FORESIGHT-AWARE STRATEGIC MANAGEMENT

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V. FORESIGHT-AWARE STRATEGIC MANAGEMENT

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5.1. Introduction

As Henry Mintzberg noted long time ago, strategies are not always based on foresight. Often business firms and public organizations find themselves locked in strategic positions that emerge through incremental decisions and choices. Strategic thinking and action, then, become constrained by historical events that no-one thought to be "strategic."

Universities often find themselves implementing unintended strategies. Universities are among the most robust social institutions existing today. Even when organizationally new, they typically copy and replicate standard models, structures, and processes that embed centuries of experience on how learning and research happen, how universities interact with their social and economic environment, and how the creation and diffusion of knowledge is best organized.

Strategies are always path-dependent, and sometimes the path is a dead-end. Due to the fact that the European university system has avoided dead-ends for several centuries, universities in Europe can trace back institutional success that almost proves that their emergent strategies have been the right ones.

Today, however, societies and economies are transforming towards a knowledge society where learning, knowledge creation, innovation and decision-making occur under radically new conditions. Educational systems based on Humboldtian, Confucian, and commercial principles interact and collide in the globally connected world. Many of the administrative procedures and institutional structures in universities code centuries of knowledge that is now rapidly becoming outdated. In the current socio-economic landscape, universities struggle between the old and the new, and many university managers face the challenge of adapting to a world that changes too fast.

In this new world, university management faces new requirements. An increasing effort is spent on continuous development of existing processes and procedures. Change management is becoming a new critical competence in university administration. In the universities, change is no more limited

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to incremental accumulation of knowledge and gradual adjustment of curricula; at present, also the modes of knowledge production and the models of learning and education are changing. More profoundly, perhaps, the dynamics of change itself are changing, requiring new approaches in planning and decision-making.

The transformation towards the knowledge society has in recent years led to quite radical changes in business strategies. Strategic actors now live everyday in the future, and expectations have become an increasingly dominant part of the present. Organizational and individual identities that used to be constructed through narratives that told where we came from, are now defined by where we are planning to go.

In the knowledge-intensive sectors of the economy, business firms use substantial and rapidly increasing resources to generate and process future-oriented knowledge. Business firms deploy a large portfolio of foresight methodologies, tools and techniques, and implement systematic foresight processes to support their strategy development. Foresight underlies almost all business action, and it has a rapidly growing role also in public policy. Strategies are still emergent as many critical choices are made without contemplating their future consequences. Yet, it is also true that today there is no strategy without foresight.

At present, strategy thinking is undergoing a substantial and subtle change. Strategic planning, in its traditional form, was based on the assumption that the future is “ontologically real”, something that can be predicted. In the strategic planning tradition, prevalent up to late 1980s and even up to today in areas such as econometric forecasting, this future was expected to unfold from the present in an essentially continuous and manageable way. Not anymore. Now business success increasingly depends on peripheral actors and constant redefinition of competitive niches, value propositions, and visions. Predictable futures are gone.

Strategic management is therefore now trying to figure out how to embrace complexity that can not be simplified anymore. Strategy is becoming a real-time effort. Foresight and strategy are not isolated from the everyday organizational activity anymore, and they have become integral elements in a continuous organizational learning processes. Strategy development, in turn, is now increasingly focusing on ongoing long-term development of strategic capabilities, instead of drafting plans for later implementation. Strategy is not anymore about carefully drafted plans and

presentations; it is about making organizations more intelligent and capable of creating and processing meaningful knowledge.

Strategy is always about reacting to the future. When different conceptualizations of future are adopted, we end up with very different forms of strategy and different spaces of possible action. When deterministic narratives about historical trends provide the basis for strategic thinking, we end up with traditional industrial-age models of management and control.[2] When the future is understood to be open, undefined and full of interpretative flexibility and latent opportunities, we need new theories of anticipation, causality, and management.

One critical capability in this new world is that of sensemaking and imagination. Organizations that are able to imagine multiple possible futures are better able to recognize important events when they occur. They can also engage their intellectual capacity and mobilize stakeholders in efforts that actually turn some of these future possibilities into realities.

5.2. The Impact of Foresight on Strategy

Foresight influences organizational strategies in three fundamental ways. First, the various methods and tools of foresight generate knowledge about opportunities that the focal organization should address today. In this role, foresight helps strategy developers in universities to discover important new areas of research and refine curricula so that they better align with future needs.

Second, at a more systemic level, foresight puts the focal organization in a larger context that highlights changes in the key assumptions that underlie strategic thinking and decision-making in the organization. In this role, foresight asks the fundamental question what are the functions and objectives of universities in the emerging knowledge society, where many of university's historical

[2] As Mircea Eliade (1991) beautifully illustrated, narratives rapidly acquire the prototypical structures and causality that match with our cultural expectations. We tend to retrospectively find causal chains that inevitably lead to the future. In practice, many stories of important scientific and technical advances have been reconstructed in this fashion, often re-arranging historical facts so that they fit the required narrative structure and model of causality (Tuomi 2002, chap. 9).

Eliade, M. 1991. *The Myth of the Eternal Return: or, Cosmos and History*. Princeton, NJ: Princeton

Tuomi I. 2002. *Networks of Innovation: Change and Meaning in the Age of the Internet*. Oxford: Oxford University Press.

roles are becoming redefined and perhaps obsolete. There are several alternative ways to address the ongoing society-wide transformations, and these lead to different strategic options for universities.

Third, the outcomes of state-of-the-art foresight studies have some interesting and important methodological implications for strategy development. Various foresight projects have pointed out that an essential characteristic of the emerging socio-economic order is its complexity and unpredictability. All models are based on simplifications. Leading-edge theory of foresight and strategy, therefore, struggles at present with the methodological challenge of modeling worlds that cannot be modeled. What is strategic management in a world where complexity makes planning impossible?

Below, I shall first outline some key features that contrast the near history and currently emerging future contexts for universities. The ongoing socio-economic transformation towards the knowledge society is already clearly visible in the everyday life of universities. It is, however, useful to make explicit some key drivers that underlie the emerging processes and structures of the "university of the future". The discussion, therefore, focuses on the first two linkages between foresight and strategy, highlighting both the changing key assumptions that have shaped the universities and opportunities that emerge as old constraints erode. I shall, in particular, discuss the impact of global real-time access to knowledge, emerging new competence development models, and new knowledge creation and innovation models.

The transformation towards the knowledge society also leads to new ways to think about strategy and planning. Although we tend to think that the knowledge society is the traditional industrial society with more knowledge added, in fact we are currently in the midst of a profound transformation that will lead to a qualitatively new socio-economic model. At present, we are reorganizing the infrastructures of space and time, and redefining what societies are and how they create knowledge. The paradox of planning in deeply complex and reflexive worlds can only be resolved by changing the way in which foresight and strategy is understood. Eventually, the ongoing research on re-conceptualization of foresight will lead to new models of organizational and social anticipation. In the present context, I shall discuss the new emerging possibilities for planning, briefly addressing the third methodological linkage between strategy and foresight. After

that, I simply point out some possible implications and entry points for university strategy development.

One implication is that it is not always enough to copy traditional foresight or private sector strategic management approaches in universities. When foresight is implemented in universities to support their strategic management and development, it is important to consider how the present tools and methods of foresight should be aligned with the emerging new requirements of the learning-intensive network society. It is possible to rigorously follow existing blueprints and conduct both foresight and strategic planning in the way they have been done during the last decades. In some concrete university settings, this may be useful. In general, the changes in the planning context should also be reflected in the methods and the content of the process. The "copy-and-paste" approach could be called "the low road" to university foresight, and sometimes it is the best and easiest way out. Choosing "the high road" requires more effort, more climbing, and more intellectual effort, but it also opens the possibility to see the emerging big picture, rethink the rules of the game, and redefine the dimensions of success that will matter in the future.

5.3. The Changing Context

Think yourself as a visionary university decision-maker, forty years ago. With hindsight, what would be the most salient features of today that were not clearly visible in 1970? What are those now "dominant" drivers that were barely distinguishable a generation ago?

Below, I shall point out three major changes that are leading to substantial transformations in the social functions of the university. Each of these would deserve extended analysis and discussion. Here I shall only briefly argue that these changes, in fact, imply important changes in the context where universities operate. I shall discuss real-time access to explicit and tacit knowledge, new ICT -facilitated social learning and competence development models, and new distributed and open innovation and knowledge creation models. In addition, I shall briefly explore the implications of the ongoing socio-economic transformation for planning itself.

5.3.1. Real-time access to knowledge

In the last two centuries, access to scientific knowledge required physical access to university libraries and university teachers. Today physical proximity plays a rapidly declining role. Knowledge

repositories are distributed and networked globally, and expertise is accessible independent of geographical location. Leading universities provide extensive electronic access to centuries of published scientific literature. High-quality open educational resources are widely available in many languages, and the Internet is increasingly allowing anyone to search and study vast amounts of scientific and educational literature and content on demand.

Although learning often requires contextual, tacit and pedagogical knowledge that is best available in interactive and physically situated settings, the almost real-time accessibility of information and knowledge is substantially changing the conditions for learning. As facts and data can often easily be checked when required, the relative value of pre-structured information is declining and the value of sensemaking is increasing. “Knowing that” is something that Internet search engines can do well; “knowing why” is more difficult. Already today answers to most known questions are cheap; what matters is the capability to formulate new relevant questions and frame problems in imaginative and creative ways. Inter-generational knowledge transfer plays an increasingly redundant and trivial role in universities, and the leading universities focus increasingly on facilitating cognitive development through active construction of knowledge among students. Cultural transfer is still important in institutions of higher education; learning and knowledge creation skills, however, are increasingly in demand.

Historically, the university was a critical access point to systems of knowing. This allowed the university to control and organize knowledge flows and utilize its unique position to shape learning processes in the society. Today, this implicit power to structure learning is distributed and diluted over many different actors. The rapidly expanding access to knowledge therefore also requires a profound change in the professional identity of university teachers. In the future, the teacher is not a source of information or knowledge; instead, she or he is someone who allows learning to happen.

In general, scientific knowledge is often contextual, situated, “sticky,” and even personal, as Michael Polanyi pointed out half-a-century ago.[3] Knowledge forms systems of interrelated

[3] See, for example, Tuomi (2000), Bowker (2005), Collins and Evans (2007), Knorr Cetina (1999), and Brown and Duguid (2001). Polanyi (1998) pointed out in his Gifford lectures in 1951-2 that explicitly articulated knowledge requires a peripheral structure of tacit knowing, and that there is a dynamic relationship between peripheral and focal knowledge. The importance of locally situated and informal knowledge was highlighted in economics already by Alfred Marshall (1890) and later by Friedrich Hayek (1973, quoting Michael Polanyi), and it forms a key theme in

concepts, practices and methods, and it is not easy to de-contextualize. “Know-who” therefore, remains important in learning, innovation, and knowledge creation. The new communication networks do not only provide access to explicitly represented knowledge, scientific articles, text books, and other learning content; they also provide access to people and facilitate communication of contextual knowledge.

The Internet, thus, combines access to both explicit and tacit knowledge in an interactive fashion that provides radically new platforms for learning and knowledge creation. This is something that only very few visionaries were dreaming in 1970s.

5.3.2. New competence development models

Today, learning occurs increasingly peer to peer. With some exceptions in post-graduate and post-doctoral education, formal learning has traditionally been organized for effective transfer of knowledge from a single teacher to multiple students. The underlying assumption was that the critical resource in the learning process is the teacher, not the learner.[4]

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the research on regional innovation systems, see e.g. Langlois and Robertson (1995, chap. 7).

Tuomi I. 2000. ”Data is more than knowledge: implications of the reversed knowledge hierarchy to knowledge management and organizational memory” *Journal of Management Information Systems* 6, no. 3: 103-117.

Bowker, G. 2005. *Memory Practices in the Sciences*. Cambridge, Mass.: MIT Press.

Collins, H. M., and R. Evans. 2007. *Rethinking Expertise*. Chicago: University of Chicago Press.

Knorr Cetina, K. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge, MA: Harvard University Press.

Brown J.S., P. Duguid 2001. ”Knowledge and organization: a social-practice perspective” *Organization Science* 12, no. 2: 198-213.

Polanyi, M. 1998. *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge.

Marshall, Alfred. 1890. *Principles of Economics. Vol. 1*. London,: Macmillan.

Hayek, F.A. 1973. *Law, Legislation and Liberty: Vol. 1. Rules and Order.* Chicago, IL: Routledge & Kegan Paul.

Langlois, R.N., and P.L. Robertson. 1995. *Firms, Markets, and Economic Change: A Dynamic Theory of Business Institutions*. Oxford: Routledge.

[4] The Humboldtian university model originally emphasized the facilitatory role of teachers and the importance of peer-to-peer learning. As access to universities expanded in the 20th century, teacher-centric models have became dominant. They are particularly dominant in countries that are categorized as hierarchical by organizational and cultural scholars. These include many European countries and, in particular, many Asian countries where Confucian values provide the historical foundations for organizing public life.

Researchers of open source software development communities were among the first to point out that this assumption does not always empirically seem to be the correct one.[5] The Internet has enabled self-organized peer-to-peer learning models that can be a highly effective for competence development. When skill profiles and content evolve in rapidly changing environments, such self-organized processes may easily become more effective than pre-planned and well-designed learning processes.

For example, during the last two decades many leading computer programmers have learned and upgraded their skills outside the formal system. Their learning activities have been problem-oriented and embedded in communities of practice, allowing social learning to accumulate in collectively created knowledge and artifacts. In such project- and practice-oriented activities, learning and production emerge as two facets of the same activity, and the produced results can relatively easily be used as evidence for learning and competence acquisition. The informal social learning models can thus simultaneously lead to rapid competence development and a concrete proof of the acquired capabilities. As a result, the importance of formal educational certificates is rapidly declining in the information and communications technology job market.

In open source software development, a common answer to political controversies, technical progress claims, and competence evaluation is: “Show me the code.” In many other domains of learning, where an underlying technical design does not provide such a simple “objective” evaluation criterion, the development and evaluation of competences may be more complex.

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[5] Tuomi (2002; 2001). Critical pedagogies, of course, have also emphasized peer-to-peer learning and learned-centric models, and, from a different point of view, pedagogies based on cultural-historical activity theory have argued that learning is and needs to be coupled with social practices and communities that exist outside the educational context, see, e.g., Engeström (1996). Open source communities, however, were among the first concrete and economically important examples of communities of practice where effective learning occurred completely without teachers. Although the role of communities of practice in learning has been pointed out before, the effectiveness of this model became clear only towards the end of the 1990s as researchers started to study competence development and knowledge creation in open source software development communities.

Tuomi I. 2000. ”Data is more than knowledge: implications of the reversed knowledge hierarchy to knowledge management and organizational memory” *Journal of Management Information Systems* 6, no. 3: 103-117.

Tuomi I. 2001. ”Internet, innovation, and open source: actors in the network”. *First Monday* 6, no. 1 - 8 January 2001. http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/824/733.

Engeström, Y. 1996. ”Non scolae sed vitae discimus: toward overcoming the encapsulation of school learning” In *An Introduction to Vygotsky*, ed. H. Daniels, 151-170. London: Routledge.

Software and computer experts have perhaps been unintentional pioneers in utilizing and realizing the emerging new opportunities of the Internet in competence development partly because their domain of learning fits optimally with the tools and technologies available. It is, however, clear that similar learning processes now play an increasingly important role in many sectors of life.

In general, the teacher is now less a bottleneck in the learning process, and economically and socially important competences are often developed outside the formal system and without teachers. Competence development routes are increasingly varied and unpredictable. The university crosses the learning paths of individual learners in potentially many points in time and space, and fills multiple roles in the mosaic of competence development. Informal learning has probably always been more important for competence development than acknowledged. The Internet, however, has rapidly expanded the opportunities for informal learning at the global scale.[6]

For educational planning, the new dynamics of competence development pose a new challenge. This is because the new social, networked, and practice-oriented competence development models highlight the fact that competences can not always be defined in relation to a pre-defined performance objective. Competences can evolve in parallel with the problem at hand, and problem articulation often occurs across disciplinary and meaning boundaries that produce new interpretations of the nature of the competence in question and the objectives of its deployment. Indeed, the conventional concept of skill to an important extent relies on an underlying structure of division of labor that generates relatively stable and socially well fixed performance requirements. The concept of skill would be rather empty without underlying assumptions about prevailing industrial structure, the job requirements it generates, and the existing technologies, tools and knowledge that is needed to get the job done.

Under the conditions of mass-production and industrial society, it is to some extent possible to catalogue competences and their constituent skills, and plan education so that it produces skills according to the expected demand. Indeed, without society-wide statistical systems that provide detailed aggregate data on both available human resource inputs and economic outputs, it would be difficult to operationalize the concept of skill. When competences are productive and generative, in other words, when they evolve with the task at hand, such an analytic approach

6 Tuomi 2007. ”Learning in the age of networked intelligence” *European Journal of Education* 42, no. 2: 235-54.

fails. This is typically the case in tasks that require innovation. To the extent that the concept of "skill" is an artifact generated by the specific conditions of the industrial age mass-production model, the transformation of that model clearly requires that we reconsider the role of universities as institutions that generate skills and competences.[7]

5.3.3. New models of knowledge creation

During the last two decades, leading business firms have realized that the traditional linear innovation model is a very inaccurate model of knowledge creation in most industries and domains of knowledge.[8] In the linear model, "upstream" ideas and scientific discoveries are gradually developed into product and service concepts and diffused in the market. This model rarely describes the reality of innovation processes well, and it neglects the critical role of "downstream" innovation. As a result, open, distributed and user-driven innovation models have become highly popular both among corporate strategists and policy makers in the recent years. "Triple-helix" models of regional innovation systems that couple academic institutions, business firms, and the government[9] are now similarly extended towards downstream actors and replaced by quadruple-helix models that incorporate users as the fourth key element in the innovation system. Innovation theory, itself, is moving towards multi-focal downstream innovation models, where new knowledge is created in and across multiple knowledge communities. At the same time, the traditional distinction between basic and applied research has become blurred and conceptually inadequate.

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[7] The concept of skill emerges as a response to the practical problem generated by the need to allocate workers efficiently to those work tasks where they are efficient. This problem exists in a context where value production occurs in closed systems of production. The idea of "learning skill" can, therefore, be a contradictory idea to start with; something akin to "deterministic creativity,"or a "leopard-like zebra." The concept of skill is closely related to the need to attribute performance capabilities to individuals, as an internal attribute of individual person. In practice, performance capabilities are often distributed, and the focal actor mobilizes complex networks of social and socio-technical capabilities to get things done. Thus, the concept of skill also unrealistically associates performance capabilities with de-contextualized individuals. This approximation only works if the context is stable and can be taken for granted.

[8] See, for example, Nonaka & Takeuchi (1995), Chesbrough (2003), von Hippel (2005), and Tuomi (1999; 2002).

Chesbrough, H.W. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston, MA.: Harvard Business School Press.

Von Hippel, E. 2005. *Democratizing Innovation*. Cambridge, MA: MIT Press.

[9] Leydesdorff, L., and H. Etzkowitz. 1996. "Emergence of a triple helix of university-industry-government". *Science and Public Policy* 25: 195-203,

Leydesdorff, L. 2000. "The Triple Helix: an evolutionary model of innovations" *Research Policy* 29, no. 2: 243-55.

The traditional linear model pushes universities that aim at high scores in international rankings towards investments in basic research. Academic research, however, now forms only one particular mode of research within a broader innovation ecosystem. The dynamics of this ecosystem is often driven by actors that are only loosely coupled with the system of academic research. New important theoretical insights and empirical knowledge are frequently created outside academic institutions.

In the new dynamically changing and networked context of knowledge production, participants in innovation and knowledge creation processes do not have stable positions. As new research tasks are addressed, the extant and latent capabilities in the innovation ecosystem are reconfigured and the participants take complementary roles that work optimally in the present situation. The participants, therefore, have to play a variety of dynamically changing roles.

For universities this is a major challenge today. From the point of view of business firms, academic research is often characterized by long planning horizons, inflexibility, and difficulties in engaging in research that produces actionable knowledge and concrete results. The long planning horizons emerge because of the need to conduct research projects that can generate academic theses. The difficulties in conducting business-relevant research, in turn, often have their source in administrative and legal restrictions. In most disciplines, the academic research system is strongly geared towards “pure science” and the system has therefore great difficulties in coupling with the rest of the innovation ecosystem.

As universities are often regulated as public institutions, many universities now struggle with the challenge of dynamically playing different types of roles in the various innovation ecosystems they are involved with. The historical assumptions about the role and function of the university research are deeply embedded in the existing rules, procedures and practices, and they are often legislated in ways that make autonomous change and agile decision-making difficult or impossible for university managers. This mismatch between the historical assumptions and practices, and the concrete demands of the continuously evolving innovation ecosystems is a major source of inefficiencies and frustrations in universities today.

The new distributed, networked, multifocal, and open innovation models have become increasingly visible because the world is changing. It is clear that also the university governance and management models will change as we move towards the knowledge society. This is one of the key drivers that will shape strategy formation in universities in the future.

In this situation, the emerging new principles of management do not necessarily consist of only a revised set of managerial principles and operational procedures. The emerging world is essentially a world of constant becoming, where the key organizing principles are change and complexity. This has some fundamental implications for the ways in which planning and decision-making can and needs to be done. The change is not only in the principles of management; instead, we have to rethink the idea of management, itself.

5.3.4. Planning at a new level of abstraction: Strategy as a combination of foresight and improvisation

In this new world, traditional planning becomes in many ways a contradictory effort. Planning requires a model that structures the world, and allows change to be studied in a context that is assumed to remain stable. Planning works best when the dimensions of the problem remain the same. In innovation research, such change is sometimes characterized as "parametric" change, in contrast to architectural and systemic change. When new aspects of the world become relevant, parametric planning breaks down.

Universities have frequently used long-range planning to predict future demand for education in different segments and skill levels of the job market. As noted above, such planning implicitly assumes that industrial structures, professions and skill-profiles remain stable. In practice, such long-range plans have missed new occupational categories and industries.[10]

As experienced planners know, plans almost always fail. The world is always more complex than our models of it, and we often miss key parameters in our modeling efforts. This failure is not because of inadequate or inaccurate data. Conventional parametric planning requires extrapolation of trends and continuous time-series data that are typically collected based on their

[10] For example, educational planners missed the emergence of web designers as a new profession, see Kotamraju, N.P. 1999. "The birth of web site design skills: making the present history" *American Behavioral Scientist* 43, no. 3: 464-74.

perceived relevance at the time when the data collection starts. Methodologically, the models that underlie planning can not, therefore, see change that is discontinuous or qualitatively new.

This blind spot is a key challenge for all strategic management theory and practice today. To the extent that the emerging world is a world of constant reconfiguration and production of qualitatively new phenomena, the fundamental assumptions that underlie conventional planning are incompatible with the empirical reality. When change is qualitative, the models that underlie anticipation have to evolve, and it is not enough to adjust input parameters to gain better predictions of the future.[11]

One response to this challenge is to shift to a new level of abstraction in planning, where the required stability of the underlying models can be found. This, indeed, was what resource-based strategies implicitly tried to do in the 1990s. Instead of focusing on long-term planning based on strengths and weaknesses and related strategic positioning in a competitive context, resource-based strategies focused on dynamic capabilities and competences. As a result, many business firms and public sector organizations have spent considerable effort in defining their core competences and capabilities that can produce competitive advantage.

In its knowledge-based forms, resource-based views on strategy have emphasized organizational learning, innovation capability, knowledge creation, and intellectual assets such as intellectual property. Strategic management can, then, become strategic development that allocates resources for learning to those areas that are considered to be critically important for the future success of the organization. Strategic management becomes a form of capability building. As knowledge-related capabilities are often slow to develop, strategy becomes an activity that aims at simultaneous development of internal capabilities and management of external capabilities through, for example, alliances and partnerships. Theoretically advanced forms of such views on

[11] For the same reason, the predictive power of long-wave theories of economic growth (e.g., Perez (2002)) may break down, even if they would accurately describe earlier phases of economic development. For further discussion, see Tuomi (2009, chap. 3, "Policy at the End of Kondratieff Waves.").

Perez, C. 2002. *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*. Cheltenham: Edward Elgar.

Tuomi I. 2009. *The Future of Semiconductor Intellectual Property Architectural Blocks in Europe*. JRC Scientific and Technical Reports. Luxembourg: European Commission.

strategy as development lead to, for example, questions on how to augment the meaning processing capabilities of organizations and how to create intelligent organizations.[12]

Whereas traditional strategic management was based on the distinction between planning and implementation, in the new context a more useful distinction can be made between foresight and improvisation. Collective improvisation is a synchronous and self-organized process that uses accumulated knowledge, tools, and skills. Its underlying dynamic is based on mutual adjustment. It lacks central coordination, and there is no distinction between planning and implementation. In improvisation, history, future and the present coalesce into a unified act.[13]

In a strategy model that embraces complexity, improvisation is complemented by foresight that plays two key roles. First, foresight generates themes that guide distributed and local performance. Second, foresight also defines performance contexts and infrastructures that make effective improvisation possible. In a simplified way, foresight defines when and what to play, what is the overall composition of the jointly produced piece, who are the players, and where to play. Foresight can therefore also turn into planning, for example when it leads to a construction of a concert hall that provides the physical and material conditions for improvisations.

In this context, strategic development then needs to address the two facets of organizational life: When focusing on the internals of the focal organization, the question is how to make the organization more intelligent and agile than it is now; When focusing on the external environment, the question is how the focal organization can shape the evolutionary processes in its organizational ecosystem to create strategic advantages. In contrast to traditional competitive

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[12] Such an inquiry, therefore, also leads to analysis of the key functional characteristics of biological and social cognition and communication, c.f. Tuomi (1999) (see above reference).

[13] Weick and Roberts (1993), studying coordinated action on large aircraft carrier ships, called this heedful interrelating. Improvisation has been a frequently used metaphor in organization cognition research since the 1970s, see, e.g. Bougon et al. (1977). In Futures research, Riel Miller has pointed out that the murmuration of starlings, where up to several millions of birds can flock in rapidly changing configurations without colliding with each other, presents a similar example of effective descentralized and spontaneous coordination.

Weick, K.E., and K.H. Roberts. 1993. ”Collective mind in organizations: heedful interrelating on flight decks. ” *Administrative Science Quarterly* 38: 357-381.

Bougon, M.G., K.E. Weick, and D. Binkhorst. 1977. Cognition in organizations: an analysis of the Utrecht Jazz Orchestra. *Administrative Science Quarterly* 22: 606-639.

strategies, such ecosystem strategies can often be non-competitive and they always have an explicit collaboration or co-evolution component.

In this setting, strategy also reveals its nature as a form of risk management. The key starting point of traditional management theories was that management is about control. Planning, therefore, has become a tool that addresses the perceived need for increased control; an instrument that manufactures belief in control, even when we instinctively know that such hubris will eventually be punished. In the current turbulent context, the punishment will come without much delay, and the risk-reducing capacity of planning is increasingly revealed as an illusion. Strategy, however, still needs to address risk.

When strategy is based on a combination of improvisation and foresight, risk needs to be addressed in its true probabilistic sense, at two levels. First, improvisation implies uncertainty, and there exists a risk of local collisions. These risks can be addressed by procedural agreements and through the development of shared performance "styles."[14] The second type of risk is related to the allocation of resources. Lack of foresight imagination can lead to the neglect of key emerging themes, and the resulting development efforts can lead to dead-ends.

In an open world, strategic evaluations are bounded by our limited capacity to formulate anticipatory models that extend beyond closed micro-worlds. In itself, this is nothing new, and our cognition works under the same limitation. There is no guarantee that collective strategy choices avoid dead-ends. The basic nature of all intelligent activities, however, is that they allow us to operate in unpredictable and open worlds, and to explain our actions so that they can be communicated. This is necessary both for collective action and learning.

[14] One might also note that this form of risk management problem underlies social contract theories that have further led to social and political theories of institutions and law. In effect, the classical social contract theories of Hobbes, Locke, Kant and Rousseau generate and legitimize institutional order that aims at avoiding local collisions. This connection points to the fact that there is a link between "rules of improvisation" and theories of justice. At present, this connection between strategy theory and political theory has received very little attention, partly because much of the extant strategy research implicitly adopts the utilitarian models of agency and value. As the improvisation model of strategy implicitly assumes autonomous agents, the theory of justice becomes an essential element in the theory of strategy and foresight.

In a complex and deeply unpredictable world, foresight, therefore, needs to be organized in a way that embraces complexity, instead of simplifying it. The resulting new approach to strategic thinking is radically different from traditional strategic planning and management. The historical concept of strategy was based on an idea of rationality that implicitly assumed that important organizational decisions can be made within a domain where the complexity of the world remains under control. This domain is now shrinking. Strategies have to be formulated also when we know that we don't know what the relevant parameters of the world are going to be.

The emerging new strategic thinking therefore requires managerial attitude that facilitates inter- and intra-organizational network coordination, distributed decision-making, and opportunistic learning. Furthermore, strategy now needs to extend beyond organizational boundaries. It needs to consider, for example, institutional and structural couplings among ecosystem participants, and the processes and tools with which knowledge and meaning are translated and transformed across local systems of meaning.

This is a major departure from the classic theory of management. Information does not flow from bottom up, and knowledge and decision-making capacity rarely accumulates at the top of hierarchies. There can be no single line of control in a networked world, nor in a world that cannot be controlled.

5.4. Strategic Management in Universities

Strategic management in universities is considerably more challenging than in traditional business settings because universities simultaneously fulfill several essentially independent functions. They act as institutional nodes in regional innovation ecosystems and global knowledge creation networks, they provide educational services, they spin-off new businesses and technologies, and they also function as socially and culturally important hosts that integrate and process knowledge flows for public and political debate.

Furthermore, universities act as institutional hosts for unallocated intellectual capital and they provide absorptive capacity that facilitate social change and development. They also provide skilled and programmable labor, access points to knowledge and expertise, and generate and diffuse knowledge-related capabilities that form the socio-political infrastructure of modern societies.

Also business firms have multiple roles. From a strategic management point of view it is, however, usually possible to focus on one key role which dominates over the others. Today, the ultimate function of business firms is often thought to make profit for their investors, and the final valuation of organizational activities can, at least in theory, be made using this single-dimensional criterion. For universities, such a simplification is not possible. It is not an easy task for strategic thinkers to define what is the dimension on which a university should be ”better” than its competitors. Indeed, it is not easy to tell what its competitors are, if any, or to what extent the concept of competition actually makes sense in university settings.

In other words, universities, in general, are not business firms. They play several socially and economically important roles in parallel, and there is no single objective that could be used to define “optimal” strategies. This is in contrast to business or military strategies, where profit or “winning the war” can provide the ultimate criterion for success. Universities provide educational services, and many of these could also be provided by commercial entities, thus defining a niche where competitive strategies could make sense. Similarly, universities can at least in theory compete among other universities on research excellence. In general, such a reductionist view on the objectives of the university is a gross and inaccurate simplification.

Due to the multifaceted nature of universities as social institutions, traditional strategic management and planning approaches quickly lead to frustrations. The emerging new strategic thinking, based on ecosystem strategies and capability development, is better suited for university strategic management, as the underlying models allow for a multitude of qualitatively different interactions and relationships among ecosystem participants. Foresight has a critical function in supporting strategy development in this new context.

5.5. Concluding Remarks

Above I briefly described three visible trends that generate a new context for universities as social institutions, organizations, and participants in local and global innovation ecosystems. These three trends—the rapidly expanding access to knowledge, the increasing economic impact of informal, social and networked competence development, and the new distributed and open innovation and knowledge creation models—will challenge long-standing assumptions that underlie many current practices in universities. More importantly, perhaps, they are the three key dynamics that drive the

socio-economic transformation that we often call “the Knowledge Society.” One of the defining characteristics of this emerging world is its essential complexity, which in many practical cases cannot be simplified without losing the object under study.

In this setting, as discussed above, strategic planning becomes a contradictory effort, and strategic management shifts toward strategic development. In many ways, strategy becomes a question of strategic learning. Learning becomes an explicit part of strategy, and strategic thinking rests on new concepts that cannot be found in existing text-books.

Although universities are fundamentally more challenging organizations for strategic management than business firms, the emerging new concepts of strategy are well-suited also in the university context. The application of these new concepts, however, requires considerable intellectual effort. There are no pre-existing blueprints to follow; instead, university managers need to draft their own blueprints for action.

In the traditional approach, strategic planning assumed that we describe and explore alternative futures, thus creating understanding of critical choices that should be made today. The decisions are then expected to lead to action. This sequence of reflection, choice and action is widely considered to be an obvious model of how people think and how organizational decision-making occurs. To an important extent, Western culture can be defined by this specific conceptualization of rationality. Although mainstream studies of organizational decision-making have pointed out that decisions are often articulated and formulated only after the fact, for example to communicate and legitimize routes of action already taken, conventional models of rationality are deeply rooted in the belief that thinking comes before action, and that rational action can only result from selecting between pre-mediated alternatives.

This view neglects the fact that our action is not just implementation of thoughts. All our action is intelligent action, oriented towards anticipated futures. It is the richness of imagined futures that makes our action more or less intelligent, in the conventional sense. Rational thought becomes possible only in retrospection, structuring, categorizing and simplifying what we already know.

In improvisation, thinking and action can not be separated in time. There is no obvious causal chain from thought to action. Instead, improvisational action is intelligent action that simultaneously expresses knowledge, skill and interpretation of the context of action. We rarely think what we say: instead, our speech expresses and articulates our thoughts. Yet, we speak using culturally embedded languages and utilize conceptual systems that allow us to make important distinctions.

The linear sequence of analysis, selection and action is today widely understood to be a highly interactive process. Yet, the underlying model remains linear. Our concepts of rationality, decision-making and causality are tightly coupled, and it is not easy to revise any of these without changing the others. Indeed, this tight bundle of fundamental concepts has to an important extent defined how philosophers since Aristotle have understood the problems of ontology and epistemology.

These Western conceptualizations of rationality, knowledge, action, and cause and effect have been highly successful in practice. They have allowed us to simplify the world in ways that make repeatable and predictable interventions possible. They have allowed us to project a mechanistic picture on the world, thus facilitating mechanical interventions and interactions with it. As Henri Bergson noted more than a century ago, the human intellect simplifies the reality in ways that allow us to grasp it. Indeed, according to Bergson, that is why we have intellect. One expression of the collective force of the human intellect is the industrial society, where technology-enabled large-scale production now dominates value creation.

Yet, as Bergson also noted, this capability comes at a cost. The human mind has great difficulties in comprehending change, flow, and complexity that are the essential characteristics of living systems. Bergson's claim was that the human intellect can only operate if it reduces the world into a reality that lacks the essence of life and where the “durée” of biological life is replaced by a sequence of timeless ticks of a mechanical clock.

As a living process, human intelligence, however, still interacts with the complex world of change through action and instinct. Perhaps, therefore, we could say that improvisation, guided by intellect, knowledge, and educated instinct, can provide us a productive access route to the world of complexity. Improvisation provides the foundation for real-time strategic action. Foresight, in

turn, generates the imagined futures that guide thinking, knowledge creation, competence development, and education. Together they make strategy possible in the emerging world.