

HYBRID METHODS FOR MAKING DELIBERATED FUTURES

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Abstract

There is a gap between futures research and policy. Policy-makers do not get enough support from futures studies as ammunitions for robust decision-making. One reason for this may be embedded in the methodological context. Either the methods used have not been carefully chosen or applied, or the results of methods application are not conveyed to policy-makers. One solution would be to develop better skills for both choosing the right method for given research problems and particularly combining various methods. Such hybrid methods could better open up the problematique of complex issues, such as energy or climate change. In addition, policy-makers could also be involved in learning about methods and their applications in order to better grasp the results. We claim that by developing, demonstrating, testing and combining various futures studies and foresight methods, the users of research results will benefit.

A new collection of futures studies methods has recently been published. We use this plethora of foresight methodology to illustrate various hybrid methods. A selection of specific methods is made for presentation, alongside with description of the use of hybrid methods. Besides interaction-based or creativity-inspired methods, expert evaluations play a key role in several methods such as Delphi, scenarios and horizon scanning of futures signals. In the pioneer analysis method, pioneers of design, development, and realisation of the future society have been selected as the study subjects. Then, the ways in which these pioneers apply, for example, renewable energy or new technologies, are examined on the basis of modified actor analysis. CLA takes into account besides rational arguments, the myths and linguistic metaphors of experts. Combining such methods can also be based on applying both quantitative and qualitative methods. This kind of mixed methods use is called a hybrid methods approach.

The paper discusses the question: How do we improve the quality of futures studies in a sense that its results become more understandable and more easy to use by policy-makers? Demonstration on hybrid methods approach is made using a case of renewable energy transformation for deliberation of preferred futures.

Keywords: futures research methods, deliberative foresight

Introduction

Futures research has a rather long history in Finland. An early pioneer was Olavi Niitamo. In the 1960s, he was Professor in Economics at the University of Helsinki and he also had a long career at Statistics Finland. In 1982, he was appointed General Director of this institute responsible for public statistics in Finland. Niitamo had written his doctoral thesis in the USA in the 1950s and had gotten to know the futures research activities of the Rand Corporation. Though Niitamo was never an active member of the Finnish community of futurists, the Grand Old Man of Finnish futures studies—Professor Pentti Malaska—heard about futurology from him. As a young student in economics, Osmo Kuusi—one of the authors of this introduction—also heard about key methods of futures studies from Niitamo.

One of the great achievements of Pentti Malaska was to establish the Finnish Society for Futures Studies in 1980. Malaska was its first president and 14 Finnish institutions of higher education, e.g. many universities, were its founding members. Since then, in the past 37 years, many additional institutions and over 700 individuals have joined the society. The society has played a crucial role for the development of the Finnish community of futurists. Besides the society, the Finland Futures Research Centre (FFRC), the Finland Futures Academy (FFA), and the Committee for the Future in the Parliament of Finland are now key institutions for Finnish futures studies. They would hardly have been established without the Finnish Society for Futures Studies.

In the beginning of the 1990s, a great effort of the Finnish Society for Futures Studies was the first edition of this book, originally published only in Finnish. In 1993, when the book was published, the academic position of futures studies was still very unclear in Finland. However, there was already a strong community of futurists working with their various methods in the field. We consider that the various methods and interpretations of futures research that are also visible in this book have been the strength of the Finnish community of futurists from the very beginning.

Since the early 1990s, the academic position and the scientific acceptance of the methods of futures research have radically improved in Finland. It is very difficult to evaluate which academic fields really belong to the field of futures studies. According to the evaluation made by Olavi Borg in this book, the number of doctoral theses that represent futures studies was 22 in the period 1991-2000 and 30 between the years 2001 and 2010. These doctors identified themselves as futurists alongside their other professional identities. Concerning the scientific status of futures research in Finland, a great step forward was taken in 2015 when the University of Turku got its first doctors in the special field of futures studies, after Finland Futures Research Centre had become a department of Futures Studies.¹

Methodological approach

The Philosophical Basis and the Paradigmatic Methods of Finnish Futures Research

¹ Finland Futures Research Centre (FFRC) at the University of Turku currently runs both an International Master's Programme and a Doctoral Programme in Futures Studies.

The main aim of this English edition of the book is to describe how the Finnish research community of futures studies sees its field and what kinds of methods it has used. Besides the articles, the glossary of key concepts of futures studies serves this purpose. In this introduction, we will simply briefly review the articles in the book. Our main aim is to connect the Finnish futures research to the recent and current scientific discussion in the field.

The articles of the book cover two main themes. The first articles discuss the philosophical basis or the paradigm of futures studies and its connections to other fields of science. The second main theme of the book is the various methods of futures research. Every method discussed is described by an author, who has used the method in her or his own practical project(s). This means that some important methods of futures research are not included in the book because of a lack of researchers with enough recent experience regarding its use. This concerns e.g. cross-impact analysis.

The articles by Pentti Malaska, Ilkka Virtanen, Ilkka Niiniluoto, Matti Männikkö, and Olavi Borg broadly discuss the philosophical basis of futures research and its connections to other fields of science. They represent very different kinds of interpretations concerning the position of futures research among sciences. For Olavi Borg, futures studies is a field of knowledge and research rather than a specific discipline or a subject. Ilkka Niiniluoto concludes that futures studies is first of all a design science, which attempts to help the rational planning of our future. Matti Männikkö compares the approaches of historians and futures researchers. According to him, in historical analysis, the different possibilities and alternative sequences of events, i.e. the counterfactual, are increasingly taken into account. On the other hand, drawing on historical trends and structural changes, he claims that futures studies increasingly relies on analogies from the past.

From the viewpoint of the recent discussion concerning the philosophical and methodological basis of futures research, the article by Malaska and Virtanen is especially relevant. They introduce the highly relevant concept of the futures map. Analogously to the geographical map, Malaska and Virtanen consider that “a futures map is a generic design of the futures manifold and a symbolic representation of what might unfold or be realised by human interventions in the material world.” Malaska and Virtanen consider that the “paradigmatic” way to present the futures map is the morphological matrix, or as it is nowadays called in Finland: the Futures Table. In their article, Malaska and Virtanen present the mathematical interpretation of the basic concepts related to the futures map or the Futures Table. In two articles, Kuusi, Cuhls and Steinmüller (Kuusi et al. 2015a and 2015b) have recently continued the theoretical approach of Malaska and Virtanen. They suggest internal and external validity criteria for the futures map and connect their approach to the quality criteria of futures research (the “Task Force Standards”) as stated by the German Netzwerk Zukunftsforschung.

Besides the article of Malaska and Virtanen, the paradigmatic position of the Futures Table approach and the related scenario methods are visible in many other articles of this book. The approach is especially tangible in the articles by Yrjö Seppälä, Vuokko Jarva, Tarja Meristö, and Timo Sneck. For the emergence of this research approach in Finland, the work of Yrjö Seppälä in 1980s was crucial. His book “84,000 futures” (Seppälä 1984) has been the Finnish basic book

of the Futures Table method. Tarja Meristö and Timo Sneck have developed their own special approaches that use this method. Meristö connects the method to the PESTE analysis in the futures-oriented processes of companies and Sneck's morphological matrix phased scenario method has recently been used e.g. in the regional development of industries, in the development efforts of national company cluster structures, as well as in the creation of international markets for companies. Jarva focuses on narrative methods for futures studies: scenario drama and drama analysis.

A weakness of the Futures Table is that it does not define explicitly the causal connections between its variables. Besides the scenario or futures map approach, system thinking is the main paradigmatic approach of many Finnish futurists. Jyrki Luukkanen, Jarl-Thure Eriksson, Mika Pantzar, and Osmo Kuusi describe various approaches of system thinking. According to Luukkanen, systems theoretical modelling aims to create a mathematical "reality" that simulates the actions of the object. The object can be a biological, social, technical, or economic system. Kuusi, again, discusses how the economic models are able to handle problems that are interesting from the viewpoint of futures research. A special form of systemic development is the evolutionary development, which is the topic of Pantzar. A system can move to a state of chaos. According to Eriksson, chaos theory is not a uniform whole, but consists of several accessory theories and methods in the fields of mathematics, information theory, and dynamic systems. The mathematical basis is already advanced. In societal chaos, cultural traditions fail. The grid that guides people collapses, and the behaviour of the individual is determined by her concern over her own safety.

Articles Focused on Specific Research Methods

The members of the Finnish futurist community share the basic assumption that the future is open for many alternative developments or scenarios. This assumption implies that all methods of futures research are in some way based on the scenario/futures map approach or on system thinking, which is open to alternative developments. In some methods, the link is clear and in some other methods, e.g. in the Causal Layered Analysis, the link is only implicit. Though the evaluation of the probabilities of future developments belongs to the field of futures studies, predictions do not belong to the paradigm of Finnish futures research. The variety of the available futures research methods that explicitly or implicitly accept the above paradigmatic starting points is considerable. The Futures Research Methodology 3.0 of the Millennium Project describes 38 such kinds of methods².

How should we then classify the futures research methods used by Finnish futurists? One possibility is the classification suggested by Kerstin Cuhls (2008). She classified the methods based on the expectations of customers concerning a study. The expected results of a study might be explorative vs. selective. The time perspective might be long vs. short. The research method might be participative vs. analytic. The focus of the study might be on general themes vs. specific themes. These distinctions made by Cuhls (2008) are related to the distinction made by Kuusi et al. (2015b) between the planning and the mapping horizons of the futures map. In

² <http://www.millennium-project.org/millennium/FRM-V3.html#toc>.

general, analytic or trend-based methods are suitable for short planning horizons. Most futures research methods are, however, developed for the mapping horizon.

Although the dimensions identified by Cuhls are very relevant also from the viewpoint of Finnish futures studies, Popper's (2008) classification works better in the description of the methodological choices of the authors in this book. Popper's "diamond" divides methods into creativity based, interaction based, expertise based and evidence based.

We will use Popper's classification in the next overview. However, it is important to remark that Finnish futures researchers nowadays often use futures research processes in which either different methods are used side by side or the different stages of the process have different methodological foci. In particular, this concerns the much-used Delphi method. Recent Finnish versions of the Delphi method nearly regularly include the scenario building stage after the expert knowledge based stage. During a real-time Delphi process experts can also easily use the evidence from the Internet. The anonymous Delphi process is also possible during a futures conference.

In this book, the articles of Juha Nurmela and Marja-Liisa Viherä represent the interaction-based methods, though the already mentioned scenario methods and the later discussed methods of creative recognition are also very much based on face-to-face communication. As was mentioned, even a Delphi process might now happen in a highly interactive environment. Nurmela's futures conference method and article have been inspired by Jungk's and Müllert's (1987) classic methodology of futures workshops and participative futures research. At the communication camps for children discussed by Viherä, information technology has been intentionally put in the service of the future interaction society. A motive for developing the communication camps has been the concern about the influences of global phenomena (the pollution of the environment, loss of workplaces, global inequality, supranational entertainment etc.) on our daily lives: loneliness, lack of vision, insecurity, unwillingness to participate etc.

The articles of Osmo Kuusi, Sirkka Heinonen, and Anita Rubin discuss methods in which expert evaluations have the key role. First of all, the Delphi method is such kind of method. It is the most frequently used futures research method in Finland besides the various kinds of scenario processes and futures workshops, and is also combined with them. In his article, Kuusi describes the unique features of the "Finnish school of the Delphi method". In the pioneer analysis method of Heinonen, pioneers of design, development, and realisation of the future society have been selected as the study subjects. Then, the ways in which these pioneers apply, for example, new information and other technology are examined. In addition to the rational arguments of experts, the Causal Layered Analysis, discussed by Rubin, takes into account also the myths and linguistic metaphors of experts.

In recent years, Finnish futures researchers have been very interested in weak signals of change. This creativity-related theme was not discussed in the earlier editions of this book. In this edition, weak signals and Black Swans (Taleb 2007) are the main theme of the articles by Elina Hiltunen and Tuomo Kuosa, as well as the article by Sirkka Heinonen and Juho Ruotsalainen. Hiltunen's doctoral thesis was focused on weak signals. In her article, she

discusses various concepts related to weak signals and gives practical guidance on how to find these kinds of signals. Kuosa compares weak signals with other types of signals and criticizes the approaches of the “classic school” of weak signals. According to him, the new school of weak signals detection and assessment treat the signals as completely subjective constructions. Something may be a weak signal to you, but to another person it is old information or nonsense. Unlike in the case of strong signals, many interpretations of weak signals are possible. Heinonen and Ruotsalainen emphasize deep interpretation, i.e. clustering and synthesizing different weak signals to anticipate possible black swans.

Some scenario methods—in this book especially the method described in Vuokko Jarva’s article— clearly belong to creativity-based methods. Citing the article of Petri Kylliäinen, these kinds of scenarios analyze and envision holistically, with intuition where the future could lead under certain conditions. Kylliäinen has used gaming in the making of creative scenarios. The gaming experiments have helped a group of students to go beyond the limits of the reductionist approach, reaching a level of holistic understanding of the future.

Results, discussion and implications

Our claim is to highlight the importance of systematic futures studies, of applying futures methods to tackle issues of diverse societal dimensions. With the examples of the methods published in the book “How do we explore our futures?” we wish on one hand to increase the transparency of the methods and their applications and on the hand encourage debate about ethical issues involved in conducting studies on chosen topics for better decision-making. Whose futures are we imagining? Who are involved in futures processes? Which methods are used in which circumstances? Which combinations of methods are most beneficial for all stakeholders? How can policy-makers themselves learn about the methods? Such questions are these are at the core of deliberative foresight.

How are the recent developments in the field of futures studies taken into account in the Finnish futures research?

Above, we have already discussed a few recent developments in the field of futures studies, particularly from the perspective of the Finnish community of futurists. The futures map approach and the related quality criteria of futures research can be seen as a continuation of the approach suggested by Malaska and Virtanen in this book. The combination of the Delphi method and the scenario method, as well as the effective use of Internet tools are typical features of the “Finnish school of Delphi Method”. Finnish futures researchers have also become much-cited experts concerning weak signals or black swans. Combining methods can also be based on applying both quantitative and qualitative methods. This kind of mixed methods use is now frequent. The combination of methods can also be called a hybrid methods approach.

In the past years, methodological experimentation has also taken place. Efforts to integrate visualisation, digitalisation, and gaming with the conventional application of methods have gained popularity. On the other hand, the interest for ontological and epistemological questions has been rekindled. The concept of futures consciousness was already discussed by Malaska

and Virtanen, as well as by the Finnish futures researcher Torsti Kivistö, another former president of the Finnish Society for Futures Studies. Currently, the young generation of Finnish futures researchers is elaborating this topic of futures consciousness in their doctoral studies.

In some other recent developments in the field of futures studies, Finnish futures researchers have not been too active. For example, the field of prediction markets has not aroused much interest and research activity. Also in the sphere of the anticipation approach as proposed by Riel Miller, Roberto Poli, and Pierre Rossel (2013) the interest is just emerging. Miller et al. have proposed “The Discipline of Anticipation (DoA)”. Miller et al. (2013) consider that all efforts to “know the future” in the sense of thinking about and using the future are forms of anticipation. The future is incorporated into all phenomena, conscious or unconscious, physical or ideational, as anticipation. Miller et al. (2013) suggest that the concept of “futures studies” will be the overarching term, the most general umbrella including the range from visionary and utopian futures and pop futurism to participatory, critical, or integral futurism and the extrapolated projections of simulations, formal modelling, and forecasting. Futures studies is inclusive. Every aspect, type, and way of including the future within one’s analysis, theories, or actions is a legitimate component of futures studies.

The Discipline of Anticipation (DoA) is a way to respond to the quality challenge of futures studies. Miller et al. (2013) consider that futures exercises conducted by professionals and futures teaching require forms of accountability, such as responsibility toward clients and students. They may, however, be inappropriate for the field of futures studies as a whole and for basic research. In order to improve the accountability, Miller, Poli, and Rossel define two further challenges of the DoA: (1) What is the focus or discipline of DoA that by deepening its theory and practice defines the development of expertise in the field of futures studies? (2) How can a practitioner and a layperson identify the DoA type of futures studies as concerned with a specific subject matter and why it is trustworthy?

Finnish futures researchers actively follow this new subfield of futures studies by attending and contributing to the international anticipation seminars and conferences.³ According to Poli (2017), the futures field is divided into three levels: past-oriented forecast, futures-oriented foresight, and present-oriented anticipation. Anticipation emphasises alternative futures through reframing. This gives room for innovation, as well. Accordingly, Poli (ibid.) sees innovation as more understandable in the context of anticipation. This stance of intertwining foresight and innovation is also assumed by Finnish futures researchers (see e.g. Dufva 2016). A special characteristic of Finnish futures studies is the strong trifold futures field of academic futures studies, public futures studies (the parliamentary committee for the futures, the PMO, ministries), and corporate foresight. The combination of futures studies as a research field and an educational field is also fruitful and functioning in the Finnish futures studies community, owing to a long tradition of both. In addition, recently, there have been visible efforts to develop the pragmatic foresight field towards deliberative foresight.⁴

³ E.g. Anticipation, Agency and Complexity, 6-8 April 2017, Department of Sociology, University of Trento.

⁴ This is closely related to the aim of engaging such stakeholders to the futures processes whose futures are being discussed. See e.g. Karjalainen & Heinonen (2017). Using Deliberative Foresight to envision a Neo-Carbon Energy Innovation Ecosystem – Case Kenya. Forthcoming in the African Journal of Science, Technology and Innovation.

The articles of this book focus a lot on the basic challenge of the DoA: How do we improve the quality of futures studies? At the general level, the challenge is discussed particularly in the articles of Malaska, Niiniluoto, Männistö, and Luukkainen. At the level of single methods or methodologies, nearly every article handles this challenge. Especially the Futures Map frame discussed by Malaska and Virtanen and further developed by Kuusi, Cuhls, and Steinmüller (2015) provides answers to the methodological challenges identified by Miller et al. (2013). The following pragmatic external quality criteria of the Futures Map resemble much the challenges of optimisation, contingency, and novelty (Kuusi et al. 2015)⁵:

1. The number or the scope of possible futures that might be relevant from the viewpoint of the vision or acceptable futures is determined.
2. The most relevant or important possible futures are identified.
3. All kinds of causally relevant facts are covered by the identified futures.
4. Causally relevant facts are effectively interpreted with as few scenarios as possible.
5. Many kinds of users of the Futures Map are able to understand and use it.
6. Key customers of the Futures Map are able to understand and benefit from it.

A basic starting point of this book is that the future of futures studies, and especially of scientific futures research, very much depends on its methods. From this starting point, a very relevant question is how the discussed methods can cover all scientifically promising methods of futures research. One way to evaluate the coverage is to compare the methods discussed in this book with the Futures Research Methodology Version 3.0 of the global Millennium Project (Glenn and Gordon 2013)⁶.

Many methods of the Futures Research Methodology that are not discussed in this book are just simple practical tools of futures research processes. Two methods, however, seem to be really relevant for the future of futures research: cross-impact analysis and the Prediction Markets, mentioned earlier. These methods are related to a very interesting process from the viewpoint of scientific methods of futures research: the prediction tournaments organized by IARPA⁷ (Tetlock and Gardner 2015). IARPA observed an interesting result: that the “wisdom of the crowd” was able to beat groups of intelligence professionals in the forecasting of geopolitical events. From a methodological point of view, an especially striking discovery of the prediction tournaments was the group of “superforecasters”. They were able to make significantly better predictions than other forecasters. One reason of their success was their common attitudes and personality features. However, from the viewpoint of scientific futures research methods, their common prediction method is especially interesting. As in cross-impact analysis, they used a Markovian chain, step by step changing the conditional probabilities of the forecasted developments. Yrjö

⁵ The philosophical background of the six criteria is the General Frame of Consistence that is introduced in Kuusi (1999).

⁶ <http://millennium-project.org/millennium/FRM-V3.html>

⁷ The Intelligence Advanced Research Activity of the US Office of the Director of National Intelligence.

Seppälä, who was a pioneer of the Finnish futures research, adopted such a cross-impact approach was adopted early. Unfortunately, he passed away already in 2004, so his article is included here as the original version, translated from the first Finnish 1993 edition of this book.

Conclusions

All in all, the Finnish futures studies community interactively deploys both exploratory and normative approaches by applying various methods. It shuns technology determinism and is instead focused more on the values behind futures studies and on futures research compatible with societal goals. The following questions concerning the futures are our call for further elaborations in this field of futures studies that has become ever more critical for building better and deeper futures-conscious societies:

- How do we understand anticipatory differences?
- What are the affective and embodied aspects of anticipation?
- How do we live in time?
- How do the futures get made?
- Who owns and governs the futures?
- How to keep the future open?
- What is the relationship between an idea of the future and action in the present?

We, as active members of the Finnish futures research community, believe that there is still much to discover and study, but the methods developed so far are a solid base from which to continue exploring the possibilities of this cross-disciplinary field of science. In a sense, the future of futures studies is much dependent on how we update and further develop futures and foresight methodologies. A missing link between research and policy-making can be found when the results of futures studies become more understandable and more easy to use by policy-makers. Demonstration on hybrid methods approach is made using a case of renewable energy transformation for deliberation of preferred futures (Heinonen et al 2017). There we combined the use of scenarios, and especially transformative ones, to the pioneer analysis method, CLA game application as well as analysis of black swans. This hybrid method has been interesting enough to award the interest of policy-makers.

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