Kingdom and Arabia Felix moving toward the centre instead of drifting to the extremes. Virtue lies in the middle, even though it does not reside in the exact centre, to paraphrase Aristotle. In the search for the Aristotelian golden mean, in order to develop and reinforce trade relations, the virtue of Confucian proper behaviour is manifested in making life easier for the average man and woman in an era of radical innovation – innovation that is occurring at an accelerating pace in the second decade of the twenty-first century.

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An Interview with Maison Dubai's Style Director

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Many cities compete to be the best innovation stylist. Dubai is one of them. The style of its Maison has attracted increasing attention from a constantly enlarging international audience. In the 1950s, the USSR Maison was all the rage. Its garments had the fascination of centralized planning, the replacement of imports with home-grown products and public investment in heavy industries. From the 1970s to the 1990s, first Japan and then the South East Asian 'Tiger Economies' won universal acclaim with their commercial and entrepreneurial models. Currently the Chinese and Indian Maisons are in vogue; but Maison Dubai is no less fashionable.

In this interview Maison Dubai's Style Director (SD) talks with a Correspondent (C) specializing in innovation fashion.

C: Dubai presents its cosmopolitan style to the world at large, fostering an international movement of talent and allowing people to navigate the rapids of innovation to reach hubs that control business opportunities with high growth potential that otherwise would be inaccessible. Looking back, could you tell us what the scene was like here before the dawning of innovation?

SD: Until a few decades ago, the only traders that came here were button manufacturers. At that time they bought mother-of-pearl which, together with shepherding (and before that, piracy), constituted the only significant economic activity of this region. We learned from that, transforming what for us was peripheral knowledge (buttons) into a totally new way of presenting ourselves to the market. We have come a long way from anonymity towards universal acclaim, and in a very short time, too!

These days Maison Dubai, located as it is in a strategic, international logistics trade hub, is a veritable melting pot of local people and ex-patriots who populate our brands – from Internet City and Media City to Knowledge Village, Culture Village and the other areas of innovation that define our style. With these attractions, the Maison offers first and foremost an extremely stimulating lifestyle for intellectuals and knowledge entrepreneurs. It is precisely this cultural diversity that attracts people and capital from all over the world.

C: One of the many projects that you are proud of is the design of your international airport, now used, I believe, by all the leading global corporations. Could you tell us something about this?

SD: We designed the airport to act as a meeting place of peoples and cultures, as a pivot between the developed West and the emerging East. When designing it, we used Western economic development models and we chose several that allowed foreign companies to invest here, to repatriate capital and profits without tax restrictions and currency constraints and to enjoy the

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assurance of reliable and secure Internet communications. This explains why today we can claim that ours is the most diversified Maison in the Persian Gulf region.

C: But not everything went smoothly: you very nearly went bankrupt. How did that happen?

SD: We had already been through the difficult years of an economic depression caused by the collapse of the pearl industry. The second time, the fall was even more painful. However, it enabled us to learn a lot from the mistakes we had made. Here is how I see us meeting our future.

Maison Dubai had nurtured and cultivated the hope that the large sums involved would, if you like, act as an elevator to take it to the lofty heights of metropolitan excellence. But, on its way, something happened: the elevator was exposed to the risk of plummeting to earth. What caused this near disaster was the speculative bubble, inflated by six years of a massive construction industry boom, riding on the waves of Abu Dhabi's huge petro-dollar income.

Thanks to Abu Dhabi money and determination to raise the symbols of innovation to the sky, our Maison was inundated with cranes constructing gigantic towers reminiscent of the spectacular artefacts of past civilizations. It has been estimated that between 15 and 25 per cent of all cranes in the world have been used by us!

In the space of a few months the bubble burst and confidence collapsed. It was an unpleasant experience but the lessons learned were strangely invigorating. The Maison, I hope, will no longer regard the property market as if it were the Pole Star showing the way to prosperity in the sky of innovation.

C: From the architecture of Burj al Arab Hotel to the Palm Islands and The World – the largest artificial islands conceived and built by man – and the highest skyscrapers ever built, each new construction project, involving enormous sums of money, has attracted a huge number of new workers, many of them unskilled, from Pakistan, India, Bangladesh and the Philippines. A substantial minority with no social or political representation: might this be seen as a sign of the poverty of your social capital?

SD: Well, yes, while physical capital was expanding, as you can readily see from the crowded city skyline, the social capital has declined. This decline has been caused by the Dubai élite which controls the Maison. The gap between the élite, which is generously served and protected by the public hand, and the mass of low-paid manual workers, has remained vast. No less worrying is the stark contrast between our leaders and the foreign intelligentsia attracted here to fill the many gaps in our knowledge and experience.

C: At the time of the Renaissance, Venice, Milan, Florence, Rome and many Italian small towns and districts were at the forefront of cultural and artistic events which had a major impact on their environments. Today, in the new age of knowledge, the fruits of human invention are also manifest in physical

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architecture and the geography of place. Maison Dubai appears to be a significant part of this phenomenon, with the organization of international cultural events attended by top managers from the best-known global companies – we call them the 'entrepreneurial stars' of the Millennial generation: Nobel Prize winners, professors and internationally renowned professionals. Do these events have a significant impact on the Maison?

SD: A lot of work still needs to be done on this. The events industry is somewhat ephemeral because you cannot buy knowledge with petrodollars. The only way to nurture it in the country is through established, transparent and committed relationships with talent attracted from other countries. The Maison needs to instil greater confidence in outsiders, to tempt the non-native talent to stay longer than the current average of three years.

So, it's a good thing that the Maison is enriching itself with intangible assets, by attracting the prestigious American and European universities. Of course, we need to bear in mind that non-native professors and researchers, already members of international knowledge communities, are unlikely to settle in environments that are indifferent to, or not particularly interested in, research. This means that the Maison ought to invest a lot more in knowledge. Otherwise, our local potential for higher education and, as a result, the ability of the Maison to generate research and development, will remain low.

C: So, it seems that the ambitious Maison Dubai mega-projects have foundered because they were unable to meet the challenge of training a creative class with the skills needed to transform the desert into fertile ground for businesses set up by young graduates, scientists, researchers and technocrats, architects and designers, fashion designers, writers, communicators and editors, artists and other protagonists of the knowledge economy?

SD: Let's say that we have yet to act on the proposal frequently put forward by our Research Director that '… education represents the future for this region, but educating the young generation is not sufficient: it is essential that we provide the tools for creating innovative enterprises, to avoid many highly educated young people being dependent on public money'.

C: The tsunami of speculation easily overcame barriers, shattering the cosmopolitan showcase windows of your Maison. Do you think you can achieve the transformation of Abu Dhabi's oil wealth into creative energy which, through Maison Dubai, could feed the entire Persian Gulf region and thus turn into reality the dream of an open Arab society, promoting and supporting social and economic policy issues of the twenty-first century?

SD: Maison Dubai intends to open a route along which the petrodollars from Abu Dhabi, which feed our investments, would be transformed into intellectual energy, to generate an open knowledge society.

To many visitors and guests the Burj al Arab Hotel represents a bridge between the closed tribal society of the past, which is reflected in its name ('burj'

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means 'tower', recalling watchtowers in the desert), and the future of an open, multicultural society, symbolized by its design as a ship's sail.

In the past there were only the sand and the dunes of the desert. Now, the Maison is a large, futuristic human settlement. At the dawn of innovation, the aridity was physical; during the boom years it was social. By investing in social capital, the fields of tomorrow will be ploughed by interpersonal relationships no longer afflicted by conflict and tension between locals and expatriates.

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23

Letter to the Millennial Students of Tartu University

Formica, Piero. *Stories of Innovation for the Millennial Generation: The Lynceus Long View.* New York: Palgrave Macmillan, 2013.
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In the first ten years of the twenty-first century, Silicon Valley in California still represented the promised land for innovators: from wizards to scientific entrepreneurs. But there were places, far from the West Coast sunshine, where the mists of tradition that had long enveloped them were beginning to clear. Estonia, influenced by strong innovative pressure from Finland, is one outstanding example. At this time the number of non-native lecturers at the University of Tartu was increasing, as was the number of itinerant Estonian students attending other universities in Europe and beyond.

In 2091, one hundred years after Estonia regained its independence, the university's archivist discovered a letter a visiting foreign lecturer had written in 2011 to his students. The letter gave advice on how to leap beyond the visible horizon. By the time the letter was found, those Millennial students and succeeding generations had managed to reach and travel beyond different horizons. Because the horizons of knowledge are infinite, to halt is to travel backwards. Aware of this danger, the Millennial students of the time, having understood and accepted the message of the foreign lecturer's letter, started to teach the new generations the art of rebelling in order to innovate, so that they could continue to navigate from one horizon to the next.

We reproduce here some important passages of the 2011 letter.

Dear Millennials,

The past is just what has happened. It ought not to be treated as a precedent that justifies its reproduction.

You were born in the years of a new Estonian childhood, when your country regained its independence, previously lost under the Soviet yoke. Freed from the burden of communist ideology, the Estonian hot air balloon took flight. Now it is soaring high, and your aspirations and expectations should take flight too.

It was in Estonia, while you were growing up, that the Skype phenomenon was developed and grew with seemingly explosive force. On the strength of this success, Tallinn is now a member of the club of world capitals in which innovative start-ups are bred. The Estonians have proved themselves prolific in this respect, with a very high number of start-ups per capita.

For centuries your city, Tartu, has been at the centre of the academic revolution in Northern European countries. Founded in 1632 as a result

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of a Papal Bull (issued by Gustavo Adolfo II of Sweden), the University of Tartu is, after Uppsala, the second oldest university in the Swedish empire and has been a crossroads for students and teachers from many corners of Europe. When Estonia regained its independence, these crossroads experienced a dramatic increase in arrivals and departures. Now, the University of Tartu is active in the training of an impressive research industry and the entrepreneurship engendered by it, free of national, linguistic and cultural boundaries.

With your networks of state-of-the-art infrastructural technologies already in place and the intellectual conduits of the knowledge society and economy created, I see you as the digitalized, ubiquitous citizens travelling across the planet and the minds that inhabit it like a flash of light. Flatland, the land of entrepreneurial ideas ironed smooth by business plans crafted in start-up incubators, is behind you now. In front of you there is Augmented Reality, where ideas are multi-dimensional, cultivated in experimental laboratories for innovative, nascent ventures, where the lenses of physics and cognitive science enlarge entrepreneurial vision.

I implore you therefore to look forwards, not backwards. I hope that you will explore the far side of the moon, to find unexpected sources of opportunity. I urge you to encourage divergent opinions and points of view to stimulate creative connections and to reap the value of cultures different from yours. In brief, I hope you will break with continuity, swallowing as you do a good dose of unreasonableness. As Charles Handy reminds us in *The Age of Unreason,* Peruvian Indians, mired in the well of continuity, failed to understand that what they saw on their horizon was not a strange meteorological phenomenon but, rather, the threatening approach of the invading Spanish fleet. So, you need to become immune to the Peruvians' syndrome of reasonableness which caused them to perfect knowledge of things that exist. By rebelling against the *status quo*, you embrace discontinuity with the spirit of unreasonableness – which resulted in the Phoenicians, accomplished and innovative seamen, discovering worlds beyond their own.

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Epilogue: Learning How Events Not Supposed to Happen, Happen

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> The expected always happens.
>
> Benjamin Disraeli
>
> Ignorance is bold, and knowledge is reserved.
>
> Thucydides
>
> It is what we investigate that reveals how good we are.
>
> (Adapted from Marcus Aurelius)

Sapling, ten years old and last-born of the Tree family, once declared to his father: 'When I grow up I want to be a book,' immediately adding 'Digital, of course', thus acknowledging his father's frequent complaints about trees being cut down simply to produce paper for printed books.

'What folly is this, you rebellious child?' his father responded sharply – as a parent might.

It was creative madness, for Sapling was choosing not to accept the restrictions of established custom and practice. An ambitious youth, he dreamed of becoming an entrepreneur, as did his peers of the Millennial Generation whose wish was to manage fast-growing and sustainable start-up businesses in the digital economy.

One of many trees in a dense forest, Sapling, once fully-grown, might otherwise find his view confined to the visible horizon. However, the fertile imagination of our little tree, in the years of his tender, green youth, extends beyond that boundary: imagination compensates for the limits of knowledge. Unknowingly, Sapling is following in the footsteps of Einstein who recognized that imagination was moved by a force more powerful than knowledge.

But Sapling is endowed with more than a capital fund of imagination. 'If I share my creative ideas with others different from me', our hero thinks, 'I will be able to benefit as our ideas collide. If two similar ideas coalesce, I can generate a third, one more attuned to my goal.'

Sapling, in short, planned to acquire relationship capital, using the principles of integrated collaboration and shared values of Open Innovation 2.0 as his inspiration. He wants to make things happen that were hitherto deemed unthinkable: for Sapling, this means the transformation of a tree into an e-book. He learns about a new business model driven by the quadruple helix of academia, industry, government and society. The four helical strands combine, to travel beyond the visible horizon on the metaphorical sea of structural change – something that could be achieved only through cooperation with others. Using his

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accumulated stock of imagination and relationship capital, Sapling acquires the experience needed to invest in entrepreneurial capital. Thus Sapling, equipped with his new forms of capital (imagination, entrepreneurial and relationship), will become an e-book as he grows and matures.

He will not have eschewed his nature: he will have redefined the way to be a tree.

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