SOCIAL FUTURING – In the Context of Futures Studies

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The goal of this paper is to show how the methodology and approach of futures studies could be useful in the research of social futuring. First of all, I define futures studies and social futuring and analyse the evolution of futures studies to show how methods have changed and how they could prove useful in the field of social futuring. Furthermore, I examine individual and organizational future orientation and the related "foresight maturity model" that is linked to the idea of social futuring. I compare future orientation indices (e.g. SOFI, JKB) and point out the pros and cons of each. In addition, I also show what kinds of measurement and indices of future orientation could be used in the analysis of individual, organizational and national social futuring. The findings provide support for the argument that foresight methodology provides an appropriate toolkit for social futuring research.

Keywords: social futuring, futures studies, futures research, foresight, methodology, future orientation

JEL codes: O10, Z10

1. INTRODUCTION

"I believe in excellence. It is a basic need of every human soul.
All of us can be excellent, because, fortunately,
we are exceedingly diverse in our ambitions and talents."

Edward Teller

Social futuring[1] is a complex term that denotes the capability of social entities to determine the future. In social futuring, conjunctive (or complex) necessary conditions include lasting survival, functional operation, the creation of a vision, and strategic implementation, whereas disjunctive (or alternative) sufficient conditions include the influencing of changes, making the most of opportunities, managing risk, and implementing changes. The concept of social futuring with its necessary and sufficient conditions has been defined in detail by Szántó (2018) and Csák (2018) in a framework of analysis that presents the various forms in which social futuring

[1] I am indebted to Petra Aczél, János Csák, Attila Korompai, Erzsébet Nováky, and Zoltán Oszkár Szántó for their valuable comments on an earlier version of this manuscript, made at a workshop discussion. However, I accept sole responsibility for this final version.

appears. The term social futuring expresses a new concept, establishes a new meaning which is precisely defined by Aczél (2018).

Another reason for the complexity of social futuring is that it can be interpreted and applied to the case of different social entities, which may be organizations, institutions, localities, regions, countries, groups of countries, societies, or nations (Szántó 2018).

Research into social futuring seeks to answer the following questions, among others: How can a civilization survive in the long run? How can a country create and implement a vision? How can an organization achieve its goals? Different social entities continuously ask questions about the futures that are related to their social futuring.

If social entities recognize their capability to consciously alter their attitude to the future and shape the future, they have a chance to create a future that will be beneficial to them. Research into social futuring aims to define the key competences used for consciously changing the future. The quote above by Edward Teller warns us that people have different ambitions and talents, thus they are differently able to satisfy their basic human needs; that is, they may become excellent in various ways. In the light of this quote, social futuring can be interpreted as a condition of excellence of any social entity covering its capability to consciously change its future, to create a vision, and the ability to manage and generate changes changes for implementing its vision.

My aim as a futurologist is to see how futures studies can contribute to the analysis of social futuring and make it more established in terms of methodology. As capacities are intimately linked to the interpretation and management of changes in this research, I study how the interpretation and management of changes have developed and how they can be applied to social entities. On one side, research into social futuring involves social science to identify characteristics of social entities. On the other side, futures studies can provide some frames of the future, and a way of approaching and methodological toolkit for the analysis in social futuring (Figure 1). The two disciplines are intimately linked to each other and include social futuring at their intersection.

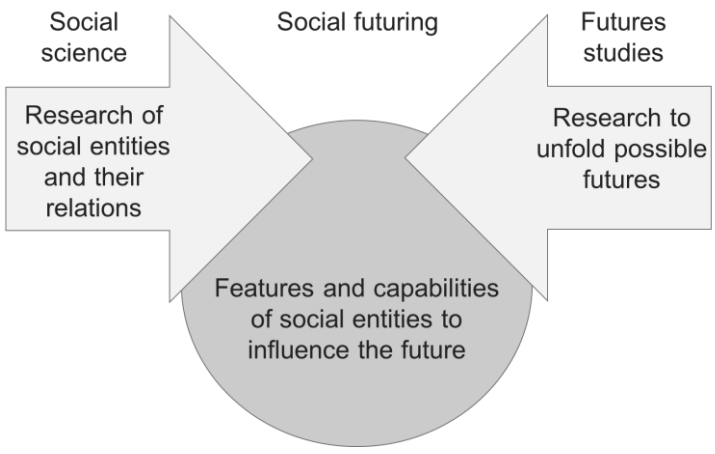

Figure 1. Social Futuring as a part of social sciences and futures studies[2]

[2] 'Futures studies' is the formal name of the discipline. In the plural, 'futures' emphasizes that the future may take different forms and a wide variety of futures may occur, therefore uncertainty exists.

Source: author.

2. FUTURES STUDIES AND CHANGES

How can social futuring utilize the means of futures studies? This study describes the evolution in the approaches, methods, and procedural logic of futures studies to reveal how we can use all this knowledge for research into social futuring.

Futures studies travelled a long way in terms of both approaches and methods over the past more than fifty years. In studying this evolution, one can observe that the domain where the future is interpreted has become broader, the number and types of methods have become more diverse, and it has become increasingly important to involve the social entities that shape and determine the future in the research process.

The approach in futures studies includes not only the probable future but also a significant number of alternative futures. The methodology of futures studies[3] has developed from data-based methods of prediction to methods of foresight that rely on both quantitative and qualitative information.

According to Conway (2013), foresight is the ability to systematically think about the future and to make decisions in the present. This term denotes an ability that may be developed by the individual, an organization, or society.

I will look at each stage of development of futures studies till the so-called "foresight generations," to see how the results of futures studies can be applied to research in social futuring, how changes can be managed, and how new changes can be implemented. According to Miles and his research team (2008), there are five distinct stages that have continuously improved existing knowledge, consistently supplementing each other. The first stage is about technological forecasting, its purpose was to identify the expected changes and to explore the probable future. In the second stage the earlier period was extended with the search for unexpected changes. Beside quantitative methods, qualitative methods were also applied in futures studies. The goal of the third stage was the involvement of the relevant social groups. Its broader approach was supported to identify a so-called desired future and to think about what would be the most desired for different kind of stakeholders. The fourth stage, political foresight, was characterized with the emergence of computer-assisted global solutions and top-down initiatives. In the fifth generation, bottom-up initiatives and rapid changes are becoming dominant.

Futures studies has searched for an answer to a particular type of challenge at each stage of its development, with different approaches and methods in every period. Besides the methodological categories established by Miles et al. (2008), I will explain, in addition to the framework of interpretation, what processes were assigned to each generation and what future they sought to research and define. The literature does not define the exact periods but I specify the approximate limits of each period based on the dates when the methods were adopted and applied.

In order to interpret and manage changes, let us first look at each type of change that may be applied to researching social futuring. Note that the types of change named in this chapter are

[3] I am indebted to Professor Erzsébet Nováky for contributing to this chapter with her professional thoughts and advices.

not completely the same as the types identified in earlier stages of this research[4] (Szántó 2018), but nor are they conflicting. My goal is to further specify the previously identified types, to place them in context, and to possibly widen their scope in light of the existing knowledge of futures studies. In categorizing changes, I have taken into consideration and partially used those applied in futures studies,[5] as proposed by Nováky (2006).

Changes may be identified in terms of their probability, efficiency, reversibility, familiarity with effects, manageability (controllability), the time in which the process is completed, its extension in space, and related attitudes.

The first question to be asked for forecasting is that whether a change is expected or unexpected The probability that an expected change will occur is important in the sense of understanding how certain or uncertain its occurrence is. Basically, futures studies never states that an event will certainly occur, but our research into social futuring incorporates a type of certain change as a possible extreme case, too.

The probability that some change will occur can be estimated with methods of prediction, projection, and forecasting. In prediction, we know by a statement made in advance that a change will predictably occur. For instance, prediction may refer to a predetermined production output of a factory ("Next year we will make 1,000 lights"). A projection is a mechanical extrapolation that can seldom be applied except to simple phenomena. One projection could be the determination of the sales figures of a retail outlet where, all other conditions being equal over some years, possession of data from the past several years allows for the establishment of an expected future value. A forecast is different in that it includes an exploration of connections between factors and an identification of breaking points, thus it also allows for the determination of more complex and non-mechanical future conditions. In the case of prediction change is determined by the actor. For projection, the change is influenced by the stability of influencing factors over time under consideration. In the case of forecast, various influencing factors are considered to determine the probability that some change will occur, therefore its value also depends on the method that is applied. Forecasts can be made with a host of mathematical and statistical methods.

An analysis of any change should include its effects, as people must prepare in time for changes involving profound effects. There is a need to make the effects of any change objectively measurable and to provide guidance to management. Measuring the magnitude of any change may depend on several factors. It may be fundamentally determined by the quantitative and qualitative characteristics used for its description, and by the period that it relates to. For instance, a quantitative analysis may show considerable difference in outcome depending on whether the Earth's temperature is forecasted to rise by one or three degrees. A qualitative analysis will produce considerably different results depending on whether the health status of the Hungarian population is forecasted to stagnate or deteriorate. Results of an examination of a defined period will show considerable differences depending on whether the effects of a relationship established by a country with a new international partner will have effects in a few years or multiple decades. It should be emphasized that when a change occurs (or before this

[4] The types of change defined by Szántó (2017) are the following: expected, unexpected, certain, uncertain (in a broad sense), risky, uncertain (in a narrow sense). Of these types, this study is only concerned with the predictable and unpredictable types.

[5] The types of change defined by Nováky (2006) include quantitative/qualitative, desirable/undesirable, reversible/irreversible, cyclical/non-cyclical, stability-increasing/stability-decreasing, natural/human intervention, and long-term/short-term effect.

happens) it is often difficult to assign a period to its effects. In the case of the former example, it is hard to calculate the longevity of a new partnership, as its maintenance and dissolution will depend on a host of other factors. Accordingly, even with the simplest categorization, the effects of scale of any change may be large or small.

In scenario analysis, any change is evaluated from two perspectives: the impact of the change and the probability of its occurrence. If a change has a high probability of occurrence and a large impact, it is definitely a good idea to prepare for it. If the change has a small probability of occurrence and a large impact, it may significantly influence the development of different outcomes. Unexpected events of great impact are "wild cards," the occurrence of which may involve considerably different outcomes. In attempting to prepare for the expected and the unexpected outcomes that occur due to wild cards, we should consider a considerable number of outcomes. Both expected and unexpected changes with small impacts are able to generate different outcomes, as the joint effect of several minor changes may generate a completely different type of future. Indeed, a small change may generate essentially different outcomes in the long run.

After examining the probability of the occurrence of changes and their impact, it is recommended to look at them in the following order:

- expected changes of large impact;
- unexpected changes of large impact;
- expected changes of small impact;
- unexpected changes of small impact.

Once the changes we wish to deal with are identified, we must ascertain whether their impact can be explored. This depends on a number of factors. The same change may occur in different environments, or may have completely different effects under various conditions. Also, the change may be completely new. In many cases, even if we speak about a new change, we can use several methods to identify the effects.

When considering preparation for change, it is also vital to know if the change will take place at a fast, medium, or slow pace. This feature is also important because if you do not prepare for a particular change (i.e., lack a strategy for responding to it), then it will be even more vital how much reaction time you have for its management.

In addition to the time that a change takes, it is important to look at its geographical scale and scope. If a change affects an entire region or country, you may expect that the management of such change will primarily affect local people (directly). For instance, impact studies can be used to prove the demographic effects of a change (such as an exodus in the case of a war) and its economic effects (worsening export opportunities for other regions due to an unfavourable economic situation), by which different but directly affected partners can be mapped. If the geographical scale and scope of a change affects a major region, different social entities will share a common fate and will equally contribute to managing the change. It is probably easier to manage change in partnerships, collaborations, and associations.

As it is impossible to prepare for an unpredictable change, one must also see how much reaction time is available for its management. A related question is whether the original condition may be restored after a change. If the change benefits a social entity, the question is irrelevant. If the

social entity finds the previous condition more favourable and wants to restore it, they must decide if the change is reversible or irreversible.

Joint analysis of the preceding types of change helps to identify 128 different types of change, as the binary branching of the seven types results in 2^7 kinds of combinations (cf. Figure 2). The present analysis is not aimed at categorizing these with accuracy, but at finding out:

- which of these changes are worth examining further;
- which of these changes we can cope with; and
- to what extent we can cope with them.

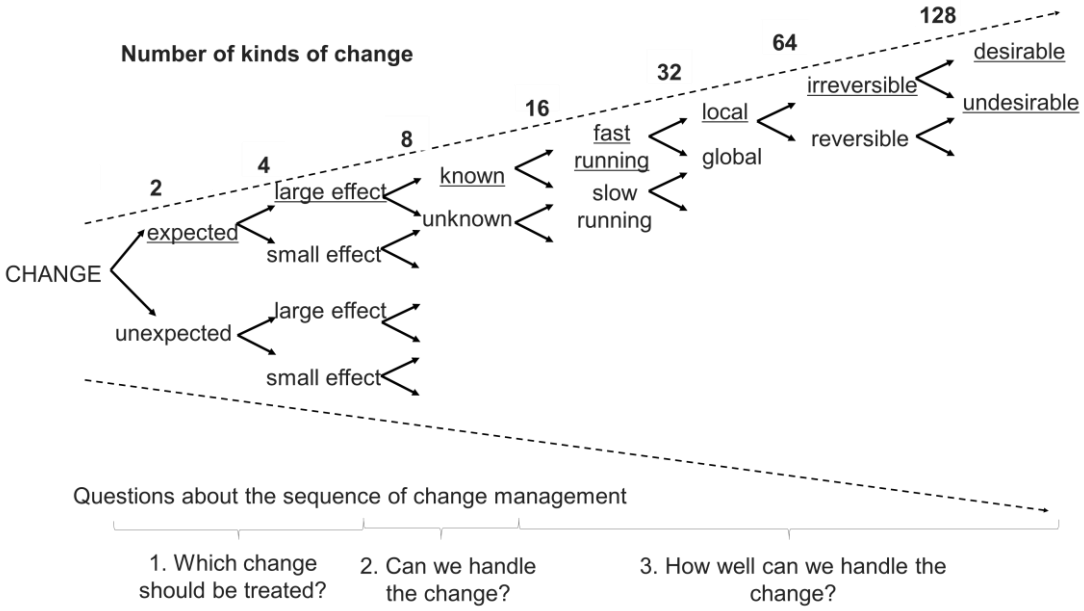

Figure 2. Types of change and number of combinations

Source: author.

It is best to address changes that are expected and which have a large impact if we are required to choose only one to manage, or the order in which they should be managed (in the case that resources are finite). In the face of changes that must be managed as a priority, the next task is to identify the level where the effect of the change can be explored. If we know that it is worth looking at changes, and we can quantify their impact, we need then to focus on the extent to which we can manage them. This depends on the occurrence of the change in time, its geographic dispersion, its reversibility, and the attitude to change.

A desirable change is an opportunity which may mean, if managed, a competitive advantage and an opportunity to implement a vision. An undesirable change is a risk which may lead to, if unmanaged, a disadvantage, and may impede the implementation of a vision. In our research, both types of change are considered important, as both of them are vital for achieving our vision and may be important for meeting the further conditions of social futuring.

2.1. TECHNOLOGICAL FORECASTING: EXPECTED, KNOWN CHANGES

The period of technological forecasting took place approximately between 1950 and 1965, when the identification of expected, known (*ex ante* predictable) changes was the focus of futures studies. The development of futures studies speeded up at the time of economic growth and the energy crisis as well as the approximation to the year 2000. The first stage was shaped by a group of technological experts in the 1950s and 1960s through the expression of technological forecasts. Since its inception, futures studies has been multidisciplinary, based on several sciences, and its research is a complex multi-factor issue. Futures studies is concerned with the problems, questions and other issues that complex systems such as present-day social, environmental, technological systems (that often have global actors) give rise to. A complex system can be described as one with multiple characteristics (Kindler – Papp 1977) that have a high number of elements, with different relations between them (Kindler 1973).

In the period defined above, futurologists sought to outline the most probable "business as usual" scenarios to make forecasts. Forecasting methods can be applied to processes that may be called relatively stable. Change may also occur under stable conditions, as lasting past trends survive into the present, and there are few unexpected turns or breakpoints. A stable situation is the one where processes and trends continue, and are predictable with a high level of cognoscibility (Nováky 2003). Forecasting methods rely on quantity, data, figures, numbers, current trends, or expert opinions, and aim at forecasting the probable future (Besenyei et al. 1982; Markridakis 1990; Kosugi et al. 2004).

Expert forecasting methods started to spread from the second half of the 1970s (Hideg et al. 1997), but were developed as early as the 1960s and 1970s. In forecasting, experts used trend calculations, mathematical modelling, and statistical methods to identify future conditions to which people should adapt (Hideg 2007).

In social futuring research, it is important to measure social futuring across different social entities based on expected changes. Data are usually measured at the national level. In addition, a country's social futuring determines that of any social entity that lives in it. This is why it is in our plans to create an index for examining social futuring in countries. This calls for the identification of the structure and indicators of the index. We aim to calculate the past and present values of the Social Futuring Index (SFI), and to estimate values that the index may produce for the probable future. For this, the appropriate means include trend calculation, mathematical and statistical methods, modelling, and expert estimates.

The methodologies and tools of this period of futures studies are suited to managing predictable changes that we are cognizant of and about which we have information. I believe this period laid the foundations for futures studies, and although several new methods are in use today, the methods and approaches developed and used during the initial steps are still relevant at present.

The time horizon of our research into social futuring is 2050, so it is a real challenge to determine indicators with respect to the index that will persist to apply in the future. For instance, ICT devices will change, just as means of transport may also change; moreover, numerous technologies will transform markets (block chain will transform financial markets; self-driving technology will transform the vehicle market; MOOCs [massive open online courses], e-learning, and IT technologies will transform education; the Internet of Things and big data will transform health and industry). Therefore, we cannot select specific technologies as indicators. It is more appropriate to measure the level of innovation and spread of new technologies.

We usually have data about expected changes, so their integration into the index is an easier task. The real challenge is to integrate unexpected changes, as these cannot be mechanically integrated as indicators into the index. Unexpected changes can only be examined if they are determined by experts at certain intervals (e.g. yearly) after estimation of their effects on each factor in the index.

2.2. TECHNOLOGICAL FORESIGHT: UNEXPECTED, KNOWN CHANGES

In the period between 1960 and 1985, technological foresight expanded the framework of analysis by identifying unexpected changes. In the 1960s, various countries established academic organizations and institutions that still determine the direction of futures studies. It was in this period that futures studies became an officially recognized branch of science. The multidisciplinary approach survived, relying on approaches and toolkits of several branches of science at the same time.

With respect to the methodology of futures studies, it should be noted that in this period it was found that forecasting had requirements and limitations related to the use of the methods of futures studies (Kristóf 2006). The primary use of forecasting using a long timescale was widely criticized due to its excessively deterministic approach to the future (Berkhout – Hertin 2002; Smil 2000) and to technological change (Geels – Smit 2000). However, the limited use of forecasting helps us to understand complex processes (McDowall – Eames 2006).

As a result of rapid technological development, the sole use of the methodology of forecasting is becoming less and less appropriate, and the methodology of foresight is required when situations become uncertain or unstable. One of the reasons for the decline in quantitative forecasting is that processes are too complex for modelling and there are no clearly correct answers (Bishop – Hines 2012; Lüdeke 2013). The approach that the methodology of foresight takes involves so-called exploratory scenarios, where the question "What could happen?" is the centre of interest (Vergragt – Quist 2011).

The scope of objective methods has been expanded with subjective procedures, such as the Delphi questionnaire, scenario writing, and workshop techniques (Hideg 2007) which were developed between the 1950s and 1970s (Bradfield et al. 2005; Riggs 1983). The goal of scenario writing is to chart alternative paths that may inform strategy making. Trend-Impact Analysis was developed in the 1970s, and refers to the extrapolation of historical data. Cross-Impact Analysis means, in essence, the analysis of the probability of event pairs by which an entire system of relationships may be explored. The Delphi technique is one of a group of expert-questionnaire-based techniques whose goal is to explore group opinions and salient values. The future workshop techniques also originated in the 1950s, based on work by Robert Jungk. This method is suitable for use in collaborative group work.

Besides the quantification of the SFI, thinking about alternatives is important in the study of social futuring. In calculating the index, I believe we must not only plan to determine the probable expected future, but also to see how the occurrence of some events may alter the value of the index. This requires impact analyses and expert interviews to help us analyse social futuring in its broader context and to identify new phenomena and newly emerging trends (including so-called weak signals). For instance, one exciting development of this era is artificial intelligence; we need to analyse its potential consequences so that we can rapidly develop a strategy, and perhaps prevent unexpected events.

This period of study had a focus on the examination of unexpected changes, as these can result in bifurcation (splitting into two parts) and hence increase the number of relevant alternatives. Futures studies has moved away from examining known, data-relevant changes to less known changes as it is always harder to identify the effects of new phenomena than those about which we already have information. This has to be reflected in social futuring.

2.3. SOCIAL FORESIGHT: DESIRABLE AND UNDESIRABLE CHANGES

The third generation of futures studies is represented by so-called social foresight, lasted between 1985 and 2000, and was primarily concerned with investigating desirable and undesirable changes. A focus on value sensitivity was typical from the beginning of futures studies, but at this point greater emphasis was laid on the collaborative creation of vision and the exploration and coordination of stakeholder interests and values.

This stage can be characterized by its participative nature, whereby the scope of experts came to include further groups of stakeholders. In participative futures studies, the future is mapped with the participation of experts and lay people (Nováky 2011). Participation occurs through contributions from groups associated with the given area (Inayatullah 2013; Kreibich et al. 2011) who have relevant knowledge and experience. Participation is necessary because the future is not only defined by the past, but also by people who shape the future and whose activity is relevant.

In addition to participation, a key factor is normativity. These two characteristics play a key role in future studies and are linked to each other. Normativity means that the future is value-sensitive. Deciding on what vision a social entity imagines greatly depends on that social entity's values.

Initially, foresight mainly appeared at regional level (villages, towns, and major regions) and in the education sector, while later the need arose for its application in the examination of the effects of globalization.

This generation of researchers developed an increasing number of collaborative techniques aimed at trying to develop a common future and vision together with stakeholders (if this fails, we talk about shared vision). The methods of futures studies are geared to systematically exploring the future, supporting the management of changes, raising awareness of the consequences of decisions, and strengthening and encouraging participation in shaping of the future. This generation also witnessed a rise in the number of workshop methods and their widespread use.

Research into social futuring includes an ideal-typical formulation of social futuring based on Szántó (2018). Futures studies suggests that an ideal-typical formulation should be developed in a way that it could represent the highest possible number of stakeholder groups and help to bring about changes that they desire, and prevents undesirable changes. From the perspective of futures studies, if a vision is created by a wide range of stakeholders, then the development of that future may be efficient because stakeholders support, accept, and identify themselves with it. The desirable future should also appear in the values of the index. As the desirable future and vision mean something different for each country, in my view we can only measure how much the given country has striven to develop a vision that is appropriate for the highest possible number of social entities that are involved. This is a difficult enterprise because it also depends on the stakeholder groups whose interests are mapped. More specifically, a dictatorial

country would be assigned a worse value in this regard than a democratic country, but it is not at all certain that it is really more capable of social futuring for this reason. As we seek to look at social futuring in many countries and social entities, we also need to measure the capacity to develop and implement a vision. According to the logic of futures studies, there is a need to identify and map stakeholder interests.

It would be worthwhile making vision development and implementation measurable to see if there is a link between the index values, the groups involved in developing the vision, and the interests of such groups.

It is possible to determine the future value of the index, including desirable changes, in a mechanical way (e.g. using 95% confidence interval estimation), where the top value is the best alternative. This is also the approach adopted by the first generation of researchers.

A data-based approach may be complemented by looking at the specific steps that are taken and programs launched by each country to influence the value of the indicators determined in the index. The analysis may be extended with expert interviews where the respondents know the policies, planning documents, and other strategic measures of the countries concerned.

The index should measure the extent to which stakeholder interests are mapped, the detail in which a vision is created, the way in which a strategy is built to create desirable changes, and the extent to which the vision is taken into consideration when formulating the strategy.

2.4. POLITICAL FORESIGHT: LOCAL, REGIONAL AND GLOBAL CHANGES

The fourth generation of foresight, called political foresight, arose in the period between 2000 and 2010 without identifying a clear-cut type of change. The main characteristic of this time was the emergence of computer-assisted global solutions and top-down initiatives which actively tried to identify and cope with local, regional, and global changes within regional programs.

This period was stimulated by issues of sustainability and terrorism. Large organizations and institutions, such as the EU, began to deal seriously with the issue of forecasting. An increasing number of people were selected for involvement as stakeholders. Also, this period witnessed an attempt to synthesize knowledge and disciplines.

The Foren (Foresight for Regional Development) Project included a practical guide involving the use of the foresight approach for regional development. In this guide, foresight means a systematic participatory process including future intelligence that creates a mid- and long-term vision to support current decisions and actions (Gavigan et al. 2001).

Foresight methods have increasingly caught on, as proved by the diversity of the European Commission's foresight activities, by which it supports the emergence of global networks,[6] the implementation of technological and social research programs,[7] online websites, the organization of international conferences, the promotion of the sharing of foresight knowledge, and workshops announcing support for foresight policy decisions among the EU's member states (Boden et al. 2010).

[6] See http://foresight.jrc.ec.europa.eu/projects.html.
[7] See the European Foresight Platform, EFP.

The flexible top-down approach has increasingly gained ground and large organizations have tried to use the methods of futures studies to research the big tasks of the future together with stakeholder groups and to encourage them to consciously shape the future.

As futures studies strove to involve an increasing number of areas during its evolution, it is fair to say that it became an inter-, trans- and multi-disciplinary science; i.e., one that uses and synthesizes the knowledge of two or more different areas and officially belongs to the span several branches of science, but also to a combination of different areas (Dror 1974; Kreibich et al. 2011). Futures studies is capable of analysing knowledge from different areas by involving a wide range of methods (Masini 1993; Toffler 1980).

When researching social futuring, this period reminds us that different decision-making organizations have a key role as they are able to activate participants and may shape the future together with them.

Research should improve understanding of how social entities of different types can cooperate and how much they can add to their social futuring in this way. A social entity may be a part of many other social entities, just as a Hungarian family may belong to several communities and workplace teams, and is also a part of a country and the European Union. If these social entities are capable of cooperating and setting common goals, they will be increasingly able to increase their social futuring.

Another key message from the fourth generation of research into social futuring is that one of the most important areas of use of the research materials created in this field is decision-making, whether at a national, regional, or global level.

There are several ways to involve futures studies in decision-making. Many examples can be followed. For instance, Finland's parliament has its own board for futures studies (Committee for the Future, *Eduskunta*) which cooperates with different social groups to prepare a report every four years to determine future trends using the principles and methods of futures studies. This report is sent out to all political parties, so they can freely use the parts that fit their programs.

The South African government uses software to create a long-term world model as local decision-makers examine the possible effects that individual political decisions may have. To this end, they use a piece of software (available online) called "International Futures" that represents 186 countries and involves a database containing 3,000 data series that is useful for research and political projects. The model focuses on three major fields: human development, i.e., individual capacity (such as health-care, education, and welfare); social development, i.e., relationships with others (such as democracy and governance); and bio-physical development, i.e., relationships with technology and each other (such as the biological and physical environment, and sustainability) (Hughes 2016).

Another example of this approach is a series of online video talks that Canadian government members held in 2017 with futurologists from different fields to increase their ability to make informed and innovative decisions about certain matters.

In many cases, research into the future is less transparent. Different strategic or innovative areas may hire consultants or research centres to examine the effects of a given decision or to make an industrial analysis.

The Social Futuring Index can also be made capable of tracking the number of foresight programs and participation in them (thereby indicating if a country develops a foresight program or participates in such EU, international, and global programs).

A general challenge is to make the index in the most automated way, preferably avoiding expert interviews. Also, the index should be unique and should contain alternatives and new ideas. We should accept that the more we seek to take new phenomena into consideration, the harder it will be to produce the index automatically.

2.5. INVOLVING STAKEHOLDERS IN FORESIGHT: RAPID UNKNOWN CHANGES

The fifth generation emerged in the 2010s and has been around ever since. In my view it is resulting in an environment suitable for managing ever-faster, unknown changes.

The current environment is increasingly turbulent, complex, uncertain, and difficult to predict (Chermack 2011). With the development of IT and globalization, due to the acceleration of change and consequent uncertainty, there is a need for developing futures studies (Nováky 2005). Digitization is the right way to achieve more interactive, real-time participation. The circle of participants is continuously expanding. This stage of development is characterized by interactivity as changes are speeding up and becoming globalized, and as digitization promotes interactivity.

In terms of interactivity as a characteristic, it is important to involve stakeholders and to integrate permanent communicative avenues between stakeholders and changes. A key component of foresight is structured debate between stakeholders.

In the past decade, artificial intelligence, evolution-based modelling and algorithms, multi-agent modelling and chaos-related analyses have come a long way (Hideg 2007); they can be applied in futures studies as they help to forecast when we can expect a future that is markedly different from the present. We must prepare for unpredictable phenomena with large effects – the so-called wild cards, which may result in a very different future.

Currently, research into the future is more and more a bottom-up activity where different social groups and companies use the methods of futures studies to explore future options, opportunities, and challenges. An increasing number of events and conferences include the future in their buzzwords and approaches because, as a result of accelerated changes, people increasingly want to keep pace with the changes and to prepare for alternatives, and even to shape their emergence.

A complex social network may mean a system where not only hubs, but also weak links are important. This is because weak links (low intensity or intense but temporary links) stabilize a system (Csermely 2005). From the perspective of futures studies, it is a key to analyse the networks created on the internet and the real world as this can help us to understand the links that should be created between social entities and their effects on social futuring.

In the fifth generation, bottom-up initiatives and rapid changes are becoming dominant. The products of social futuring research may be equally useful for different social entities. The more social entities identify ways of becoming capable of social futuring, the more probable the emergence of entities that wish to explore and understand changes and are capable of shaping and introducing changes.

This is why computer-assisted decision-support systems for foresight purposes are increasingly prevalent, including Shaping Tomorrow (2018), the Global Futures Intelligence System (GFIS 2017), and IKnowFutures (2018), which are capable of collaboratively offering dozens of integrated methods on a process basis so that users can research their respective futures. The users of such systems can be countries, organizations, companies, or other social entities.

Digitization has shortened processes and hence changes, including changes related to financial, business, and communication processes. In addition, it means every electronic operation may be stored, thereby allowing their processing. Big data technologies help us to map previously unknown correlations. Also, digitization expands complexity by enabling us to understand complex patterns using artificial intelligence and to interpret networks by applying network science (Bakacsi 2017). This period of digitization equips us with devices that revive the approach of the first data-based period and improve it so that we are capable of identifying and managing rapid and unknown changes.

2.6. SUMMARY OVERVIEW

The development of futures studies clearly reflects (Table 1) that the initially quantitative approach has been expanded with qualitative techniques with an increasing emphasis on the combination and mixed use of methods. The scope of stakeholders has been expanded and their activities and attitudes have gained in importance, suggesting that shaping the future is a task and duty for everybody. With respect to its characteristics, futures studies has become more diverse; an increasingly varied futures studies methodology has emerged, which is capable of outlining multiple types of futures depending on the given situation.

Table 1. The development of futures studies

	1	2	3	4	5
Generation	Technological forecast 1950-1965	Technological foresight 1965-1985	Social foresight 1985-2000	Political foresight 2000-2010	Stakeholders involvement in foresight 2010-
Challenge	Economic growth, energy crisis	Population growth & environmental pollution	Globalization	Terrorism, sustainability	Digitization, turbulent environment
Intensifying quality	Multidisciplinarity, complexity	Interdisciplinarity Alternativity	Participation, Normativity	Transdisciplinarity	Interactivity
Methods	Quantitative methods	Qualitative techniques	Collaborative techniques, workshop methods	Top-down complex solutions	Bottom-up participatory solutions
Type of future	Probable	Possible	Desired	Shapeable	Shapeable

Source: author.

The methods and approaches of futures studies have given us the tools to determine the probable future, to look at its alternatives, to develop a vision with the participation of groups that shape the future, to develop interactive decision-making programs for this purpose, and to support the widest range of bottom-up initiatives that aim to actively shape the future. In exploring alternative futures, it is vital to interpret knowledge from multiple areas in a complex and integrative way, to integrate a participatory attitude, to explore stakeholder interests, and to support interactive communication.

2.7. THE PROCESS OF FUTURES STUDIES

To understand foresight, it is worth looking at its stages in detail, as this involves assigning tasks to each stage and creating a framework system for making foresight.

The general stages of the foresight process usually have two interpretations (Figure 3). The foresight process starts by defining the scope of a project and ends by developing the strategy. In one interpretation of the process, different stages are assigned to the collection of data required for foresight, to its development, and to the use of the results (Durst et al. 2015; Horton 1999; Sutherland 2009; Voros 2003). The input stage of the process refers to the acquisition of input information required for foresight and includes the purpose of foresight as the formulation of questions and the extension of the foresight project, and the collection of information necessary for the given topic. Before such collection occurs there is a need to identify the source of information, which may include the internet, expert interviews, a literature review, etc. This stage is aimed at acquiring the greatest possible amount of relevant information as the potential basis for subsequent analyses. The foresight-development phase consists of three main steps including analysis, interpretation, and prospection. Analysis aims to structure, shape, and interpret data. Interpretation aims to explore underlying correlations, to reveal causes, and to define other options that may emerge. Prospection is concerned with what we may do and what stakeholders would like to do using strongly participatory methods. Decision-makers evaluate the results of foresight-development and elaborate their strategies accordingly.

The other approach uses a similar logic to identify the stages based on Hines and Bishop (2015). The framing stage corresponds to determining the project scope. The scanning stage involves the collection of the necessary information. In forecasting, experts analyse and interpret data and explore their quantitative correlations. Visioning also includes interpretation, but this involves the examination of qualitative characteristics to identify underlying correlations. Also, this stage includes prospection, the involvement of different stakeholder groups, and the exploration of their interests and ideas. The strategic planning stage means the establishment of alternatives and the building of paths to them, which may also be called strategy making.

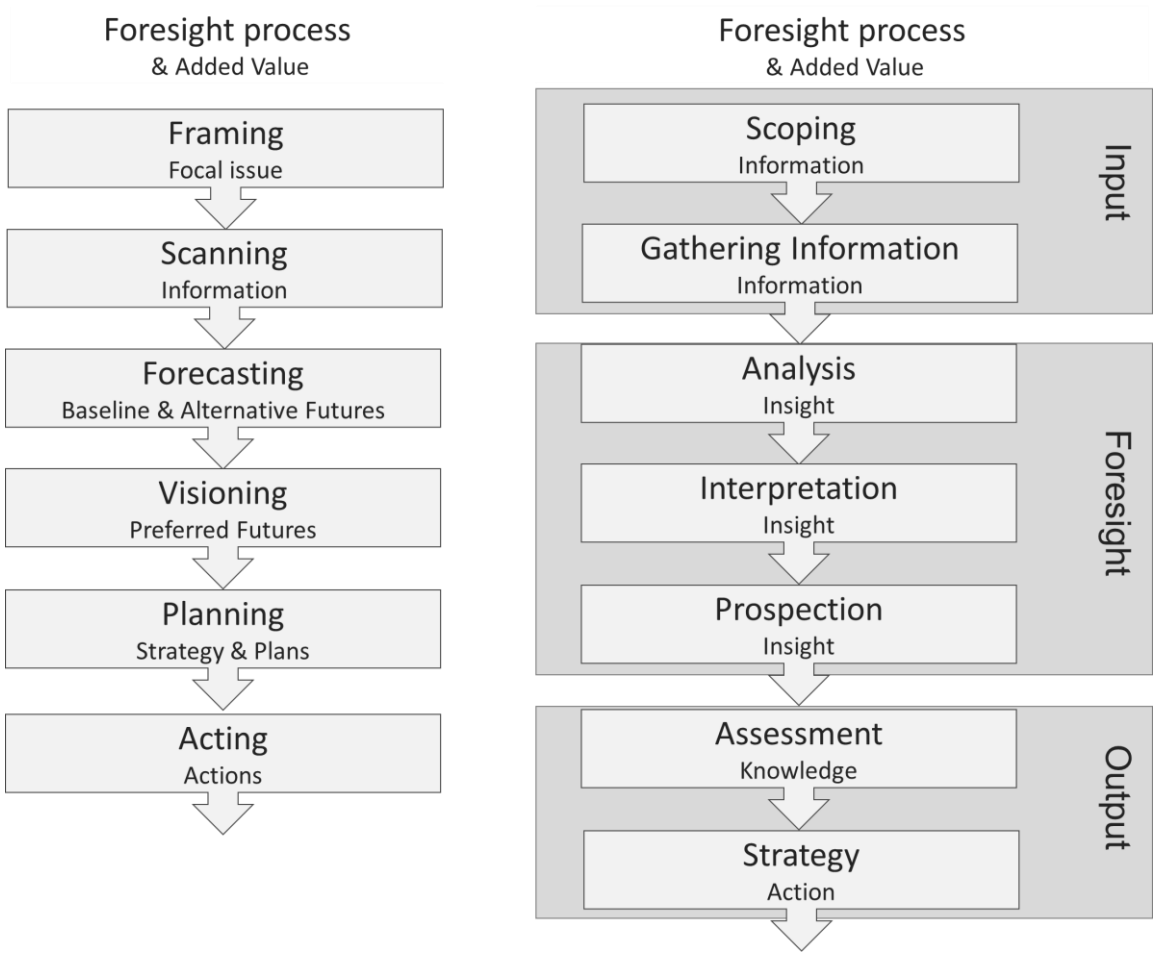

Figure 3. Two visions of the foresight process and added value

Source: Durst et al. (2015: 93) (left-hand side); Hines – Bishop (2015) (right-hand side).

The foresight process clearly shows the close link between the structure of each stage, its hierarchy, and the development of futures studies (see Table 2, which adds an additional row to Table 1 detailed the process steps). The first steps of the process (from framing to forecasting) are subject to technological forecast generation. In the second generation it becomes important to expand forecasting methods and to look for alternative ways, which corresponds to the interpretation stage. The third generation is related to the prospection stage in which we use participatory methods to identify what would be appropriate for most stakeholder groups. The fourth generation emphasizes the role of decision-makers and thus relates to planning. Bottom-up initiatives that encourage computer-assisted immediate action emerge in the fifth generation.

Table 2. The development of futures studies (complemented with process steps)

	1	2	3	4	5
Generation	Technological forecast 1950-1965	Technological foresight 1965-1985	Social foresight 1985-2000	Political foresight 2000-2010	Stakeholders involvement in foresight 2010-

Challenge	Economic growth, energy crisis	Population growth & environmental pollution	Globalization	Terrorism, sustainability	Digitization, turbulent environment
Intensifying quality	Multidisciplinarity, complexity	Interdisciplinarity Alternativity	Participation, Normativity	Transdisciplinarity	Interactivity
Methods	Quantitative methods	Qualitative techniques	Collaborative techniques, workshop methods	Top-down complex solutions	Bottom-up participatory solutions
Type of future	Probable	Possible	Desired	Shapeable	Shapeable
Process logic	Forecast	Interpretation	Visioning	Planning	Acting

Source: author.

3. THE EXAMINATION OF FUTURE ORIENTATION

The concept of social futuring is intimately linked with the social entity's ability to know and prepare for future changes and to make a vision accordingly, on which it is willing to act. Futures studies has long been concerned with these areas within the scope of the future orientation of entities in future orientation research.

Future orientation may be examined on an individual, organizational, and national level. The extent of quantification is also different at each level (Figure 4). Scholars primarily use questionnaires to survey individual-level future orientation without a predetermined guide for their interpretation and evaluation. The questionnaire method is also the most appropriate at the organizational level, but here it is completed with an evaluation guide and grading. At the national level, the analysis may be made using indices.

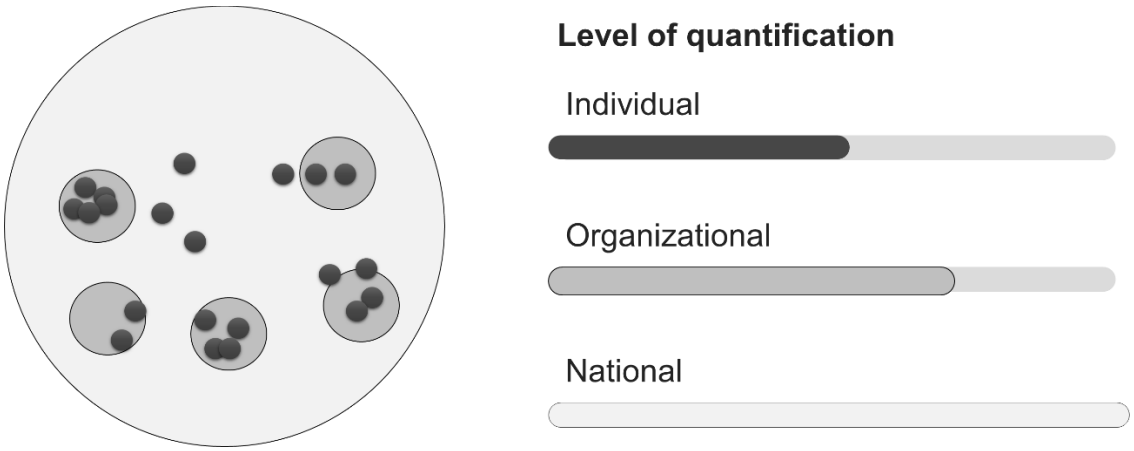

Figure 4. Level of quantification of future orientation

Source: author.

3.1. FUTURE ORIENTATION ON THE INDIVIDUAL LEVEL

Future orientation is a form and manner of expression of human thinking which is pervaded by presuppositions, ideas, and expectations regarding the future. To some extent, future orientation is characteristic of every person who is aware of the differences and links between the present and the future. Future orientation is a necessary condition for a person to be informed and find their way with respect to the cause, purpose, and consequences of the events in their environment and their activities (Hideg – Nováky 2008: 1).

A distinction may be made between active and passive future orientation, and positive and negative attitudes to the future.

On an individual level, future orientation relates to whether an individual is interested in, thinks about, acts for, and has expectations about the future. In the preceding sense, future orientation at an individual level is comprised of the following four components (Nováky – Kappéter 2002): (1) interest in the future; (2) thinking about the future; (3) expectations about the future; (4) action for the future.

Of these components, the individual only has an active future orientation if they act for the future. If they do not, their future orientation is passive (Nováky – Kappéter 2002).

The individual's future orientation can reach two extremes. A future-shocked individual is full of fears, goes blank, and does not think about or acts for the future. A future-oriented individual is interested in, thinks about, acts for, and has positive expectations about the future. The key components of future orientation include interest in, thinking about, action for, and expectations about the future (Hideg – Nováky 2008; Nováky 2005). Samples from a future orientation survey of Hungarian society taken at different times show that Hungarian society is largely future-oriented (Hideg – Nováky 1998).

A positive attitude to the future means that an individual is able to determine their desired future and does their best to achieve it. Logically, a negative attitude to the future is the opposite: when the individual is unable to define or act for the desired future. In such situations the future is more of an escape route out of the present (Hideg 2003). There are similarities and differences between social futuring and future orientation (the meaning of social futuring and future orientation and its dissimilarity is defined by Aczél (2018)). The future proofed person is also a future oriented individual. According to the definition of social futuring, this term concentrates on the capability to manage and implement changes, not directly to interest in the future and think about the future and have expectations about it. Other differences between social futuring and future orientation are that the term of social futuring has a normative interpretation (normative standards are defined by Csák (2018)). Social futuring focuses mainly on the societal level, not on the individual.

3.2. FUTURE ORIENTATION ON THE ORGANIZATIONAL LEVEL

An organization's future orientation may be measured with the Foresight Maturity Model, which helps to determine its level of maturity and how far it can get. The scorecards of the model may be linked to the previously presented process steps of futures studies, including the leadership index as an extra element (Figure 5) (Grim 2017).

The leadership index peaks when leaders are able to consciously and proactively encourage people to plan the future and when they create an environment in which the organization is able to cope with changes and introduce new changes, the results of foresight are immediately used for decision making, and the knowledge generated by foresight becomes the basis for corporate action.

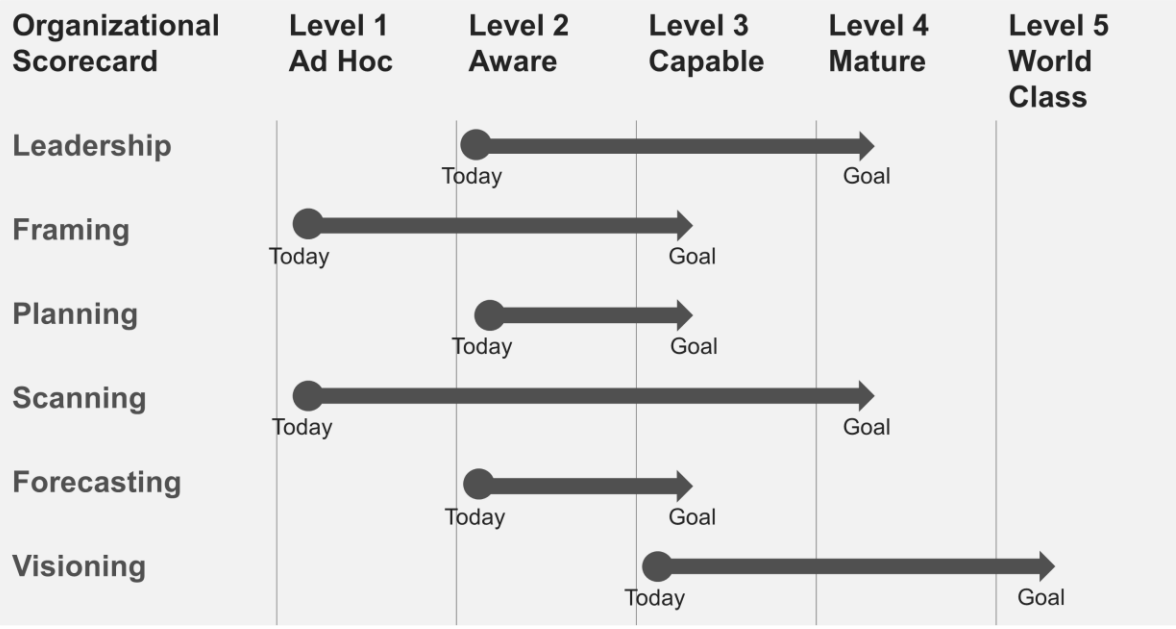

Figure 5. Scorecards and levels in the Foresight Maturity Model

Source: author, based on Grim (2017)

When preparing a scorecard for framing, an organization is truly future oriented if it wants to identify the real root causes of a problem encountered during a project, and this creates the need for a task using foresight. In addition, the organization manages to determine measurable and documented goals with which all participants agree.

Scorecards for planning include the identification of consequences and effects of alternative futures and actions, the exploration of potential strategies and options, the selection and refinement of the strategy leading to an organizational vision, and the development of a plan containing the activities, processes, conditions, and communication required for adopting the strategy.

Scorecards for scanning relate to how the organization constructs the so-called domain map that determines the source and structure of the required information, the type of methods and tools used to collect the information that is important for the organization, and how it stores such information.

Scorecards for forecasting show how the organization aggregates information and creates a framework for developing further ideas. The scorecards also show the extent to which the stock of potential futures covers interest in the topic, and how the optimum number of alternative futures is fixed.

Scorecards for visioning show the extent to which the entirety of stakeholders has contributed to the developed vision, values, and aspirations, and the extent to which the vision fulfils its actual role; i.e., encourages the organization's members to make decisions with a real awareness of the vision that should motivate them in their everyday action.

3.3. FUTURE ORIENTATION ON A NATIONAL AND GLOBAL LEVEL

The future orientation of individual countries can be measured by indices. The State of The Future Index (SOFI) has been constructed for the global and national level. SOFI asks the questions what factors influence the future, what points of intervention are there in relation to the future, and how the future orientation of decision-makers can be improved (Glenn et al. 2015).

The key areas of SOFI consist of the following 15 global challenges (GFIS 2017, see also Annex Figure 1): sustainable development and climate change, clean water, population and resources, democratization, global foresight and decision making, global convergence of IT, rich – poor gap, health issues, education and learning, peace and conflict, status of women, transnational organized crime, energy, science and technology, global ethics.

SOFI is based on the previously mentioned global collective intelligence system called GFIS, a project system of the Millennium Futuring research organization which contains foresight methods and has hundreds of registered experts who participate in different research projects. The index is a composite indicator consisting of 27 variables. SOFI aims to draw humanity's attention to global mega-problems, to improve their related complex understanding, and to encourage action, furthermore SOFI can be computed on the national level and in this case it aims to improve the exploration of the future developments of a given country.

The 2017 edition of SOFI shows that the world has in general continuously improved (Figure 6) but its pace of improvement is slower than in the last 27 years. In the next decade, the rate of future improvement will be 1.14% as opposed to the 3.14% of the period between 1990 and 2017. This is mainly the consequence of a slow recovery in the wake of the 2008 financial crisis and global recession. SOFI 2017 was significantly affected by terrorism, forecasts about which are fairly uncertain.

One of the benefits of the SOFI calculation is that it reflects the direction and intensity of various areas. The prediction is improvement in 18 areas and decline in 11 areas (cf. Figure 2). Here are the predicted positive changes: increasing GNI per capita, decreasing poverty, increasing foreign direct investment, slightly increasing freedom, increasing number of women in national parliaments, increasing share of high skilled employment, significantly increasing school enrolment, increasing literacy rate, adult total, increasing electricity from renewables, increasing energy-efficiency, increasing improved water sources, increasing number of physicians, increasing health expenditure per capita, decreasing prevalence of undernourishment, decreasing mortality rate, increasing life expectancy at birth, population growth, increasing number of internet users.

While there are more areas in which improvements are expected, those heading in a negative direction are very important. Here are the predicted negative changes: increasing CO2-equivalent mixing ratio, decreasing renewable internal freshwater resources, stagnating forest area, decreasing biocapacity, insignificant increase in R&D expenditure, some increase in the social unrest indicator, increasing unemployment, increasing income inequality, significantly

increasing terrorism incidents, significant increase in the number of wars and serious armed conflicts, increasing corruption in the public sector.

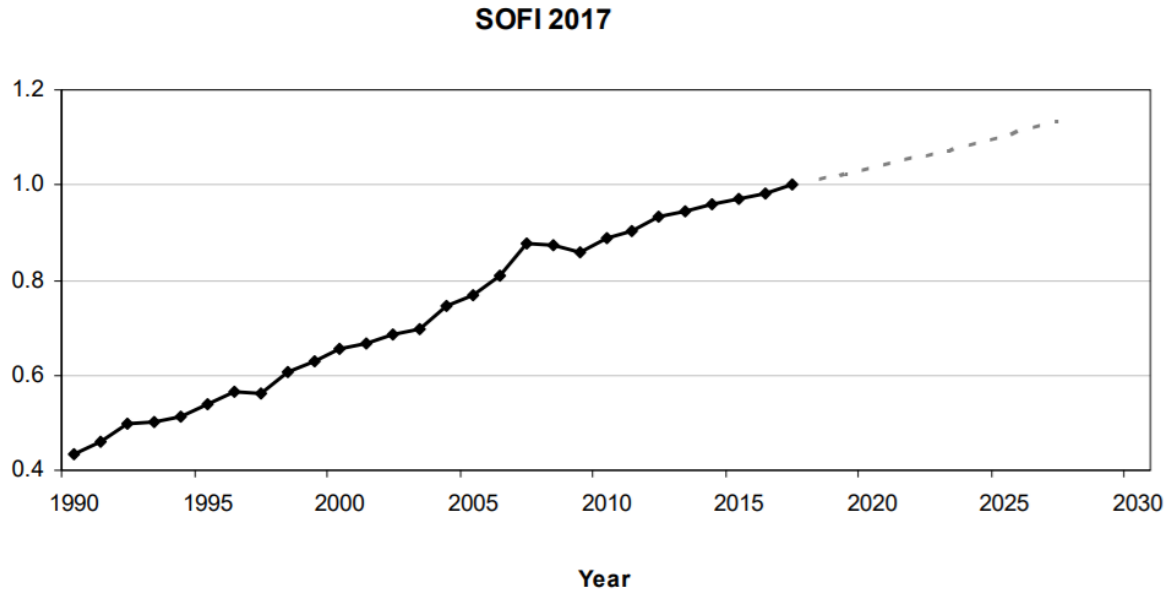

Figure 6. The State of the Future Index (SOFI) 2017

Source: Glenn et al. (2017: 4).

SOFI was computed for some countries, for example Azerbaijan, Kuwait, South Korea and Turkey. In the case of Azerbaijan in 2011, 24 developments and 20 variables were selected by experts and then assessed by a larger group of experts using a Real-Time Delphi questionnaire method.

The so-called FEI index,[8] shows a country's development, both external and internal, and that which determines its future, consisting of three parts: F for future potential, E for external potential, and I for internal potential. Of these values the most relevant for research into social futuring is the Future Potential Index (F index). The F index contains the components of the long-term sustainability of general economic welfare. The E index is concerned with the factors that influence a country's world market positions and international competitiveness. The I index represents the factors that determine the quality of life of domestic actors at a given moment (Bartha et al. 2013).

Of the 28 indicators of the FEI Index, 11 belong to F, which includes factors that are vital for long-term sustainability and competitiveness, such as corporate social responsibility, labour culture, energy efficiency, educational expenditure, ageing, development of renewable resources, people's health status, environmental sustainability, R&D expenditure, R&D potential (number of researchers and patents), and the efficiency of the educational system (Bartha et al. 2013). These are the indicators that result in positive changes in the long run and that should be specifically looked at as part of research into social futuring.

[8] The original Hungarian name is the JKB index.

4. SUMMARY: LINKS BETWEEN FUTURES STUDIES AND SOCIAL FUTURING

In the context of futures studies, the term *social futuring* means a field of research that seeks to explore preparedness for the future. The term *futuring* can increasingly be used as a new name for futures studies. The World Future Society, one of the most renowned international organizations of futures studies, uses the term *futuring* to designate futures studies. A book published by this organization in 2004 is entitled *Futuring: The Exploration of the Future*.

Social futuring and foresight are closely related concepts, but their meanings are different. Foresight is the capacity of individuals, organizations, and societies to think about, forecast adopt an attitude to, and make decisions about the future. Social futuring is not concerned with social futuring at the individual level, as its goal is to look at the social futuring of social entities consisting of multiple persons. Another property of social futuring is that it determines a few necessary and sufficient conditions and considers them as applicable to many social entities, whereas research into social futuring within futures studies usually makes a distinction between organizational and social futuring and creates concepts and selects elements for analysis accordingly. Another important difference concerns emphasis and goals. Specifically, research into social futuring aims to explore the social futuring of social entities, for which foresight methodology provides an appropriate toolkit.

The quantification of social future orientation indices by itself is not enough to link futures studies and social futuring: there is also a need to examine the paradoxes that exist among individual factors (such as the coexistence of improving economic indicators and a declining productivity rate) (Aczél 2018). Also, it is a good idea to compare the future orientation of individuals, organizations, and countries, the level of their cohesion and willingness to cooperate, the factors that determine the level of cooperation between individual social entities, and the way in which this affects social futuring in other entities.

Table 3. The development of futures studies and an interpretation of its link to research into social futuring

	1	2	3	4	5
Generation	Technological forecast 1950-1965	Technological foresight 1965-1985	Social foresight 1985-2000	Political foresight 2000-2010	Stakeholders involvement in foresight 2010-
Challenge	Economic growth, energy crisis	Population growth & environmental pollution	Globalization	Terrorism, sustainability	Digitization, turbulent environment
Intensifying quality	Multidisciplinarity, complexity	Interdisciplinarity Alternativity	Participation, Normativity	Transdisciplinarity	Interactivity
Methods	Quantitative methods	Qualitative techniques	Collaborative techniques, workshop methods	Top-down complex solutions	Bottom-up participatory solutions

Type of future	Probable	Possible	Desired	Shapeable	Shapeable
Process logic	Forecast	Interpretation	Visioning	Planning	Acting
Social futuring research	Trend analysis, modelling	Impact analysis, simulation, expert workshops	Creating vision by workshops, conferences	Impact analysis of political decisions	Creating corporate, societal programs
Social futuring index	Defining of probable values of index	Analysis of probable and possible alternatives of index	Achieving the maximum value of the index	Creation of index by decision makers	Creation of index on the level of corporates, communities

Source: author.

In social futuring research, measurement is indispensable. We want to do this by creating a global index. The index values are best determined by trend analysis and modelling methods. Also, further steps must be taken for a deeper and more diverse understanding of social futuring. In addition, to be able to forecast the index values, it is necessary to analyse alternative pathways describing diverse visions, where the "if... then" steps reflect multiple scenarios.

The recommended methods include scenario building, simulation methods, and expert workshops. Afterwards, with the selection and active participation of stakeholder groups, there will be an opportunity to create a vision that combines potentially shared points and interests, preferably leading to a consensus solution. The vision shall only really be efficient if its common acceptance becomes measurable in the values of the index.

Decision-makers should be encouraged to make sure they communicate about active social futuring. In this process, they should look at the potential values of the index and answer the question how and to what extent they can contribute to shaping social futuring. The commitment of decision-makers to social futuring may be greatly enhanced if they see the extent to which the specific values of the index are altered by political decisions and their future effects.

There is a need to support bottom-up programs and initiatives that help organizations and other social entities to shape and increase social futuring; these programs represent the right area for surveying the practical application of social futuring.

The basic forms of social futuring are proactive, active, and reactive (Szántó 2018). Reactive if it is adaptive regulated by feedback mechanisms, active if it is resilient regulated by feedback and predicted mechanisms, and proactive if it is foresighted regulated by feedforward mechanisms. It should be emphasized that a social entity may be active if it prepares for the predictable future and its alternatives. If a social entity wants to be proactive, it must create a vision for introducing new changes and must be capable of influencing future changes. Social entities that bring about big changes are able to develop an alternative that is markedly different from the present and that is no longer based on the existing system. In such cases, forecasting methods are usually not used because no new system can be built on old data. In this case, the new type of thinking involves the so-called "backcasting" method rather than "forecasting,"

meaning imagination and dreaming about the future and then taking this back to the present. This method also requires planning but does not build on existing knowledge to the same extent as forecasting. Proactive social entities can become increasingly capable of social futuring if they develop their capabilities by thinking over and for elaborating different types of alternatives, innovation, and implementing a version of the future which differs from the present.

Researching social futuring poses real challenges because the topic is so broad and there are so many methodologies, covering a multitude of issues. Thus, the following years will provide an opportunity to apply the methodologies mentioned above in a well-considered way. The number of applicable methods will be narrowed down as further directions for research take shape.

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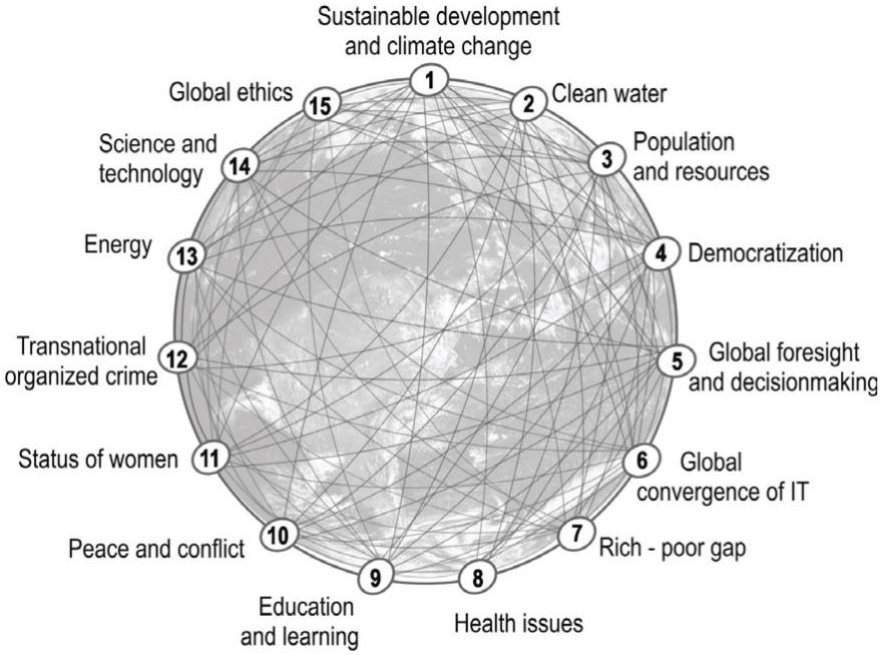
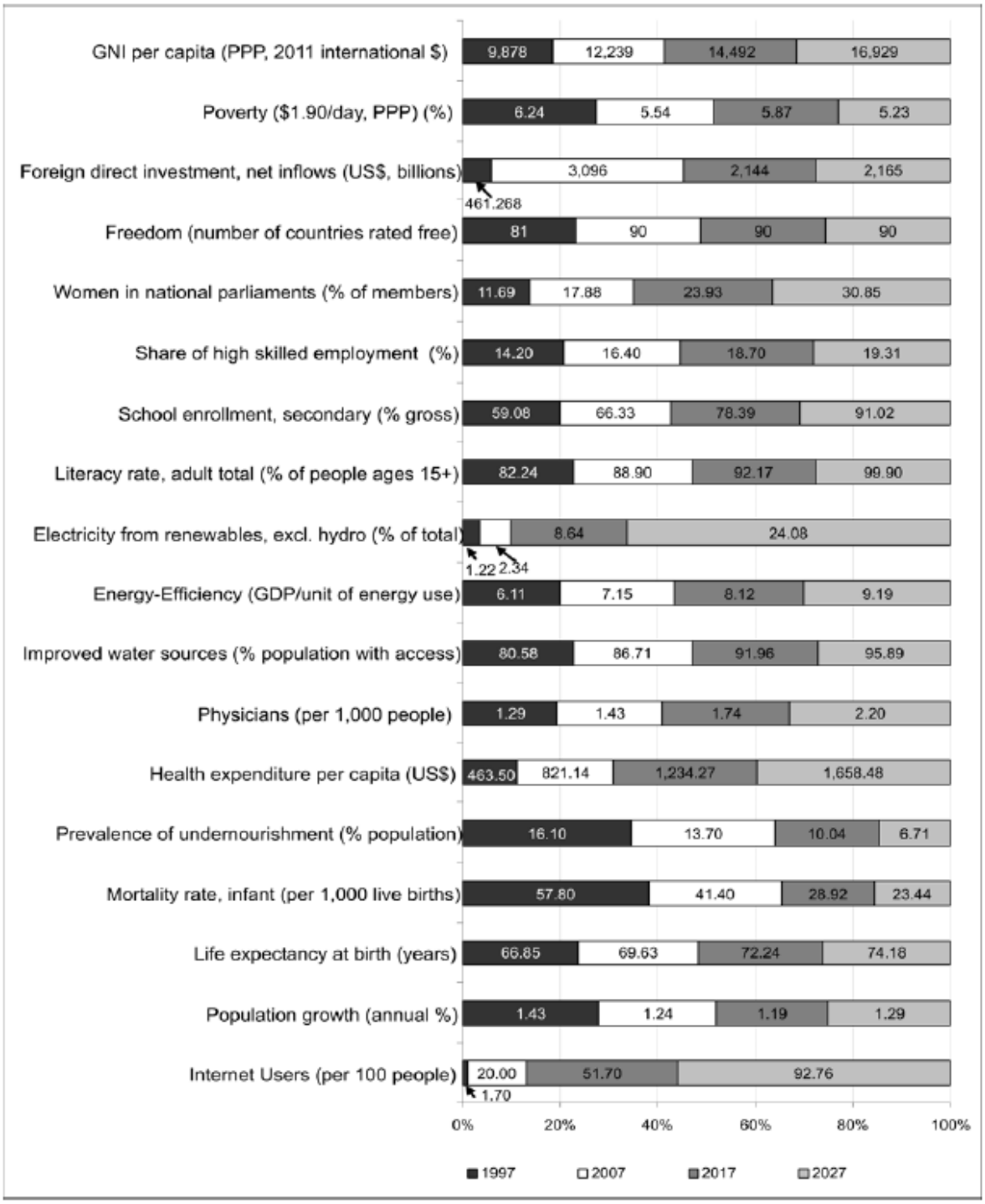
ANNEXES

Annex Figure 1. SOFI areas



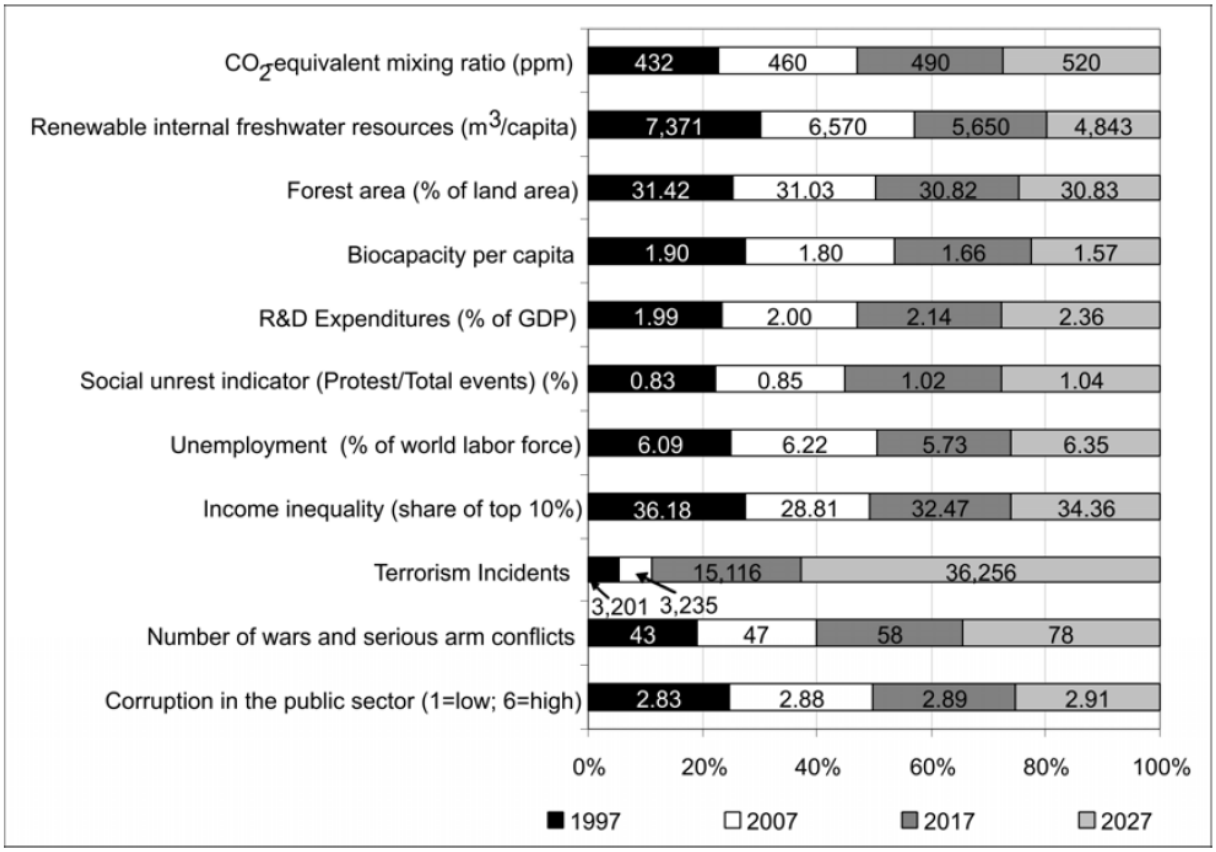
Source: GFIS (2017).

Annex Figure 2. Positive changes based on the State of the Future Index



Source: Glenn et al. (2017: 14).

Annex Figure 3. Negative changes based on the State of the Future Index



Source: Glenn et al. (2017: 15).