



School's Over: Learning Spaces in Europe in 2020: An Imagining Exercise on the Future of Learning

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Preface

This report provides a visionary scenario of a 21st Century Learning-intensive Society where Learning Spaces are the next school. It is an imaginary snapshot of learning in Europe in 2020 which has been developed on the basis of a rigorous foresight approach. It presents a discontinuous model of how people learn and how what they learn is used in everyday life. The vision provokes and challenges the assumptions that currently dominate, often implicitly, the choices being made today. It includes hypothetical policy options for the imagined Learning-intensive Society Learning Spaces. The visionary scenario and the policy options that are part of it are intended to provide food for thought on the possible future of learning in Europe in 2020.

“Learning Spaces” (LS) is the term used in a report published in 2006 by the European Commission's Institute for Prospective Technological Studies, “as a way to embrace a different view of future learning”.¹ The current report moves the discussion of Learning Spaces forward. It is written by Riel Miller (www.rielmiller.com), Hanne Shapiro and Knud Erik Hilding-Hamann (www.danishtechnology.dk) and is the result of a study commissioned by IPTS.

¹ Punie, Y. & Cabrero, M., 2006. The Future of ICT and Learning in the Knowledge Society. Report on a Joint DG JRC/IPTS-DG EAC Workshop held in Seville 20-21 October 2005, DG JRC-IPTS, European Communities, March 2006, EUR 22218 EN.



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“The conception of education as a social process and function has no definite meaning until we define the kind of society we have in mind.”

John Dewey, Democracy and Education, 1915

Miss Viola: “Good morning class!”
Class: “Good morning Miss Viola!”
Miss Viola: “Today we begin with the most important lesson you will ever learn at Penguin Elementary. Does anyone know what that is?”
Hugh: “We have to find our Heart Song all by ourselves.”
Miss Viola: “Well done Hugh.”
Hugh: “It is the voice you hear inside.”
Miss Viola: “Yes!”
Hugh: “Who you truly are!”
Miss Viola: “Yes! So, take a moment and let it come to you.”
There is a pause, then a clamour.
Class: “I got one!”, “I got one!”, “I got one!”, “Pick me”, “Pick me”, “Me”
Miss Viola: “Okay, Seymour”
Singing starts: “Don’t push me ‘cause I’m close to the edge, I’m trying not to lose my head...”

*The scene from the film **Happy Feet** when the young penguins start the lifelong development of their Heart Song, Warner Brothers, 2007*

“Articulate human groups share a natural human inclination to attach universal significance to their own experiences. The pattern is not inherent in the events themselves; it is imposed upon them out of the consciousness and experience of the historian. The pattern is, however, determined not so much by the historian’s view of the present as by his view of the future. Past and future are the two essential time dimensions; the present is an infinitesimally small moving point on a continuous line consisting of past and future. It is thus the future prospect even more than the present reality which shapes the historian’s view of the past.”

E.H. Carr, “The New Society”, Macmillan, 1951, Pp. 12.

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Executive Summary

“Learning Spaces” (LS) is the term used in a report published in 2006 by the Institute for Prospective Technological Studies, “as a way to embrace a different view of future learning”. This report moves the discussion of Learning Spaces forward by refining the concept and linking it to possible policy initiatives. The report builds on the premise that the context for learning is already changing, and thus the characteristics and enabling infrastructure for learning spaces may also be changing. To clarify the nature of these changes an advanced scenario methodology is used.

The report builds a scenario of a 21st Century Learning-intensive Society (LIS), which could emerge from the potential of the present. The scenario is an imaginary snapshot of how society might function with open learning at the core of what everyone does all the time, everywhere. In the LIS scenario, Learning Spaces (LS) are the next school. It is a vision of learning that differs radically from the conventional classroom model where blackboard knowledge and the imposing teacher represent the quintessential learning space of the industrial era.

In the imaginary snapshot of Europe in 2020 it is assumed that society is no longer dominated by the industrial-era logics of mass-production and mass-consumption. Scale is no longer the guiding principle. Instead, the pivotal act, the creation of added value, has changed locations. In the Learning-intensive Society of 2020, the daily (re)creation of the world around us through spoken or written words, pictures and movies, will generate the largest share of added value. Weak signals of this change are already detectable now in 2008 - there are hints of the potential of the present to create a society where the division between the supply side and demand side is marginal. These include tendencies towards self-generated personalization, the “unique creation” expressed in a widespread do-it-yourself attitude, the breakdown of the professional/amateur distinction, and the emergence of Web 2.0 technologies that give rise to social networking, collaborative content creation and democratized innovation.

This means that the crucial moment in industrial society when the entrepreneur or engineer or designer comes up with an idea that can then be implemented by taking advantage of economies of scale is no longer central. The aims and organization of wealth creation no longer take on the form of a pyramid or hierarchy, with the genius who generates new ideas and the technocrat manager who implements them occupying the top floor, while down below at end of the chain of command is the “front-line” worker. The Learning-intensive Society is heterarchical (antonym of hierarchical). Everyone is the inventor and implementer of his or her own designs, the unique, personalized set of artefacts, services, and experiences. As a result, in the Learning-intensive Society there is a profound difference when compared to industrial society in the relationship of knowledge to production or, in more general terms, the activities that (re)create daily life.

In 2020, Learning Spaces will enable people to construct their identities as inter-dependent and inter-connected social beings and on this basis to produce the wealth and community that sustain their well-being. In general terms, this functional role or purpose of learning infrastructure in 2020 is not much different from before. It continues to serve the main economic and social requirements of society. However, by 2020 the leading economic and social requirements have changed.

From the perspective of learning the two most marked contrasts between the vision of Learning Spaces in a Learning-intensive Society and the current framework for learning, are (a) the abandonment of the technocratic, hierarchical and exclusive approach to education and skill achievement, and (b) the marginalization of institutionalized learning.

This report describes in some detail eight attributes of Learning Spaces in a Learning-intensive Society (LIS-LS):

Personal digital spaces

Learning-intensive Society Learning Spaces are where each and every learner can access a holistic and life long track record of his/her learning achievements and articulate their learning ambitions independent of time, location and access device. This is the core of LS in 2020, the anchor of a knowledge system that records and signals what people know, what they have learned and what they aspire to learn, at particular times and in particular places.

Connecting and social spaces

Learning-intensive Society Learning Spaces are where all learners meet physically and virtually to share experiences and engage with other communities and social networks. Such LS are inherently “inclusive” since everyone has access to an individual learning account and to the network linking him/her with other learners. LS are active spaces, the place where projects unfold and experiments take place. The range of activities is as vast as people’s motivations and imaginations – from the banal to the sublime, the common to the exceptional. All learning counts.

Trusted spaces

Learning-intensive Society Learning Spaces are where people can easily and verifiably assess both what other people know and what they are learning. Clarity with respect to the degree of transparency and verifiability associated with what people know and how they learn plays a critical role in ensuring that LS in the LIS can span a variety of different degrees of trustworthiness.

Motivating and emotional spaces

Learning-intensive Society Learning Spaces are where people access the action content of learning across the full range of motivations and emotions that constitute learning. Both learning and “intelligence” are multi-dimensional, encompassing a rich variety of motives and emotional states. Learning-intensive Society Learning Spaces are complex crossroads where learners engage their motives and emotions through the act of learning.

Controllable, creative/experimental, open/reflexive spaces

Control. Learning-intensive Society Learning Spaces are where the needs of learning and the learner can take precedence when necessary or wanted. Everyone learns differently and in different ways at different times about different things. LS need to be able to nurture this diversity and make it easy for learners to discover the best way for them to learn in any circumstance.

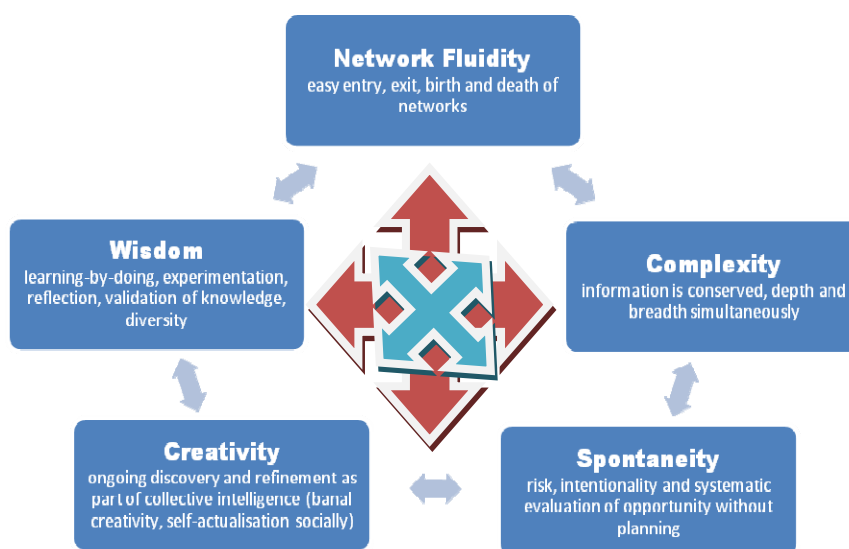
Creative/flexible. Learning-intensive Society Learning Spaces are characterized by a high level of creativity and experimentation, in part, because the dualism between life and learning diminishes when the pursuit of knowledge through experience makes the use of LS an everyday practice. The creativity and flexibility of LS in a LIS entail experimentation and risk taking.

Open/reflexive. Learning-intensive Society Learning Spaces are permeable, connected, and modular spaces that enable a wide range of learning, including synchronous and asynchronous, face-to-face and virtual, subjective and inter-subjective. Learning-intensive Society Learning Spaces are reflexive because in their LS a person is able to get and give continuous, real-time meaning to the “what” and “how” of learning as it occurs, tagged with multiple references.

Evaluated and certified spaces

Learning-intensive Society Learning Spaces are where acquired skills and competences are demonstrated, evaluated and certified. The institutions and practices – rules, customs, habits – of LIS-LS offer “certification” based on both hierarchical, application-based verification as well as heterarchical, self-referential expressions of what a person knows.

LIS-LS unfold along five further dimensions which are enabling factors for their functioning: *network fluidity and density, complexity, spontaneity, creativity, and wisdom.*



Hypothetical policy options for the imagined Learning-intensive Society Learning Spaces

On the basis of these observations the report offers a number of tentative and hypothetical policy options to begin a discussion of policies that would be more consistent with the assumptions of the Learning-intensive Society Learning Spaces, and thereby try to leverage the potential of the present to promote future Learning Spaces. These are:

Personalized Learning Spaces and cybercitizenship. Digital learning accounts will need to be established, with a verifiable identity that is controlled by the individual, supported by a means of establishing identity effectively. Major milestone: a European agreement on universal access to cybercitizenship for all citizens of the EU by 2010.

Reputation systems. Legal measures are needed to support the accumulation of trustworthy reputations. Considerable research needs to be invested to understand the emergent reputation systems and to find ways of integrating evaluation and feedback into the routine functioning of people’s everyday activities. The central policy issue to be addressed concerns setting up the rules and institutions that allow for the practical exercise of ownership over a personal record of

competence or accumulated knowledge. This is important since it can significantly alter motivations and incentives, which in turn facilitates the control and responsibility that makes Learning Spaces operational. Major milestone: *The first KnowBank, an institution that facilitates the evaluation and accessibility of personal knowledge assets accumulated over a lifetime and vested in a validated and valorised personal knowledge account, is established in Europe in 2010.*

Intellectual property and transactions. Open source is fundamental to Learning-intensive Society Learning Spaces. Current intellectual property rights (IPR) systems, transaction and payment systems, and peer-to-peer contractual platforms all fail to address the needs of LIS-LS for sharing and accessing knowledge. A copyleft or Creative Commons regimes, complemented by an international standard on traceability and a public service for drawing up unique, single transaction contracts, might be able to resolve these problems. Underlying all of these learning based transaction relationships are payment and accounting mechanisms that are conducive to new business models and the creation of new markets that are no longer organized on the basis of the separation of supply-demand. Major milestone: *By 2010 the European Central Bank introduces the “neuro” (net euro), a monetary instrument, one way to facilitate internet based peer-to-peer transactions running on a new universal system for both monetary and non-monetary net based attribution of authorship managed by the European Copyleft Office.*

Network rules and governance. The key role of network fluidity and density for the Learning-intensive Society Learning Spaces is to maintain and extend its neutrality. A way of maintaining the accessibility of digital resources might be to authorize the Internet Engineering Task Force (IETF) to implement by its running code principles a set of user objectives that sustains net neutrality. Additionally, wireless gigabit connectivity should be available at little cost everywhere in Europe. Major milestones: *By 2010 Europe succeeds with net neutrality as a governance principle. In 2015 wireless gigabit connectivity for free covers all of Europe.*

Searching and the meaningful web. Open learning in the Learning-intensive Society Learning Spaces requires universal systems for indexing, semantic referencing, archiving, and privacy. Europe should therefore support and promote open standards for indexing and searching the smart web. Major milestones: *Europe negotiates and establishes a universal standard for greater web transparency and searchability by 2010. By 2015 universal indexing and the full implementation of a multiple-source meaning of bottom-up key words should be common practice throughout Europe.*

The end of compulsory schooling. Announcing that compulsory schooling will end for all children by 2020 provides a powerful catalyst for the development of alternative institutions that are more effective and efficient at accomplishing the five primary functions of industrial-era school systems: custody, cognition, behaviour, socialisation and screening. Major milestones: *By 2015 half of high school students have opted out of the compulsory system. By 2020 the old classroom school is a historical vestige.*

A European Think Tank for Learning Spaces. The potential for the development of new learning spaces merits a dedicated Think Tank for Europe. This European agency would serve as a research, networking and consolidation hub for the weak signals and experiments related to LS throughout Europe and in the world. Major milestone: *ELSA – European Learning Spaces Agency is established in 2010.*

1 Why think about the future of learning spaces now?

Few policy themes are more pervasive than learning. Learning is considered a prerequisite for addressing a vast range of policy challenges, from achieving higher rates of innovation and enhanced competitiveness to resolving the tensions of multiculturalism and improving people's health. Yet the ubiquity of learning as a solution to so many woes is also a source of ambiguity, even confusion. What is the purpose of learning? Are there best ways to learn? When and where do we learn? Are people motivated to learn? Are they able? What is the impact of learning on the economy and society?

These questions originate from the fact that learning is simultaneously individual and collective, a means and an end, active and reflective. They reflect that learning is also defined by its context: the why, how, when, and where of acquiring knowledge at a particular point in time. Since learning contexts differ and change with society, efforts to address these questions and propose policy solutions have to avoid both, a too narrow focus on specialized fields, and, equally limiting, a too broad perspective encompassing everything and nothing.²

“Learning Spaces” (LS) is the term used in a report published in 2006 by the Institute for Prospective Technological Studies,³ “as a way to embrace a different view of future learning” (p. 33). A description of what LS are and how they operate on a day to day basis in Europe in 2020 requires a description of the economic, social and governance context that “sets the stage” – the context for learning. In practical terms, this means that the LS scenario set developed for this report must be nested within a scenario of the broader European society of 2020.

The concept of “learning spaces” can encompass the multi-faceted reality of learning – particularly for analytical and policy purposes. LS are crossroads. LS include all of the different strands, both tangible and intangible, that constitute the nexus that is learning. This combination of terms – learning and spaces – may seem curious; the word “spaces” is usually understood as referring to physical places – a specific terrain or volume defined by the parameters of distance - and learning is quite often taken to be an individual practice, a personal activity. Why should the word “learning” be associated with the word “spaces”? While learning has traditionally been assigned to specific spaces such as classrooms, research labs, workplaces, and homes, the reality of "space" is currently changing. Not only are ideas, people, and things more mobile, but time and place constraints for connectivity can be de-linked in contexts that have become 24/7 and asynchronous.

Associating the words 'learning' and 'spaces' to form a composite term⁴ is symptomatic; shifts in language are often signals of new phenomena, even of patterns – sometimes systemic patterns, that are not yet evident to the biased eye of common sense or the entrenched categories of researchers. Although it is difficult to know which words or phrases to attach to new phenomena, the appearance

² Cf. Gavigan, 1999.

³ N.B., the term “learning spaces” has been in use for some time with respect to the architecture of buildings, like universities and schools, which are intended to provide a physical place for learning. The development of a broader, ICT-enabled meaning for the term “learning spaces” was put forward in Punie & Cabrero, 2006 & Punie 2007. New competences and skills related to new learning spaces are discussed in Punie & Ala-Mutka, 2007.

⁴ Lefebvre, 1991.

of such new ideas or views can be thought of as a clue, a signal⁵ that something may be happening. That is the starting point for this report and the rationale for using a term like Learning Spaces (LS). The premise for this report is that changes taking place in the world around us today signal the emergence of a new context for learning and hence policy makers need to think about what this means for why and how learning is organized.

The hypothesis that the context for learning is changing in potentially systemic ways is supported by many facts or observations from our present surroundings. The term “learning spaces” can be a useful lens or meta-framing⁶ device for detecting and focusing on these facts in order to tell a story about what is happening to learning. Since every story about the present contains an anticipatory element⁷, searching for the meaning of learning spaces is a way to think about the future of learning. This report will render more explicit the anticipatory part of the story of learning spaces by imagining a possible future for learning spaces in Europe in 2020. The story is confined to imagining and does not address issues of probability, likelihood, or desirability.

The report is organized into seven chapters and three annexes. Chapter 2 examines current phenomena to look for signals or clues that the context for learning is changing and therefore that learning spaces might be both different and important in the future. Chapter 3 lays out the methodology employed to imagine the future of learning. Chapters 4, 5 and 6 form the core of the imaginary exercise on the future of learning. In chapter 4 the vision of Europe in 2020 as a Learning-intensive Society (LIS) with Learning Spaces (LS) at its centre is developed and spelled out. Chapter 5 gives a detailed account of the fundamental characteristics of Learning Spaces in the LIS. Chapter 6 assesses basic requirements and different possible enabling conditions for LIS-LS, the “how-to” scenarios, by contrasting (“backcasting”) LIS-LS to the present. Chapter 7 closes with suggestions for policy.

⁵ Such signals may be weak (like virtual realities that are not evident to many) or strong (like cell phone usage that is obvious to most people) without revealing its meaning or role (again weak or strong) in the way the potential of the present is actualised in people’s anticipatory assumptions.

⁶ For a perceptive and provocative discussion of the term “lens” with respect to foresight, see Aaltonen, 2006, and Rossel, 2007.

⁷ Adam, 2004.

2 Signs of a changing context for learning

Currently, the conventional way of discussing the phenomena that lead people to believe or expect something about the future is to talk of trends and drivers. Trends are phenomena that have been detected (measured) in the past, exhibit a specific pattern (usually increasing or decreasing at a particular rate), and can be extrapolated into the future. Drivers, as the word suggests, are agents or agencies that both exert a force (pushing on the accelerator or the brake) and a direction (steering through the choices they make). Both terms have a reassuring familiarity and, if only implicit, offer a sense of legitimacy by using the language of what might be called “predictive science” (forecasting). Although the term trend is typically used quite loosely, it nevertheless connotes a foundation of expert empirical analysis. The term ‘drivers’ also conveys the impression of deeper causal analysis, even of the kinds of theory and modelling that are requisite for social science.

Assessing the nature of change is a complicated task. It is crucial to attempt to distinguish between those changes that are adaptive, part of the resilience of an existing system, and those that may signal the emergence of new, distinct systems. This report examines a wide range of phenomena – many of which are technically neither trends nor causal factors – but may nevertheless be indicative of the kinds of changes that inspire imagining a changed context for learning in Europe in 2020. What is crucial when looking at these phenomena – a few of which might legitimately be labelled trends and drivers – is to attempt to distinguish between those changes that are adaptive, part of the resilience of an existing system, and those that may signal the emergence of new, distinct systems.

For instance, there is no reason to assume that a change that is part of an adaptive process (intra-systemic), that for all appearances looks initially like a reform meant to preserve a system, does not end up eventually playing a role in its demise.⁸ There are also phenomena that seem to be outside existing systems (extra-systemic) but on closer inspection or, more likely, with the insight of hindsight, seem to be dependent and/or defined by an existing system(s). This kind of symbiosis, that often combines aspects of competition and cooperation, is characteristic of changes in hyper-complex social systems. An example of this kind of compositional change is the historic shift from agricultural to industrial society. Farming does not disappear entirely and remains essential for human subsistence, but it is no longer the dominant component of the whole social picture.

Phenomena, be they trends, drivers, acts/non-acts or events/non-events (since when it comes to the evolution of a system the things that do not happen may be as important as those that do), can also belong to more than one category of change. Furthermore, there is overlap and interaction that means that there can be change in change. How the future will actually play out is uncertain. The future does not yet exist. However, what does exist is anticipation, in the present, and as one of the key determinants of choice (although not necessarily of actual outcomes). Therefore, what is practical and serves as the starting point for this report is an exploration of present phenomena and past experiences in order to detect and explore signs of a changing context for learning. These signals provide the inspiration for imagining a social order (in Chapter 4) where the aims and methods of learning are different from today. The present is thus used as a springboard for imagining (anticipating) a distinctly different future.

⁸ Carr. 1951. A fascinating example discussed by the historian E.H. Carr is the case of Czarist Russia where the imposition of highly repressive restrictions on democracy contributed, in his view, to the creation of three generations of ardent revolutionaries. However, extending Carr’s argument somewhat, even though the Czars did not sustain their position in the Russian system, it could be argued that they did succeed in staving off democracy well into the 21st century and thereby somehow their choices did contribute to the resilience of an autocratic social order.

The survey of relevant phenomena in this section examines the changes taking place in the world today at three different levels – the aggregate *macro*, the institutional *meso*, and the individual agent *micro*.⁹ Distinguishing these three levels helps to reveal signs that the present contains the *possibility* that the context for learning *may* change. It is then, on the basis of this evidence, that the following sections of the report imagine a distinctive anticipatory story – one that provides a non-linear (i.e. change in the conditions of change – non-ergodic) context for learning spaces in Europe in 2020.

2.1 Macro-level trends and drivers

The challenge of assessing aggregate level changes is finding the appropriate indicators. First of all just adding up changes in the sub-components can lead to serious errors when the whole is more than the sum of its parts. A further complication is that general changes in societal context may actually arise from extra-systemic developments, phenomena that are outside the old way of defining and measuring aggregates. As a result, accounting frameworks that are embedded in the past may actually hide the key indicators of macro-level change. Thus, it is not a straightforward task to detect and describe the aggregate level phenomena that may signal significant changes in the context for learning.

Three society-wide phenomena are discussed here; the emergence of new skills and competences, demographic changes, and globalization. Current developments in all three areas indicate that the context for learning is changing at a macro level.

2.1.1 New skills and competences

In considering the nature of macro level changes in the mix of skills in society it is important to distinguish changes in quantity and quality as well as changes that are intra- and extra-systemic. Starting with the most familiar, it is worth noting that from a quantitative, intra-systemic perspective, the churning of careers, and the demand it generates for the acquisition of “new” skills, does not necessarily alter the context for learning. It certainly puts pressure on existing suppliers and ways of producing sufficient skill levels, but in most situations this kind of churning is well within the remit of existing learning systems. And, for the most part over the last few decades, such reallocation has been accompanied by efforts to reinforce and improve the long-standing and highly successful contexts for learning of the past – the education and training systems of the industrial era.

This is not to call into question the readily available signs of macro-level changes in the skills and competences of a society based on indicators that categorize what people know. These familiar signs of change can be seen in the following:

- The reallocation of activities occurring due to shifts in the international division of labour as firms and jobs move around the world; a reallocation of employment and jobs arising from competitive and technological threats and opportunities, global sourcing and automation. All of these changes are creating new hierarchies of work, the need for new skills and competences, and processes of continuous updating of skills and knowledge.¹⁰

⁹ As developed also in the IPTS Learning Spaces Report: Punie & Cabrera, 2006.

¹⁰ Gartell et. al., 2007.

- An increased focus on collaboration, cooperation and partnerships across departments, cultures, companies, sectors and borders is leading to a focus on the acquisition of new skills or improving existing ones in areas like: interpersonal communication, teamwork, project management, contract and terms negotiation, conflict and risk management, languages and interpersonal skills.¹¹
- The advances taking place in the sophistication, the ease-of-use and diffusion of new tools, particularly the maturing IT field¹² is generating a demand for new skills.

All these factors generate both a push and pull for learning related to new products, new networks, and new processes.¹³

All European countries are, to varying degrees, facing these traditional macro-level learning challenges.¹⁴ New skills and competences related to changes in specialisation, collaboration, and improved tools, continue to emerge in the public as well as in the private sector. From a macro-level perspective, this ongoing process of skill reallocation and the development of new competences signal potentially disruptive changes in the context of learning.¹⁵ But when does quantitative change demand systemic change? Can qualitative changes be accommodated by existing systems? Are extra-systemic developments outside the up-until-now dominant system beginning to replace the old ways of doing things?

These are all difficult questions, pertinent to the challenge of ascertaining if the context for learning is changing in ways indicative of the emergence of a new system of learning spaces. The answers can only be speculative. On the surface, the macro-level changes taking place in skill mixes signal a need for qualitative and quantitative supply-side responses.¹⁶ Ongoing intra-systemic reform to adapt to changing demand remains and the need for greater efficiency in the delivery of conventional educational services remains high on government agendas.

However, outside the beam of existing skill indicators there are also signs of change, ones that may be more extra-systemic or discontinuous. Plumbers, welders, school teachers, mentors, coaches, care-givers, parents, friends, teams, and competitors, all know things related to what they do. This know-how is the “real” data set upon which macro-level indicators are based. There are both official and unofficial (lived) signs that deeper changes are afoot, even though what is actually measured is mostly based on the know-how categories that are largely related to the industrial past. In particular, there are signs in the present that a greater number and range of skills are needed to live well in a diverse and ambiguous society.¹⁷ Such changes may be signalling a macro-level shift in the learning context of every-day life.^{18, 19}

¹¹ Cairncross, 2001.

¹² McFarlan and Nolan, 2003.

¹³ For a wider illustration of these types of change see EMCC sector futures studies (http://www.eurofound.europa.eu/emcc/sector_futures.htm); See also Fichman, 2000.

¹⁴ European Commission, 2007a.

¹⁵ See also, for activities on eSkills and EU work on eSkills: <http://ec.europa.eu/enterprise/ict/policy/ict-skills.htm>

¹⁶ Gardner, 1983 and 1993.

¹⁷ Bauman, 2004 and 2006.

¹⁸ The term “every-day life” is used throughout this report. Here the term is refers to a direct relationship, the one-to-one mapping of decisions, including those related to learning, to people’s daily acts – from the humdrum to the transformative. There is certainly an extensive literature spanning a range of fields that addresses the multiple dimensions of the construction of every-day life, a fascinating and pertinent topic that, however, cannot be addressed directly given the constraints of this report.

2.1.2 Demographic changes

Macro-level changes in both the demographic and social composition of European societies are well-studied phenomena.²⁰ The typical story is one that focuses on a future where the average age in many European countries continues to climb, the rate of population growth slows, and the risks of entrenched or more polarised stratification increases. The wildcard is usually migration, legal and illegal, from within and outside the European Union.²¹ Two of the most discussed general implications of aging and migration are, on the one hand, an increase in the demand for skills and skills training along the standard industrial era categories of know-how and, on the other hand, a relative reallocation of time and resources to questions of health, social welfare, etc. (quality of life).

When it comes to skills and education the social side of the story regularly focuses on exclusion and the role of training in overcoming it. Thus, many factors are expected to account for the training boom related to skill shortages, including a relatively higher rate of retirements, lower rates of young people entering the labour market, reallocation of the demand for labour towards services that cater to an older population, the needs of immigrants for specific work related skills, and the general learning costs associated with widespread re-skilling.

Other demographic factors, such as the changing population distribution between urban and rural areas²² and differences in the capacity of specific population sub-groups to engage in or even access training, are also expected by many to exert pressure on current learning infrastructures. Multiculturalism or the changes in women's role in society also provoke a demand for training.²³ Extrapolating from current phenomena like the high cost of maintaining traditional schooling in sparsely populated rural areas or ensuring quality schooling in deprived urban areas, the typical view is that skill distributions maybe very uneven. This, in turn, is expected to generate pressure for reform, not only in the training sector, but also in the business, social services, and cultural sectors.²⁴

One line of speculation is that without sufficient or successful reform, segregation is likely to reinforce the division of society into learning-poor and learning-rich segments and places. In many medium-sized and large European cities this is already the case, with immigrants concentrated in low quality schools in specific parts of the city. Another line of speculation, also rooted in observations of present day phenomena, is that there will continue to be a shift away from the one-size-fits-all solutions of the mass-production era towards "personalization" of education. Throughout Europe, reform efforts are underway aimed at improving the capacity of industrial era organizations, like schools and universities steeped in the practices of scale economies, to tailor services to a population that is more differentiated in its origins and, perhaps more importantly, in its aspirations.²⁵

Similarly, seen from a European-wide macro perspective, the strains on the existing systems for the provision of services aimed at ensuring the health and well-being of European populations may signal both conventional and unconventional changes in the context for learning. On the

¹⁹ See Rychen and Salganik, 2003, for an attempt to define the broader set of competences (OECD *DeSeCO* project)

²⁰ Fotakis, 2003; Coomans, 2005; and the SSO (European Observatory on Demography and the Social Situation)

²¹ EFMN

²² United Nations Population Fund, 2007

²³ Doomernik, 2001; Battle, 2007; Pemint

²⁴ Eurydice

²⁵ Department for Constitutional Affairs, 2007

conventional side, in Europe and the rest of the world, increases²⁶ in chronic health disorders are generating a demand for learning. So, too, are other health risk factors such as stress, physical inactivity, tobacco, unhealthy diets, and alcohol consumption. Such direct demands on existing health services alter the context for conventional learning supply in a number of ways. For instance, addressing the growing problems of chronic diseases increases the demand for education and learning among healthcare professionals, advisors, and citizens in general.²⁷ The diversity of the demand for training and research, including by people suffering from chronic diseases, is pushing innovation by both users and suppliers.

Less conventional signals of change such as policies aimed at breaking down institutional borders and practices through inter systemic approaches that “join-up” education, research, and health care, may be indicative of a more significant transformation in the context for learning. One weak signal could be the degree of difficulty encountered in all OECD countries as well as throughout Europe in getting beyond existing practices. Here there are signs of a mismatch between macro-level phenomena and what policies within existing frameworks can achieve. This could be a signal of the emergence of a new context for learning, one that reflects a redefinition of what it means to be healthy and live a “high-quality” life.

2.1.3 Globalization

Another major macro-level phenomenon, perhaps the most cited of all today, is globalization. Despite the many often inconsistent and a-historical definitions, there is abundant evidence that the international nature of much trade and business development creates the need for new skills and knowledge, but in many instances along with conventional industry era categories of know-how.²⁸ As already noted, the reallocation that is part of such internationalization has led to job destruction and also to new jobs being created. This requires a flexible workforce that is capable of un-learning outdated competences and learning new ones (for instance the closure of a meat processing company in Denmark led to several workers being retrained as social care workers²⁹).

At an aggregate level, the churning within mainstream sectors and existing occupations certainly puts pressure on both the demand and supply for skills. However, beyond the conventional processes of economic specialization and the shift towards services, long-standing attributes of Europe’s mature industrial societies, globalization may also increase the potential for changes in the macro-level context for learning in three distinctive ways.

One is the coincidence with a breakdown in the way “products” are conceived, produced, and consumed. This phenomenon³⁰ is known variously as “co-production”, “co-design” or pro-sumption. When combined with open, relatively low-cost international networking – the flow of both tangibles and intangibles – the potential for change in the context for learning could be significant. Cumulatively, this way of producing alters the location of conceptual knowledge in the value chain; more people are coming up with their own ideas and making their own decisions in which design, learning, and use are closely connected, thereby altering the learning arena. As a result learning processes, also called “research and development”, “trial and error” or “entrepreneurial leadership” –

²⁶ World Health Organization, 2005

²⁷ Cline & Haynes, 2001.

²⁸ Florida, 2005, and Castells, 1996.

²⁹ EIROnline (2004)

³⁰ Von Hippel, Eric (2005); Prahalad and Ramaswamy, 2004; Miller and Bentley, 2002.

depending on the institutional context (government, university, company, start-up, street), could be facilitated or enhanced by greater global openness (transparency, low barriers) and networking (ease of community creation, ease of flows, and high density of connections).

A second similar type of transformation in the context for learning that could also be enhanced by “globalization” is related to the process of identity formation in society. Here again, learning is generated by the actions taken by individuals and groups in relation to the communities that surround and touch them. The “smaller world” created by the speed and ease with which everything flows may be a key factor in providing the diversity and inspiration necessary for such heterogeneous learning needs and processes to be satisfying for both individuals and communities.³¹ All of the micro level choices, which on an aggregate level go beyond the perimeters of the local, could alter the way societies as a whole (macro-level) forge the relationship between identity and community. Certain global phenomena like the web, migration, tourism, trade, pandemics, climate change, etc. offer non-local learning in response to the basic identity questions of “who am I?” and “which communities am I part of?”

A third macro-level change might emerge from an overall increase in heterogeneity or “difference”. Although there are signs of world-wide homogenization or a reduction in differences, many observers detect fragmentation beneath the surface of similarity as old imposed identities lose meaning and power while the capacity to seek and engage in networked based community building grows. Such greater diversity may indicate a changing context for learning. Overall, at the macro-level there is more “difference” and this highly differentiated context is more propitious to learning than one that is uniform. In this sense globalization may alter the macro-level context for learning by augmenting the diversity within which learning occurs. As more and more micro-level learning plays out on the diversity of a world stage, the cumulative result has the potential to alter both what and how learning happens.

2.1.4 Macro-level observations

Do these three sets of macro-level changes discussed above: the new skills that are solicited, the new roles for a given age and place when compared to the past, and the scale of the stage on which people play, really add up to a new context for learning? Is it justified to argue that at a cumulative level the impact of these changes on the context for learning points towards a discontinuity in the nature of learning spaces? Or, is this just another example of “hubris of the now”, that fairly universal human inclination to think that one’s own brief moment of consciousness is in some way remarkable, that leads to the claim that what is happening now is really different from the past?

There is no definitive answer to this question. Globalization, defined as an open and networked planet, marked by large and unimpeded flows of goods, ideas, and people, is still a relative concept. As many commentators point out, the world is not flat, at least not yet.³² Yet de-territorialization and the emergence of non-spatially delimited communities are beginning to pose problems for territorial based policy - even for a territory as broad and multifaceted as Europe. Current phenomena are provoking questions, many of which have been posed before,³³ that cumulatively may signal not

³¹ Part of this hypothesis relates to the question of the relationship between a growing diversity of learning processes and the “resources” necessary to really satisfy heterogeneous learning. It is not at all clear that the local cannot offer such richness of experience, nor that the diversity of the local is inadequate to the banal creativity that is inherent to most learning.

³² Ghemawat, 2007

³³ Illich, 1971, 1976.

only a departure from the past but a moment when the inter-action of changes at different levels and from different sources creates the conditions for imagining a different future. Expressed in more conventional terms, it is a commonly held view today that many macro-level “drivers and trends” are reinforcing each other and generating a strong impact on the context for learning.

2.2 Meso-level trends and drivers

Institutions are always adapting, reforming, changing leadership, expanding, contracting, conquering new territory, or dying. The challenge here is to determine what kind of change is occurring and what the change reveals about the potential for change in the future context for learning. Often, generalizations do not hold across types of institutions and different places. For instance, changes to the family as an “institution” often cannot be understood in the same terms as changes to the “firm” or “enterprise”, and changes taking place in institutions of collective choice (legislatures, state executives, political parties) often differ from one location to another.

The list of current meso-level changes is a long one, with many variations throughout Europe, including at the level of Europe as a whole.³⁴ The temptation, naturally, is to focus on the institutional reforms and transformations occurring in the broad education sector and within firms, since these have traditionally been the two pre-eminent locations for “official” learning – the industrial era’s dominant learning spaces. Certainly, the changes taking place in the education and training systems and in the human resource development systems are important. However, there is another way of thinking about these changes that hints at two weak signals of discontinuous change. One is the shifting nature of the authority wielded by traditional sources of control and choice and the implications this has for learning. The other is the emergent “institutions” of Web 2.0³⁵ that also seem to open up potentially new horizons for learning in many different forms and for many different purposes.

2.2.1 Formal versus informal learning³⁶

Perhaps the most noteworthy meso-level signals of a new emerging context for learning have to do with what might be called the “institutional footprint” or the power/authority and coverage exercised by the formal systems of classroom schooling, university degrees, corporate human resource development, R&D, etc. Although existing indicators of institutional status do not offer a straightforward signal, there are current phenomena from a range of different perspectives that suggest that the relative coverage of the formal learning systems seems to be shrinking. Informal learning is regaining pride of place in use and recognition outside the credentialist systems of the industrial era.^{37, 38}

³⁴ Tomusk, 2007.

³⁵ http://en.wikipedia.org/wiki/Web_2

³⁶ Formal learning is typically provided by an education or training institution and leads to certification. It is intentional from the learner's perspective. Non-Formal learning is provided by any organised, structured and sustained educational activities outside formal education. It is intentional from the learner's perspective, but typically does not lead to certification. Informal Learning is learning that results from daily life activities related to work, family or leisure. It does not lead to certification and in most cases, it is non-intentional.

³⁷ See also OECD country reports (OECD 2007c, forthcoming) on the recognition of informal and non-formal learning. Korea, for example, has already developed a competence credit bank system.

³⁸ Citizendium; Sanger, 2007.

This does not mean that existing systems are not growing, since there can be little doubt that on the basis of conventional indicators such as spending on education be it in formal educational institutions or within firms engaged in “professional development” that the business of training is booming. A similar story of ascendance might be told by looking at the energy being devoted to reform of the education sector as governments proclaim the importance of education for innovation and competitiveness.

However, outside the spotlight of traditional data sources there are changes related to the kind of knowledge being produced and the way it is produced and used.³⁹ Such changes have been addressed in part by the literature on “national innovation systems,”⁴⁰ or the “creative class,”⁴¹ or the “democratization of innovation”.⁴² Equally noteworthy phenomena that escape the existing certification and ownership boundaries of the formal education and research institutions can be found in the emergent fields of open source knowledge and the spontaneous communities of practice that are part of the social networking movement that has recently been popularized under the moniker Web 2.0.

These phenomena are still only partially developed and the theoretical models and empirical metrics are only starting to be articulated.⁴³ As a result the signals are still weak, difficult to detect and/or difficult to interpret. The meta-frames needed to help measure the changes and determine the meaning – continuity or discontinuity or both – are only emerging. Indeed, it is precisely one of the functions of the Learning-intensive Society scenario described in the following chapters to assist with the detection and interpretation of the meaning for learning spaces in Europe of phenomena in the world today.

Beneath the surface of the facts and the lists of trends and drivers, there is a change in the outlook on life which many people in Europe today subscribe to:

- People are less impressed and restricted by the perception and legitimacy of the external authority of father, teacher, employer, and government;
- People are less homogeneous across a wide range of categories – from lifestyles and video windows on the world to next door neighbours and products on the kitchen table;
- People are less certain with respect to belief systems, role models, work patterns and the basic attributes of identity; and, in many ways,
- People are less autonomous as the reality of inter-dependency and the necessity of networking impose an awareness of mutual responsibility.

If these phenomena are present in the Europe of today, then it is the reality of freedom, ambiguity, diversity, inter-dependence, and responsibility, which is expanding the meaningful and useful realm of knowledge and learning. Looked at from the meso-level of institutions like the family, the school,

³⁹ Akrich and Miller, 2006.

⁴⁰ <http://www.druid.dk/> and also Lundvall, 1992.

⁴¹ Florida, 2005

⁴² Von Hippel, 2005. Also <http://web.mit.edu/evhippel/www/>

⁴³ Benkler, 2006.

the firm, the state, this enlargement of the need and desire to know is, almost by definition, happening outside or with little reference to the old institutional boundaries.

One of the strongest symptomatic indicators of the changing boundaries and challenges to the historical predominance of existing institutions is that these very same institutions are changing, reacting and adapting – sometimes willingly, sometimes not.

- The family, as the fundamental social institution, is taking on all sorts of new configurations and its members are assuming new, often unfamiliar and open-ended roles. The family's place and relationships in society are being renegotiated, as legal, fiscal and everyday services are reshaped to take on the greater diversity. Intergenerational and cross-lifestyle conflicts create learning opportunities that do not always resolve easily. The lack of precedents, the obligation to explore and construct new roles and models, also means that the required learning-by-doing can be both painful and highly rewarding.
- The old learning spaces, dominated by the immensely successful organizations of the industrial era⁴⁴ like schools and universities, are struggling to maintain authority and control over the definition and certification of knowledge while at the same time remaining true to the stated mandate of helping to equip people and society for a life where learning is much more heterogeneous and heterarchical.
- Firms, trying to increase productivity in a flexible world invest in knowledge management and more intensive human resource development. However, they are caught by a number of intractable dilemmas, some of which are rooted in the privacy and mobility of “human capital”, and some of which stem from easy reproducibility in the digital sphere, the power of open source, and the large externalities generated by the digital commons.
- Institutions of collective choice – from municipalities and nations to NGOs and international organizations of all kinds – are having difficulty being effective in a context where bureaucratic and lowest-common-denominator mass-scale solutions no longer fit the needs of diverse and self-directed populations. Indeed, there may be an uncomfortable, potentially debilitating incompatibility between what John Kay calls the disciplined pluralism⁴⁵ of experimentation and the bureaucratic managerial chain of command that punishes failure.

From today's vantage point it is impossible to say which of the previously successful institutions will prove resilient and why. Many of these institutions are in the midst of self-declared ambitious reforms, presumably because there is a general consensus that conditions have already changed and will continue to do so. In addition, a variety of signals point towards a diffusion of authority and the decentralization of meaningful and effective action as scale-based, bureaucratic solutions give way to more local, information-rich, and just-in-time choices.

This means, in the practical terms of what people do and decide, that continuous and diversified experimentation is the basis for an increase in both quantity and quality of learning. The quantity of learning is higher because people are persistently, throughout their lifetimes and day-in and day-out, challenged to experiment as they willingly or not co-produce the world that is meaningful to them.⁴⁶

⁴⁴ Miller, 2007b.

⁴⁵ Kay, 2006.

⁴⁶ Kirkeby, 2007.

With respect to the quality of learning the greater intensity arises from an equally continuous confrontation with ambiguity and uncertainty that, all other things being equal, generates experiences that on a cumulative basis deepen a person's knowledge.

Detecting this return to the importance of wisdom may be difficult since measuring the quality of learning has long been subject to hierarchically based assessment systems of a largely technocratic bent. This is not to deny the importance of scientific judgement and inter-subjective assessment. However, what may be distinctive about the learning associated with present phenomena is that it essentially escapes from such judgemental hierarchies. The way people find meaning in their lives, be it water skiing or gardening, blogging or paid work, is up to them and falls outside the high-low, better-worse scales of the pyramids of hierarchical judgment.⁴⁷

No one else can judge or discover your "Heart Song" as Miss Viola explains to her class of young penguins in the film *Happy Feet*, quoted at the outset of this report. This means that as long as people exercise their freedoms and responsibilities within the bounds of the basic rules of the society, then the way they solve the "problem" of meaning, of co-creating their lives is their concern (hermits – the illusory monad individual – aside). By the same token, so too is the "quality" of the learning that gets them to their identity rooted in "banal creativity"⁴⁸ – each person has their own tastes and ways of refining those tastes. However, it is precisely the subjective nature of this "banal creativity" that puts such a large share of learning outside the existing institutional perimeters. Today's predominant institutions are more than operationally dependent on the use of hierarchies as a means to coordinate action, such institutions are the embodiment and carriers of hierarchy throughout society through status and imprinting.⁴⁹ As a result non-hierarchical (heterarchical) learning fails to fit within the logic that sustains such institutions.

There is no point in trying to estimate the extent to which existing institutions with specific historically established aims, rules, metrics, and organizational methods can perceive and adapt in order to integrate or co-exist with emergent phenomena. Nor if such adaptation will or will not contribute either to the resilience of the existing system or the emergent ones. Quite often, the old systems have difficulty even detecting new phenomena. Imagining alternative systemic situations is one way of trying to become aware of these gaps in knowing, to understand how the working assumptions used by decision makers actually narrow choice.

2.2.2 Educational reform – how far can it go?⁵⁰

Changes at the meso-level can be seen throughout Europe as education systems are being reformed to respond better to the knowledge society. These often high-profile reforms of primary, secondary and tertiary systems reflect the widespread recognition of the need for extended learning networks that go beyond the borders of single institutions and offer the possibility of recognizing diversity, encouraging the mobilization of social capital, and enabling powerful collaborative and relevant learning experiences.⁵¹ For learners of age 18 and above, much of the formal education that is taking place is still mainly defined by industry needs.⁵²

⁴⁷ Miller, 2006a.

⁴⁸ Miller and Bentley, 2002.

⁴⁹ Espinosa, Harnden, and Walker, 2007.

⁵⁰ OECD, 2007b.

⁵¹ <http://www.eun.org/portal/index.htm>

⁵² Townsend, 2007

Reforms within education institutions are, largely within the confines of the industrial logic that binds the existing systems, moving towards empowering learners, enabling creativity and self-determination as more firms are calling for more flexible and self-motivated workers down to shop floor level.^{53, 54} In some of the most innovative and successful flexible learning institutions (e.g. NKI⁵⁵ in Norway, Open University⁵⁶ in the UK and Phoenix Online⁵⁷ in the USA) new learning agents are emerging representing new roles, processes, and relationships in the learning economy. They create new career paths and greater specialization in education – content experts, learning coaches, network navigators, classroom managers, and cognitive specialists - corresponding to the types of specialization that occur across economic sectors. In some cases, these frontrunners begin to influence mainstream education institutions as they try to define next steps.⁵⁸

Seen from a meso-level these reform efforts, as already noted, are symptomatic of institutional change, although in many places “reform fatigue” seems to be setting in.⁵⁹ Can the education institutions of the industrial era transform sufficiently to become part of another learning context? Is it desirable or necessary? Will a loss of pride of place, of power, of share in the overall learning pie lead to internecine warfare that marginalizes the old systems or to renewed efforts to transform into post-industrial institutions or simply to an approach that stresses coexistence and synergy? Will the education establishment do itself in through bad management or internal resistance to reforms that inhibit adaptation? Yet again, there is no way to know. What is doable is to imagine, as in the scenarios presented in this report, different outcomes in order to help reveal the assumptions that shape the decisions being made today.

2.2.3 Workplace learning – formalizing informality?

Employee communities of practice are predominant enablers of learning in many workplaces.⁶⁰ In many organizations, formal and non-formal learning co-exist, though it is a standing discussion that much of the formal training does not have the intended impact on learning and competence development.⁶¹ Lack of a connection between strategy and the human resources available may be one side of the coin; notions of training offer and training supply and skills gaps as the dominant way of talking about workforce learning may be another. As long as training is supply-driven and, as long as employers and business managers keep buying it, the training supply business is not likely to change. In certain firms, particularly SMEs, employees are motivated to find other informal ways of learning what they need to know to do their jobs well. The introduction of social software⁶² can support employees in their search for relevant knowledge and workable solutions. As task and job responsibility is channelled down to teams and individual workers, more and more learning choices are being made by individuals.

⁵³ Hargreaves, 2003

⁵⁴ Kirkeby, 2007.

⁵⁵ <http://www.nki.no/index.xsql>

⁵⁶ <http://openlearn.open.ac.uk/>

⁵⁷ <http://college.us.com/Aff/?partner=1088&source=1014&key=phoenixonline>

⁵⁸ The Knowledgeworks Foundation, 2006

⁵⁹ Andersen, 2007; Mandelson, 2005.

⁶⁰ Kurtz and Snowden, 2003.

⁶¹ Lassen & Plougmann, 2005.

⁶² Tapscott and Williams, 2007.

More generally, despite the fact that the institutional or meso-level contours of Web2.0 and social software are not yet clear, they are already signs of important developments in where, when, how, and why learning takes place. Web2.0, social software, wikis, and tagging through folksonomies, empower learners to create content, discover each other, and share content and experiences. Blogging and multimedia versions of blogging have undergone an immense growth both in general and specifically in relation to learning activities⁶³. Although the boundaries that distinguish formal, informal and non-formal learning and the role of education institutions and the business community have not formed any definitive patterns, there is already enough activity to signal new meso-level potential. The notion of “formalizing informality” is meant to suggest, once again, that the old hierarchies and power centres may be ceding terrain to more heterarchical reference systems and, if not a direct diffusion of power, a greater dispersion and turnover of arbiters, intermediaries, and relevant actors.

2.2.4 Meso-level observations

Diversification of life and learning trajectories is generating a new learning terrain and potentially new institutions, while at the same time challenging existing ones. As the boundaries of learning change, so too do the positions and roles of institutions. Macro-level phenomena, already mentioned above, such as globalization, demographic changes, or shifts in values, are currently transforming the context for learning, albeit without determining any specific outcome for Europe in 2020. Nor is there any clear verdict regarding the reform and adaptation of education systems in Europe. Few of these reforms are occurring in the same way or at the same pace across countries and institution.⁶⁴ In thinking about the meso-level implications for imagining changes in the context for learning calls for careful consideration of the way in which existing educational institutions do and do not change.

Looked at from the perspective of institutional adaptation some signs point towards a neglect of the emerging terrain of informal learning.⁶⁵ For instance, there appears to be reluctance towards alternative means for establishing reputation or facilitating open source or new intellectual property rights like Creative Commons. Still, changes in the overall institutional context for learning are not only shaped by reactions and initiatives on the educational supply-side. Other institutions, both existing ones and emergent ones play a role. In this regard enterprises, as one of the traditional institutional sources and motivators of learning, may end up leading some of the changes related to knowledge creation and acquisition. Many expect that the diversity of approaches for organizing learning at the enterprise level could indicate real opportunities to experiment and to discover new ways to support and facilitate knowledge sharing inside and outside companies. Such phenomena may be amplified or accelerated by the learning occurring through the tools and communities of social networking that many call Web 2.0.

2.3 *Micro-level trends and drivers*

What are the micro-level signals that a change in the context for learning may be emergent in Europe today? Again this is not an easy question. Micro-level change is about what agents do – the motivations, ideas, and relationships of many small decision making units such as individuals or

⁶³ SPIRE project, 2007

⁶⁴ European Commission, 2007b.

⁶⁵ More recently the evolution of open source courseware and the issues of copyright (OECD/CERI) and the persistent lack of structural uptake of recognition of formal and non-formal learning systems except for in a few countries such as Australia and Canada have a direct bearing on the evolution outside the existing rules and institutions.

firms. Generalizations in this field are most often about specific behavioural patterns, typically distinguished by age groups (marketing) or social strata (sociology) or types of firms (economics). In this report, the primary unit of analysis is the individual learner and the micro-level changes that matter here relate to changes in the capacity to learn.

The capacity to learn is multi-dimensional, with many determinants at any one time and place and even more over time and in different circumstances. However the focus here at the micro-level is on three “internal” aspects of why and how specific segments of the population learn: attitudes, behaviour, and “cognitive capacity”. People at different moments in their lives may be more or less open minded, curious, and ready to spend time and effort to understand and to share knowledge. They may behave in ways that invite others to join them in experimenting and creating, or not. They may have developed the cognitive capacity – the learning tools of conceptualization, analysis and experimental practice, or not. Taken together these attitudes, behaviours, and skills make up the micro-level capacity to learn.

Surveys of people’s attitudes focus largely on broad cultural values or the marketing of goods, services and politics. Recent studies of learning behaviour have tended to concentrate on “brain research”.⁶⁶ There is no micro-level index of the capacity to learn, as defined here, that would measure the extent to which people in a suburb of Paris, for instance, have a greater or lesser capacity to learn than the people in say a small town in Finland. Existing standardized tests seek to establish benchmarks for the performance of school systems and the population’s acquisition of basic industrial era skills like reading, writing, and arithmetic, though there are attempts being made to measure other types of skills such as learning to learn (by the EU) and in national systems such as Finland. Yet a synthesis of these various fragments does not really offer the portrait of the micro-level learning capacities of specific groups or even different individuals.⁶⁷

2.3.1 Diversification of life: are learning cultures changing?

Significant changes are making life and learning trajectories more diverse and complex. In part, this is related to previous observations regarding macro- and meso-level changes such as:

- changing age profiles of the population;
- shifting structures of employment;
- a more intimate mixing of the local and the global;
- households with diverse and more complex roles;
- social networks becoming more visible and more valued;
- professional identities and associated skills becoming more blurred in most occupations;
- people finding their values and learning in likeminded communities;
- work and learning moving into new public and private spaces; and
- experiences that become communities of practices and projects (immersive learning).

Within this changing context, there are also transformations at the level of people’s motivations, the “psychological” or behavioural dimension of learning. In part, this might be called the “culture of learning”. Many efforts to analyse and generalize about micro-level behavioural attributes rest on the

⁶⁶ OECD, 2007a.

⁶⁷ An excellent European source for attitudinal data is the European Social Survey, <http://ess.nsd.uib.no> which shows, for instance that around 15% of people born in the 1930s did not identify with the statement that it is “important to do what you are told and follow the rules”, while close to 30% of those born in the 1980s felt the same way. Are millennials less conformist, less obedient? Maybe. (See Annex 7 for a chart extracted from the ESS data).

work done for marketing purposes that distinguishes categories based on age cohorts, such as the “baby boomers” (1946-1964), “generation X” (1965-1981), the “millennials” (1982-2000) and the tentatively entitled “generation I” for internet (2000-?).⁶⁸ All four groups will be active learners in the Europe of 2020.

Recalling E.H. Carr’s quote cited at the outset of this report about how anticipation shapes what people see and how they explain it, careful attention needs to be paid to each group’s vision of the future. Obviously the anticipatory assumptions used by different groups are shaped by their specific history, the events and non-events, the imperatives and options that make up their day-to-day life and form their view of the future. Equally important, although not as evident, is that these anticipatory assumptions are constructed through different processes by different groups at different times, using different building blocks (conceptualizations of time, causality, predictability, etc.).

The Baby Boomers: The boomers lived with the aftermath of the Great Depression and World War 2. They lived at the height of the Cold War. The boomer’s parents had won or lost, but succeeded in reconstructing not just in terms of monetary wealth, but also in discovering and diffusing the economic and social models that created both peace and fertile ground for amazing tools like the telephone and television. The parents of the boomers were hard working, fully employed, carriers of the myth of the nuclear family, disciplined by the competitive imperatives of the arms race, chastened by the lingering taste of real war and the riveting fear of Armageddon, careful to not waste because their memories touched times of hunger, and thankful for the escape from the horrors of the first half of the 20th century. No wonder the boomers, in their overflowing numbers, first let loose in the 60s and then went on to measure their own achievements with their parents’.⁶⁹

Generation X:⁷⁰ Now, as the vast majority of Gen Xers finally escape the interminable prolongation of adolescence, a convenient excuse for denying young people their rights and freedoms, they live with the handicap of growing up subject to influence of the paradoxical combination of bravado and fear of failure that marks their boomer parents. Unlike the parents of the boomers, who could point to achievements that were crystal clear since they were defined as the opposite of depression and war, the boomers themselves seemed to have simply made a mess. Gen Xers grew up in a world with oil shocks and economic cycles, celebrations of diversity and declining authority that generated little but an excessively complicated and ambiguous day-to-day reality, more things but less reflective meaning, antiquated codes of conduct based on fading canons of obedience to boss and father, working mothers that accepted getting men to wash the dishes as a feminist achievement, and rampant technophobia with its flip side of techno panacea.

Millennials⁷¹ (sometimes also called Generation Y): The millennials, still mostly caught in the sweet purgatory of extended adolescence, may be able to cut loose from the bonds that afflict Gen Xers. Children of late child-rearing boomers and courageous Gen Xers, the millennials do not have much to go on. They are often described as blithe or excessively care-free. They know of and shrug at the reality of abundance and the hyperbole of catastrophe so rampant in a cacophonous world where the fading of yesteryear’s mass-market success desperately screech for attention. Rejecting the queasy uncertainties about future prospects of the Gen Xers, the millennials know that they will have to

⁶⁸ The dates on this type of cohort analysis is approximate, for a discussion and further sources see: Wikipedia - http://en.wikipedia.org/wiki/Generation_X

⁶⁹ Howe and Strauss, 2000

⁷⁰ Coupland, 1994.

⁷¹ Howe and Strauss, 2000.

figure it out themselves. In fact that is what the subliminal message really is about. No one has a clue where we are going. Most anticipatory assumptions are off. Sure, into this void boomers are making every effort to throw certainties about population aging, climate change, technological trends, and the ascendance of Brazil, Russia, India and China, but so far not too many millennials are buying the need to return to the planned economy and society of the mid 20th Century run by a global government.

The experience of institutional schooling is common to all of these different generations. But, not surprisingly, given the different anticipatory stances, the meaning of education across the generations is not the same.

- The now disappearing Silent Generation (1925-1945), not wanting or needing to sing any praises about their follies or achievements, still has an iconic view of school and its formative role. This generation can feel and still believe in the stability and order of the industrial-era-school as the anchor of a hierarchical system that marched into the future with sky scrapers, jack boots and highways.
- Boomers are more doubtful but “rock ‘n roll” helped leave a rosy feel about school/university and the solidarities and counter-culture it nurtured. For boomers education worked; indeed it remains one of the last bastions of clarity of purpose, idealism, and order. That is why they are such vociferous critics of what they see as the weaker school of today and such ardent champions of school reform. They have been unsuccessfully championing life-long learning for almost forty years now. Today more than ever they believe in education as a cure for all ailments and the only hope for the future, given their own inability to figure out what is going on. Extrapolating their experiences means that younger generations absolutely must be better educated, because, for the boomers, that is the only way in which the next generation will figure out what is going to happen in the future and then be able to save themselves by planning accordingly.
- Gen Xers cannot find any really meaningful guidance from their parents’ meek refuge in outmoded and no longer credible certainties that book learning, test scores, and “iron rice bowl” career paths will save the day. But at the same time they do not seem to have the wherewithal to escape the mindsets that come with the still dominant industrial era institutions of education and training. Xers are dutifully accumulating ever more degrees, certificates, and professional experience, reluctantly following the path of least resistance but without conviction or much imagination. However, almost inadvertently, but consistent with the values of tolerance and diversity proclaimed but weakly practiced by the boomers, the Xers are being exposed to a more heterogeneous reality. They study in different countries, learn other people’s languages (particularly English) and travel more extensively. More of them have practiced what was preached about seeing the world, even if their mental maps (thinking tools) for understanding it remain weak.
- Millennials could be a different story since they are beginning to live the reality of learning anywhere, anytime, for any purpose, with anyone. They are immersing themselves in a social and economic context of dense networking and lived complexity. They know how to put the tools to use and do not hesitate to multi-task with asynchronous, mobile, 24/7 and global means for communicating and knowing. Personal websites, avatars, blogs, wikis, tags,

telepresence, multimedia expression, and Googling are close to second nature. The classroom school and its clones begin to fade from the picture.⁷²

2.3.2 Micro-level observations

One of the stronger signs in the present of significant, transformative changes in the context for learning are not at the macro or meso level of carefully constructed aggregate indicators and Herculean efforts at institutional reform. It is in the everyday reality of people, from all generations, trying to cope with the freedoms and ambiguities that confront them.

Democracy, productivity, rights, and investments in the development, diffusion, and capacities needed to wield the tools and techniques that augment our speed, strength and communication all built the current reality. Faced with this challenge of living in a more “learning-intensive society” it is certainly older generations like boomers, hobbled by the parameters, tools, and successes of the past, that adapt most slowly and probably inadequately. Their anticipatory assumptions screen out spontaneity, complexity, and emergent phenomena and solutions. The more open questions are how much are they suffering, both from the effort to adapt and from the lack of adaptation, and how much is their only partial adaptation and their resistance to change (passive, defensive, offensive) currently weighing on the evolutionary process?

Gen Xers may be showing signs of the greatest difficulty. After all the boomers were raised to retire (out to pasture to die) and even though they are not actually doing it, meaning they remain very active in a myriad of ways, they are more willing to let go, live and let live. The Gen Xers, on the other hand, have been saddled with many fears and constraints that reflect the decline in effectiveness of old institutions and practices. They are inheriting the old jalopy and instead of junking it, seem to be trying to fix it. But it is a thankless task because many of the old ways of doing things cannot really be fixed. Both the problems and, more importantly, the surrounding conditions have changed. But letting go is hard and it inhibits both their openness to learning and the extent of experimentation that they actually experience. The difficulties in adapting to the learning intensity of the present reflect a deep inability to understand and challenge their anticipatory assumptions.

Millennials are just getting started and so obviously do not have as much to lose. In this sense the millennials do not even need to make the effort to reject the past, they are just moving on. What this will mean for the future is unknowable since they have not done it yet. However, one aspect that can be discerned in the present is the extent to which efforts are underway to equip the millennials based on the emergent nature of their challenges. Here part of the answer may be this report since it is intended to explore: the changing context for learning, the emergence of a new system of “learning spaces,” and, last but not least, what might be done to equip people today to be better at assessing the anticipatory assumptions that play such a major role in shaping current decision making. The question is to what extent the millennials and perhaps the Xers will be helped by explicit efforts to develop the capacities needed to assess current assumptions by imagining otherwise.

2.4 *Technological trends and drivers*

Technology occupies a privileged position in industrial societies. Strictly speaking technological tools do not spring into the hands of people nor does a tool decide how or to what end it will be

⁷² SPIRE project 2007, also: Oblinger and Oblinger, 2005.

wielded. Yet technology is often accorded a “life” of its own, witness how it is frequently referred to as a “driving force”. When it comes to the issue of learning technology the “driving force” is traditionally seen as being exerted on the cost side. The printed book, the lecture hall, the blackboard, the television, even the library are technologies or techniques for reducing the cost of diffusing information and putting erstwhile learners in contact with teachers. Certainly the industrial take on technology as an efficiency enhancer used by the supplier to deliver a given quality of product for a lower cost fits the schooling model of input-output quite well. And, on this score, the story is impressive albeit quite familiar. The next sub-section offers a selective and brief catalogue of “techno” phenomena that have links into the transformation of the context for learning.

2.4.1 Faster, cheaper – better?

Diffusion of broadband internet access in Europe is developing quickly. However, broadband take-up still varies widely in Europe and socio-economic factors affect broadband access and use. However, differences in digital literacy, often as a sub-set of broader literacy issues, mean that the introduction of broadband internet access does not provide the fix and may even deepen differences. The signs of a growing gap between leading and lagging edges maybe good news if it means take-up on the leading edge is going faster and farther. If this is the case it does not argue for slowing things down; rather it puts the spotlight on efforts to ease the way further and pay closer attention to the lagging edge.

The continuous improvement of mobile technology as an affordable technology for most citizens has the potential of making digital interaction even more flexible, as learners can collect and communicate images, sounds and short video on the move and use them for creating visual- and audio-supported learning experiences for themselves and others. Wireless technologies are giving learners the freedom to access learning resources from many different locations including ad-hoc learning environments created on the fly.

“Free/Libre Open Source Software⁷³ (FLOSS) is already a significant presence, providing many new and effective tools for the net. It also motivates the development of skills, often outside official or certified training. People participating in the development of open source software are likely to benefit from the experience gained and can profit from the community network in many other learning situations.⁷⁴ FLOSS used for distributing, supporting and managing learning can improve access to learning opportunities subject to the improvement of interoperability through open standards. A significant number of initiatives are experimenting with and implementing open educational resources, perhaps most famously at MIT through its “open courseware” initiative.⁷⁵ Again, although open education is still in its infancy its significance may be as a symptom of a systemic emergence as the old methods adapt and new ones are invented.

Looking strictly at the existing education institutions as learning spaces, investment in ICT in schools and higher education may only be in the initial phases of take-off. Although investment in ICT in schools has had a positive impact, there is widespread agreement that the potential has not yet been fully realized. One of the hypotheses regarding why this is the case is that there has been too little focus on pedagogical opportunities offered by ICT-enabled learning. Studies conclude that the general extent of ICT integration into teaching has increased over the last 6-7 years. However, ICT is

⁷³ Flossworld, <http://www.flossworld.org/>

⁷⁴ OECD/CERI, 2007.

⁷⁵ Source list, MIT open courseware, (<http://ocw.mit.edu/index.html>)

primarily used to support existing teaching structures and methods and as a means of facilitating communication via traditional pedagogy and didactics. So far ICT investments appear to have had more impact on administrative services such as admissions, registrations, fee payment, and purchasing, than on the fundamentals of teaching and learning. For now children generally use the computer more outside the school, and they learn different ICT competences away from the school compared to within the school. There is some hope that if teachers are more comfortable and capable of using the new tools that there will be a more effective integration into learning activities of the existing educational systems.⁷⁶ This may or may not have implications for the more general context for learning.

New tools also have the potential to change distance learning. So far the impact appears to be slow and has not led to radical changes in the way teaching and learning is conducted be it at the primary, secondary or tertiary levels. However, due in part to cost considerations and in part to efforts at standardization of the international higher education sector following the Bologna and Copenhagen processes, networked learning and virtual and mobile learning environments are now increasingly on the agenda of University management teams.⁷⁷

Infrastructure convergence has the potential to improve the quality of learning experiences through more media rich content and interactions. Companies and operators in the media field have begun creating multimedia content across media sectors. Educational TV operated by education institutions is more common in the US. In Europe, most initiatives draw on joint collaborative efforts between media operators and education institutions (e.g. BBC and the Open University⁷⁸).

Multimodal devices may create new possibilities for enriching and facilitating learning experiences. The use of multimodal technology may help overcome the limitations imposed by small screen mobile devices and their cumbersome data input capabilities. Podcasting and other similar technologies are tools that can re-contextualize learning. MP3 files generated by podcasters are relatively easy to create and do not require expensive equipment, and RSS technology enables automatic download of new podcasts. A similar story is emerging for video. Vodcasting, the video equivalent of podcasting and the emergence of internet based TV could redefine the way people think about television.

In turn, this seems to have a significant potential as more and more learning takes place using high quality video sequences, collaborative virtual worlds, and other social learning features. Ambient Intelligence (AmI) technologies enable the development of smart rooms and intelligent spaces. Wireless sensor networks are already able to influence the use of real world measurements, machine learning and supervised learning. Avatar technology bridges the gap between distance learners by allowing them to see each other and interact with one another. When brought together all of this may give rise to one of the most powerful learning contexts – learning-by-doing in simulated environments.

2.4.2 Technology observations

Which tools will be used, and how and by whom, remains an open question. The fascination with technology partly induced by the cultural centrality of technology as miracle cure and partly because

⁷⁶ Balanskat et.al., 2006 (EUN European Schoolnet)

⁷⁷ OECD, 2005b

⁷⁸ <http://www.open2.net/>

it is marketed as a cure all by everyone from high tech firms to fascinated politicians, should not obscure the misleading nature of extrapolation in this area. Smaller, faster, better – the ICT mantra tells little about what these tools will be used for or in what kind of society. In terms of changing the context for learning, the available tools remain inadequate to many already existing aspirations. Problems involve the difficulty and incompleteness of web searching, inter-operability deficiencies that inhibit data sharing, the lack of a semantic web, the challenges concerning identity, privacy, trust, and transparency, not to mention what many might consider the biggest limitation of all, the poor interfaces that limit the uses of these tools. Strictly speaking only the software obstacle is really technological in the sense of current techniques being inadequate to the task. All the rest of these obstacles are economic, social or political and based on current performance benchmarks. These could be overcome if many of the vested interests that defend old business models and assets, like intellectual property rights, were less influential.⁷⁹

2.5 Summary of trends and drivers

The following tables summarize a set of phenomena that may indicate a changing context for learning. The table also includes a nominal assessment of how significant such phenomena might be for altering the acquisition and use of learning in society, without in any way suggesting that such impact can be predicted.

2.5.1 Impact of macro trends and drivers on learning

Trends and drivers	Main impacts in relation to learning
Globalization (very high impact)	<ul style="list-style-type: none"> - expands the potential sources and markets for learning - creates new learning requirements and needs - creates a need for global standards, transparency and collaboration, but also for localization of learning - leads to global partnerships and consolidations in some commercial learning markets
The emergence of new skills and competences (high impact)	<ul style="list-style-type: none"> - requires learning solutions to be flexible and dynamic in order to respond to changes in skills and competence needs. - requires guidance of learners and learners (strongly supported) to take control of their learning path
Demographics, health and social changes (Very high impact)	<ul style="list-style-type: none"> - learning systems need to be able to cater to people with a wide variety of different backgrounds (values, social, age, health, learning styles, etc.)

⁷⁹ Lessig, 2002.

2.5.2 Impact of meso trends and drivers on learning

Trends and drivers	Main impacts in relation to learning
Diversification of life and learning trajectories (high impact)	<ul style="list-style-type: none"> - learning systems need to be able to cater for people with a wide variety of different life trajectories (single parent family, elderly workers, educational leave, learning while working, etc.) - requires learning solutions to be flexible and dynamic
<p>The educational system is only adapting slowly to the learning society (high impact)</p> <p>Despite investments in ICT in schools the potential of ICT is not being fully realized</p>	<ul style="list-style-type: none"> - more and more learning will take place outside the context of the educational system - changes will be introduced through bottom up processes initiated by pro-active teachers and learners and large scale projects - focus on assessing the value of investment in the use of ICT for learning - focus on exploiting new markets with existing educational services - focus on tests and evaluation of the impact of learning - sharing of costs of resources and developments across institutions and borders (where possible) - may drive the change from teacher to learner centred paradigm (learner self-service cost model) as number of students per teacher increases in some regions/countries - focus on developing pedagogical methodologies to take advantage of technology enhanced learning - greater focus on teacher training and development - more learner centred approaches and more ICT use away from the institution. - learners as co-producers of learning resources
Employees at companies and organizations learn predominantly through informal learning (high impact)	<ul style="list-style-type: none"> - focus by pioneering organizations on integration of non-formal, formal and informal learning - linking training offers to business results and tailoring training to company needs. - employers playing down the importance of non-formal and formal learning and prioritizing informal learning instead - status quo of supplier led learning offers not meeting demands - focus on recognition of prior learning and work-based experience

2.5.3 Impact of micro trends and drivers on learning

Trends and drivers	Main impacts in relation to learning
Recognition of informal learning and learning happening in several contexts for all generations (High impact)	<ul style="list-style-type: none"> - More and more learning happening in different contexts and locations - Focus on learning for competence development and leading to recognition/certification
The emergence of the new millennium learners (high impact)	<ul style="list-style-type: none"> - Learners seeking influence on the learning process and the role of ICT in learning - More and more learning happening outside the institutions
Still limited use of ICT for learning among adults (medium impact)	<ul style="list-style-type: none"> - Digital divide keeping some segments of the population from valuable learning opportunities - Need for ICT training and guidance of certain segments of adults

3 Using a hybrid strategic scenario to imagine the future of learning



Bruegel the Elder, 1559, Staatliche Museen zu Berlin - Gemäldegalerie, Berlin Link: <http://www.ibiblio.org/wm/paint/auth/bruegel/proverbs.jpg>

Scenarios are stories. As discussed below, there are many kinds of stories. The one told here is of a particular kind. It is not about a journey, nor is it about a chain of events, a plot that leads from intrigue to denouement. It is more like the Bruegel painting above, a snapshot of a moment in time – a story within a frame. The learning spaces (LS) scenarios recounted here describe different ways of looking at an imaginary tableau, one that was “painted” by a group of twenty-four people invited to a two day workshop in Paris on February 12 and 13, 2007. The participants followed a carefully predefined and detailed process in order to create a “living picture”. The purpose of this picture was to provide a sufficiently detailed and functional image of learning spaces in 2020 so that by backcasting this image onto the present it would be easier to identify and challenge the assumptions that underpin current policy choices.

Such are the exigencies of backcasting. On the one hand, it appears similar to reverse engineering because it involves taking something that has already been made (a picture of an imagined future), disassembling it into its component parts to see how it works, and then comparing its functioning with the present. This can help decision makers to compare the choices they are making now, or those of the past, with the kinds of decisions that might be more conducive or consistent with an imaginary future. On the other hand, this process is not at all like reverse engineering an existing object or system because the comparator with the present does not exist.

Naturally, there is a temptation to try to “overcome” this problem of non-existence by developing the most robust prediction of the future possible, which would then become the artefact to be reverse engineered to the present. As tempting as this approach might seem, it has a fundamental flaw - not the idea of trying to understand the present by comparing it with something different, but the hope against better judgement that a sufficiently meaningful prediction can be made about what the societal context for learning spaces will be like in 2020. The siren song of probabilistic thinking needs to be meticulously overcome. The summary methodological discussion sketched in the rest of this Chapter explains how this was done for this project.

3.1 Foresight methodology – rethinking the present

According to Météo France, the sun will rise tomorrow at 6:46. There is a fair degree of confidence in this prediction. A meteor might hit the earth between now and then or space aliens might tow the earth to a new location. But these are low probability events when compared to tomorrow’s sunrise. What about the role of learning spaces in the different learning context of Europe in 2020? What can be predicted about the status and role of learning spaces some 13 years from now? It is probably safe to say that learning spaces will still exist and will still be playing a role in the way society functions. Arguably, learning spaces have always been part of human societies so it is a safe bet that they will continue to be.

Existence, however, does not tell us much about what a learning space might be like, how it might function, and what its relationship might be to the economy and society in which it is situated. Is there a way to predict changes in the goals of learning or in the organizational form of the institutions that facilitate or use learning or in the ways that learning enters into the value-chain that generates the wealth of a society? On these questions the potential for variance is very large and the number of causal factors that might account for such variance greater still. No predictive causal model of learning spaces exists, or at least none that we can hope has any predictive accuracy. Nor is there any consensus on which theory might enable the construction of such a model.

Indeed, lacking an accepted theory of change in the objectives, organization and relations of learning spaces, what options are available for this project? Is there no alternative to attempting the impossible by building an elaborate predictive model based on an equally elaborate “scientific theory” of the determinants and dynamics of change in learning spaces? The approach adopted here reflects recent experiences in the field of “foresight”. The pivotal distinction is between forecasting, a predictive exercise, and foresight, which in formal terms eschews any predictive ambitions in favour of elaborating, more or less systematically, what we can imagine about the futures (scenarios).

There are many different types of scenarios. Most familiar are those used to plan, like in a chess game. Here the goal is given, the resources and rules are clear, and scenarios are just different ways of getting to the same objective. Another common type of scenario is the what-if simulation, meant to test and improve the capacity of an emergency crew or military contingent to react to different situations. Flight simulators for pilots are a good example of this kind of scenario training.

The learning spaces scenarios developed here do not take either of these two forms. The type of scenario in this project is more open ended or “exploratory” – heading into unknown and unknowable territory. In such scenario exercises there are few fixed parameters (givens). The quest, without succumbing to the constraints of the *ex ante* expected or preferred, is to expand the horizons of the possible. This way of building a scenario is open ended, a bit like life.

Combining the assumption that changing contexts change not only what is possible but what is imaginable with the value statement that it would be wrong to insist that future generations must hold the same values as we do today, eliminates one of the key expectations typically attached to a foresight or scenario exercise. Most often the implicit (sometimes explicit) expectation of a scenario exercise is that it will help people to change what they do today by contrasting current choices with either a more desirable future or a more probable future.⁸⁰ The normative future offers an “ideal” benchmark, while the probable future (typically based on a pseudo-predictive model using key driving forces) offers lessons on what to do or not to do if one wants to either accelerate or avoid the scenario that from today’s perspective is deemed more or less probable. Both are rooted in a planning paradigm that uses scenarios as a way to improve blueprints for the future (be it for a path over time (time-series) or for an outcome (cross-section)).

An alternative approach, adopted here, uses scenarios as a tool for calling into question current decisions without any expectation that the scenario used today will correspond to the scenario developed tomorrow. Jettisoning the planning premise may seem like a subtle distinction. For instance critics of foresight in general might point out that in any case, both in practice and in principle, scenarios are usually assigned a low probability and hence are not a dependable planning tool. But by altering the premise that underpins the way policy makers typically use scenarios, particularly by explicitly not accepting the dual planning oriented imperatives of fixing a target⁸¹ for the future and seeking the highest probability prediction (despite formal proclamations to the contrary), the scenario method used here is at once more modest and less constrained.

Given that the aim of this paper is primarily to report the results of the learning spaces scenario process, this is not the place to explore in any further detail the epistemological issues and controversies that boil beneath the surface of the foresight field.

3.2 Backcasting

Like the Brueghel painting at the start of this chapter that depicts an active society, a village bursting with human energies of all kinds in the 16th century, the following chapter describes a tableau of the LIS of Europe in 2020 and the attributes of LS in that context. The LIS scenario paints a picture of a social system where a specific type of learning – banal creativity – has become: the primary source of wealth creation; the active component of identity creation and the social relationships that go with it, and; the core of values creation as expressed through the decisions that put values into practice. It is this picture of an imaginary learning-intensive society that provides the specific, distinctive context for describing the workings of learning spaces in Europe in 2020. And in a backcasting exercise like the one conducted here, it is this image of the LIS that must be “deconstructed/reconstructed” so that the assumptions about goals, roles, and what works, are revealed.

The Hybrid Strategic Scenario backcasting process used in this report is akin to the one used by counterfeiters who learn how to replicate a product by taking it apart to see what it is made of and how it works. Also called reverse engineering, this is a process that can assist the designer or

⁸⁰ It is also common to use scenario exercises to build up better communication and a shared understanding of values and expectations. But this type of scenario exercise does not usually target specific policy issues.

⁸¹ A single target because even if the scenario process generates multiple scenarios the policy choice is made in terms of avoiding the bad scenario or achieving the good one. Sometimes policies are elaborated or judged in terms of being able to accommodate multiple scenarios and this polyvalence is deemed a useful criterion. However this is still a planning perspective only using a set rather than a single target.

decision-maker to discover how each part works and how the different parts, when fit together, make up a working whole. Based on an assessment of how a functioning model or finished product works, the “engineers” determine not only what it takes to replicate the item but they also pick-up clues about how specific variations or innovations might offer new or better ways of achieving the same ends.

Of course, in the case of learning spaces in Europe in 2020 there is no real end product to reverse engineer, only an imaginary picture of a different context for learning, the LIS. While the Brueghel painting presumably rests on the painter’s direct observations of the world around him, the LIS described in Chapter 4 rests on observations of the “potential of the present” exhibited by current phenomena as surveyed briefly and partially in Chapter 2 above. This means that quality of the comparisons between the present and an imagined future depends a great deal on the extent to which three partly conflicting objectives are reached: analytical rigor, imagination, and operational detail.

The process undertaken for this project took the three preceding points into account by engaging in a carefully structured process that is described in the next sub-section.

3.3 *Applying the hybrid strategic scenario process to European learning spaces in 2020*

3.3.1 Two frames, a canvas, and a colour palette

In order to meet the methodological and performance criteria spelled out above a careful and detailed process was designed and implemented for this project. This “rigorous imagining” process followed the three steps of the “hybrid strategic scenario” approach. Each step builds on the next one in order to create an analytically clear and imaginative set of contrasting anticipatory assumptions that reveal the potential of the present in ways that can change decisions today.

- The first step, as specified in the following sub-section (3.3.1) and in Chapters 4 and 5 consists of four elements: a narrative frame that sets out key assumptions; a detailed exploratory scenario of a learning-intensive society (LIS) presented in Chapter 4; a model of learning in context that is laid out in detail in sub-section 3.3.1, part D; and a set of generic attributes of learning spaces presented in Chapter 5.
- The second step in the process uses the material generated in the first step to engage in a participatory scenario building exercise. The results of this process are detailed in Chapter 6. This second step involved participants imagining how learning spaces might function in a learning-intensive society. This stage constituted the primary contribution of the participatory process of the workshop. This is where the value-added from the group process was created.
- The third step, summarised in Chapter 7, partly addressed by the workshop discussions and partly by the subsequent analysis of the workshop results, teases out policy insights by contrasting (backcasting) the detailed stories of functioning LS in a LIS, elaborated in the second step, with existing policy assumptions.

As befits this kind of rigorous exercise both participants in the process and readers of the results as presented in this report are able to evaluate the methods in a transparent and reproducible way. This is a critical part of the overall approach and brings important clarity and openness to the difficult task of anticipation or thinking about the future.

Learning spaces as the subject of the scenario process imposes certain requirements on how the canvas is prepared.

First, there would be no reason to conduct a scenario exercise to imagine how learning spaces might function in 2020 if the attributes of such a “place” – physical, virtual, social and individual – did not change over time. After all, it is perhaps one of the most universal aspects of human society that we learn, our advanced capacity to learn may even be considered one of the defining attributes of our species. As a result any effort to project learning spaces into time means understanding what distinguishes the learning space of yesterday from the learning space of tomorrow. This means that in order to imagine the functioning of learning spaces in 2020 that are not identical to today’s learning spaces it is essential to define learning spaces in a way that both allows and yet specifies what is different.

Second, learning spaces, as initially defined by the report *The Future of ICT and Learning in the Knowledge Society* (IPTS, 2005), are multi-dimensional, described from many different, overlapping angles including the individual point of view, the institutional frame, and even the physical context. As a result, in order to construct an image of functioning, operational, everyday learning spaces in 2020, the picture needs to be drawn and display the appropriate dimensions or colours. This means that it is important to situate the scenario of learning spaces using the appropriate variables of where, when, how, and why learning activity occurs. To return to the painting metaphor, a painting of a still-life is neither a painting of the country side nor of village life. Looking at the Brueghel painting reproduced at the beginning of this chapter it is clear that the things depicted, the colours used and the relationships within the frame all describe village life at that moment in time.

Of course a painting is not only static but it also leaves out many details, some of which are implicit in the structure or pattern of the frozen image, but others that are impossible to deduce from the depicted moment. Furthermore, a painting is not reality. The choices made by the artist, inevitably constrained by what he or she knows and sees (consciously and unconsciously, implicit and explicit), are neither exhaustive nor continuous. The future is of course even more difficult – at once more limited because there is no detail to observe and at the same time unlimited for the same reason. Given these challenges and those of foresight in general discussed above, the approach adopted for this process needed to be carefully defined in order to provide a sufficiently well defined frame and painting supplies to generate a meaningful image of learning spaces in 2020.

The frame, palette of colours, and selection of subjects that serve as the basis for drawing the learning spaces scenarios were built up using five components: a narrative frame that helps tell a coherent story (3.3.2); a “rigorous imagining” model of the “learning-intensive society” that helps to set the context, i.e. select the elements that serve as background (3.3.3); a model of learning in context that helps to select the colours that will be used to paint the “protagonist” or actor in context (3.3.4); a model of learning spaces in a learning-intensive society that combines the two models above (points 3 and 4)(3.3.5); and lastly, specific attributes of learning spaces that help to define the contours of the painting’s protagonists (3.3.6).

Turning once again to the Brueghel painting for a clarifying metaphor, each of these five points are ways of specifying the nature of the story to be painted without deciding in advance the exact story that will be told.

3.3.2 The narrative frame

First, there is a narrative frame that lays out the assumptions that make the story consistent – told from a clear point-of-view, in a given genre, in a specified timeframe, and with explicit assumptions regarding the audience and the underlying values. In the case of this exercise the specification of the narrative frame for the scenarios is as follows:

Purpose: The aim of this scenario exercise is to discover the potential of learning spaces in a learning-intensive society and on this basis re-examine the assumptions that shape current policy decisions. This is a double scenario objective that mixes: a discovery-related strategic scenario of a learning-intensive society and learning spaces within that context with ii) a backcasting scenario that attempts to identify specific changes that might be considered enabling conditions for the functioning of learning spaces in a learning-intensive society.

Point-of-view: The point of view for the story of learning spaces is recounted at the micro level in terms of the conduct of daily life. The metric that offers scale to this day-in-the-life point-of view is that of transitional or transformational change, similar to the kind of all encompassing alterations that occurred in the shift from agriculture to industrial society. The point-of-view for the analysis is not that of an institution or of macro-level aggregates, although obviously the changes in the conduct of daily life have institutional and aggregate implications. The point-of-view is also that of “learning spaces” nested within a specific societal context, which in the case of this exercise is a distinct scenario in itself of the learning-intensive society.

Temporal frame: Comparative static cross-section in 2020 – the issue is not describing the voyage or how or why to get from A to B.

Protagonist: the actor is the predominantly the EU (and its Member States) since the aim of the exercise is to identify EU policies and frameworks (choices that could be made now) that would enable/facilitate LIS-LS.⁸²

Rules/assumptions: there are a set of general status quo assumptions regarding basic values and social choices related to things like respect for human rights, market economy, parliamentary democracy, etc. Additional framing assumptions: 1) Long-run change is compositional. The old co-exists with the new, reallocation leading to shifts in the share of the total is the primary structural attribute of long-run change. 2) All change is incremental in the sense that any change takes place in the complex, multi-dimensional present in which inertia (power to oppose change, resistance in all its forms) and the constraints of evolutionary functionality limit the rate of change. 3) Over time incremental changes can produce radical differences when two points in time are compared. 4) Change is both dialectical and usually only partially (maybe very partially) rational, explicit.

On the basis of these narrative assumptions it becomes possible to use rigorously imagined scenarios to assess the choices that are made both at individual and collective levels in terms of the extent to which a decision does or does not contribute to changes that refine the existing system (preservation) versus a decision that does or does not contribute to changes that eventually, over time might generate cumulative transformations that create a radically different, new system. It is worth noting that the difference between preservation type decisions and transformation type decisions is always

⁸² The political will for this is assumed here – notionally it is what is described as the desire to create a knowledge society (e.g. Lisbon Agenda).

speculative. Further, the distinction between preservation and transformation does not turn on the question of whether or not a change is endogenous or exogenous.

Both intra- and extra-systemic changes can arise from both types of choices, although there may be a bias in transformative choices towards enabling extra-systemic type changes if, in general, there is a bias in transformative change towards compositional effects. For example, take the usual type of reform efforts undertaken by governments to improve education or health care or social insurance or labour market flexibility – most of these kinds of changes are intra-systemic and can be characterized as efforts to preserve the system by making it work better. Without in any way impugning the desire to improve efficiency and outcomes by refining an existing system, such reforms may end up contributing to transformation because they ignore or even oppose the development of extra-systemic practices. Such is the nature of compositional change and of the uneasy, often conflictive relationship between the status quo and the emergent.

3.3.3 The “learning-intensive society” frame

Second, the context chosen for situating the learning spaces scenario is itself a detailed scenario of a society where the predominant technological, economic, social, and governance characteristics have changed. All societies, at any time, are composed of many different layers, of different more or less depreciated vintages; for instance, that industrial society coexisted with elements agricultural society. The transition from one dominant system to another does not entirely do away with the past. Rather, it is assumed here that societies are composed of sets of dynamic systems that evolve through both endogenous and exogenous processes, and that at different points in time different systems and different processes have different degrees of importance for the direction and day to day functioning of the social system as a whole. Such ecologies evolve in complex and compositional ways.

The LIS is a scenario that describes a static moment in a general social system where the old industrial sub-system and processes no longer predominate. The question is how to describe what does. Providing such a description, inevitably leaning on terms and logics that are still largely industrial, means being able to answer the following questions in ways that distinguish the LIS from the present:

- With respect to the creation, exchange and accumulation of wealth (value) - what are the main attributes of wealth (tangible or intangible, homogeneous or heterogeneous) and of its organization?
- What kinds of property rights predominate (diversity of contractual relationships, mix of different degrees of copyright/copyleft)? How does this relate to business models (ways of making a profit)?
- How is trust established and maintained in different spheres of economic, social and collective inter-action and choice?
- How does work (or wealth creating activity) relate to the way we build our habitat?
- How is power allocated (is authority assigned or taken, is decision making capacity gained through experimentation, is complexity embraced)?
- What kind of equality matters (hierarchy and/or heterarchy)?
- What shapes a person’s identity?
- How is risk perceived & managed?
- What are the enabling or collective attributes of the LIS?

- What do people need to know – know-what, know-how, know-who, know-why?

The learning-intensive society as the context for developing specific descriptions of learning spaces can be summarized very succinctly following only the most primary (colours) aspects, along the following lines:

- Technology - Ambient computing – high levels of ease-of-use, range-of-uses for information technologies such that these tools are no longer “evident”;
- Economy: Unique creation – high levels of unpredictability of tasks and freedom of initiative for wealth creating activity mean that the predominant source of value-added is the refinement of taste (banal creativity);
- Society: Bottom-up collective identity – high levels of diversity of affiliations and intensity of identity generating decision making produce sense making that integrates (internalizes) the social nature of the individual; and
- Governance: High levels of transparency/access to information and experience in making strategic choices emerges reflexively from the interaction of ambient computing, unique creation and bottom-up collective identity.

The descriptive short version: The LIS is about daily life when:

- Information technology is ambient and ubiquitous, the use, not the tool, requires skill;
- Unique creation predominates in a high transaction intensity, post-subsistence, quality of life economy;
- Identity is bottom-up, highly heterogeneous, produced endogenously on a highly liberating minimum common denominator of values, and;
- Decision making capacity allows people to embrace experimentalism, heterogeneity, complexity, and spontaneity.

3.3.4 A model of learning

Third is a model of learning that provides the basis for describing learning in different contexts – this is a model that is not bounded by the definition of its variables in a specific historical period. Workshop participants were provided with two “situational” schemas for defining learning. The first, following the work of Etienne Wenger’s social theory of learning (diagram below),⁸³ takes an action/function perspective on learning. On the action side there is learning as: doing, belonging, becoming, and experience. On the function side there is learning as: practice, community, identity, and meaning. Such a model is situational in the sense that the actions and functions, such as the way a person belongs or practices, depend on the historical context and the actual acts. This situational model for describing learning is perfectly suited to the task of painting scenarios.

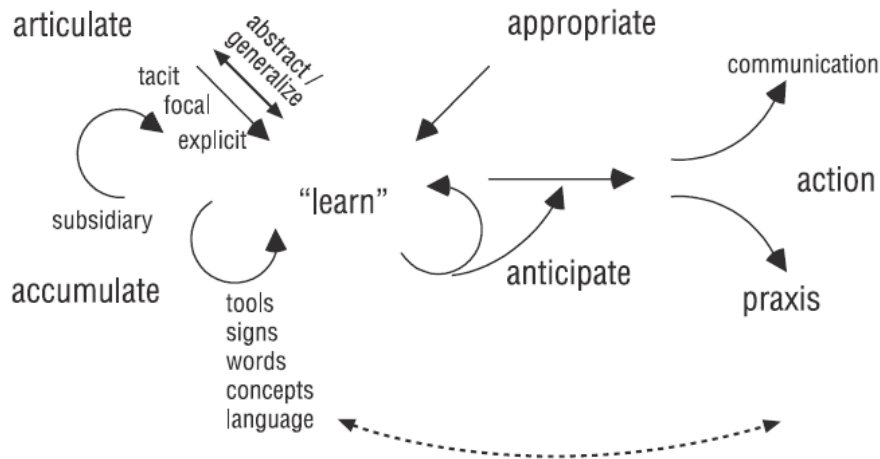
⁸³ Wenger, 1999.

Etienne Wenger's Diagram of Learning



In a similar fashion, the model proposed by Ilkka Tuomi in the original IPTS Learning Spaces document⁸⁴ situates learning in a way that makes action in context the fulcrum of learning. Tuomi stresses the temporality of learning by distinguishing the cumulative and anticipatory dimensions as well as the modalities used to formulate learning, including articulation and conceptualization. This model helps to include within the contextual description of learning the tools and media that mediate the relationship between the learner and the world around them. These too are highly context-specific and need to be described for the learning spaces of the learning-intensive society in 2020. However, and this is a crucial point, these mediating tools, that include language (as per Tuomi's diagram below), do not put the technology forward as a driving force.

⁸⁴ Punie and Cabrera, 2006.



Source: Tuomi, 2006, p. 81.

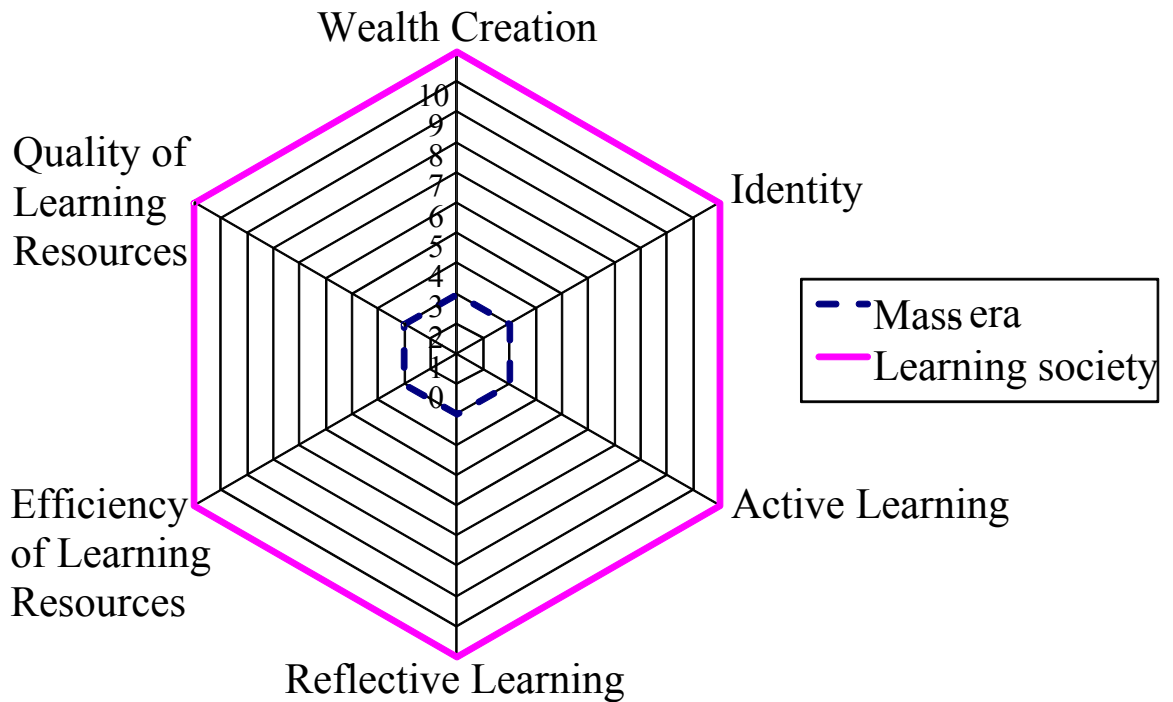
On the contrary, these models stress that it is the context which gives specificity to the actions, power, temporality, and formulation that are learning, not the tools. These learning models help shift the emphasis away from the no doubt fascinating but epiphenomenal aspects of the “new” to the more prosaic but also more substantive dimensions of what people actually do and for what purpose.

3.3.5 Combining the learning model with the learning-intensive society model

Fourth, by taking the two prior models, one of the learning-intensive society and the other of learning as a social activity, it is possible to define an analytical frame for the specific story we are trying to paint, i.e. of learning spaces in a learning-intensive society in 2020. Merging the two models produced the following functional relationships as a way to describe the context within which LS work in the context of the LIS.

In the context of a learning-intensive society all of the learning spaces scenarios are located at the outer rim of the radar chart below. Putting learning spaces in the LIS context allows for a more detailed description of the specific attributes and functioning. This specification of the attributes of LS in an LIS was used to conduct the “rigorous imagining” process with participants to the process at a two day workshop in Paris in February 2007.

Learning Spaces Model Radar Chart



3.3.6 A generic palette of colours for describing learning spaces

Fifth is the descriptive attributes of learning spaces as provided by the original IPTS report and elaborated in detail in Chapter 5. These categories are generic ones that can be used to describe learning in a wide range of contexts and points in time, from ancient Rome to the jungles of Columbia. Once learning is anchored in a specific historical and physical context, this list serves as a sort of colour code to help descriptively paint the details (think here of the way colours are used on maps to highlight specific features or how in paintings we easily make an association of flesh colours with skin, white with clouds and blue with water).

4 Imagining the future of learning

Learning Spaces (LS) are the next school. That is the rigorously imagined scenario explored by this report. It is a vision of learning that differs radically from the conventional classroom image above – where blackboard knowledge and the imposing teacher represent the quintessential learning space of the industrial era. Instead, because the context for learning is different, learning spaces are much closer to the radical message from the film *Happy Feet* cited at the outset of this report. In that movie the primary learning task is to find your “Heart Song,” and to do so “*all by yourself*”. In this film, which is the story of a Penguin searching for his identity, inner knowledge is validated instead of denigrated. Learning is about finding out “*who you truly are*” from the “*voice you hear inside*”.

What is the test of learning in *Happy Feet*? Performance is the test, the act of singing your song to the community. Not as an externally set exam, but as a song that is your own, one that is refined and embroidered for an entire lifetime as part of a societal symphony. Indeed the film goes even further since the hero of the story does not have a song but a dance. The film’s message is to learn to express yourself in the way that suits you, not to some pre-ordained community standard but to one’s own sense of self. The story is about a community of learning-intensive penguins that learn to be open to open learning.

The scenario of a 21st Century Learning-intensive Society depicted in this report is an imaginary snapshot of how society might function with open learning at the core of what everyone does all the time, everywhere. *This scenario is neither a prediction nor a statement of desirability, but an imaginary picture of what learning is like in Europe in 2020.* It is this imaginary scenario that fulfils the requirement, stipulated in John Dewey’s statement quoted at the beginning of the report, that the “conception of education as a social process” requires a prior definition of “the kind of society” within which the learning occurs. The context for learning is critical and the scenario developed in this Section provides that different context.

From the outset, it is important to underscore that this image of learning, as it occurs in everyday life in Europe in 2020, is not a scenario of how the image came to be. It is a painting not a movie. Without belabouring the technicalities of “thinking about the future”, the foresight methodology adopted for this report uses a “comparative static back-casting” approach.⁸⁵ What this means is that the focus is on generating and comparing two tableaux – one of an imaginary society in 2020 and the other the Europe of today. The process for generating this comparison entailed the elaboration of detailed preparatory analyses and stage-setting papers, an intensive two day workshop with over twenty international experts in education and foresight, and a careful refinement and elaboration of the results for this report, including further feedback and inputs from a range of experts.

The point of comparing two moments in time is not to find the line between them, the path from A to B. Nor is the intention to describe the results of an intricate, highly technical exercise in prediction that provides a “scientific” “best guess” of what the future *will* be like. Such efforts are not only illusory but also misleading.⁸⁶ The aim of the exercise is to find a way to gain a better understanding

⁸⁵ Much back-casting work, pioneered by John Robinson (see bibliography, Robinson 1990, and one of the participants in this process), is used to trace a path back from the future to the present and thereby discover one way of getting from A to B. The approach adopted here is less ambitious, aiming to compare two points in time – one an imaginary future and the other the present. A few observations on intermediary steps are offered in the conclusions to this report, but there is no predictive accuracy claimed for such statements since they simply offer a logical “what-if” extrapolation based on the comparative static comparison.

⁸⁶ Miller, 2006b.

of the assumptions people use when they make choices. This is a crucial anticipatory component of choice, any choice, from the everyday kind of decision to take an umbrella because of an assumption about the probability of rain to the grand kinds of choices about the fundamental legal, institutional, and moral infrastructure of a society.

The Hybrid Strategic Scenario (HSS) method⁸⁷ used in this process generates a “rigorously imagined” scenario that throws into sharp relief the fixed ideas (anticipatory assumptions) – typically “inside-the-box” conceptual building blocks – that play a strong role in shaping decisions. For example, in the scenario elaborated for this report the learning infrastructures that have served industrial societies so brilliantly are marginal. Compulsory classroom-based schools, apprentice and skilled trades training systems, adult education, and mass-universities, are still part of the landscape but, relative to past glory, much less significant. Instead, in the predominant position formerly occupied by industrial era learning institutions for well over a century, there is a new system that provides the infrastructure to support a much more multi-dimensional, holistic, and omnipresent societal role and everyday practice for learning.

The Learning Spaces (LS) of 2020 function on different principles and achieve different objectives than the education systems of 2008.⁸⁸ Two fundamental differences distinguish the education systems that are characteristic of today’s industrial era from the LS that are predominant in the scenarios used to describe European society in 2020. One is related to purpose - or the function of learning - and the other is related to organization - or how learning takes place

- The first arises from the clear dominance of a transformation in what and how wealth is created and social well-being sustained. This is a change in the socio-economic context for learning.
- The second reflects a shift, not so much in the way learning has always happened – actively – but in the way the recognition and pursuit of the activity that is learning are integrated into everyone’s everyday life, all the time. This is a change in the organization of learning activities and the infrastructure that facilitates those activities.

In 2020, LS are mostly about how people as inter-dependent and inter-connected social beings construct their identity and, on this basis, produce the wealth and community that sustains their well-being. In general terms this functional role or purpose of learning infrastructure in 2020 is not much different from before, continuing to serve the main economic and social requirements of society. However, by 2020 the leading economic and social requirements have changed. In the scenario of post-subsistence society in 2020 dubbed “The Learning-intensive Society” (LIS), the leading source of wealth (value/utility), increased productivity, and social cohesion, is an activity called “unique creation.”⁸⁹

4.1 The learning-intensive society (LIS) scenario

The image of European societies in 2020 depicted in the LIS scenario is one where daily life has moved beyond today’s dawning recognition of what it means to be post-subsistence and post-

⁸⁷ Miller, 2007a.

⁸⁸ For convenience of exposition for the rest of this report, the term “education system” will be used to refer to the predominant “learning spaces” of the industrial era, and the term Learning Spaces (LS) will be used to refer to the systems for facilitating learning that are in a leadership position in the scenarios of 2020 developed in this report.

⁸⁹ Miller and Bentley, 2002; Prahalad and Ramaswamy, 2004; Toffler and Toffler, 2006.

industrial. In 2020, the old industrial society, including everything from manufacturing to services like banking, health care, and education, all historically organized on industrial lines, is looked upon in much the same way as agriculture was in the 20th century. In the industrial era, farming and rural life played a role, perhaps somewhat greater than its actual weight in economic and social affairs merited, but there was little question that leadership and pre-eminence from the point of view of societal change had passed to industry. In 2020, the relationship between the LIS and industrial past is similarly unequal, with the LIS taking the lead.

In the imaginary snapshot of Europe in 2020 it is assumed that society is no longer dominated by the industrial-era logics of mass-production and mass-consumption. Scale is no longer the guiding principle. Instead, the pivotal act, the creation of value-added, has changed locations. In the LIS of 2020 the daily (re)creation of the world around us – things, services, and relationships – generates the largest share of value-added through self-generated personalization – “unique creation.” DIY (do-it-yourself), Pro/Am (professional/amateur), Web 2.0 (social networking), democratized innovation, etc. These forms of production are all weak signals in 2008, hints of the potential of the present to go beyond, mass-production/mass-consumption to create a society where the division between the supply side and demand sides is marginal.

This means that the crucial moment in industrial society when the entrepreneur or engineer or designer comes up with an idea (conceived) that can then be implemented (executed) by taking advantage of economies of scale is no longer central. The aims and organization of wealth creation no longer take on the form of a pyramid or hierarchy, with the genius who generates new ideas and the technocrat manager who implements them occupying the top floor, while down below at end of the chain of command is the “front-line” worker. The LIS is heterarchical (antonym of hierarchical). Everyone is the inventor and implementer of his or her own designs, the unique, personalized set of artefacts, services, and experiences. As a result, in the LIS there is a profound difference when compared to industrial society in the relationship of knowledge to production or, in more general terms, the activities that (re)create daily life.

In a socio-economic system dominated by “unique creation” the critical value-added comes from the ideas and insights that each person makes as their contribution to the (re)creation of everyday life (a process that is inherently inter-personal, networked). The nature and source of this personalized value-added is not and need not be the genius of industrial era success typified by the brilliant entrepreneur or technocrat who in a flash of exceptional insight (implemented through command and control leadership) determines what and how to produce the goods and services that keep everyone else busy working and consuming. On the contrary, with “unique creation” it is a simpler, more imitative and shared set of tastes that gets refined gradually through experience (learning-by-doing) that is the dominant source of activity and value-added. People still spend a fair share of their time creating wealth, but this wealth is related to outputs and process that add value to their identity and community, i.e. what matters to them.

Such a shift unthrones the kings of the industrial era, those at the top of the pyramid of value creation – the mass-market designers, inventors, and managers. Instead, it is the everyday, everywhere “*banal creativity*” of self-actualization that creates value in the broadest sense of things, services, and experiences that are desired/useful/satisfying. In the LIS, not only is the universe of “economically” relevant outputs and transactions expanded beyond today’s GNP or monetary realm,⁹⁰ but equally as

⁹⁰ Typical measures of wealth consisting of GDP and productivity do not take into account many components of well-being. Alternative indicators are being developed, such as the Happy Planet index (New Economics Foundation, 2006) or the World

crucial, the origin of efficiency improvement (productivity growth) is in the refinement of taste – knowing ever more exactly why and what you and your community want. From the point-of-view of learning it is “truth through experience” (xperidox) or “learning-by-doing” that dominates. Consequently, LS are at the core of the economy and society.

In the open, trusted and connected context that makes LS work, the imperatives that seemed so urgent in 2008, like yoking education to the idea of “national competitiveness,” have receded into an old memory. In this LIS scenario of 2020 both old industrial style learning and the notion of national competitiveness are passé. Why? Because it is widely understood that nations are not firms and a successful nation does not succeed by being a better more efficient, cost competitive, profitable “firm” than another country but by creating the conditions for local, unique creation. In the LIS the old industrial forms of competition around product market innovation and efficiency are marginal, since output is not standardized but unique. In the LIS of 2020 the largest share of “wealth” creation is sourced locally from personal creativity – which, once again, is not a technocratic skill. Certainly, vestiges of the old forms of product market and investment competition remain, but such activities are only pertinent to a thin layer of production that is necessary but non-central in terms of its share of value, time, and lifestyle (once again similar to the position of farming in the industrial era).

In this imaginary picture, the socio-economic composition of society and the shares of activities that make up the whole are different. This does not mean that industrial era scale economies are not important, only that the value created by the highly efficient industrial era share of the economy, critical enabling goods and services (like food, information technology and communications, finance, traditional R&D, etc.), are now the inexpensive raw materials – inputs to unique creation, that require relatively little time and money. Indeed, in the LIS of 2020, many traditional industrial sectors have shifted focus from the production of finished goods to intermediate ones that people can use in order to produce their unique creations.⁹¹ With a worldwide supply of engineers and global competition in these specific intermediate product markets, even the tools, the means for “unique creation,” are innovative and inexpensive.

In the European LIS of 2020, there is no longer any fear that the marginalization of the industrial era’s economic and social bastions means impoverishment. Neither out-sourcing – even of high-tech activities, nor the ascendance of other parts of the world to high levels of sustainable industrialization are seen as threats. Quite the contrary since one of the cornerstones of a post-subsistence LIS is the immense productivity of the former developing parts of the world. Once again, in the European LIS the centrality of “unique creation” means that most value creation is local, but that ideas are global and the subsistence and industrial inputs to daily life are cheap. This is a world of open exchange at all levels and in all spheres.

The European LIS of 2020 can be broken down into three general dimensions:

- The first dimension is economic. In the scenario of the LIS a compositional shift has occurred, such that the predominant source of wealth is unique creation. This means that in the LIS the dominant source of value-added is produced by people learning to enhance their well-being (quality of life) in a highly inter-dependent and inter-connected context – dense and fluid

liberty Index (The State of World Liberty Project, 2006) or the Calvert-Henderson Quality of Life Indicators (Calvert-Henderson) begin to point towards different ways of accounting for wealth. Much remains to be done to get a better and legitimate accounting system in place.

⁹¹ Green, 2007.

networking. Both what and how wealth is created and accumulated (flow and stock) has changed.

- The second dimension of the LIS is social. In 2020, identity creation is bottom-up in such a way that the social fabric is woven by the capacity to be free. This capacity is built up through the practice of unique creation's banal creativity and the internalized responsibility that comes from experimentation that is inherent to learning-by-doing. One of the most striking differences between the LIS and industrial society is with respect to the creation of identity and the capacity of the LIS to nurture and use this motivational force to overcome the instrumental reality of the opposition between the individual and the other (state, boss, teacher, etc.) that is inherent to hierarchical order.
- Lastly, given the high everyday burden of choice in both the realms of economic and social activity, a LIS can only function with a greater capacity to make decisions. This is the governance dimension that underpins the operational sustainability of the highly networked (dense and fluid) economic and social processes of the LIS. Better decision-making capacity throughout society is an attribute of a Europe where the practice of freedom/responsibility is even more insistent and yet easier than in 2008.

By using these three dimensions of the LIS scenario of Europe in 2020 it is easier to imagine details of a changed context for learning and, within that context, to describe more specific attributes of LS in the next sub-section.

4.2 Learning spaces in the learning-intensive society

LS are part of every aspect of the LIS picture. In the LIS of 2020, learning-by-doing throughout society, in so far as it is the source of adding-value through unique creation, is the main attribute of economic and social activity, and therefore the practices, culture and institutions that are the collective enabling systems for LS are at the core of any description of the operational attributes of a LIS. But these are LS that contrast sharply in terms of purpose and organization with the education systems that are the pre-eminent learning spaces of 2008. As already described, the socio-economic context is different, as are the goals and methods of learning. In 2020, the technocratic, hierarchical, and exclusive approach to educational and skill achievement has been abandoned, and the industrial era's approach to the institutionalization of learning through industrial forms of "education" has collapsed (become marginal).

In 2020, "learning-intensive society learning spaces" (hereafter: LIS-LS) are not about the usual screening, testing, credentialing, socializing, or custodial functions characteristic of the education LS of industrial society. In the LIS, the primary rationale and use of learning is not to ascend through a hierarchical structure of ever-greater technical achievement but to gain a better appreciation of what improves the quality of life. Certainly reading, writing, and arithmetic are still useful skills, but now on par with visual, oral, and multi-media avenues for expression and communication. Telling stories with sound and light, solving problems with virtual teams, plunging into simulated worlds, choosing local projects, experimenting in a context where failure is welcome, are all at the core of LIS learning. Compared with the cognitive and behavioural requirements of industrial learning in 2008, the LIS scenario depicts a profound transformation in both what and how knowledge is valorized and its acquisition organized.

The LIS-LS privilege the inter-connected, inter-dependent personal discovery process. Far from being an individualist or isolated voyage, learning and meaning are the resonance of life in a complex social landscape. The organization of LIS-LS, less burdened by the compulsory, custodial, and credentialist approach of the industrial organization of learning, is better able to leverage the fruit of research on how people learn. The LIS scenario in this section of the report describes a Europe of 2020 where the predominance of LS and the related, but not necessarily in a causal way, relative marginalization of the industrial era's learning infrastructures are taken as givens. Front and centre stage is a much more integrated, holistic way of recognizing and sharing what people know. This means that learning is significantly less structured by the imperatives of an industrial society where the requirements for success meant that people had to fit what they knew (as well as what they wanted to learn) into the chain of command, the external value chain of a production process for which they and what they know are just a "resource". In the picture of the LIS of 2020, practices like "human resource management", along with all of the imperatives it brings for learning, are no longer at the forefront.

In summary form, the "bottom line" is that a rich new learning framework can be detected in the "learning-intensive society" that characterizes Europe in 2020. This framework or new infrastructure of learning has LS at its centre and is the main objective of institutional enabling policies. These LS are multi-dimensional loci for learning in all its forms: intangible and tangible, experiential and reflective, individual and collective. LS are the nexus, the crossroads of all strands of learning – both the stock of what someone knows and the flow of action that alters what they know, both in hierarchical terms judged by a third-party standard and in heterarchical terms that are self-referential, complex and transparent.

5 Fundamental features of learning spaces in the LIS

The following eight partially overlapping and multi-dimensional attributes of LIS-LS offer a fairly detailed picture of the functioning of this new learning infrastructure. Of course no locality in Europe, with the diversity of traditions, values and resources, can be assumed to have identical ways of operating LS. That is why the “how-to” scenarios developed in Chapter 6 imagine a range of ways of performing the functions and organizing the LIS-LS.⁹² However, what is common to all of the “how-to” scenarios in Chapter 6 is the shared definitions and general enabling framework for facilitating open, trusted and connected learning. The eight sketches of the attributes of functioning LS in the LIS, inspired in part by the original list of attributes of LS developed at IPTS, also include brief references to some of the current weak signals or phenomena that suggest that LS are part of the potential of the present (emergent *without* either predicting or suggesting paths of causal change).

5.1 Personal digital spaces

LIS-LS are where individual learners, each and every one, all inclusive, can access a holistic and life long track record of their learning achievements and articulate their learning ambitions independent of time, location and access device. This is the core of LS in 2020, the anchor of a transparent and individual knowledge record. They reflect what people have learned and what they aspire to learn – at particular times and in particular places.

These personal and personalized digital Learning Spaces will work because everybody will have the equivalent of a verifiable and trustworthy “cybercitizen” identity that is the basis for opening a “Knowledge Bank” account that records what they know on the basis of a wide range of different assessment methods, – from vendor track records on e-Bay (auctions) and unsolicited third party Zagat scores (anonymous restaurant evaluations) to verified inter-subjective peer review (academic journals) and test based certification schemes (by accredited institutions).

In most cases the personal digital knowledge account is owned and controlled by the individual cybercitizen. Practices such as mandatory encryption, multi-level access permissions, permanent traceability, etc. will be established under a legal authority with respect to the rules for assuring the transparency of quality control, identification and punishment of fraud. Accounting rules and transparency requirements as well as a culture of knowledge banking used for the collaborative and competitive transactions of unique creation, make personal digital spaces a critical enabling element for the high density and fluidity of networking in the LIS.

The personal ownership and asset value of digital LS generates incentives to invest in improving both personalization and transparency. Facilitating these two, often contradictory objectives, is one of the main roles of the LIS-LS infrastructure. However, the trade-off is not resolved by seeking lowest common denominator results like those generated by standardized testing and certification. The LIS-LS infrastructure is able to assist in attributing meaning to both the distinctive knowledge

⁹² It is important to underscore that each of these different functional portraits are situated within the same frame of a LIS and that as such the differences that distinguish different LS infrastructures still share certain basic requirements. The utility of imagining different ways of achieving the same objective, i.e. the functioning of LS in a LIS (“how-to” or optimization scenarios), is with respect to policy choices today. The four “form and function” scenarios developed in Section 3 of this report offer more specific backcasting insights when contrasted with current assumptions and policies.

stored in a person's personal digital LS and to the rich signals that are accessible to the person seeking to know what others know.

5.2 *Connecting and social spaces*

LIS-LS are where all learners meet physically and virtually to share experiences and engage with other communities and social networks. Such LS are inherently “inclusive” since everyone has access and no one has a privileged position. LS are active spaces, the place where projects unfold and experiments take place. The range of activities is as vast as people's motivations and imaginations – from the banal to the sublime, from the common to the exceptional. All learning counts. People can share and inter-connect their LS, launch joint efforts to create, refine, debate or just explore. The connected and social activities that constitute the open and externalized dimensions of the LS can span a vast range of initiatives from the provision of local care services and community greening projects to creating simulated worlds and inventing new communities of interest and practice. Such activities characterize the banal creativity of learning-by-doing that is the main source of wealth and identity creation in a LIS.

In practical terms, this means that there is a much higher density and fluidity of the networks that enable and provoke learning. Some of the current weak signals for such connecting and social LS are the increase of internet connectivity, the rise of mobile technologies and the tremendous success of Web 2.0 applications like MySpace, Facebook, SecondLife, Flickr, Orkut, LinkedIn, Xing, RSS feeds, listserves, Yahoo or Google groups, YouTube, blogs, local knowledge through Google Earth or Mappy, etc.. Other factors indicating the potential of the present in terms of LIS-LS include greater “career” flexibility, increased occupational mobility and multiplicity, diversified memberships and higher levels of co-production. However, the fluidity and density of the interconnections and social richness of LS in the LIS reflects a more profoundly changed context, i.e. the personalization (not individualization) of wealth and identity creation. This is what motivates and provides the practical, lived experiences that make LS connected and social.

5.3 *Trusted spaces*

LIS-LS are where people can easily and verifiably assess (trust) the quality of what and how they learn. Neither trust nor quality can ever be absolute or kept permanently at one single level. The nature of the trust in what and how one learns, as well as in the signals that indicate what someone knows, do not always need to be at the same level nor signified in the same way. Different degrees of trust are related to different levels of confidence in the meaning and verifiability of both how and what a person knows. Clarity with respect to the degree of transparency and verifiability associated with what people know and how they learn plays a critical role in ensuring that LS in the LIS can span a variety of different degrees of trustworthiness.

LIS-LS enable on-going, multi-form evaluations of the content, pedagogy, links, history, processes of what a person knows, comprising internal, external, peer-to-peer, anonymous, etc. evaluations targeted at several dimensions of knowledge, e.g. know-how, know-what, know-who, know-why. The kinds of trust that are established in LS cover the full range of inputs, processes and outcomes that make up a learning track record or portfolio. By encompassing knowledge processes and outcomes, LS trust includes, without necessarily accounting for it directly, the multi-dimensionality of what a person knows, including multiple-intelligences, tacit and explicit knowledge. This reflects more fully the nature of human knowledge, including a wide range of different qualities of knowledge and opinions concerning these qualities. All of this is easier to do in a context that

functions on the basis of greater diversification, experimentation, network density and fluidity, and the use of complexity.

From an infrastructure point-of-view this does not mean that all learning is official nor need be recorded; experimentation and failure, foolishness and misfortune need to coexist with official, ironclad assurances of verifiable skills. Trusted LS function with wide range of practices, standards, and institutions that can for instance establish once-off responsibility communities, set working standards on the fly, generate self-regulated open source systems, and provide temporary oversight and validation reference points. Some of the weak signals related to this can be currently detected in phenomena like open source, copyleft,⁹³ and “creative commons” movements, blogging, “smartmobs”,⁹⁴ and even the practices that “run” the internet like the Internet Engineering Task Force⁹⁵ and the Internet Corporation for Assigned Names and Numbers.⁹⁶

Another notable attribute of the kind of trust that characterizes LS in the LIS of 2020 is that it functions on the basis of new forms of governance; decision making systems that have the capacity to open and close a vast diversity of networks (standards). Processes for establishing equivalences, without being identities, and inter-operability, without being integration, are to the LIS what representative democracy was to industrialization – the way to reap the benefits (reallocation) and avoid the costs (monopoly).

5.4 *Motivating and emotional spaces*

LIS-LS are where people access the action content of learning across the full range of motivations and emotions that constitute learning. Both learning and intelligence are multi-dimensional, encompassing a wide range of motives and emotional states. LIS-LS are complex crossroads where learners engage their motives and emotions through the act of learning. Crucially, in the LIS there is the widespread capacity to engage in identity creation and continuous experimentation with the meaning of community standards, rights and responsibilities.⁹⁷ This quest for meaning through communities of practice and interest is what puts LS in a “place” (both physical and virtual) that gives full play to the diversity of motives and emotions that are both causes and consequences of learning. These experiences happen through the learning-by-doing that occurs in the multitude of different communities that overlap within LS, from virtual realities populated by a diversity of avatars to family web sites for sharing discoveries, memories and meaning.

Examples in 2008 of weak signals of emergent LIS-style motivating and emotional LS include the already mentioned Web 2.0 phenomena. Equally indicative of the potential of the present are the adaptive processes reforming existing institutions – including the traditional education systems, but also families and a wide range of other communities. Crucially, from the point-of-view of the functioning of the LIS, these motivational and emotional dimensions of LIS-LS are key parts of the transformation of the creation, expression, and maintenance of “social capital” and the reorganization of daily life such that work-life dualism no longer has the same meaning as in the industrial era. Such

⁹³ <http://en.wikipedia.org/wiki/Copyleft> and Gnu Project,

⁹⁴ <http://www.smartmobs.com/>

⁹⁵ IETF, <http://www.ietf.org>

⁹⁶ ICANN, <http://www.icann.org>

⁹⁷ The content and delivery of this “minimum foundation” cannot be specified in advance although the criteria – the attributes of the outcome – can be described under the imaginary conditions or context as done in Section 3.

reversals in the everyday practices that give and create meaning are fundamental to the logic of a LIS and the central role of LS therein.

5.5 Controllable, creative/experimental, open/reflexive spaces

Control. LIS-LS are where the needs of learning and the learner can take precedence. Everyone learns differently, at different times, different things. LS need to be able to nurture this diversity and make it easy for learners to discover the best way for each person or group to learn in any given circumstance. Pooling the experiences of learners, connecting them to their learning aspirations and those of others, is a key part of LIS-LS.

At the same time, finding and designing the most effective approach to learning depends on the dual development of the capacity to make judgements about one's own learning and take into account the judgements of others that indicate whether the learning process is working or not. LIS-LS can operate in this way because of open, experimental institutions that are capable of aggregating and assessing the effectiveness – processes and outcomes – of learning throughout society. Research into both the psychology and physiology of learning combined with investment in evaluating the evaluation systems are weak signals of more seamless approaches to subjecting learning activities to effective control.

Creative/flexible. LIS-LS are characterized by a high level of creativity and experimentation, in part because the dualism between life and learning imposed by the classroom methods of the industrial era diminishes when the pursuit of knowledge through experience makes the use of LS an everyday practice. The meaning of creativity and flexibility of LS in a LIS is, in part, related to experimentation and risk taking – both of which inevitably involve both failure and success. Thus, in part, the institutional and contextual differences that distinguish the LIS from the industrial era can be seen in the way failure is addressed. With creativity (risk taking) and learning through experimentation (“xperidox”) central to everyday life, it becomes essential to find ways of altering the meaning of failure. Both complexity and diversity play a role here since in part creativity/flexibility (risk taking/experimentation) are only sustainable if they rest on an approach to learning that on the one hand embraces complexity as a way to find inspiration in the unpredictable, irreducible nature of life and society, and on the other hand uses diversification to manage risk.

Open/reflexive. LIS-LS are permeable, connected, and modular spaces that enable a wide range of learning, including synchronous and asynchronous, face-to-face and virtual, subjective and inter-subjective. LIS-LS are reflexive because in their LS a person is able to get and give continuous, real-time semantics (meaning) to the “what” and “how” of learning as it occurs (tagged with multiple references). The openness and “self-awareness” (or how and what you learn changes what and how you learn, i.e. reflexivity) of LIS-LS works with systems for indexing, comparing and tagging what and how people learn. These databases are cumulative and accessible in real-time. Google, for instance, is a precursor of this type of knowledge index. Although Google is advertising-biased (and therefore subject to “moral hazard”) it can be considered a weak signal of the types of infrastructure that a LIS requires. Another sign of the potential of the present is the way hyper-links are beginning to be pooled and the way tagging is deepening the pool of semantic resources often in non-hierarchical ways.

5.6 Evaluated and certified spaces

LIS-LS are where acquired skills and competences are demonstrated, evaluated and certified/accredited. The key questions are who does this certification, how do they do it and to what end? The answer for LIS-LS is everyone, in all ways and to an infinite variety of ends. The institutions and practices – rules, customs, habits – of LIS-LS offer “certification” based on both hierarchical, application-based verification as well as on heterarchical, self-referential expressions of what a person knows. Dynamic evaluation systems, spanning the range from ranking and rating schemes in the hierarchical sphere to cross-referencing and semantic engines that help generate equivalences of sense across highly heterogeneous profiles, are key infrastructural aspects of LIS-LS. This is not just the certification provided by academic and professional authorities signalling the completion of certain tests or continued status in a guild. It is a way of producing just-in-time “certificates” of what a person knows that are fit-for-purpose rather than one-size-fits-all. In the LIS the trade-off between signalling the specificity of what someone knows and establishing the transparency of what they know has been overcome.

One way of thinking about this trade-off as well as the role of certification in LIS-LS is to think about money. Turning to learning certification, on the one hand it needs to have the homogenizing capacity of a currency. Meaning that just like money the certification of learning in the LIS needs to be able to label and signal value for a vast range of content. On the other hand what people know is not at all uniform and even similar knowledge applied in different circumstances or by a different person is not the same. Each moment that knowledge is applied and when learning occurs is unique. As a result learning certification also needs to be able to signal this heterogeneity.

The LIS-LS infrastructure handles this challenge with the kind of sophistication that characterizes, for instance, the financial sector. Despite crises, or perhaps because of them, the financial sector gradually developed and continues to evolve diversified tools for working with the complex reality of assessing, signalling and acting on an infinity of assets (credit/liquidity/risk). The LIS-LS infrastructure has a similar capacity to differentiate, react and evolve its methods for assessing, signalling and acting on learning assets. With unique creation’s collaborative use of highly dense and fluid networks the “certification” of what someone knows takes a central place in the overall operation of society. Like the old education systems of the industrial era or even earlier innovations like “bills of exchange” and “double entry bookkeeping,” the certification of learning is a major institutional breakthrough. The LIS achieves the transparency and transaction efficiency of money for learning by anchoring the learning that happens within LS in personal knowledge accounts that can then support the institutions and practices of assessment, signalling and accounting, allowing both hierarchical and heterarchical certification systems to flourish and inter-act.

5.7 Knowledge management

LIS-LS are where people consolidate and use the tools for managing learning activities and information – digital and analogue, certified and non-certified, formal and informal, local and global. This is not the same as industrial era knowledge management (KM) that was often applied to situations where the command and control methods of Taylorism, used so effectively to boost efficiency when producing tangible products, confronted intangible products that were “invented” on the spot by the actual producer. With customized services it is usually impossible to use the old methods for detailing what and how to produce something without wasting time or money since it is only at the moment of inter-action with the client and in a specific context that the exact nature of the product becomes evident. This makes it very difficult to apply the old Taylorist approach of dividing conception and execution so as to fit production into a bureaucratic command and control

framework. With customized services how can a manager make sure that an employee does a good job, i.e. acts in ways that are efficient and profitable?

In the industrial era, KM was regularly applied as a way to get “human resources” to internalize the imperatives of efficiency and allegiance to profitability. KM in the LIS remains about “managing”, but the power relationships are not the same. Unique creation moves both the source of the idea – the value-added generated by personalization – and the means for producing it to another location – the person who learns-by-doing. This new form of KM can work because of all of the previously noted attributes of LS: personal, connected, trusted, motivated, controlled, creative, reflexive, and evaluated. KM of LIS-LS is how an integrated and functioning system of learning operates.

Managing LS in the LIS is a situation that has all of the classic ingredients of a managerial challenge; there is information, there is scope for choice, and there is a role for expertise in combining the information with the imaginable, doable, and desirable choices. But, as many say, management is as much an art as a science. On the science side of things the managers need good information – appropriate and timely. On the art side of things there needs to be the opportunity and encouragement to be creative and instinctual, to experiment and discover. LIS-LS combine all of these elements, particularly since learning-by-doing is dominant, so that everyone can learn to manage their life – a life constructed through the effort of unique creation and enabled by LS.

5.8 Inclusive spaces

LIS-LS are not inclusive or exclusive, since people are always learning and like the right to citizenship in the place you are born everyone has the right to the status of learner – recognition of the knowledge that is specific to them. The infrastructure of the LIS is designed to valorize learning wherever and whenever by whomever. Furthermore, status and wealth in the LIS are not established and sustained in the same ways as in industrial society. The LIS is a post-subsistence society, and basic liberty from hunger, etc., is assumed. What counts is quality of life and quality of life depends on learning how to live. Unique creation is a permanent experimentation zone for the production of daily life – the material and immaterial dimensions that make life meaningful. And experimentation and the knowledge that comes with it are what learning is about.

In the LIS no one’s knowledge is “superior”. LS are heterarchical as well as hierarchical – but the former takes precedence when it comes to the pre-eminent goal of society – quality of life. Obviously the uses to which the knowledge can be put may differ – and in 2008 it is common to attribute higher social recognition to certain kinds of learning and knowledge. But in the LIS, with the focus on banal creativity (constructing your own life) and the wisdom that comes through accumulated years of learning-by-doing, the hierarchical side, related to specialization, genius, and massification, is no longer pre-eminent. As a result, the terms and boundaries that define inclusion and exclusion change in the LIS. No person’s learning is “better” than another’s learning when the metric for judgement is well-being and self-fulfilment. This is why the LS and the learning within it – as a performance, as a memory, as a signal, as a door – cannot be exclusive.

5.9 The cost of learning spaces

The different LS dimensions sketched above point largely to different attributes of the way learning occurs. In large part these different dimensions of LS are focused on the benefits for learning. But of course there are also costs. Although it is impossible to provide an exact benefit-cost assessment for the different LS dimensions, particularly since the LIS is an imaginary societal future where prices

not to mention values are imagined to be radically different, it may be helpful for concretizing certain aspects of the LS to try to identify a few of the costs that might be associated with LS. Even though no effort has been made yet, see Chapter 6, to deepen the organizational and functional attributes of LS in a LIS.

Spaces	Institutional cost model	Individual costs	Cost reducing factors
Connected	Cost of setting up and hosting social learning spaces (potentially financed by advertisement revenue) Institutions investing in commercial social learning systems (e.g. FirstClass). Cost of training learning facilitators in moderating social learning activities.	Time invested in developing and maintaining social network Time of pedagogical support personnel in formal and non-formal social learning activities. Time invested in social learning participation	The use of open source based facilities (ELGG, Moodle, MySpace, blogs, etc) may reduce costs of licences, but not cost of implementation. Sharing of social learning spaces across institutions.
Personal	Cost of developing and hosting personal digital spaces Cost of maintaining, facilitating and servicing personal digital spaces (PDS). Cost of training individuals to how to maintain PDS.	Time invested in establishing and maintaining a personal digital space. Time invested in contributing to the spaces of others. Time invested in tutoring somebody in how to maintain a PDS.	The use of open source platforms (e.g. ELGG). The use of automated learning recorders (e.g. a camera placed in a button taking a picture every minute and transferring pictures to a personal record)
Trusted	Organizational cost of gaining a reputation & recognition and promoting this to relevant learners and associates. The cost of ensuring quality assurance and personal security within systems and services	Time invested in developing a personal reputation. The time invested in assessing and identifying trustworthy resources. Time invested in building trust in ones learning resources	Using existing network to recommend resources Equally institutions can reduce cost by practicing reciprocal endorsement. Building on long term partnerships with learners, producers, institutions and facilitators.
Open/ reflexive	The cost of developing learning resources, complying to open standards and making them available openly to others. The cost of transforming institutions from focusing on content to focusing on services.	The time invested in validating, tailoring, integrating and adding to the open learning resources identified. The time invested in producing learning resources and reflecting on your learning and the learning of others.	To share through collective agreements the cost of developing learning resources. To achieve higher quality for less by opening up for constant validation and dynamic content development. To involve learners in producing reusable learning resources while learning (learners becoming prosumers)
Signalling Certified space	The cost of developing and securing the assessment and certification systems as well as integrating them with non-IT based certifications. The cost of providing users with the competences to use and apply the assessment systems. The cost ICT equipment and software that allow all to participate in e-assessments.	The time invested in producing and conducting assessments plus transfer and publishing the results of assessment and final certificates.	Online assessment part or fully leading to certificates can potentially reduce the total cost of conducting assessments. Collective investment of institutions in high quality and secure assessment systems can lead to shared costs. Implementation of open source assessment tools. Reduction in costs because more people in critical work roles will be certified/competent.
“Effective” Knowing about learning	The cost of developing/purchasing KMS and integration to HR and personal learning spaces. The cost of producing learning objects, modules and co-creation tools for learners that comply with standards. The cost of developing virtual reality, simulations and games is still very high and projects are chosen based on volume and how critical it is that people are competent. The cost of experts participating in certain simulations. Cost of producing pleasant and stimulating and yet effective learning materials/resources.	The time invested in continuous updating, interaction and feedback for the KMS. Initiating cross organizational leveraging of learning. Dedicated timeslots where attention needs to be concentrated on learning and nothing else. In some cases the personal financing of stimulating learning resources. The time invested in supporting somebody’s learning or the learning of a group of people.	Tools that automate the searching in communicative files and personal learning and experience records (avoiding that the same information should be updated in several places). The cost of tools is coming down and they are becoming easier to use for more and more advanced creations. The cost of developing multi user games and simulations will decrease as tools become cheaper and more effective. Some critical areas require that learning takes place in near real situations; if not costs may be higher due to disasters. Consider reusability, need for and possibility for updating and modifying learning materials

From today’s vantage point we might imagine the cost of developing different LS dimensions and the range of business models (where that is appropriate) that might be part of that aspect of LS. There are the organizational and individual costs of making LS work effectively. In addition, there are features as detailed in the next chapter that may contribute to reducing the costs of learning. Indeed, it is one of the general observations regarding learning spaces in a learning intensive society that

given the much greater prevalence of everyday knowledge creation and diffusion that the costs will need to be significantly lower across most learning dimensions.

6 Backcasting the LIS-LS scenario

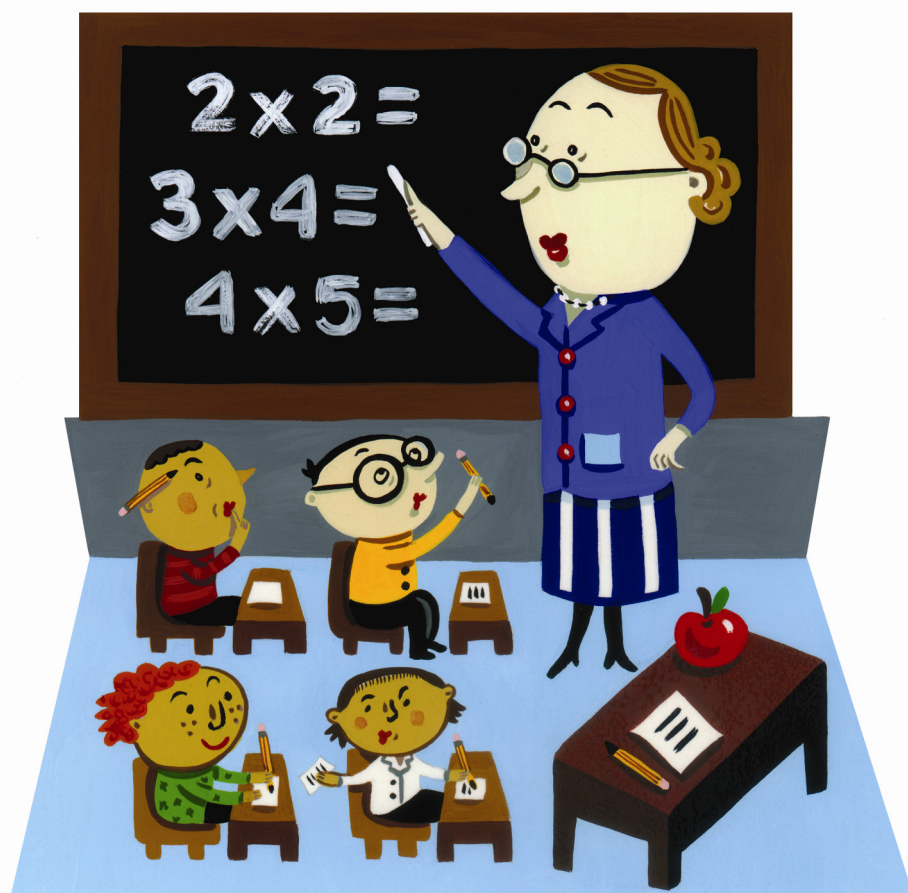


Illustration Credit: Jennifer Herbert, <http://www.jenniferherbert.com/>

6.1 The “how to” scenarios

The specific scenarios of how LS function in a LIS were the fruit of a two-day intensive HSS foresight workshop held in Paris in February 2007. All of the scenarios assume that the LIS is the prevailing societal condition in 2020 – this outcome is assumed to be the same for all of LS scenarios. Keeping with the equally-desirable, equally-probable criteria for constructing the specific how-to scenarios, differences arise from the specific way in which LS are implemented under different organizational and functional frameworks.

Participants were given the task of developing two different sets of “form and function” scenarios. The sets were distinguished by different attributes on the horizontal – organizational – axis and on the vertical – functional – axis. One set stresses differences in the composition of society and the principles used to organize inter-operability. The second set allows for a way of distinguishing different approaches to the practical implementation of LS on the basis of different values and governance institutions. In this way the scenario sets offered participants a wider range of imaginative options for achieving the same objective of open, connected, and trusted LS.

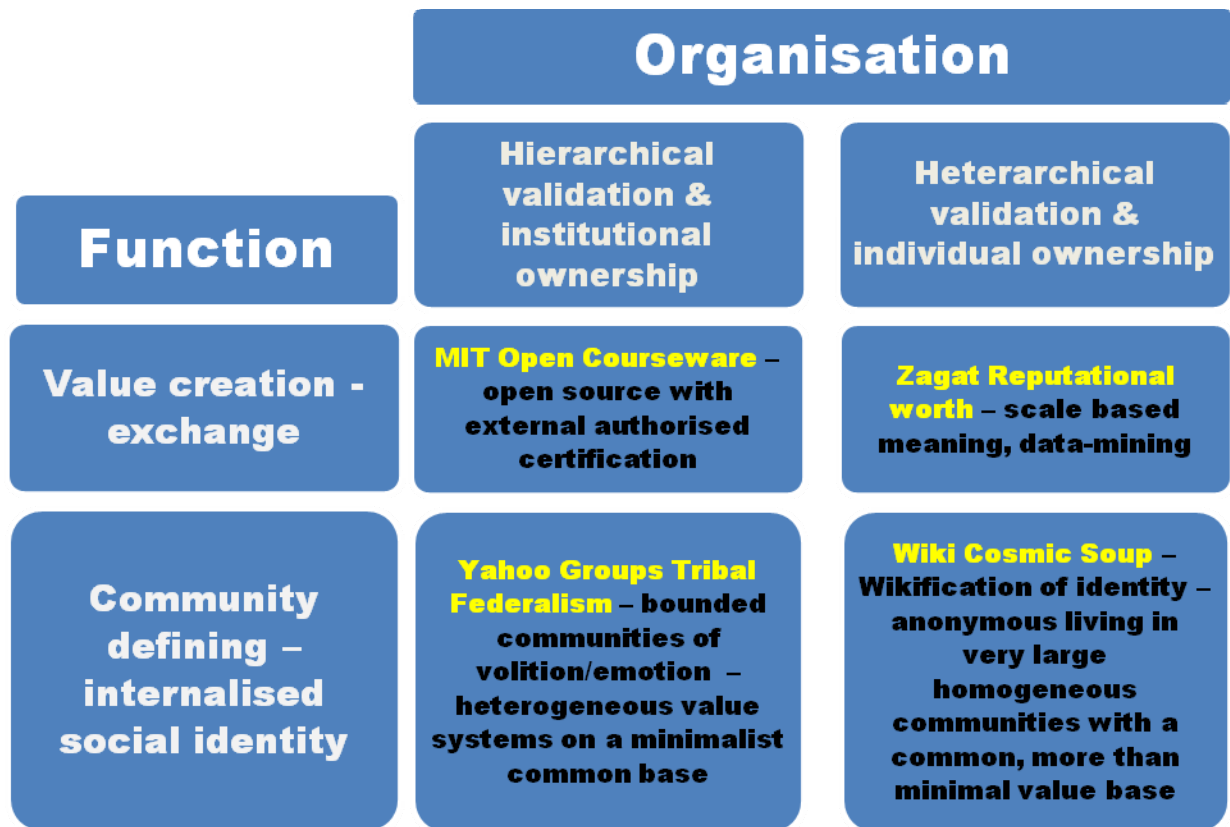
There is no intention to suggest that, as with all scenarios of this type, other mixtures are not imaginable. Rather, the point is to begin to explore the phenomenon familiar to most wealthy nations that are clustered around a similar average of economic and social achievement but differ considerably with respect to the cultural, institutional, and attitudinal aspects that shape everyday life. In today's reality there are many practical ways of achieving the same outcome, and these imaginary "how-to" scenarios begin to capture some of this variation. However, the categories used for this process remain at a general European level and, in keeping with the mandate for the process, did not enter into a more detailed specification of the preferences and historical path dependencies that can help to specify more place and time specific parameters for "how-to" scenarios of a specific nation or sub-region.

Participants in the HSS workshop were divided into three groups. The workshop agenda (Annex 1) alternated between plenary and group sessions. All three groups were asked to work on "how-to" scenarios using two different sets of criteria, which should have resulted in a total of six sets of four scenarios. However, given time constraints and predilections in the groups, in the end only four sets of four were produced. For the sake of brevity and to reduce repetition, this report only presents one set.

6.1.1 LS specific scenarios set: socio-economic mix and referential principles

The four scenarios presented below are distinguished according to the following matrix that arranges possible options on the horizontal axis according to their degree of hierarchy or heterarchy, and on the vertical axis according to the balance between more or less seamless integration of LS into wealth creation processes. Both organizational categories respond to the requirements of the LIS for transparency and fluidity. The two categories on the horizontal axis offer different ways of organizing the certification or validation of acquired knowledge and indexing or making the data transparent. The "MIT Open Courseware" and "Yahoo Groups Tribal Federalism" solutions are more hierarchical, anchored in institutions that secure certification and authorisation. The two other "how to" scenarios are more heterarchical, i.e. authority is much more diffuse, distributed on an as needs basis. All of the solutions achieve a high degree of spontaneity, liberty and diversity as is consistent with the requirements of the LIS frame.

The two categories on the vertical axis represent different weighting of the types of wealth creation activity. In "value-creation exchange" LS function as a more overt and stand-alone sphere that is connected to transactions in ways that are distinguishable – markets and wealth creating activities are specialized and bounded. While the second category, "community defining internalized identity" is where LS function in a more integrated and seamless way with a system of wealth creation that has few on-going boundaries. What distinguishes these two categories is not that in one LS are more "economic" and in the other more social since in the LIS in general this dualism has lost much of its meaning. The distinction turns more on the kinds of signals and symbols different societies prefer when it comes to giving meaning to different value-adding activities. In the "MIT Open Courseware" and "Zagat Reputational Worth" scenarios there is a clearer demarcation of activities related overtly to value creation and exchange, whereas in the "Yahoo" and "Wiki" scenarios wealth creation merges into the overall processes of community-identity creation.



6.1.2 MIT open courseware – external official certification

Legal: Institutional ownership. State authorized and/or run external evaluation.

Cultural: Alumni model.

Institutional: Power law nodes with a mixture of existing and new institutions.

In this scenario the existing institutions of learning and certification managed to welcome the LIS and adapt to the needs of LS. Very radical reforms moved the education systems away from proprietary and monopoly practices towards the openness and the unbundling of functions like teaching, mentoring, research, and community development. In this way the existing institutions helped to create the personal digital LS and assure trust. The “Knowledge Bank” and its associated transaction relations are enabled and supervised by traditional institutions of knowledge production and validation. Individual “knowledge accounts” are even owned by specific institutions rather than at the individual level, although there are strict contractual obligations on both sides. An alumni approach to building dense and transparent networks also shows continuity at the level of familiar practices and institutions.

This scenario takes the strengths of the existing institutions in terms of being able to evaluate and guide learning processes and outcomes in order to realize the enabling conditions for LS in the LIS. However, this particular “how-to” scenario sits closer to the values of those communities that are accustomed to, respect, and want visible institutional reassurances. Furthermore, the functional priority for LS in the LIS remains largely “economic” in the sense that the focus is on the wealth side of unique creation. This scenario is marked by continued tolerance of power law nodes (various types of institutionalized status) in the form of hierarchical validation and institutional ownership of

many of the enabling conditions. As a result this scenario has an explicit, visible, and more unitary governance structure.

6.1.3 Zagat reputational worth – scale-based meaning, data mining

Legal: Liability at the aggregator level.

Cultural: Mass taste.

Institutional: Power law nodes dominated by new institutions.

In this scenario the fluidity and density of individual-level ownership of the personal “knowledge accounts” is facilitated by strong network nodes. These are new institutions that emerged from heterarchical peer evaluation experiments in high trust reputation systems. Here the trust and complexity conditions are met by continuous evaluation of evaluators and very dense and transparent systems for pooling meanings. However there are still strong aggregators that are regulated by law defined and enforced liabilities that help ensure trust and recourse. The aggregators do not own the knowledge accounts at the core of the LS system but they do have responsibilities that can be enforced by law to respect rules about openness, anonymity, learner control, and access.

This scenario sees the old institutions of industrial era LS marginalized to narrow functions that relate to mass methods and products. The willingness in this scenario to embrace a range of new convenors and transaction arenas as the way to achieve the complexity and spontaneity of LIS-LS shows that the old institutions failed to adapt appropriately (either passively or actively) and that the new institutions demonstrated effectiveness and congruence with the shifting assumptions of the population regarding the economic and social potential of the present. In other words this scenario sits better with those communities that are more open to change in their institutional maps.

6.1.4 Tribal federalism – dynamically gated communities

Legal: Institutional ownership.

Cultural: High boundaries, open gates, voting with feet.

Institutional: Strong safeguards against power law consolidation at certain levels of the network, perpetual re-composition of intermediation.

In this scenario the network density and fluidity takes on a particular pattern of a federal kind. This means that there are two or more levels at which collective choices regulate the sharing of knowledge and the integrity of people’s “knowledge accounts”. This partly reflects the supposition that people in this scenario place greater emphasis on identity related aspects of unique creation. To safeguard against compartmentalization, there are strict rules that ensure easy migration from one community to another, although within communities there are restrictions that must be followed. Like the MIT Open Courseware scenario, the old industrial era LS institutions have adapted quite well and serve a dual function of being community attractors and intermediators.

One of the advantages of maintaining more hierarchical elements of society-wide governance is that it helps to ensure that the conditions for generating new poles of trust and transparency can emerge. Because different well-defined communities serve as springboards for creativity, through both

competition and cooperation, there are incentives to establish new ones. Maintaining strong interoperability standards that ensure ease of entry into new communities is a key challenge in this scenario. In this column of this scenario set, the points of reference with respect to governance are more familiar. The historical legacy of perpetually negotiated common interest serves as part of the strengths of the knowledge management systems used by all learners to sustain their engagement in a LIS with the reduced but strictly enforced common denominators of this federal solution.

6.1.5 Cosmic soup – Wikification of identity

Legal: Personal ownership.

Cultural: Low boundaries, no gates, voting with feet.

Institutional: High governance capacity continuously overthrows power law consolidation.
Perpetual recomposition of intermediation.

In this scenario there are few points of reference with respect to existing institutions and current everyday practices. Identity has morphed into a fluid and heterarchical process that generates high capacities to be both free and responsible. Key reputation and evaluation systems are regulated endogenously by the conduct of members, sidelining the old institutional mechanisms of governance. Definitions are fluid even as communities are clearly bound, but without strong constraints to change embedded in *ex ante* authority. Spontaneity and creativity run free in an open source environment. Clearly the bias here is towards well-being as a social ensemble, the preoccupation with value creation, the vestige of subsistence fears, is gone.

Modesty and a general culture of learning-by-doing to gain one's own version of wisdom are the basis for the continual renewal of the sources of intermediation. Continuity is sustained through the common respect for complexity that rests on very minimal universal rules related to basic human rights, equality before the law, and "ownership" of one's own knowledge. In this scenario, as in the others, the infrastructure for knowledge banking is in place. However, in this case the institutional supports are highly self-organized, changeable, and open-ended. Clearly new governance systems will have had to emerge, perhaps springing from the Wiki model.



These four "how-to" scenarios are not meant to be mutually exclusive. The point of these scenarios is to evoke stylized or archetypal ways of making LIS-LS happen at the level of practical operational and behavioural activity, taking into account the kinds of differences that distinguish the choices made and ways of doing things across different places at different times. Hence to arrive at more refined specifications requires that the scenarios must first be rooted in the distinctive attributes of particular places at particular times – one community or country at a time.

6.2 Comparing the future of learning with the present

Changes and choices made in the present are part of the evolution of our hyper-complex reality. Ex-post it may seem easy to assign certain changes and choices to intra-systemic evolution that either contributed or detracted from the resilience of the system in question or not. Most policy choices, be it for a factory producing cars or an education ministry managing schools, are aimed at improving the

resilience of the existing system. This intra-systemic change, often called reform or innovation, is about improving a system where the rules, resources and aims are largely known.

Still it is very difficult to discern at the moment whether or not a particular change is actually making the existing system stronger or weaker. This is because the adaptation of the system for safeguarding children or assembling automobiles takes place within a broader context. Even the most efficient blacksmith could not alter the fact that the steel mill and car were altering the context within which the blacksmith functioned. Extra-systemic change in the form of industrialization and the tools it made ascendant swept away the specific role played by the blacksmith in pre-industrial societies.

When it comes to the collective infrastructures of everyday life like laws, publicly administered programs, and culture, there is of course also the challenge of trying to identify intra- and extra-systemic change. Shedding light on these difficult challenges is precisely one of the main aims of the hybrid strategic scenario method outlined above. By comparing a snap-shot of an imaginary learning intensive society in Europe in 2020 with the present this chapter provides a sharper and more multi-dimensional view of the intra- and inter-systemic nature of current phenomena (as touched on in Chapter 2). And it is for this reason that the details elaborated in the “how-to” scenarios of LIS-LS, by illustrating the distinctive and discontinuous ways in which an alternative complex societal system functions, facilitates consideration of policy choices that may take into account systemic issues.

6.2.1 Taking care of the functions of the industrial era education system

According to the scenarios of LIS-LS presented so far (Chapters 4, 5 and 6.1), all of the familiar educational institutions still exist. That is, compulsory classroom-based schools, vocational training systems, adult education, and mass-universities, still form part of the learning landscape of Europe in 2020, but, relative to past glory, they are much less significant. Instead, the predominant position, the one currently occupied by “educational institutions”, is now held by a new system that provides the infrastructure to support a much more multi-dimensional, holistic, and omnipresent societal role and everyday practice for learning.

Contrasting (backcasting) the LIS-LS with current learning practices reveals a wide range of differences, as well as some similarities. Perhaps the most marked contrast, given the focus here on learning, is that compulsory schooling is at best redundant and at worst incompatible with the future LIS. In principle, new and old institutional systems can co-exist in complex multi-speed, multi-layered societies. However, in practical terms, as history has often demonstrated and as described by the “how-to” or LS-specific scenarios in this chapter, there are fundamental differences in the way LS are organized between the two pictures.

In many ways this is a shocking or perhaps incredible notion. Today schools are considered such a fundamental part of the way any desirable society functions that it is close to unimaginable to think about a world without it. The point here is not to caricature nor repeat the many virtues and vices of compulsory schooling.⁹⁸ Nor is there any reason on the basis of the contrast between LS today and LS in the imaginary LIS to call into question the universalist and humanist aspirations which have always motivated and informed so much of educational practice. Again, to reassure, there is no dispute that in historical terms, education systems have achieved amazing feats in a wide range of

⁹⁸ Miller, 2007b.

economic and social dimensions.⁹⁹ However this does not change the fact that there is a profound contrast between the reality of what industrial era schools actually do and the role performed by LS in the LIS.

What is at stake is an issue that is at the core of the difference between a LIS and much of current industrial society – how to address the challenge of constructing meaning in a complex world. This question takes seriously the role of current education systems in shaping the way people seek and establish the meaning of life and wonders how LS in the LIS might equip people for a world that is profoundly indeterminate and, by both choice and capacity, free. In the context of the contrast generated by this scenario exercise between the LIS and industrial society this is not a solely philosophical question. It is a question that arises from the reality of why, how, when, and where people learn in a specific kind of social order. These are very practical questions that confront the very practical answers provided by today's solution of compulsory schooling.

Not unexpectedly this practical obstacle is usually a key stumbling block to imagining alternatives. It is not unusual to hear people say that they understand all too well the strengths and weaknesses of the existing educational system, but what can replace it? Indeed, as already noted, one of the main impediments to reconsidering the potential of the present is often the difficulty of inventing an alternative. In this case, the question that pre-empts many potentially imaginative discussions is the difficulty of imagining ways of efficiently and effectively replacing the standardized compulsory classroom based school system. Specifically, the difficulty of imagining alternatives that would be as effective in addressing the five main functions of the existing educational system: i) custody, ii) behaviour, iii) cognition, iv) socialization, and v) screening.¹⁰⁰ Each of these functions is essential for industrial society.

Here are some thoughts, suggested by the scenario process used in this report, regarding how the imaginary LIS might address these functions.

i) Custody. Currently, compulsory schooling plays an important role in liberating parents from the obligations of child-minding. This has obvious labour market supply implications since parents can now engage in paid labour outside the home instead of supervising their offspring. Given this task, assuring the safety of a large proportion of the population, the class-room form of schooling is a particularly efficient solution. Compulsory custody of children has a dual pay-off. One is that there are aggregate gains from parents being available to offer their skills in the labour market. The other arises from the economies of scale of a mass-school system that can standardize the necessary infrastructure and specialize in necessary skills of teachers who are at the same time experts at one-to-many supervision. Imagining an equally efficient alternative to this latter “cost rationale” is often one of the most difficult hurdles to imagining a world without the industrial era school. Schools and now universities are a very efficient way to safeguard a large number of precious young people at a cost that seems significantly lower (for a given quality) than the alternatives.

Turning to the imaginary LIS, what is the alternative to the industrial era's custodial role for schooling? At first glance the preceding description of the LIS-LS leaves this largely physical custodial role unaddressed since the focus has been primarily on the cognitive dimension of learning. However, there is a key aspect of the LIS related to the question of how people learn that provides both, an imperative or criterion for the construction of LS, and an opportunity for developing new

⁹⁹ Miller, 2007b.

¹⁰⁰ Miller 2007b.

ways of ensuring the safety of young people and the freedom of adults. This is the centrality in the LIS of wisdom – where wisdom is defined in modest terms as the accumulation over time of insights about how to live better.

How could this solve the custodial challenge in the LIS? Generically, without trying to imagine how specific local communities might put this into practice since that is outside the purview of the present report, the solution arises from the combination of two attributes of the LIS. One is that daily-life in the LIS, as imagined in the scenario, is one of continuous learning-by-doing. The other is that in the LIS, the scale economies and specialization of mass-society that give rise to the factory, office, bedroom community, schools, hospitals, pension schemes, etc. are no longer predominant. The anonymity and interchangeability that are so essential for standardized production systems stand in stark contrast to the affective, identity-creating choices that are at the core of meaning in the LIS. In contrast to prior social orders work is organized for life instead of life organized for work.

This opens the door to using inter-generational and community-based methods of organizing learning. From a cognitive point-of-view these can be highly efficient and, without speculating on how specific societies will organize these activities, it is not hard to see how helping young people to discover their “Heart Song”, i.e. facilitating the unique creation of their identity and community, could be a worthy occupation of adults who are in any case engaged in networked activity involving others both locally and globally. Parents, grand-parents, and local members of a community who have chosen to reap the benefits of a community and share in its responsibilities may be much more engaged in assuring the quality of learning than when it was a specialized industrial task. Safety is part of quality, with safeguards perhaps made less costly through the tools made available by “ambient computing.”

ii) Behaviour and iii) Cognition. The mixture of the second and third functions of industrial era schools is perhaps what is in clearest contradiction, if not conflict, with the needs of a LIS. Punctuality and obedience to authority even under circumstances of duress (boredom, arbitrary punishment, and denigration that are common in the classroom and in “teach to test” failure systems) are prevalent in many schools. The utility of these behavioural reflexes for a society where work is organized in a way that divides conception and execution is obvious.

Equally clear is that the efficiency of the classroom for custodial purposes would be significantly reduced if children did not arrive at the same time for their lessons and did not keep quiet in order to allow the one-to-many form of classroom teaching to operate. Although the respect for others that is part of being on-time and being able to listen are certainly not exclusive to industrial society, it is the association of the behavioural with the cognitive that makes industrial era schooling antithetical to the LIS criteria outlined above.

What is learned in school comes from the teacher and is verified by the test. Both inner knowledge and discovery by one’s self outside the classroom are discouraged. Passing the exam without going to class is not acceptable since this means that both the behavioural conformity and conformity to the canons of existing knowledge may not be acquired.

LIS-LS work without compulsion in the sense that the learning tasks are not obligatory. Other aspects of the process may be compulsory, depending on the society. Indeed, one of the main policy questions, rarely addressed and considered shocking by some, is why continue to deny children their

liberty?¹⁰¹ Why is it a taboo to discuss the question of the reallocation of the burden of compulsion across generations? Society certainly has the right to force members to do certain things, within the limits of the basic rights and freedoms, but why should post-industrial society continue to impose 12 or more years of obligatory service on young people? There are many options that can be imagined, particularly since it is now well established that learning and compulsion do not mix very well since humans exhibit a much higher learning efficiency when learning is voluntary.¹⁰² The effectiveness of learning situations, including those with today's teachers, is considerably reduced in circumstances of obligation rather than personal motivation.

Furthermore, with respect to increasing the effectiveness of learning, bringing all of the inventiveness and insight from research on learning may provide many new avenues for making learning fun – including a much greater use of simulation, which can also make repetition – so essential for learning certain things and so much a part of playing games – easier. The challenge then is to reconfigure compulsion to be consistent with the behavioural and cognitive goals of the LIS. Different communities will organize this kind of inter-generational, project based, experimental type learning in different ways.

iv) Socialization and v) Screening. The last two roles played by industrial era learning spaces that are called into question by the LS-LIS are socialization and screening. With respect to socialization – or the inculcation of certain uniform codes or norms – schools today are commonly viewed as relatively less effective than in the past. Regardless of whether or not this contention is true, it is clear that in the context of the migration between countries or cities and the consolidation of nation states as integrated markets with one language, amenable to bureaucratic forms of administration, schools did perform a key set of socialization functions. Many of these functions became accepted as givens, although the responses to the challenges of immigration lean heavily on the school system's earlier socialization successes. From a more holistic perspective, even in the early phases of industrial development the surrounding authority systems were crucial for reinforcing and making students more receptive to the mass-scale socialization of schooling. There was a virtuous circle. Today little of this holds. As for the screening function, it is arguably quite effective still, but less and less justifiable.

How would LIS-LS address the socialization and screening functions? For the most part the new LS would not take on these roles explicitly, as instruments of a particular set of goals such as good citizenship or equality of opportunity. The reason for this is that these crucial social requirements are generated internally rather than externally in the context of the LIS. The pursuit of identity through a learning-by-doing experiential process leads to an organic, internal recognition of the social nature of life, the interdependencies and externalities. Socialization happens from within, not without. As for screening, it no longer applies in heterarchical, unique creation based communities. All of this unburdens LIS-LS, with potentially significant improvements in the efficacy of the learning process.

So is it safe to begin to talk of the end of school and the replacement of this form of compulsory service with another? Certainly there are many inventive and highly appropriate ways to enforce an obligation to society that would be more effective at generating learning, not to mention inter-generational solidarity, community involvement, etc. However these kinds of changes are big institutional turning points, calling into question immense systems with huge inertia and power. The positive policy agenda, beyond simply challenging current assumptions, needs to be anchored in the

¹⁰¹ Illich, 1970; McClintock, 2000; Winch and Gingell, 2004; Daly 2007.

¹⁰² CERI OECD brain research.

reality of specific places and times. This kind of detailed work is beyond the scope of this exercise. However, on the basis of the Breughel level of detail painted so far it is feasible to extract key performance criteria for policies that might need to be in place in order for the imaginary LIS-LS to work effectively and achieve the systemic functions that are inherent to the LIS picture.

6.3 General performance criteria for the functioning of LS in the LIS

The broad societal scenario sketched in Chapter 4 demands a strong mutually supportive relationship between LS and the society as a whole. Since the discussion here is of a society that is not preoccupied with basic material subsistence, the conditions that need to be assured are related to the predominant post-subsistence activities of the population. For the LIS this is learning, and LS as imagined in Chapter 5 are the primary vehicle for making this work. For LS to flourish and play the role that has been designated to them in this fictitious story of a LIS the appropriate functional and organizational structures must be in place – as imagined in section 6.1 above. Now, on the basis of this detailed painting of LIS-LS it is possible to spell out in more precise terms what might be called the policy conditions related to this imagined systemic transformation.

The remainder of this chapter elaborates five conditions that policies must meet in order to assure the existence and functioning of both a learning intensive society and the learning spaces that are at its core. As is to be expected of policy criteria, the five conditions stipulate the functional/organisational aspects of the LIS-LS that policy makers would need to take into account if they were to try to encourage currently emergent phenomena on the basis of an as yet hardly visible imaginary alternative social order.

6.3.1 Network fluidity and density

LIS-LS are constantly in the process of emerging, reconfiguring, cross-cutting, and ending, and therefore require an environment where networks exhibit easy entry and exit. The physical preconditions for this are already in place, although higher band-width, better telepresence software, improved simulation (virtual reality, historical recreation, life games), and more intuitive user interfaces, widely expected for 2020, will make it easier. Some of the critical basic elements for the required fluidity and density concern building up individual learning capacities, creating a culture of inter-operability and institutions that, through the implementation of standards, actively promote communities of practice and interest, which make up networks, build virtual realities, co-produce, and co-design.

Questions that need to be addressed include the danger of networks being misused. The “power-law”,¹⁰³ Machiavelli’s long-standing observation about how connections gravitate to power¹⁰⁴ and the flaw of many transactional contexts (including infamously markets) to tend towards monopolies or oligopolies of power also threatens networked contexts.

6.3.2 Complexity

LIS-LS can only function effectively in a context that is non-totalizing (non-reductionist), where information in both its depth and breadth is accessible, transparent, and trustworthy, and

¹⁰³ Shirky, 2003.

¹⁰⁴ *The Prince*

recognizable as a key source of diversification. Otherwise large quantities of low quality information become a serious burden rather than a key resource for diversification and thereby risk reduction (both perceived and actuarial) in a context where the level of experimentation is much higher (i.e. there are more failures). However using complexity as a mechanism for diversification is not just a question of quantity; it is more than just avoiding or overcoming the temptation to reduce the world and one's identity in it to simple stories or meanings. There is a critical role for accepting incompleteness and a permanent state of ambiguity.

However, this is – at least from today's vantage point – a rather frightening situation. Hence the importance of access, transparency, and trust, if learning is to take such a prominent and constant place in daily life. The challenge for LIS infrastructure is to enable this degree of respect for complexity. Part of the solution relates to heterarchy,¹⁰⁵ or non-hierarchical ways of knowing that are one critical and so far underdeveloped way to offer ready access to information that is unique – context and time specific – and hence cannot be categorized a priori. At the moment there is still relatively little socio-economic or organizational precedent to use for thinking about the necessary enabling collective institutions and culture. However, as partially outlined in Section 1, there are emerging phenomena like social networking systems that may signal the invention of relevant practices in the world today.

6.3.3 Spontaneity

LIS-LS need good information. This is not just a question of the density and fluidity of connectedness or of embracing complexity, although both are needed. For information to be good it also has to be timely. The right information at the wrong time is useless. Advance planning is usually an attempt to wrest the right information from reality by brute force. To do so it usually does not respect complexity since the easiest way to get the right information is, as the futurist's adage says, to create it. That way what you end up knowing corresponds to what you planned to know – an approach which depends on ignoring the complex nature of the present. Learning is significantly diminished and information that may be available in the future wasted.

The LIS-LS work on a different principle, spontaneous decision-making that is able to take advantage of the best information. Best means that the information has accumulated through constant reflection and questioning, includes the most recent events and circumstances, and is selected on the basis of three criteria. The first is its aptness for inspiring the creativity needed to imagine the potential of the present; the second is the attempt to avoid path dependencies; and the third selection criterion, taking for instance the Universal Declaration of Human Rights as a given moral frame for action, is to select information with the aim of actualizing values in the present. Such selectivity can never be correct, but it can be creative and wise.

6.3.4 Creativity

LIS-LS entail ongoing discovery and refinement as part of the “collective intelligence” of a social order where unique creation is predominant. The creativity of LIS-LS is motivated in part by the necessity of problem solving, in part by the desire for the self-satisfaction of expression, and in part by the ambitions that push people to reach beyond what they already know. But as Edison famously said, “genius is 1% inspiration and 99% perspiration”. This holds true for everyday “banal creativity”, the unremarkable breakthroughs that are so similar to so many others but nevertheless are

¹⁰⁵ Miller, 2006a.

a personal triumph with respect to one's own life and its ongoing experiments. Muses still matter, for the inspiration and the mystery of insight, but so too do the tools and the competences that make the perspiration pay off.

The creativity of the LIS is partly a question of seeking out and refining the techniques which help people to be imaginative such as brainstorming, dreaming, or simply finding ways to be less constrained by the baggage that inevitably constrains what we think. But it is also more than that; the challenge of creativity is in the way anticipation enters into our perception of the present. E.H. Carr, quoted at the outset of this report, notes how the historian's view of the past is deeply influenced by his or her view of the future. This applies equally to the everyday historian in all of us, the ones who take their story of the future as one of the primary lenses for understanding the past. The creativity of a LIS, enabled by LS, is one that is continuously reinventing the present. It is a creativity that arises from treating the future as the potential of the present, as a fundamental challenge to our imaginations.

6.3.5 Wisdom

LIS-LS work through learning-by-doing, experimentation, reflection, validation of knowledge, and know-why – this is process as product and means as ends. Cumulatively, over time this is the basis for wisdom. By recovering this fundamental attribute of human worth, the LIS turns its back on the industrial era's nasty combination of traditional subsistence imperatives, such as equating one's worth with the strength of your back (worthless in old age because the back is broken), and the hubris of believing that codified knowledge provided dispensation from the lessons acquired through experience and an understanding of the past. Instead, the cumulative nature of the "banal creativity" that underpins unique creation combined with the fact that more experimentation builds up "futures literacy" puts learning-by-doing at the forefront of value creation. Wisdom reclaims its lost pride of place.

In the end it can only be wisdom that gives us some hope that intentionality will be better than fatalism. Aiming for a society that assures wise outcomes is as old as the early philosophers of human society, from Plato to Confucius. What is intriguing about LIS-LS is that if wise outcomes ensue it is not because of teleological or hierarchical ways of organizing society, but rather from the enabling (through rules, institutions, values, etc.) of networked, complex, spontaneous, and creative living, by everyone. This may be a response to the rather chilling reality of evolution's forceful blindness to both intention (pursuit of values) and systematic search for opportunity, because it opens up the prospect of infusing the processes of emergence with what is currently being called the "wisdom of crowds"¹⁰⁶ or "collective intelligence."¹⁰⁷ The hopeful supposition that democracy and learning are basically coterminous may turn out to be practical after all.

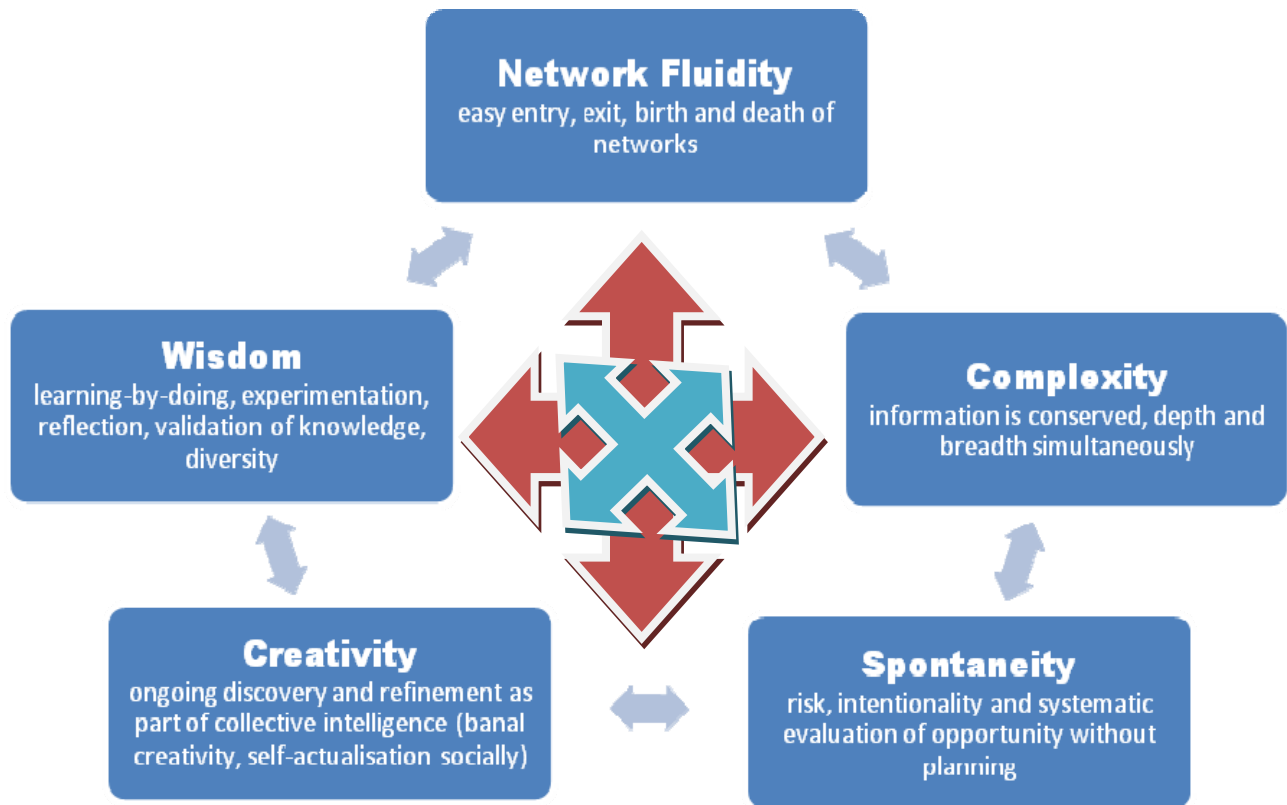
6.3.6 LIS interdependency – the synergy conditions

Each of the five functional requirements detailed above helps to clarify the benchmarks for policies that might make the how-to scenarios operational. However there is the additional criterion of synergy that plays a critical role in generating the virtuous circle of systemic functioning. The diagram below summarises the idea that a functioning LS infrastructure, much less compartmentalized than today's education and training systems, must be able to support the

¹⁰⁶ Surowiecki, 2004.

¹⁰⁷ Community Intelligence (<http://www.community-intelligence.com/blogs/public/>) and Levy, 1997.

realization of all five of these outcomes at high performance levels. This adds yet another challenge for policy.



Finally, before venturing a few policy conclusions, it is worth recalling that when it comes to making choices that try to leverage the imagined potential of the present what matters is not only the difficulty of identifying phenomena that might signal systemic transformation (both from within and without) but also the desire to do so. The elaborate anticipatory exercise conducted here offers only one way of challenging the assumptions that shape policy today and does not attempt to demonstrate in the least that the learning-intensive society and learning spaces are either desirable or probable. Furthermore, there can be little doubt that systemic change and the actions that might be more explicitly aimed at realising it provoke both considerable fear of the unknown and outright opposition from those who oppose change or imagine they will lose power should such changes be implemented.

7 Hypothetical policy options

Given a hyper-complex reality the determination of the whether a particular policy will make the emergence of the LIS-LS more or less likely by 2020 is impossible. There is no way to know in advance if even hostile changes will not, in the end, serve as the most critical catalyst for the flowering and consolidation of a new system. Unintended consequences, serendipity (or catastrophe), strange attractors, and more, are what make up the evolutionary process. The emergence of the LIS-LS system over time is not simply a question of being “open” to new ideas. Indeed, if the existing education system – nominally a competitor with the LIS-LS – changes in ways that make it more resilient it could have a positive competitive impact on the emergence of LIS-LS by spurring a more explicit, direct contest that accelerates and sharpens the new system. Or, on the contrary it could stifle and weaken efforts to knit together the rather demanding systemic conditions that underpin LIS-LS.

What is possible and preferable is not a probabilistic analysis of policy but a values-based choice of hypothetical policy options that make sense now and are consistent with the goals articulated by existing democratic processes. Testing aspirations against the anticipatory assumptions that are directing and constraining choices is one of the key tasks for the kind of policy advice that this report is supposed to offer. It is not a menu or a set of instructions.

The aim of this tentative and partial list of hypothetical policy options and milestones presented in this concluding chapter is to encourage measures that leverage the potential of the present in order to realize the five Learning-intensive Society Learning Spaces (LIS-LS) conditions developed above: **network fluidity, complexity, spontaneity, creativity, and wisdom**. *Indeed these five criteria are the main policy conclusions of this report since these are the guiding assumptions for what policy should do – the benchmarks for judging policy choices.* This does not mean that if all policy choices were consistent with these criteria, to the best of decision maker’s ability, that the stated objectives of such policies would be achieved. And, even if the objectives were realized, there is no assurance that this would give rise to the kind of unique creation, LIS that has been described in the imaginary scenarios of this report.

- Reputation Systems: Developing the digital learning account

The lynchpin of the evaluation, transparency, and transactions of LIS-LS are systems that establish a personal learning account and enable trustworthy reputations to be accumulated. This needs to go well beyond the modest but largely industry-oriented efforts at developing an e-portfolio. Considerable research needs to be done to understand the emergent reputation systems and to find ways of integrating evaluation and feedback into the routine functioning of people’s everyday activities. Ownership is central here, even of avatars, since without the control and responsibility that comes with ownership there is unlikely to be necessary investment in the development and transparency of LS. The question of the institutional interests of the current methods of certification should also be contrasted with alternative systems.

Major milestones: The first KnowBank is established in Europe in 2010. By 2015 there are many competing but interoperable KnowBanks.

- Cybercitizenship: Anchoring identity in the LIS

No personal learning account is workable without some way of establishing identity effectively. Today there is no way to prove who you are on the internet. From problems of SPAM to the difficulty of establishing trust, the issue of the universal right to “cybercitizenship” is a critical enabling policy for LIS-LS. It is also the cornerstone for giving people control, indeed ownership, of all of their data – from their reputation on e-Bay and their medical records to the learning portfolio and banking records. On this basis people can choose how to manage their privacy, since they own the data, and they can begin to leverage the potential for pooling of data. This could then motivate user demand for finding out how others, with similar profiles, achieved certain learning objective or went on a wonderful vacation.

Major milestones: A European agreement on universal access to cybercitizenship for all citizens of the EU by 2010. Implementation of a secure, diffused system for controlling your own cybercitizenship.

- Intellectual property and transactions

Open source is fundamental to LIS-LS. Current intellectual property rights (IPR) systems, transaction and payment systems, and peer-to-peer contractual platforms all fail to address the needs of LIS-LS for sharing and finding all forms of knowledge and learning activities. Unique creation builds layer upon layer of copying as people bring their banal creativity to the personalization of the local world around them, based on much more impromptu, peer-to-peer, community-to-community way of transacting. Active LIS policy could address all three areas by working on copyleft or Creative Commons regimes complimented by a virtual fiat currency on the internet along with new traceability regulations (a universal standard) and a public service for drawing up unique, single transaction contracts. Underlying all of these learning based transaction relationships are payment and accounting mechanisms that are conducive to new business models and the creation of new markets that are no longer organized on the basis of the separation of supply-demand.

Major milestone: By 2010 the European Central Bank introduces the “neuro” (net euro), a monetary instrument, one way to facilitate internet based peer-to-peer transactions running on a new universal system for both monetary and non-monetary net based attribution of authorship managed by the European Copyleft Office.

- Network rules and governance

The key role of network fluidity and density for the LIS-LS means that the net needs to maintain and extend its neutrality. The spontaneous entry, exit, birth, and death of networked communities is a fundamental attribute of LIS-LS. If there are biases or specific interests rooted in ability to pay or national interest that restrict fluidity and density it will be very difficult to build LIS-LS. Dark fiber, or unused bandwidth or “wasted” bandwidth (downloads of movies) are all the empty space for free speech and learning. This is a resource that can and needs to be unmetered. The difficulty is how to set up the decision-making structures that can ensure that the net meets these open and boundless objectives?

Major milestones: By 2010 Europe succeeds with net neutrality as a governance principle. In 2015 wireless gigabit connectivity for free covers all of Europe.

- Search and the meaningful web

The indexing and searching of all of human knowledge needs more than advertising revenue, it needs rules like those that ensure that every published book is deposited in the national library. This is not to criticize the ingenuity and power of the commercially driven experimenters such as Google. But it is becoming essential to get beyond the fear of IT that has paralysed baby boomer and older decision makers. Automobiles are better with seatbelts and catalytic converters. The net will be better with universal requirements for indexing, semantic referencing, archiving, and privacy. These rules can be pursued aggressively, if need be, by using trade, financial, and even internet traffic-blocking penalties.

Major milestones: Europe negotiates and establishes a universal standard for greater web transparency and searchability by 2010. By 2015 universal indexing and the full implementation of a multiple-source meaning of bottom-up key words should be common practice throughout Europe.

- The end of compulsory schooling

Announcing that compulsory schooling will end for all children by 2020 should provide a powerful catalyst for the development of alternative institutions that unbundle the five functions of schools – custody, behaviour, cognition, socialization, and screening. This process will need to be community driven, since the way different communities will want to address child safety and the learning processes for their community will differ. Ministries of Learning will focus on how to support the shift from the management of large factory schools to the provision of resources for the local unique creation activities that bring together generations and tasks to create ongoing learning processes. The Ministries of Learning will also play an active role in the development of the many different evaluation and reputations systems, working to ensure that the summative and formative assessment appropriate to the diversity of what people know are addressed. Equally important will be the effort to ensure that there is sufficient transparency in how learn and that the different pathways can be shared on the basis of comparing people with similar attributes and aspirations.

Major milestones: By 2015 half of high school students have opted out of the compulsory system. By 2020 the old classroom school is a historical vestige.

- A European Agency/Think Tank for LS

The potential for the development of new learning spaces merits a dedicated Agency/Think Tank for Europe. This Agency would serve as a research, networking and consolidation hub for the weak signals and experiments related to LS going on throughout Europe and the world. It would focus on the emergence of post-industrial forms of evaluation, knowledge accounting, reputation systems, and learning transactions like co-production and co-design. The Agency would pursue the exploration of the reform process in industrial era LS and assess the relationship – positive, negative, or neutral – with the emergent LS.

Major milestone: ELSA – European Learning Spaces Agency is established in 2010.



Pursuing the policies outlined above would certainly challenge some of the key assumptions of current decision making and may run up against opposition from entrenched institutions, power centres. That is why it is important to anchor this kind of policy effort in a participatory policy formation process. A process that involves as a first step making specific assumptions - including

people's current values, expectations, and anticipatory models - more explicit and problematical. Then the next step is to use people's imaginations to rigorously reconsider the potential of the present as a way to be more effective at questioning the assumptions that underpin choice. And the final and third step is to consider which choices to make in light of a now more explicit understanding of the relationship between initial perceptions of the potential of the present and the new one that is the fruit of this process.

Annex 1 - Workshop Agenda

The Learning Spaces Workshop

Location: Demos Institut, 20 rue de l'Arcade, Paris, 75008 – Tel. 0144942063

Day 1

February 12, 2007

09:00 Coffee and introductions

09.30 – Start of the Workshop

- Welcome by Jean Wemaere, President, Demos France
- Roundtable Introductions
- Purpose of the Workshop. Presenter: Yves Punie, Institute for Prospective Technological Studies

10:00 Session 1 – Overview: Methods and Content

- Plenary – Presentation and discussion of Futures Literacy and the backcasting approach. Presentation of the logic of the workshop – what you will be asked to do step-by-step. Presenter: Riel Miller, XperidoX: Futures Consulting.

10:30 Coffee break

10:45 Session 2 – Level 1 Futures Literacy – Exploring the Concept of Learning Spaces, Values, Expectations, and Time

- Plenary – Trends and Drivers – Why talk about LS now? Presenter: Knud Erik Hilding-Hamann, Danish Technological Institute.
- Group work that will explore and validate key trends and drivers that have generated the vision of learning spaces (each group will be given illustrative charts of trends and drivers). Key questions: why does the vision of learning spaces seem relevant now? What factors have brought this idea to the forefront of work on the future of the “knowledge society”?

12.00 Short report back in plenary by each group

12.30 Lunch

13.30 Session 3 – Level 2 Futures Literacy – Rigorous Imagining and Form/Function Scenarios

This is a three part session. Part 1 will explore a model that describes key dimensions of the societal context for learning in 2020. Part 2 will explore a model that describes key dimensions of LS. Part three will use three specific policy areas as catalysts for exploring form/function scenarios that are within the “frame” of the LIS (as elaborated in Part 1) and described using the LS dimensions (as elaborated in Part 2). At the end of this three part session the stage will be set for discussing different stories about how LS might function and be organised in Europe in the future.

- Part 1 LIS model – presentation in plenary of a model for describing the societal context for learning and the key socio-economic variables related to this model (the Learning-intensive Society – LIS scenario) Presenter: Riel Miller, XperidoX: Futures Consulting.
- Group work on the societal model and variables – creating possibility spaces and generating the LIS frame that provides the societal context for learning (and LS) in Europe in 2020.

15.00 Coffee break

15:30 Session 3 – Level 2 Futures Literacy continued – Part 2 – LS Possibility Space Model

- Part 2 LS model – presentation in plenary of a possibility space model for describing LS. Presenter: Riel Miller, XperidoX: Futures Consulting.
- Group work to explore the LS possibility space model.

16:45 Coffee break

17:00 Session 3 – Level 2 Futures Literacy continued – Part 3 – LS Form and Function

- Part 3 LS form and function scenarios – presentation in plenary of three specific topics – e-portfolio, e-identity/governance, e-access as the point-of-view for developing scenarios. Presenter: Riel Miller, XperidoX: Futures Consulting.
- Group work to explore form and function scenarios for the three topics, each group will address one topic.

18:30 Break

20:00 Official Dinner

Day 2

February 13, 2007

09:00 Coffee

09.30 Introduction to day two and recap of findings from day one

09.45 Session 4 – Futures Literacy Level 2 to 3 – Refining the Strategic Scenarios

- Group work telling the stories that illustrate, bring to life the distinctive form/function scenarios – “a day in the life”.

10.45 Coffee break

11.00 Session 5 – Futures Literacy Level 3 – Reintroducing Values and Expectations

- Group work comparing, on the one hand, the socio-economic assumptions, institutions, behaviours and policies associated with the strategic scenarios (stories) and, on the other hand, the assumptions that underpin the current dominant systems and policy choices.
- Report back to plenary and discussion of continuity and transformation.

12.30 Lunch

13.30 Session 6 – Policy Analysis, Conclusions and Next Steps

- Group work analysing key obstacles to the emergence of LS in the knowledge society in Europe and of actions today that might create the conditions for the emergence of knowledge society LS.

14.45 Coffee break

- Report back in plenary and general discussion of the measures needed to encourage the development of learning spaces in Europe and of “intermediate milestones” in 2010 and 2015.
- Conclusions – plenary discussion of “sense making” narratives and potential next steps/ follow-up activities.

17.00 Meeting closes

Annex 2 – Workshop Participants

- Jean Claude Ruano-Borbalan, Demos Institute, Paris, France
- Morten Sjøby, ITU, Oslo, Norway
- Richard Collin, ICCE & AFNeT, Paris and Lyon, France
- Rory O'Donnell, NESC, Dublin, Ireland
- Stuart Candy, University of Hawaii, Hawaii
- John Robinson University of British Columbia, Canada
- Goux-Baudiment, Fabienne, Progreective, France
- Esko Kilpi, Independent Consultant, Finland
- Erik Overland, Subito, Norway
- Mike Gibbons, Director of the Innovation Unit. DFES, London, UK
- Efhymia Amanatidou, PhD and independent researcher, Greece
- Josephine Green, Philips, Eindhoven, Netherlands
- Stephanie Young, Scottish Enterprise, Senior Director
- Verhulst, Stefaan, Markle Foundation, New York, USA
- Roger Blamire, Senior Manager (policy and practice), European Schoolnet, Belgium
- Edna Yahil, Unesco, Paris, France
- Larry O'Connell, NCPP, Dublin, Ireland
- Maruja Gutierrez-Diaz, European Commission (Head of Unit A4 DG Education and Culture)
- Jose Pessanha, European Commission (DG Education and Culture)
- Yves Punie, Institute for Prospective Technological Studies, Sevilla, European Commission.
- Kirsti Ala-Mutka, Institute for Prospective Technological Studies, Sevilla, European Commission.
- Maria del Mar Negreiro, DG Information Society, EU-Commission,
- Riel Miller, XperidoX, Paris, France
- Knud Erik Hilding-Hamann, Danish Technological Institute, Denmark

Annex 3 - Interviewees, commentators and reviewers

Thanks to interviewees in relation to the trends and drivers report:

- Jane Massy, Independent e-learning and ROI consultant, UK
- Graham Attwell, researcher and part of Pontydysgu – a research network. A researcher of online learning and knowledge management (particular emphasis on SMEs)
- Wim Jansen, European Commission, Unit on Research infrastructure, previously EU DG education and training project officer and evaluator and prior to that EADTU and OTEC (Open University).
- Morten Flate Paulsen, NKI, Professor of e-learning, NKI one of the largest distance education institutions in the Nordic countries.
- Maria Joao Rodrigues, Professor, special advisor to the EC on the Lisbon strategy
- Jean-Claude Ruano-Borbalan, Director of Demos Institute, Paris, historian of education and former editor and chief of “Science Humaines”

Thanks to Interviewees in relation to the final report:

- Cheonsik Woo, Korean Development Agency
- Michelle Sellinger, Cisco
- Claudio Dondi, Scierter
- Tony Mackay, Executive Director of the Incorporated Association of Registered Teachers of Victoria (IARTV) and Director of the Centre for Strategic Educational Thinking (CSET), Melbourne
- Barbara Gerstenberger, European Foundation for the improvement of working and living conditions,
- Wolfgang Michalski (former OECD Director of the International Futures Programme),
- Ruben Nelson (Foresight Canada),
- Pankaj Ghemawat (Harvard Business School),
- Maria Joao Rodrigues (Portugal),
- Michael Storper (Sciences Po, LSE, Berkley),
- Thomas Townsend (Director, Policy Research Initiative, Canadian Government, Ottawa)

Thanks to commentators among the workshops participants

- Morten Sjøby, University of Oslo
- Esko Kilpi
- Jean Claude Ruano-Borbalan
- Mike Gibbons
- Stuart Candy,
- Josephine Green,
- Fabienne Goux-Baudiment,
- Larry O’Connell,
- Rory O’Donnell,

And also thanks to the two reviewers of both the trends and drivers report and the final report:

- Charles Pascal, Atkinson Charitable Foundation - Charles E. Pascal has a strong background in education, training, policy development, leadership, and organizational development. He has published extensively in the fields of education and psychology. He graduated from the

University of Michigan with a Ph.D. in psychology and joined the psychology faculty of McGill University in Montreal in 1969.

- Philip Von Notten, Independent Scenario Consultant - Independent scenario consultant. Has conducted projects for: OECD, Schooling for the Future; UN Environment Programme, 4th Global Environmental Outlook; Maastricht University School of Governance, MA Programme Sustainable Development; Osnabruck University, lecturer Integrated Assessment Programme previously at International Centre for Integrative Studies (ICIS), Maastricht University.

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Title: School's Over: Learning Spaces in Europe in 2020: An Imagining Exercise on the Future of Learning

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Abstract

This report uses a rigorous imagining approach to develop an alternative way of organizing learning in Europe whereby the traditional school system no longer plays a significant role. This study shows that, on the basis of phenomena already present in Europe today, it is possible to invent a discontinuous model of how people learn and how what they learn is used in everyday life. At the core of this model is a carefully elaborated idea of learning spaces that encompass new ways of ensuring that people have the capacity to control, direct, share and deepen their knowledge throughout their lives. These multi-dimensional learning spaces are imagined as operating in a systemically different economic and social context. One where non-technocratic, non-hierarchical learning is central to the production of local well-being and community based identity. "School's Over" is meant to challenge both the functional and organizational assumptions that currently dominate, often implicitly, the choices being made today.

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