

Future Thinking

The scarce management skill

Anthony P Botha^{1,2} and Marthinus W Pretorius¹

¹Graduate School of Technology Management, Faculty of Engineering, Built Environment and IT, University of Pretoria, Pretoria, South Africa

² TechnoScene (Pty) Ltd, Pretoria, South Africa

Abstract - We are all expert strategists for the now. But what about the future? Seeing that the future lies beyond strategy, it is of great concern that so few leaders have the ability to do future thinking. Future thinking is the ability to mind-time travel into the future, experience that imagined future and back-cast to develop strategies in the present to realise the preferred future. Several futurists have expressed concern about the lack of future thinking skills and an interest in the future among business leaders on a global scale. This applies to corporate boards, executive management, policy makers and academics alike. This research is based on interviews, supported by learnings from executive training and consulting in future thinking. We look at future thinking in terms of recognising emerging and disruptive technology in time, the ability to integrate the understanding of human behaviour inside the workspace and in the marketplace and the ability to make sense of the impact of major events. This paper presents a thought model outlining critical reasons for lack of interest in the future and recommendations to instate future thinking among leadership.

I. BACKGROUND AND LITERATURE

We are all expert strategists for the now. But what about the future? Seeing that the future lies beyond strategy, it is of great concern that so few leaders have the ability to do future thinking. Future thinking is the ability to mind-time travel into the future, experience that imagined future and back-cast to develop strategies in the present to realize the preferred future. Several tools are available to assist with future thinking. Yet, the future remains a difficult subject - it is not predictable, neither is it predetermined. It can thus be shaped from the present. This shaping can take place through applying the right way of thinking, amidst the political, environmental, social, technological and economic influences.

A. *The future and change*

When we talk about the future, we mean an era in time yet to come that lies outside of the everyday planning, strategic management and intervention scope. It normally refers to over-the-horizon landscapes that may be anticipated with future thinking and long-range planning, but cannot be "seen" directly in the present. The future approaches at different speeds for different business environments. In the information technology sphere change may be faster (years) than in the mining sphere (decades). Different changes occur at different rates and will have different impacts at different times [1].

B. *Foresight is not trusted*

A variety of foresight techniques have been used to demystify these longer range futures [2]. Although strategic foresight is required by business practices, they are often considered with suspicion or avoided because they "naturally introduce fuzziness and expose uncertainty" [1]. More than 40 years of futures studies have brought the world a wide range of foresight specialties and a variety of academic activities in many different fields.

C. *Educating for future thinking*

A universal failure [2] of future thinking is that future concepts, tools, appropriate models and methods have not been incorporated in educational systems, with the result that it is not a natural skill resident in professionals and executive management. This has led to a lack of ability to respond to or pre-empt global problems or opportunities, and reduced capacity for forward-looking leadership.

D. *Tools to look at the future*

The extended spectrum of foresight tools has evolved into very practical approaches where these tools are customized, integrated and modified to address specific future views. These tools have different horizons and assist in mind-time travel [3], [4] where thinking takes place in a continuum from the past, through the present into the future. Six foundational concepts proposed by Inayatullah, "The Six Pillars of Futures Thinking" [5] provide an approach incorporating, integrating and optimizing several foresight methods. Mapping the future; anticipating emergent issues; considering the timing of the future; deepening the future through metaphorical understanding; creating alternative futures; and transforming through visioning and back-casting, provide a landscape on which to navigate towards the future.

E. *Corporate foresight*

Corporate foresight is defined as the ability to enable an organization to lay the foundation for future competitive advantage [6]. It involves identifying, observing and interpreting factors that induce change leading to possible organization-specific implications, and triggering appropriate organizational responses. It should lead to critical resources or

actions ahead of the competition, and prepare the organization for change. It further positions the organization towards a desired future. Rohrbeck et al. [6] suggest four development phases of corporate foresight: early phase initiation of concepts in the 1950s; the age of scenarios in the 1960s and 1970s; methods and processes in the 1980s and 1990s and organizational integration from 2000 until present. This has led to the belief by many corporates that a foresight unit must be established [7]. This presupposes deep integration of foresight in the strategy, applying “method sophistication”, diversity and flexibility to adapt to change and adopting a new culture. Combined with this, successful foresight depends on the ability to cope with uncertainty and operating in increased complexity [8]. In scenario planning, key uncertainties, often related to the impact of major events, form the one axis, compared to key factors and forces over which control can be exercised, often over technology and the behavior of people. Uncertainty relates to operating in the complex domain where information is not available beforehand and proper analysis cannot be done to reduce uncertainty, but where emergence of unpredictable effects is to be reacted to, based on decision making in the absence of reductionism.

F. The evolution of future studies

The evolution of future studies [9] has also impacted on how future thinking is practiced. A new phase of modern futures studies deals mainly with complexity and the integration of systems thinking. This era is characterized by almost a complete end to the development of new foresight methods, the stabilization of the academic activities in futures research, discussions around an identity for future studies (e.g. is it a discipline?), and overall fragmentation of the field. This fragmentation results from a lack of formal education in futures studies and no defined qualifications of the futurist profession; the explosion in knowledge and information, big data and the fact that no single person can grasp the entire field; the nature of work by consultants who in confidential brief by their clients to provide strategic intelligence through futures studies do not contribute to the body of knowledge; and the generic nature of future studies, not being owned by a single group, such as futurists. With the world rapidly migrating from the knowledge era to the conceptual era, where the so-called algorithm economy will evolve from the knowledge economy [10], studies of the future will be concerned with dialectic thinking, including the consideration of paradoxes, options, linkages and mindsets, through cognitive arguments [9].

G. Future skills for business leaders

In a study on the required future skills of business leaders, the following was identified as critical for the current management era [11]: the ability to empower others; the ability to learn; commitment to lifelong learning; creativity and the generation of ideas; flexibility and willingness to change; foresight which includes the ability to predict future occurrences; holistic thinking abilities leading to the ability to

see the whole situation and its consequences; taking initiative; integrative thinking abilities, including thinking outside of functional areas and visionary skills. All of these relate to strategic thinking and the ability to do future thinking.

H. Youth, culture and future thinking

It is not only at executive level and leadership level that future thinking skills have become crucial. Psychological studies show that human beings have the ability to do mind-time travel at a very young age [12]. Yet, this natural ability to do mind-time travel is not developed further in the education systems of the world. School education systems are stuck in an outdated industrial era world view [13]. An integrated forward looking view should be a crucial part of education, at school level and at higher education level. Three traditions of future studies prevail: the empirical tradition, practiced mainly in the USA; the critical tradition, originated in Europe, much in reaction to the empirical tradition and lastly; the cultural tradition, which has a strong non-Western cultural basis. These traditions have influenced the teaching of futures at schools and cause a non-uniformity, unlike the teaching of mathematics and science which are globally taught in universal ways. Young people are faced with three perceptions of the future: the feared future that is often illustrated as a dystopian and post-apocalyptic world in science fiction; preferred futures where technological enhancement of work and life, as well as harmony with the earth dominate thoughts; and proactive futures, where world views are linked with action planning. When a future world based on future thinking is presented to audiences, it is the young people that are in general encouraged and the older ones that primarily want to avoid these changes at all cost.

I. Integrating future thinking in organizations

Although foresight is increasingly used by organizations, the integration of foresight work is not readily integrated with corporate culture and work processes. Some organizations have started to appoint “organizational futurists” with the clear role of doing foresight on a continuous basis. Hines and Gold [14] explore whether this has a positive effect on futures alignment, in fact they extend this to investigate whether foresight at all has an impact on organizations. They pose a research question on why it is so difficult for organizations to use foresight work. One reason suggested is that “foresight delivers a type of knowledge that is difficult to apply in organizations, because there is a mismatch in timeframe such that the organization and its members have difficulty in fitting foresight findings into existing decision-making processes”. It is recognized that many executives use foresight intuitively and that professional foresight experts do not exist in many organizations, often consulting futurists are used. It is also stated that the field is still emerging and terms are unclear, grappling with what it is and what its boundaries are. Three challenges are identified: (1) episodic use of foresight, consisting of intense activity for a while, followed by long periods of inactivity; (2) cultural resistance to foresight,

resulting from perceptions that foresight competes for attention of already busy people, foresight is threatening the existing order, it is viewed as intangible and is more an intellectual activity than one that is getting things done and deep foresight capacity is lacking apart from the interest in superficial trends; (3) institutionalization of foresight is not a priority and a clear view of the professional focus is not evident, with organizations calling the organizational futurist function anything from a trends manager to an ideation leader. Organizations in general have people nominally responsible for foresight, but few have any formal training as futurists.

J. Time horizons - how far ahead do people think?

People rarely think of a distant future and when they do, they employ cognitive styles different from the ones commonly used for planning and decision making [15]. Mind-time travel is not spread uniformly in time. Different thinking processes are used, depending on the time scale. The distant future thinking is more concerned with high level goals and vision than near future thinking which deals mostly with concrete plans for action. Boschettia, Walkera and Pricea [15] state that people normally think one day ahead, somewhat less frequently one week to one year ahead; much less frequently between one and five years and rarely beyond five years. People in general seem to have difficulty imagining the future beyond 15 to 20 years. When people are asked what time horizons they think about when they hear the word 'future', it differs from one to two years to 10 to 15 years.

K. Do young and old people think differently about the future?

The generational shift depicted by baby boomers, generation X-ers, generation Y and the millennials is often quoted to provide a conflict in attitude towards the future and how work will be done and markets will behave. This may be misleading, since this generational spread has been developed more as a marketing issue and the behavior will be different in different parts of the world, especially away from accepted first world norms. Futures methods have evolved over time and it is assumed that younger people will be linked to new generations of future methods. Knowledge transfer on futures methods from old to young and through formal academic programs are fragmented and not available universally. Young and old have to adopt complexity and uncertainty as intrinsic to reality. Two aspects remain important in the skills toolkit for the futurist. (1) Futures fluency, defined by Schultz [in 16], involves identifying and monitoring change; critiquing the impacts of change; imagining alternative futures; and planning and implementing. (2) Futures literacy, as defined by Slaughter [16], involves the symbolic grounding of futures capability in futures concepts, and through in-depth knowledge and understanding of the futures domain. Futures literacy is essentially the ability to maintain a futures discourse. It is also the basis for effective action, or strategy. Realization that the world is heading towards all kinds of

crises (water, food security, climate, health, etc.) all current generations will have to take futures seriously.

II. RESEARCH PROBLEM STATEMENT

It is clear from the literature and general perception that there is a concern about the lack of future thinking skills and interest in the future among business leaders on a global scale. This applies to corporate boards, executive management, project managers, policy makers and academics alike. A distinction should be made between having the propensity to look at the future and having the tools to do so. It is clear that a large spectrum of tools is available that could assist in understanding the future. The problem, however, lies within the following statement:

"Few business leaders have the ability to do future thinking."

III. RESEARCH QUESTIONS

In this paper we address the following research questions in an attempt to understand the validity of the research problem and its causes.

1. Is there a problem with the ability to do future thinking?
2. Is the lack of future thinking skills leadership age related?
3. At what management level does the problem lie?
4. Is the problem more predominant in certain industry sectors than others?
5. Does organization form and size have an influence on the ability to do future thinking?
6. What are the reasons for not being able to do future thinking?
7. Are people that find it easier to do future thinking more comfortable working in the complexity regime?
8. Are certain future techniques more effective to assist with future thinking?
9. What is the relevance of different emergent issues that determine future thinking?
10. Do people that find it easier to do future thinking have different strategic planning styles?
11. How can future thinking skills be improved?

IV. RESEARCH METHODOLOGY

An "electronic interview" was developed in the form of a web based set of questions that was sent to a variety of people involved in senior management positions ranging from boards to project managers. This survey was live for fifteen days and guided respondents through a series of options where they could provide information to structured and unstructured research questions. The idea behind the "electronic interview" was to do a quick survey of opinions related to a structured investigation that would address the research problem and research questions. Respondents were assured of keeping their

information provided confidential and the “electronic interview” was held blind so that their identity was not revealed. The “electronic interview” was structured as follows: *the context in which participants took part in the interviews* - position in their own organizations, age of respondents, gender of respondents, country in which the respondent works; *the relationship with the future* - interest the organization has in the future, how difficult it was to project their thoughts into the future, foresight/future thinking methods used, familiarity with working in the complex and chaotic space, ranking of emergent issues according to their relevance in determining the future, how their organizations plan strategically, belief why it is difficult for leaders to imagine the future, suggestions on improving future thinking capabilities of business leaders; and *ideas on improving leadership interest in the future*. The sample was chosen from a broad base of individuals known to the authors either through teaching and post-graduate research supervision of students in the work space, executive training specialized courses, strategy consulting, foresight guidance and consulting, roadmapping facilitation and academics and practitioners in technology, innovation and knowledge management as well as future studies. This sample selection resulted in a predetermined spread of individuals and may not be representative of the larger community involved in future thinking, but it provides a strong opinion poll from people that are known to be confronted with long range planning and strategic responsibilities in their organizations.

V. RESULTS AND DISCUSSION

Analysis was done on 62 replies ranging mostly from business leaders in South Africa, but including responses from Namibia, the United States of America, Canada, The Netherlands, Germany and Portugal.

A. Difficulty of projecting thoughts into the future

Research question 1: *Is there a problem with the ability to do future thinking?*

The question posed was “Do you find it difficult to project your thoughts into the future?” The answers of “yes” or “no” are interpreted as “Difficult to do future thinking” and “Easy to do future thinking”. Slightly more than half of the respondents (53%) indicated that they indeed find it difficult to do future thinking as indicated in Fig. 1. If more than half of business leaders find it difficult to do future thinking, deeper understanding of the problem is warranted. The statement: “*Few business leaders have the ability to do future thinking*” thus represents a real problem which needs to be addressed in management.

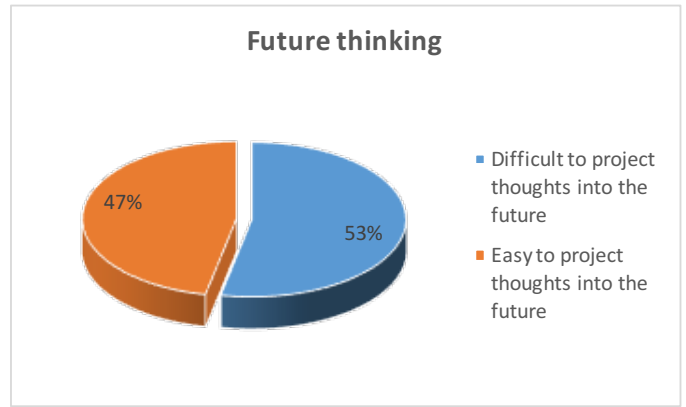


Fig. 1. Responses on ability to do future thinking

B. Age and future thinking

Research question 2: *Is the lack of future thinking skills leadership age related?*

It is now investigated what the age distribution is of people that find it difficult or not to do future thinking and this is illustrated in Fig. 2. Of people under the age of 60 which form the majority of the working population, 50% or more find it difficult to do future thinking. Seventy percent of people in the age bracket 41 to 50 years have problems with future thinking, as have two thirds of those between 31 and 40 years of age. It is interesting that of the younger people, under the age of 30, half find it difficult to do future thinking. The few older people that responded have many years of experience in taking their organizations into the future and indicated that it is not a problem to think ahead. The majority (85%) of respondents were male, and 15% were female. Only one third of the females found it difficult to do future thinking. Future thinking is thus not leadership age related and a large percentage of young leaders and older people in senior positions share the same problem that it is not easy for them to do future thinking.

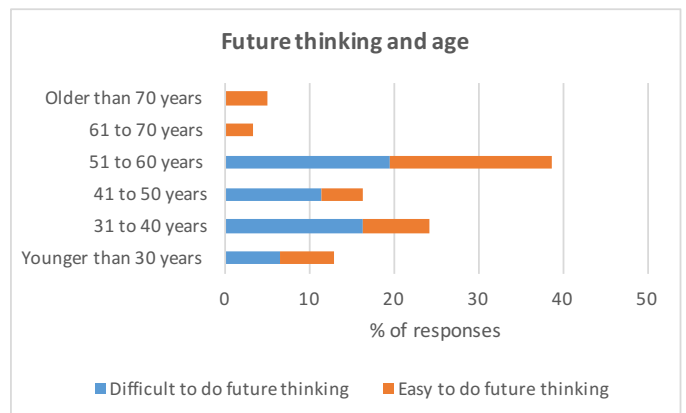


Fig. 2. Age distribution of respondents and their ability to do future thinking

C. Position and future thinking

Research question 3: *At what management level does the problem lie?*

The outcome of the “electronic interview” showed that the problem of not being able to project thinking into the future is quite evenly distributed over all levels of respondents. The majority of respondents were at levels such as executive and general management and project management. However, responses from the level of chairman of the board, board members, company directors and CEOs indicated 50% or more find it difficult to do future thinking.

D. Industry sector dependence of future thinking

Research question 4: *Is the problem more predominant in certain industry sectors than others?*

The ability to do future thinking does not vary significantly from industry sector to industry sector. Responses received indicate an almost equal division between difficulty and ease of doing future thinking for the majority of industries representative of respondents. Respondents were associated with manufacturing; information and communication; electronics; defense; aerospace; science, engineering and technology; education; services; mining and quarrying; finance, insurance and real estate; public administration; construction; agriculture, forestry and fishing; transportation and storage; retail trade; and electricity, gas, steam and air conditioning.

E. Future thinking and form and size of the organization

Research question 5: *Does organization form and size have an influence on the ability to do future thinking?*

Form or size of the organization do not seem to influence future thinking by leaders and the spread of those that find it difficult to think ahead and those that find it easy is almost equal. The respondent density per organizational grouping in declining order were: SME (private); state-owned enterprise; multinational (listed); government institution; multinational (private); academic institution; large enterprise (private); large enterprise (listed); government department; NGO; and research funding foundation. Listed multinationals, and private multinationals were outliers with respectively 85% and 83% of respondents in these sectors finding it difficult to do future thinking.

F. Reasons for not being able to do future thinking

Research question 6: *“What are the reasons for not being able to do future thinking?”*

Respondents were asked to rank a set of reasons they believe make future thinking difficult. The outcome, as shown in Fig. 3 primarily lies in short-term pressure for financial performance, and the fact that

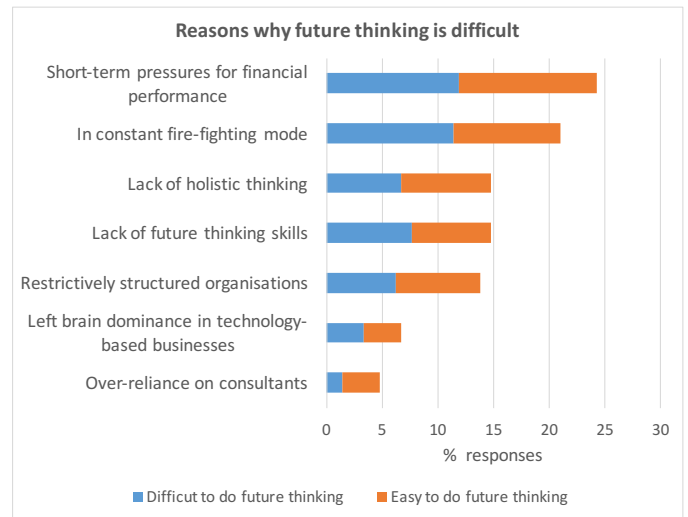


Fig. 3. Ranking of reasons why future thinking is difficult

business leaders are in constant fire-fighting mode. These influences are equally valid for those that find it easy and difficult to do future thinking. Further reasons include a lack of holistic thinking, lack of future thinking skills and restrictively structured organizations, with the latter having a slight preference from those that find it easy to do future thinking. Lastly, left brain dominance in technology-based business and over-reliance on consultants may be minor reasons why future thinking is difficult. Again the latter is stronger in the opinion of those that find it easy to do future thinking.

G. Complexity and future thinking

Research question 7: *Are people that find it easier to do future thinking more comfortable working in the complexity regime?*

There is a clear indication that people that find it easy to do future thinking are also more used to working in the complexity domain as pointed out by the results of the interviews in Fig. 4. A very large percentage of the respondents in total indicated that they are familiar with the complexity domain. Most of the respondents that are not familiar with complexity also find it difficult to do future thinking.

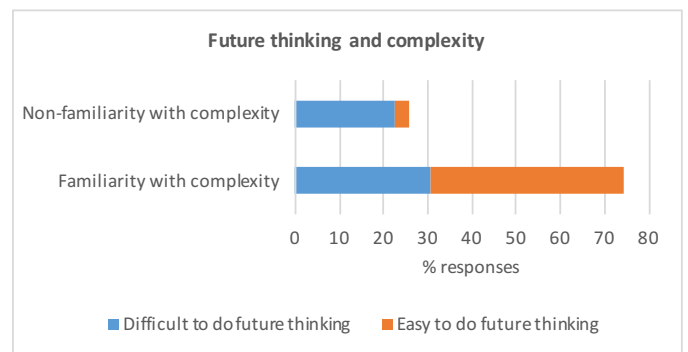


Fig. 4. Future thinking capability and familiarity with the complexity domain

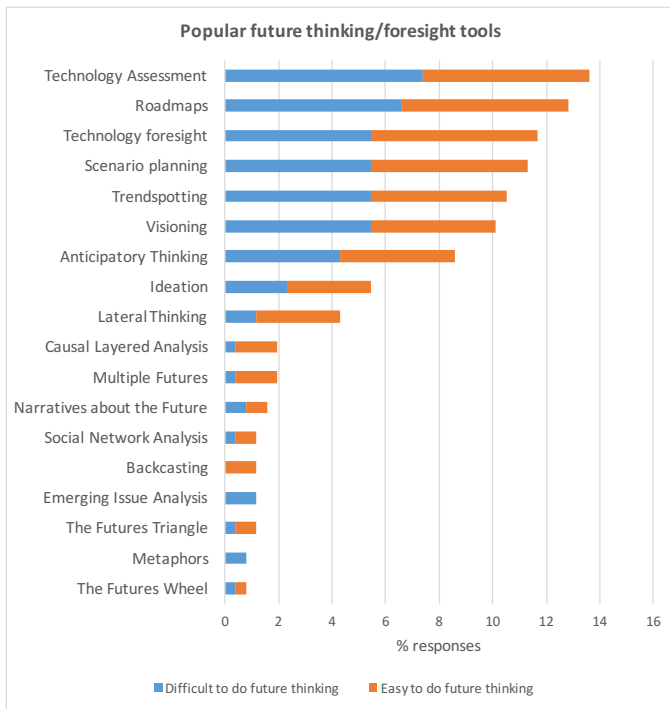


Fig. 5. Popular foresight/future thinking tools used by respondents

H. Future thinking/foresight tools used

Research question 8: *Are certain future techniques more effective to assist with future thinking?*

Respondents were asked to indicate the typical foresight tools or methods for future thinking they have used in the past. The results are shown in Fig. 5. The top seven futures methods used evenly by those that find it difficult to future thinking and those that find it easy are in declining order of importance: technology assessment; roadmaps; technology foresight; scenario planning; trendspotting; visioning; and anticipatory thinking. This is followed by a group of methodologies, applied largely by those that find it easy to do future thinking: ideation; lateral thinking; causal layered analysis; multiple futures; social network analysis; backcasting; and the Futures Triangle. Lesser used methodologies that are mostly applied by the group that find it difficult to do future thinking are: emerging issue analysis and metaphors.

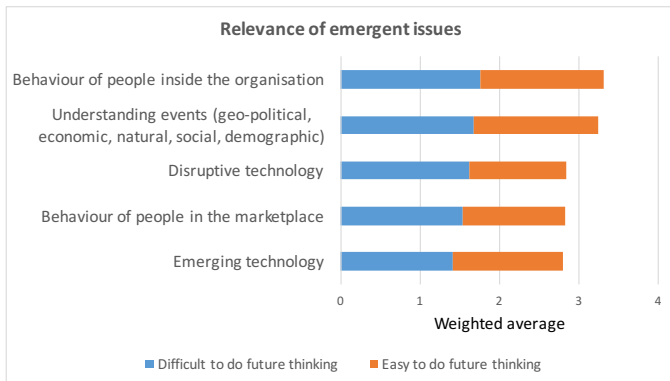


Fig. 6. Relevance of emergent issues determining the future

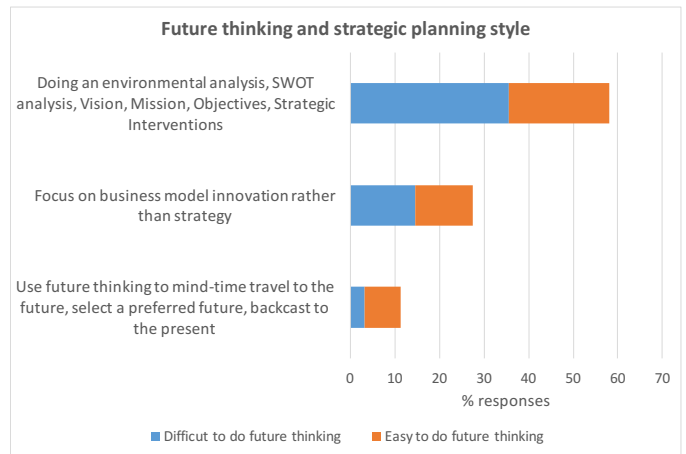


Fig. 7. The relationship between future thinking capability and strategic planning

Narratives about the future and the Futures Wheel are not used by many, but are equally used by the two groups.

I. Relevance of emergent issues

Research question 9: *What is the relevance of different emergent issues that determine future thinking?*

Several techniques for measuring emerging issues have been developed, one of these being the S-curve [5]. A new approach suggested by one of the authors [17] is that of a future thinking lens, where emerging and disruptive technologies, the behavior of people in the marketplace and inside the organization and major events are used to determine future impacts. The relevance of these parameters in terms of influencing the future was tested in this research and are shown in Fig. 6. Most respondents felt that the behavior of people inside the organization has the highest relevance, followed by events which can be predicted or not, and avoided or not. Then follows disruptive technology, behavior of people in the marketplace and emerging technology. The opinion expressed by those that find it easy to do future thinking and those that do not is very similar.

J. Future thinking and strategic planning styles used

Research question 10: *Do people that find it easier to do future thinking have different strategic planning styles?*

Fig. 7 shows the results of responses to a question to indicate how organizations plan strategically at present. Most people use the old, classical strategic planning style of doing an environmental analysis (mostly in the present), doing SWOT analysis, defining a vision and mission and deciding on objectives and strategic interventions. There are slightly more people that find it difficult to do future thinking in this category. An almost equal split in those that find it difficult to do future thinking and those that do not is evident for those that focus on business model innovation, rather than strategy. A minority, that is dominated by people that easily do future thinking, select a preferred future and back-cast to the present.

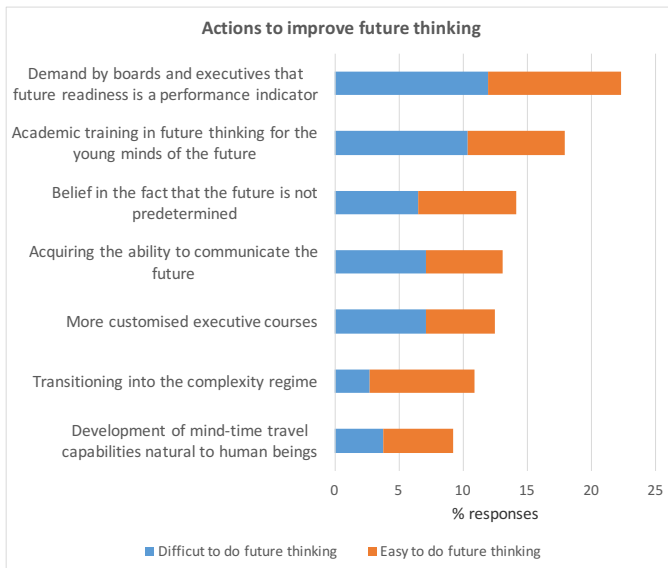


Fig. 8. Suggested importance of actions to improve future thinking

K. Improvement of future thinking skills

Research question 12: *How can future thinking skills be improved?*

Suggested actions to improve future thinking have been rated in the interviews. These are shown in Fig. 8. The most important action suggested is that corporate boards and executives should demand that future readiness is a performance indicator for organizations. This is followed by academic training in future thinking to create the young minds of the future. Furthermore, adopting a belief in the fact that the future is not predetermined and can be influenced may assist in improving future thinking skills. It is important to acquire an ability to communicate the future in an understandable, simple way. This is normally done through visualization, modelling and simulation. A need has been confirmed for more customized executive courses in future thinking. Up to this point almost equal importance was given to the suggestions by those that find it difficult to do future thinking and those that do not. The fact that a large number of respondents have indicated that they work in the complexity regime leads to a suggestion that future thinking can be improved by transitioning into the complexity regime. Lastly, the development of the natural mind-time travel capabilities that all people have should be encouraged. The latter two actions are predominantly suggested by people that find it easy to do future thinking.

Respondents were asked to suggest additional ideas for improvement of leadership interest in the future. These are shown in Table I.

TABLE I. IDEAS ON IMPROVEMENT OF LEADERSHIP INTEREST IN THE FUTURE

Category	Difficult to do future thinking	Easy to do future thinking
Boards and executives	<ul style="list-style-type: none"> Introduce future readiness in a disruptive world as an important key performance area Develop long term strategies 	<ul style="list-style-type: none"> Remuneration must be based on long-term outcomes, even exceeding the term of employment of leaders
Formal Education	<ul style="list-style-type: none"> Basic introduction at university level - develop leadership qualities from an early age Exposure to the benefits and business relevance of future thinking 	<ul style="list-style-type: none"> Turn the discipline of future studies into a science Supplement future thinking with critical thinking
Culture	<ul style="list-style-type: none"> Create a future thinking culture within organisations 	<ul style="list-style-type: none"> Encourage experimentation and honest failure as part of learning
Management styles	<ul style="list-style-type: none"> Eradicate a mind-set of command-and-control Establish unique roles to develop future plans Leaders to be concerned about organizational life beyond their tenure Incorporate systems thinking and trend analysis Expand statements of work to include future thinking aspects Work collaboratively with key stakeholders to project the future 	<ul style="list-style-type: none"> Exposure to tools that are less complex and demanding Establish communities of practice on future thinking
Self-motivation	<ul style="list-style-type: none"> Adopt a specific mind-set and brain profile dedicated to the art of future thinking and guide others Promote the power of being ahead of the curve Think holistically Move away from focusing on operational issues 	<ul style="list-style-type: none"> Remove fears about the future
Leadership development	<ul style="list-style-type: none"> Cross-industry workshops on future thinking Educate senior members of the company as well as the board on gains to be achieved Make future thinking a key performance area of leaders 	<ul style="list-style-type: none"> Seminars or workshops held by successful leaders who practice future thinking Change short term incentives to long term incentives Develop executive thinking skills Cultivate adaptable leaders Involve popular speakers, produce media articles Greater collaboration and sharing in futures thinking

VI. CONCLUSIONS

Future thinking is indeed a scarce management skill. This research has confirmed the problem to be rooted in the fact that few business leaders have the ability to do future thinking. Not enough importance is given to the fact that the future and change happens at different speeds and that different impacts will take place at different times. The literature suggests that foresight is not trusted. Future thinking is also not taught in global educational systems and academic activities are fragmented and present several gaps in a body of knowledge about the future. A large variety of tools are available to look at the future, but these are often applied in isolation and no holistic view of the future is achieved. Corporate foresight has been institutionalized by some organizations, to the extent that the position of a “corporate futurist” has been created - this primarily in larger organizations. Future thinking is often facilitated by consultants, with the result that the knowledge is not transferred into the organization. Future thinking in organizations are primarily episodic, receive cultural resistance and is not given priority in terms of importance and role it could play. Future studies have evolved and are now more focused on complexity and systems thinking. It is along the lines of systems thinking that future thinking is emerging as a holistic way of getting involved with the future. It is globally accepted that business leaders must improve on their future skills and become more visionary. Young people have a natural ability to do mind-time travel that assists them in future thinking. This natural ability is, however, not cultivated further by educational systems. Future thinking also varies with culture, complicating global mobility of knowledge. Business leaders do not think long term, most are concerned with the immediate future and making a success of current activities. In general, the longest time horizon people think ahead in is too limited to warrant a proper understanding of future impact.

This research sought confirmation of some of these perceptions about future thinking. It posed eleven research questions related to: confirming the problem; the influence of age on future thinking; identifying whether different management levels experience different future thinking problems; investigating whether certain industry sectors have an exacerbated problem; see whether organizational form and size influence future thinking; assess whether it is easier to do future thinking when working in the complexity regime; investigate typical future techniques that assist with future thinking; rank the emergent issues that determine the need for future thinking; establish whether proficiency with future thinking leads to advanced and modern strategic planning; and collecting ideas on how to improve future thinking skills.

The research methodology of an “electronic interview” allowed the investigators to get a quick response from a large variety of targeted individuals known to work in areas where future thinking is very important. The research was aimed at both confirming pre-identified issues related to future thinking

skills and to solicit ideas on how to improve the future thinking skills of leaders.

The following conclusions are drawn from the research supporting the proposition that few business leaders have the ability to do future thinking.

- The lack of future thinking skills is not age related and young leaders and older people in senior positions share the same problem that it is not easy for them to do future thinking.
- Position in an organization does not influence the ability to do future thinking. The problem to project thinking into the future occurs at all levels of management, from boards, through executive management to project management.
- The inability to do future thinking is primarily due to short term pressures for financial performance and leaders being in a constant fire-fighting mode. People that find it easy to do future thinking believe that organizational structures are often restrictive.
- A very clear indication exists that people that find it easy to do future thinking are mostly familiar with working in the complexity regime.
- Foresight tools such as technology assessment, roadmapping, technology foresight, scenario planning, trendspotting, visioning and anticipatory thinking are employed by a large number of leaders. Both those that find it difficult to do future thinking and those that do not, use these tools. People that find it easy to do future thinking, albeit a smaller number, use more modern and advanced tools such as lateral thinking, causal layered analysis, creating multiple futures, doing social network analysis, do back-casting and using the Futures Triangle and Futures Wheel
- Emergent issues that determine the future as described by the future thinking lens [17] include technology, the behavior of people and events. These were confirmed by this research as relevant to the development of future thinking skills and were rated in declining order of importance as: behavior of people inside the organization, understanding large events, disruptive technology, behavior of people in the marketplace and emerging technology.
- Most people use the classical way of strategic planning, starting with an environmental analysis, SWOT analysis, determining a vision and mission, followed by strategic objectives and interventions. Fewer people are using business model innovation in stead of strategy. Those that find it easy to do future thinking are more inclined to apply modern strategic planning processes where they mind-time travel to the future through future thinking and then return to a present time strategy through back-casting.
- Future thinking skills can be improved by boards and executives demanding future readiness to become a performance indicator. Likewise, academic training in

future thinking to create the young minds of the future will make a major impact on the ability to future-enable organizations. Additional aids to improving future thinking include the belief that the future is not predetermined and can be shaped, an ability to communicate the future, and customized executive courses. Achieving a familiarity with complexity, and the development of mind-time travel capabilities.

- The research points out a wealth of ideas on improving leadership interest in the future, classified in actions the board and executive management can take, the role of formal education, creating a culture for future thinking, self-motivation aspects and leadership development.

VII. RECOMMENDATIONS

The scarce management skill of future thinking must be recognized as important for sustainability, survival and competitiveness. Business leaders should equip themselves to acquire these skills and apply them in a holistic way. To assist them in doing it, universities around the world that have programs in futures research should agree on a standard of education and training that will enable future thinking and identify the knowledge gaps and fill them. This includes the recognition of weak signals, the ability to seamlessly think forward and backward and to link patterns that emerge from a complex world, systems approaches, holistic mindsets and the ability to drive ideas. Research is required to define and develop an integrated set of tools and techniques that can characterize the “far future” and then create an ability to back-cast to the near future and present. To do this, the field of future thinking should be given status as a discipline, building on a strong multi-disciplinary body of knowledge. A holistic, systems level approach is required. Instead of only institutionalizing a corporate futurist position, organizations should rather focus on embedding future thinking abilities in all their leading staff. In a globalized world different cultures of doing business and looking at the future should be recognized and aligned to achieve a common view of desired futures. Complexity must be embraced and a new regime of decision making based on volatile and uncertain environments should become the norm. Tomorrow’s leaders cannot think in today’s ways. They must approach the future by knowing that they have already arrived.

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