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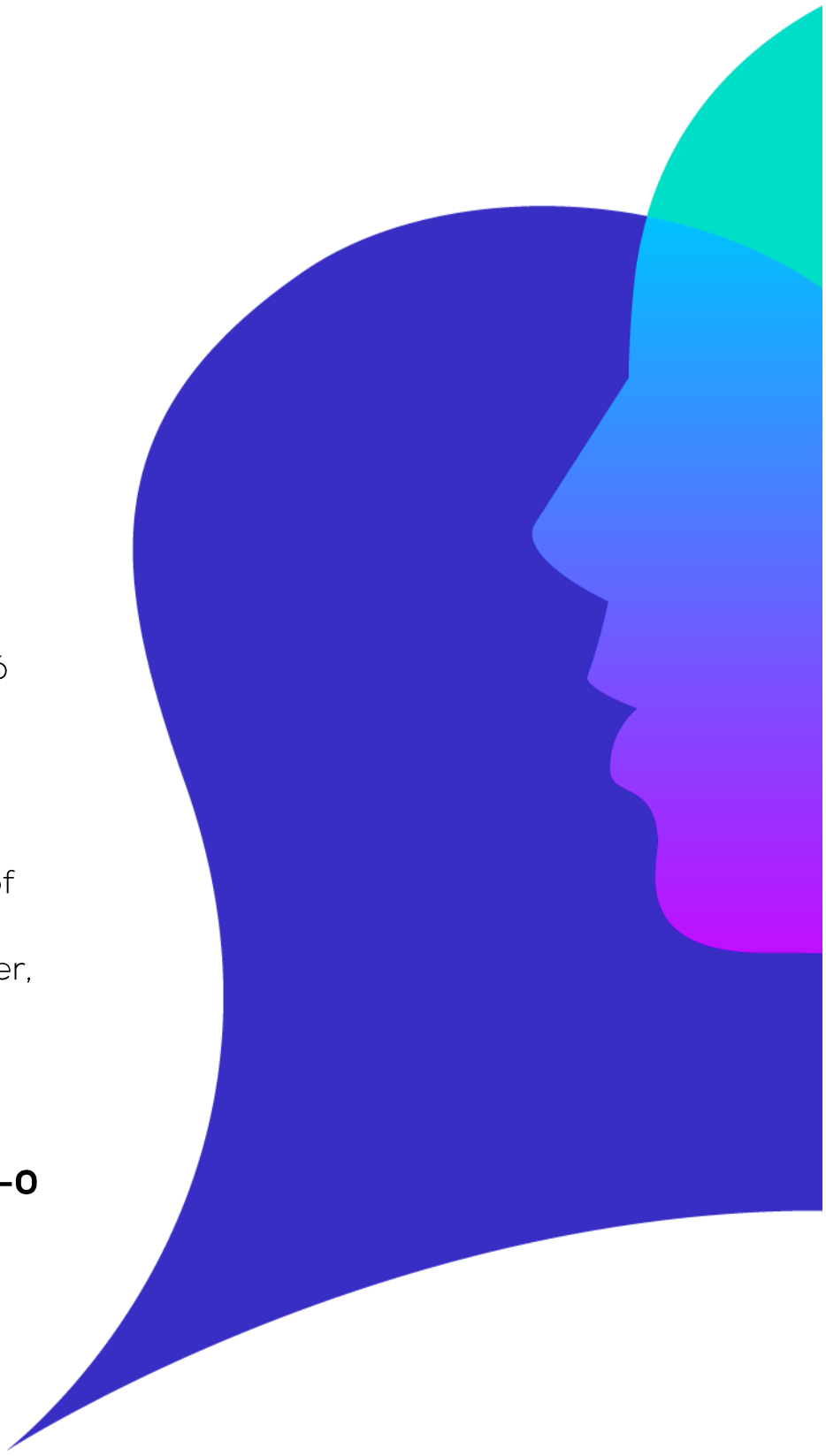
ESZTER MONDA

SOCIAL FUTURING – IN THE CONTEXT OF FUTURES STUDIES

WORKING PAPER SERIES NO. 5/2018



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Publisher:

Corvinus University of Budapest,
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Fővám tér 8.

ISBN 978-963-503-682-0
ISSN 2560-2357

Online version:
www.socialfuturing.com

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 capacity of social entities to determine the future. In social futuring, the conjunctive (or complex) necessary conditions include lasting survival, functional operation, the creation of a vision, and strategic implementation, whereas the 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 was defined in detail by Szántó (2018) in a framework of analysis presenting various forms in which social futuring appears.

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

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

[1] I am indebted to Petra Aczél, János Csák, Attila Korompai, Erzsébet Nováky, and Zoltán Oszkár Szántó for their valuable comments on the manuscript made at our workshop discussion. At the same time, I am solely responsible for this final version.

If social entities recognise their capacity to consciously alter their attitude about the future and about shaping 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 above quote by Edward Teller warns us that people have different ambitions and talent, thus they are able to satisfy their basic human need, that is, excellence. In the light of this quote, social futuring can be interpreted that any social entity may be excellent if it sets out to change the future consciously, has a vision, and is able to manage changes and introduce new changes so as to implement such vision.

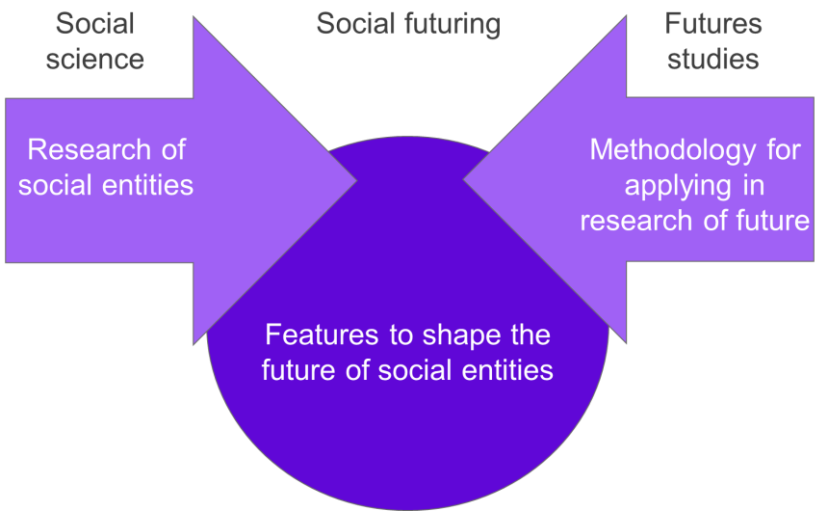

Figure 1: The links of social futuring to social sciences and futures studies[2] (Source: the author)

My aim as a futurologist is to see how futures studies can expand the analysis of social futuring and make it more thorough in terms of methodology. As capacities are intimately linked to the interpretation and management of changes in this research, I study out how the interpretation and management of changes have developed and how they can be applied to social entities. Research into social futuring involves social science as an area of application for futures studies. Futures studies can provide an approach and methodological toolkit for the analysis of social futuring (Figure 1). The two disciplines are intimately linked to each other and include social futuring at their intersection.

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

2. FUTURES STUDIES AND CHANGES

How can social futuring be examined with the means of futures studies? This study presents an evolution in the approaches, methods, and procedural logic of futures studies in order to find out how we can use all this knowledge for research into social futuring.

Futures studies has come a long way in terms of both approaches and methods over the past fifty years. 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 social entities that shape and determine the future in the research process.

The approach of futures studies includes not only the probable future but also a high number of alternative futures. The methodology of futures studies 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 organisation, or society.

I will look at each development stage of futures studies, the so-called Foresight generations, to see how the results of futures studies can be applied to research to 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 the existing knowledge, consistently supplementing each other.

Futures studies has searched for an answer to a particular type of challenge in each development stage with different approaches and methods in every period. Besides methodological categories

established by Miles et al., I will explain, as an addition to our framework of interpretation, what processes were assigned to each generation and what future they wanted to research and define. The literature does not define the exact periods but I will provide the approximate limits of each period based on the date 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 research social futuring. Note that the types of change named in this chapter are not completely the same as the types identified in earlier stages of this research[3] (Szántó, 2017), but they are not conflicting. My goal is to further interpret the previous types, to place them in context, and to possibly widen their scope in light of the existing knowledge of futures studies. In categorising changes, I took into consideration and partially used those applied by futures studies[4] as proposed by Nováky (2006).

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

The question must be asked whether a change is predictable or unpredictable. The probability that a change occurs is important in the sense of how certain or uncertain its occurrence is. Basically, futures studies never states that an event will certainly occur but our research into social futuring applies the type of certain change as a possible extreme case.

The probability that some change will occur can be defined with the 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 the predetermined quantity of production in a factory ("Next year we will make 1,000

[3] Types of change defined by Szántó (2017): predictable (expected), unpredictable (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.

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

lamps"). A projection is a mechanical extrapolation that can seldom be applied except for simple phenomena. A projection may be the determination of the sales figures of a retail outlet where, all other conditions being equal for years, such amounts from the past 10 years allow for establishing a predictable value. A forecast is different in that it includes an exploration of connections between factors, an identification of breakpoints, thus it also allows for determining more complex and non-mechanical future conditions. In the case of prediction and projection, change is predictable. In the case of forecast, the probability that some change will occur also depends on the method applied. A forecast can be made with a host of mathematical and statistical methods.

The analysis should include the effects of any change, as people must prepare in time for changes of profound effects. There is a need for making the effects of any change objectively measurable and for providing guidance for their 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 will show a considerable difference depending on whether the Earth's temperature will rise by 1 or 3 degrees. A qualitative analysis will show a considerable difference depending on whether the Hungarian population's health status is stagnating or deteriorating. The examination of the period will show a considerable difference depending on whether the effects of the relationship established by a country with a new international partner will affect a few years or multiple decades. It should be emphasised that when a change occurs (or before this 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 period of a new partnership, as its maintenance and dissolution will depend on a host of other factors. By the simplest categorisation, the effects of any change may be large or small.

In scenario analysis, any change is evaluated from two points of view: 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 such change. If the change has

a small probability of occurrence and a large impact, it may greatly contribute to the development of different outcomes. Unpredictable events of great impact are "wild cards", the occurrence of which may involve a considerably different outcome. If we prepare for the expected and the unpredictable outcomes that evolve from wild cards, we can cover a considerable number of outcomes. Both expected and unexpected changes of small impact are able to generate a different outcome, 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 change occurring and their impact, it is worth looking 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 chosen, we must ascertain whether their impact can be explored. This depends on multiple factors. The same change may have occurred in a different environment or it may have had completely different effects under different conditions. Also, the change may be completely new. In many cases, even if we are speaking about a new change, we can use multiple methods to identify the effects.

When considering preparation for change, it is also vital to see if a change takes place at a fast, medium, or slow pace. This aspect is also important because if you do not prepare for the particular change, i.e. lack a strategy for 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 geographic dispersion. If a change affects an entire region or country, you need to expect that the management of such change will primarily affect local people (directly). For instance, you can use

impact studies to prove the demographic effects of a change (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 you can map different directly affected partners. If geographic dispersion affects a major region, different social entities will have 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; you must also see how much reaction time its occurrence gives you for managing it. A related question is whether a change lets you restore the original condition. If the change benefited the 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 it is a reversible or an irreversible change.

A joint analysis of the preceding types of change helps you 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 analysis is not aimed at categorising them with accuracy but at finding out:

- which of these changes are worth looking at;
- which of these changes we can cope with;
- to what extent we can cope with them.

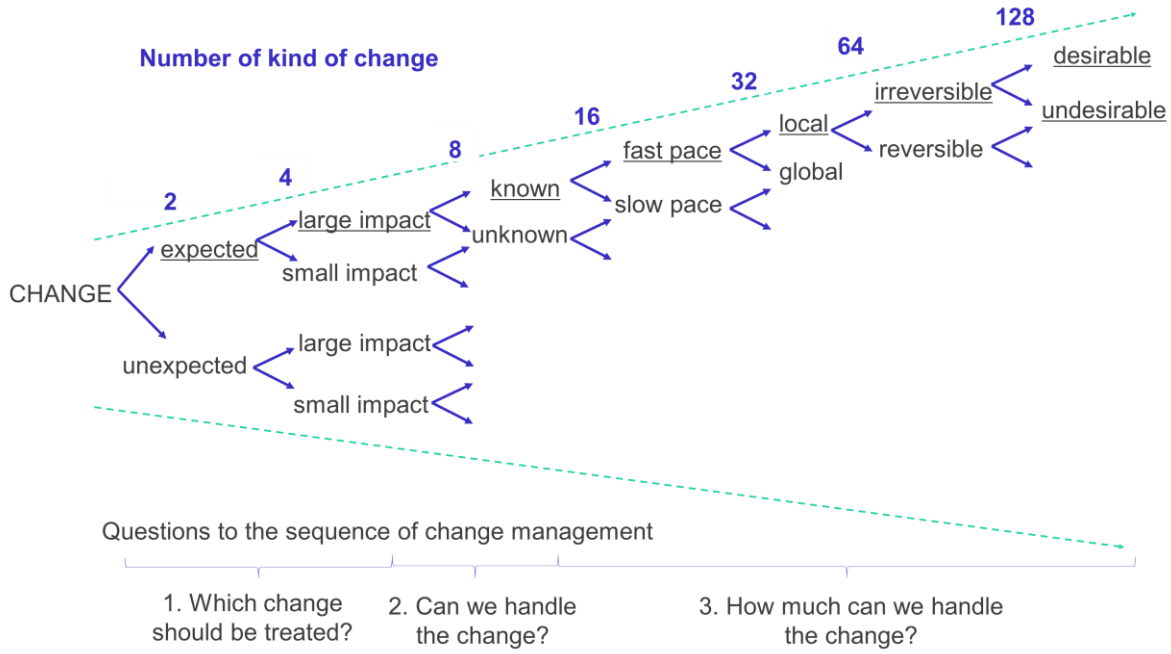

Figure 2: Types of change and the number of their combinations (Source: the author)

It is best to look at changes that are expected and have a large impact if we have to choose one, or the order in which changes are managed (in case 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 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 your attitude to change.

A desirable change is an opportunity which may mean, if managed, a competitive advantage and an opportunity to implement our vision. An undesirable change is a risk which may mean, if managed, a disadvantage and may impede the implementation of our vision. In our research, both types of change are 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 in the focus of futures studies. The history of futures studies started at the time of economic growth and energy crisis. The first stage was shaped by a group of technological experts in the 1950's and 60's by expressing 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 and questions of complex systems such as present day social, environmental, technological, and other questions that often have global actors. A complex system can be described by multiple characteristics (Kindler–Papp, 1977), having a high number of elements with different relations between them (Kindler, 1973).

At that time, futurologists sought to outline the most probable, "business as usual" scenario, to make a forecast. 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 to the present and there are less unexpected turns or breakpoints. A stable situation is one where processes and trends have a linearly continuing state 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 predicting the probable future (Besenyei–Gidai–Nováky, 1982; Markridakis, 1990; Kosugi et al., 2004).

Expert forecasting methods started to spread from the latter half of the 1970s (Hideg et al., 1997), but had been developed as early as the 1960's and 70's. 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. Data is usually measured at a national level, which is one of the reasons why social futuring should

be examined in countries. In addition, a country's social futuring determines any social entity that lives in it. We are planning 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. Also, we wish to determine the values that the index provides for the probable future, to which the appropriate means include trend calculation, mathematical and statistical methods, modelling, and expert estimates.

The methodologies and tools of this period are fit for managing predictable changes, which we know and about which we have information. I believe this period laid the foundations for futures studies and although several new methods are used today, the initial steps used for research are still the objective methods and approach developed in that period.

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 continue to apply in the future. For instance, info-communication devices will change just as means of transport may change; several technologies will transform markets [as block chain will transform the financial market; self-drive technology will transform the vehicle market; MOOCs (massive open online courses), e-learning, and IT technologies will transform education; Internet of Things and big data will transform health and industry]. In the changed environment, indicators will have to be revised at least every year but most probably no later than every five years.

We usually have data of expected changes, so their integration into the index is an easier task. The real challenge is the integration of unexpected changes as they 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) as they estimate their effects on each factor of 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 organisations and institutions that still determine the direction of futures studies. It was in this stage that futures studies became an officially recognised branch of science. The multidisciplinary approach survived, relying on the 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 in the use of the methods of futures studies (Kristóf, 2006). Forecasting cannot answer questions by which phenomena that differ from the past and appear in the present or future evolve and change. The use of forecasting for primarily a long timescale was widely criticised due to the 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 methodology of forecasting is less and less appropriate by itself and requires the methodology of foresight as a situation becomes uncertain or unstable. One of the reasons for the decline in quantitative forecasting is that it is too complex for modelling and there are no clearly correct answers (Bishop–Hines, 2012; Lüdeke, 2013). The approach that appears in the methodology of foresight prefers the so-called exploratory scenarios, where the question "What could happen?" is in the centre of interest (Vergragt–Quist, 2011).

The scope of objective methods was expanded with subjective procedures, such as the Delphi questionnaire, scenario writing, and workshop techniques (Hideg, 2007), which were developed between the 1950s and 70s (Bradfield et al., 2005; Riggs, 1983). The goal of scenario writing is to chart alternative routes that may inform

strategy making. The Trend-Impact Analysis was developed in the 1970s, which means the extrapolation of historical data. The Cross-Impact Analysis means, in essence, the analysis of probability of event pairs, by which the entire system of relationships may be explored. The Delphi technique belongs to the group of expert questionnaires and its goal is to explore group opinions and salient values. The future workshop techniques also had their origin in the 1950s, based on work by Robert Jungk. This method is suitable for group collaboration.

Besides the quantification of the index, thinking about alternatives is important in the study of social futuring. In calculating the index, I believe we not only plan to determine the probable expected future, but we also see how the occurrence of some events would 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, the so-called weak signals. For instance, an exciting area of this age is the development of artificial intelligence; we need to analyse its potential consequences so that we can develop a rapid strategy and perhaps prevent unpredictable events.

I think this period focused on the examination of unpredictable changes as they are able to result in bifurcation (splitting in two parts) and hence to increase the number of relevant alternatives. Futures studies has moved from data-based known changes to lesser known changes as it is always harder to identify the effects of new phenomena than those about which we already have information.

2.3. SOCIAL FORESIGHT: DESIRABLE AND UNDESIRABLE CHANGES

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

This stage is characterised by a participative nature where the scope of experts comes 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 appears through contributions from groups in the given area (Inayatullah, 2013; Kreibich et al., 2011), which 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 values-sensitive. Deciding on what vision a social entity imagines greatly depends on the social entity's values.

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

This generation developed an increasing number of collaborative techniques trying to develop a common future and vision together with stakeholders. (If this fails, we talk about a shared vision). The methods of futures studies aim to systematically explore the future, to support the management of changes, to raise awareness of the consequences of decisions, and to strengthen and encourage participation in the shaping of the future. This generation has 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 such that it represents the highest possible number of stakeholder groups and helps to bring about changes that are desirable for them and to prevent undesirable changes. From the perspective of futures studies, if a vision is created by a wide range of stakeholders, then the development of the future may be efficient because stakeholders support, accept, and identify 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, I believe we can only measure how much the given country has strived to develop a vision that is appropriate for the highest possible number of social entities concerned. This is a difficult enterprise because it also depends on the stakeholder groups whose interests are mapped. Specifically, a dictatorial country would be assigned a worse value in this case 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 want 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 to make 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. by 95% confidence interval estimation), where the top value is the best alternative. This is the approach adopted by the first generation.

The data-based approach may be complemented by looking at the specific steps taken, and programs launched by each country to increase the value of the indicators determined in the index. The analysis may be extended with expert interviews where the respondents know the policies, plan 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, called political foresight, arose in the 2000–2010 period without a clear-cut type of change. The main characteristic of that 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 powered by sustainability and terrorism. Large organisations and institutions, such as the EU, started to seriously deal with the questions of future forecasting. An increasing number of people were selected for involvement as stakeholders. Also, this period witnessed an attempt to synthesise knowledge and disciplines.

Foresight is a process aimed to completely understand long-term futures that create forces, supporting policy-making, planning, and decision-making – one that uses both qualitative and quantitative means to this end.

The Foren[5] Project included a practical guide where the foresight approach was used for regional development. In the 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

[5] Foresight for Regional Development

it supports the emergence of global networks[6], the implementation of technological and social research programs[7], online websites, the organisation of international conferences, the promotion of the sharing of foresight knowledge, and workshops announcing the support of foresight policy decisions among the EU's member states[8].

The flexible top-down approach has increasingly gained ground and large organisations 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 is an inter-, trans- and multi-disciplinary science, i.e. one that uses and synthesises the knowledge of two or more different areas and officially belongs to social sciences. Trans-disciplinarity not only refers to the relations that overarch several branches of science, but also to the 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 organisations have a key role as they are able to activate participants and may shape the future together with them.

Research should make sure to see 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 and section of many other social entities, as a Hungarian family may belong to several communities, 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 use their social futuring.

[6] http://foresight.jrc.ec.europa.eu/projects.html
[7] European Foresight Platform, EFP
[8] Institute for Prospective Technological Studies, IPTS, Facing the future - time for the EU to meet global challenges

Another key message of the fourth generation for research into social futuring is that one of the most important areas of use of 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 in 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 would have. To this end, they use online available software called "International Futures", which represents 186 countries and its database contains 3,000 data series. It is useful for research and political projects. The model focuses on three major fields: human development, i.e. the individual's capacity (such as healthcare, education, welfare), social development, i.e. relationships with others (such as democracy, governance), bio-physical development, i.e. relationship with technology and each other (such as biological and physical environment, sustainability) (Hughes, 2016).

Another example is a series of online video talks that the Canadian government's members held in 2017 with futurologists from different fields in order to be able to make informed and innovative decisions on certain matters.

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

The Social Futuring Index can also be made such as to measure the number of foresight programs and participation in them, e.g. if a

country develops a foresight program or participates in such EU, international, and global programs.

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

2.5. INVOLVING STAKEHOLDERS IN FORESIGHT: RAPID UNKNOWN CHANGES

The fifth generation emerged in the 2010's and has been around ever since. I believe this results 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 globalisation, due to the acceleration of change and consequent uncertainty, there is a need for developing futures studies (Nováky, 2005). Digitisation is the right way to achieve more and more interactive and real-time participation. The circle of participants is continuously expanding. This development stage is characterised by interactivity as changes are speeding up and becoming globalised and as digitisation promotes interactivity.

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

In the past decade, artificial intelligence, evolution-based modelling and algorithms, multi-agent modelling, and chaos calculations 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 of 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 are using 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 approach because, as a result of accelerated changes, people increasingly want to keep pace with 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 intensive but temporary links) stabilise the system (Csermely, 2005). From the perspective of futures studies, it is key to analyse the networks created on the Internet and the real world as this can help us understand the links to 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 set out to look for ways to become capable of social futuring, the more probable the emergence of entities that wish to explore and understand changes, and that are capable of shaping and introducing changes.

This is why computer assisted decision-support systems for foresight purposes are more and more prevalent, including Shaping Tomorrow[9], GFIS[10] (Global Futures Intelligence System), and IKnowFutures[11], which are capable of collaboratively offering dozens of integrated methods on a process basis, so that users can research their respective future. The users of such systems can be countries, organisations, companies, or other social entities.

[9] https://www.shapingtomorrow.com/
[10] http://107.22.164.43/millennium/GFIS.html
[11] http://wiwe.iknowfutures.eu/

Digitisation has shortened processes and hence changes, such as changes related to financial, business, and communication processes. In addition, it has allowed every electronic operation to be stored, thereby allowing them to be processed. Big data technologies help us to map previously unknown correlations. Also, digitisation 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 digitisation equips us with devices that bring back 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 (Figure 3) that the initially quantitative approach was expanded with qualitative techniques with a rising emphasis on the combination and mixed use of methods. The scope of stakeholders has been expanded and their activity and attitude have gained strength as a message 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 developing multiple types of futures depending on the given situation.

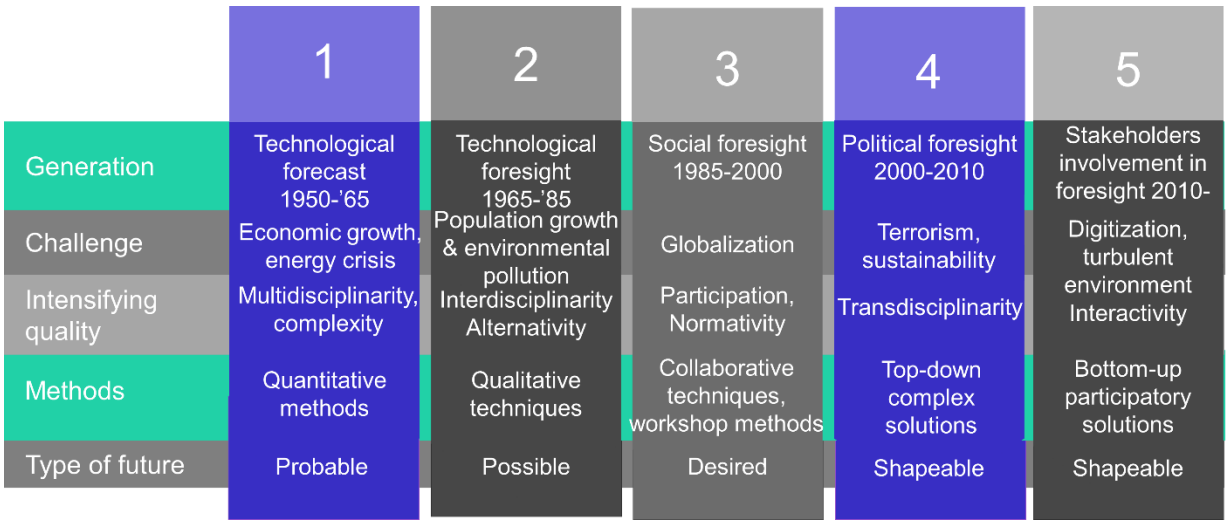

Figure 3: The development of futures studies
(Source: the author)

The methods and approaches of futures studies have given us the tools to determine the probable future, look at its alternatives, develop a vision that may be developed with the participation of groups shaping the future, 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 achieve a complex integrative interpretation of knowledge from multiple areas, to integrate a participatory attitude, to explore stakeholder interests, and to ensure interactive communication.

2.7. THE PROCESS OF FUTURES STUDIES

To understand foresight, it is worth looking at its process stages in detail, as they assign tasks for each stage and ensure a framework system for making foresight.

The general process stages of foresight usually have two interpretations (Figure 4). The foresight process starts by defining the scope of project and ends by developing the strategy. In one interpretation of the process, different process 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 process stage 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, there is a need to identify the source of information, including the Internet, expert interviews, literature review, etc. This stage aims to acquire the highest possible amount of relevant information as the potential basis for subsequent analyses. Foresight-making consists of three main steps, including analysis, interpretation, and prospection. The analysis aims to structure, shape, and interpret data. The interpretation aims to explore underlying correlations, to reveal the 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-making and develop 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 necessary information. In forecasting, experts analyse and interpret data and explore their quantitative correlations. Visioning also includes interpretation, but this involves 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 planning stage means the establishment of alternatives and the building of routes to them, which may also be called strategy making.

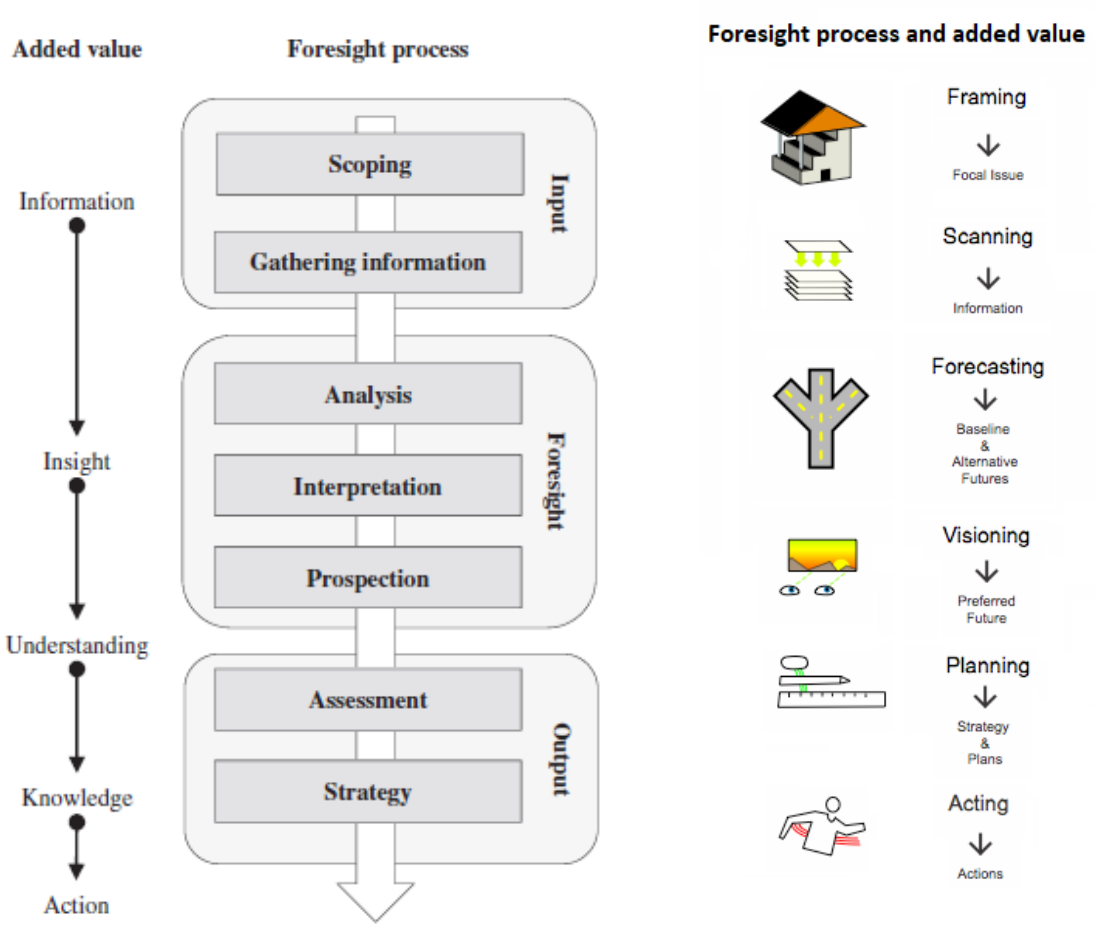

Figure 4: The foresight process
Foresight process, source: (left side) Durst et al, p 93
(right side) edited version based on the source: Hines–Bishop, 2015[12]

The foresight process clearly shows a close link between the structure of each stage, their hierarchy, and the development of futures studies (Figure 5). The first process steps (from framing to forecasting) are subject to the technological forecast generation. In the second generation it became 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, where we use participatory methods to identify what would be appropriate for most stakeholder groups. The fourth generation emphasises the role of decision-makers and this relates to planning. Bottom-up initiatives that encourage computer assisted immediate action spread out in the fifth generation.

[12] Source of the electronic picture: http://www.andyhinesight.com/books/a-framework-for-thinking-about-the-future/

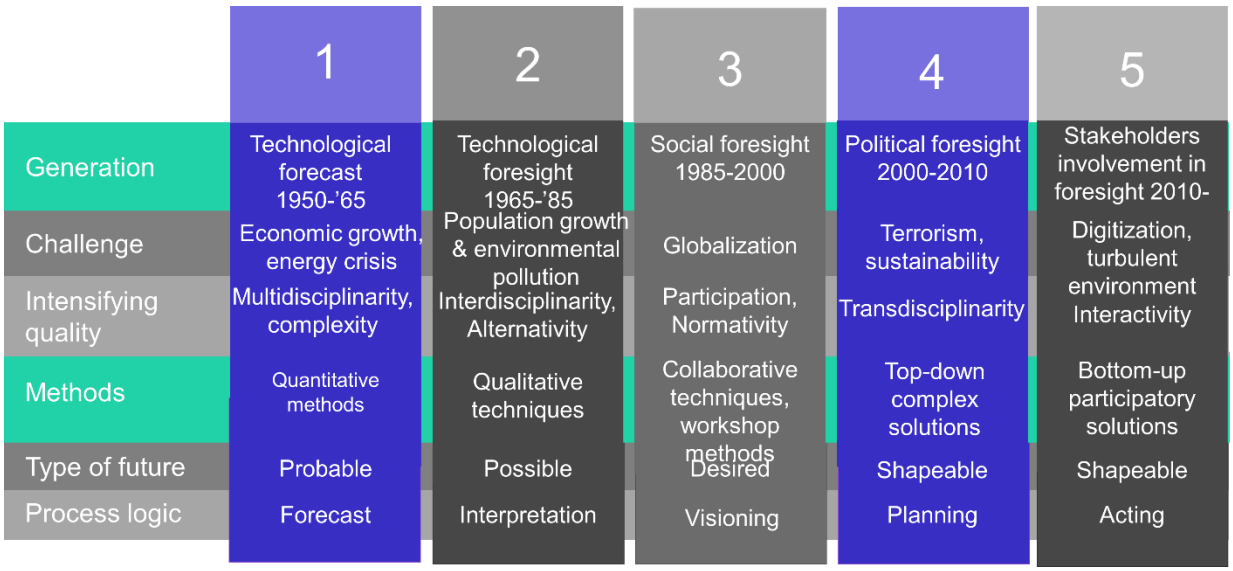

Figure 5: The development of futures studies (complemented with process steps) (Source: the author)

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, for which it is willing to act. Futures studies has long been concerned with these areas within the future orientation of entities in future orientation research.

Future orientation may be examined on an individual, organisational, and national level. The extent of quantification is also different at each level (Figure 6). Scholars primarily use questionnaires to survey individual future orientation without a predetermined guide of interpretation and evaluation. The questionnaire method is also the most appropriate at the organisational level, but here it is completed with an evaluation guide and grading. At the national level, the analysis may be made using indices

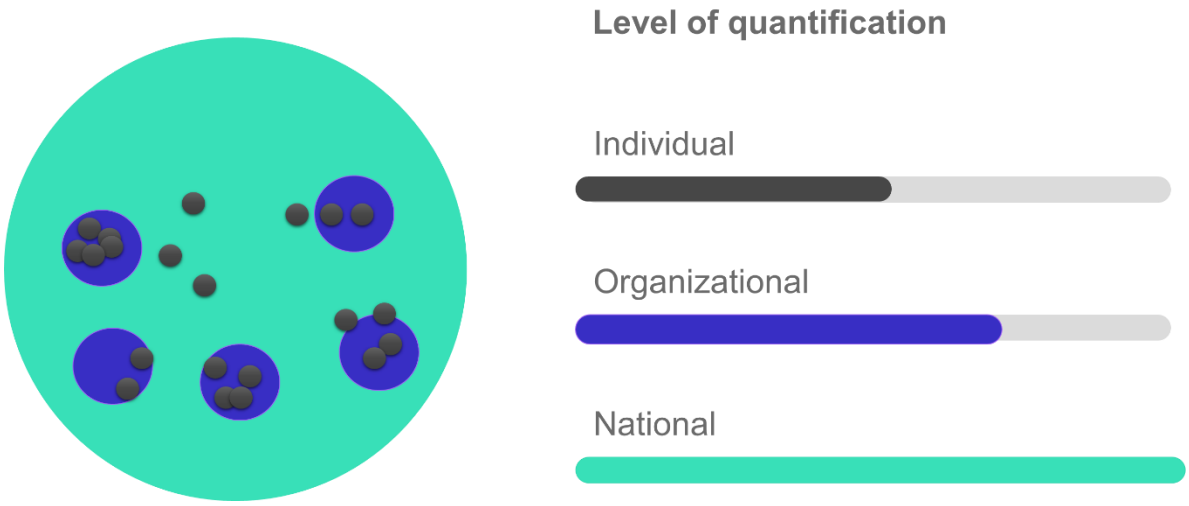

Figure 6: Level of quantification of future orientation
(Source: the author)

3.1. FUTURE ORIENTATION ON AN 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, p. 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 means if the individual is interested in, thinks about, acts for, and has expectations about the future. In the preceding sense, future orientation on an individual level is comprised of the following four components (Nováky–Kappéter, 2002):

- interest in the future,
- thinking about the future,
- expectations about the future,
- action for the future.

Of these components, the individual only has 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 have two extremes. A future shocked individual is full of fears, goes blank, and does not think about or act 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 the 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 where 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 presence (Hideg, 2003).

3.2. FUTURE ORIENTATION ON AN ORGANISATIONAL LEVEL

An organisation'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 model's result indices may be linked to the previously presented process steps of futures studies, including the leadership index as an extra element (Figure 7) (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 where the organisation 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 actions.

When preparing a scorecard for framing, an organisation is truly future oriented if it wants to reach the actual root cause of a problem encountered during the project and this creates the need for a task using foresight. In addition, the organisation manages to determine such measurable and documented purposes 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 organisational vision, and the development of a plan containing the activities, processes, conditions, and communication required for adopting the strategy.

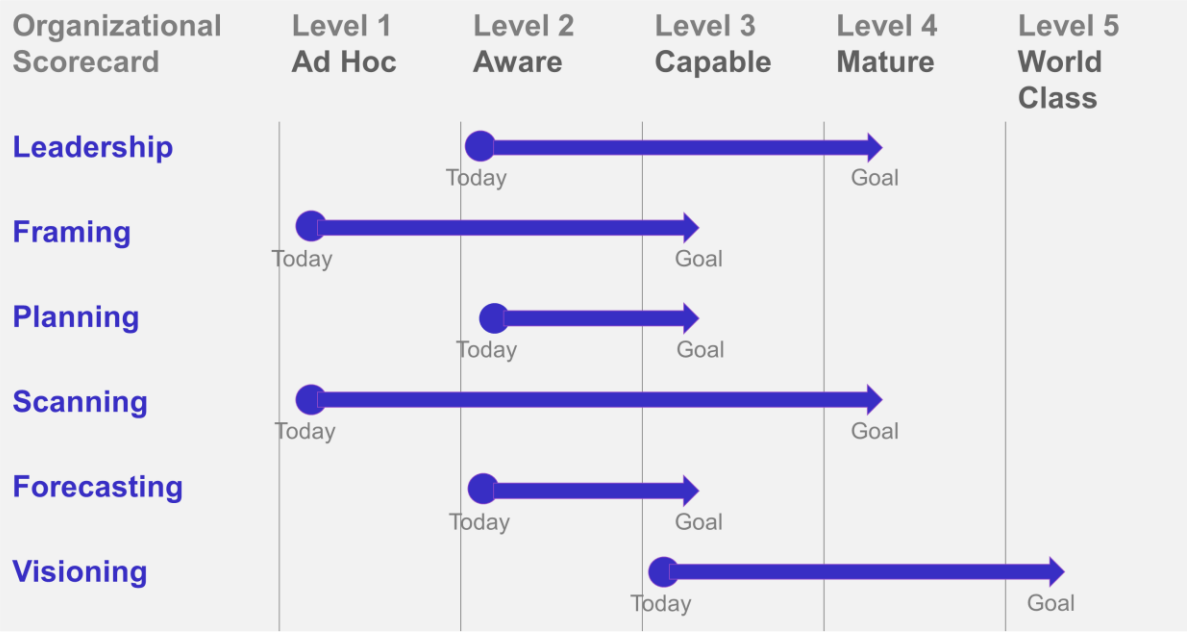

Figure 7: Scorecards and levels in the Foresight Maturity Model
(Source: the author's translation based on Grim, 2017)

Scorecards for scanning are about how the organisation can designate the so-called domain map that determines the source and structure of the required information, and the type of methods and tools used to collect the information that is important for the organisation, and how it stores such information.

Scorecards for forecasting show how the organisation 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 plays its actual role, i.e. so that the organisation's members really make decisions with an awareness of the vision and this should motivate them in their everyday actions.

3.3. FUTURE ORIENTATION ON A NATIONAL LEVEL

The future orientation of individual countries can be measured by indices. The State of The Future Index (in acronym: SOFI) asks the question what factors influence the future, what points of intervention there are about the future, and how to improve decision-makers' future orientation (Glenn et al., 2015).

The key areas of SOFI consist of 15 global challenges (Annex 1) as follows (GFIS, 2017):

1. Sustainable development and climate change
2. Clean water
3. Population and resources
4. Democratisation
5. Global foresight and decision making
6. Global convergence of IT
7. Rich – poor gap
8. Health issues
9. Education and learning
10. Peace and conflict
11. Status of women
12. Transnational organized crime
13. Energy
14. Science and technology
15. Global ethics

SOFI is based on the previously mentioned global collective intelligence system called GFIS, a project system of Millennium which contains foresight methods and has hundreds of registered experts like myself who participate in different research projects. The index is a composite indicator consisting of 27 variables. SOFI aims to draw mankind's attention to global mega problems, to help their related complex understanding, and to encourage action.

The 2017 edition of SOFI shows that the world has in general continuously improved (Figure 8) 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% rate in the period between 1990 and 2017. This is mainly the consequence of the slow

recovery in the wake of the 2008 financial crisis and global recession. SOFI 2017 was greatly affected by terrorism, whose forecast is fairly uncertain.

One of the benefits about 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 predictable positive changes.

1. Increasing GNI per capita
2. Decreasing poverty
3. Increasing foreign direct investment
4. Slightly increasing freedom
5. Increasing number of women in national parliaments
6. Increasing share of high skilled employment
7. Significantly increasing school enrolment
8. Increasing literacy rate, adult totals
9. Increasing electricity from renewables
10. Increasing energy-efficiency
11. Increasing improved water sources
12. Increasing number of physicians
13. Increasing health expenditure per capita
14. Decreasing prevalence of undernourishment
15. Decreasing mortality rate
16. Increasing life expectancy at birth
17. Population growth
18. Increasing internet users

While there are more areas expecting improvement, those heading towards a negative direction are very important. Here are the predictable negative changes:

1. Increasing CO2-equivalent mixing ratio
2. Decreasing renewable internal freshwater resources
3. Stagnating forest area
4. Decreasing biocapacity
5. Insignificant increase in R&D expenditures
6. Some increase in the social unrest indicator
7. Increasing unemployment
8. Increasing income inequality
9. Significantly increasing terrorism incidents
10. Significant increase in the number of wars and serious armed conflicts
11. Increasing corruption in the public sector

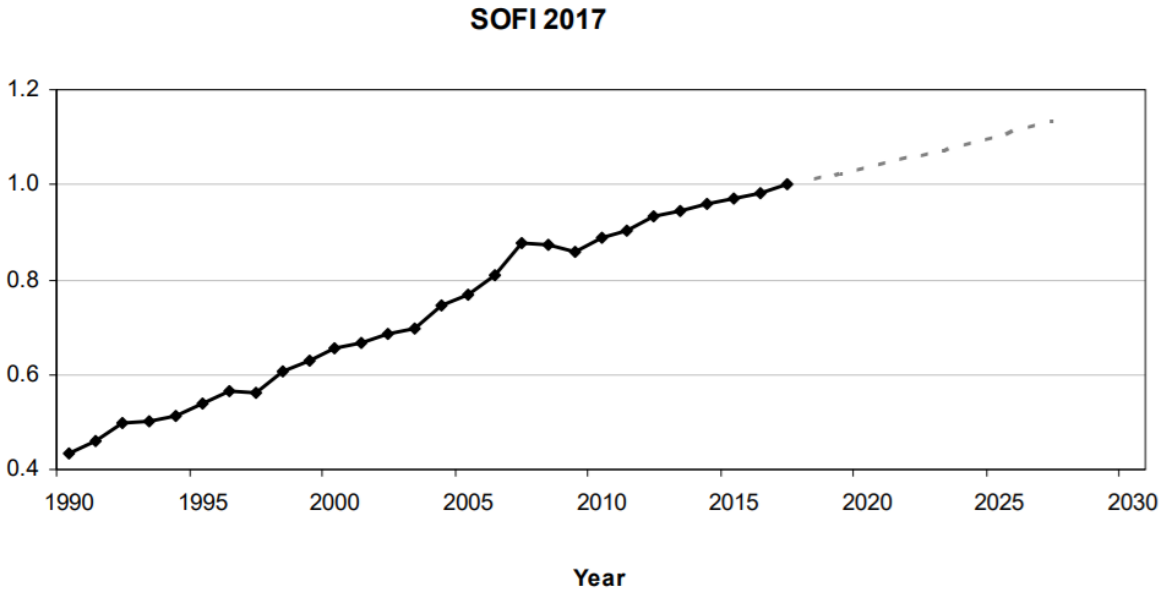

Figure 8: The State of The Future Index (SOFI) 2017
(Source: Glenn et al., 2017, p. 4)

The so-called FEI index[13] 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

[13] The original Hungarian name is JKB index.

influence a country's world market positions and international competitiveness. The I index looks at the factors that determine the quality of life of domestic actors in the given moment (Bartha–Gubik–Szita, 2013).

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

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 the preparation for the future. The term *futuring* can increasingly be used as a new name of futures studies. The World Future Society, one of the most renowned international organisations of futures studies, uses the term *futuring* to designate futures studies. Its 2004 book is titled *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, organisations, and societies to think about, predict, adopt an attitude to, and make decisions about the future. Social futuring is not concerned with social futuring at the individual's level, as its goal is to look at social futuring in the case 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 organisational and social futuring and creates concepts and selects elements for analysis accordingly. Another important difference concerns emphasis and goal. Specifically, research into social futuring aims to explore social futuring in the case of social entities, for which foresight methodology provides an appropriate toolkit.

The quantification of social future orientation indices by itself is not enough for linking futures studies and social futuring as there is a need to look at the paradoxes that arise between the individual factors (such as the coexistence of improving economic factors and a declining productivity rate) (Aczél, 2018). Also, it is a good idea to compare future orientation in the case of the individual, an organisation, and a country, the level of their cohesion and willingness to cooperate, the factors that determine the level of

cooperation between the individual social entities, and the way in which this affects social futuring in entities.

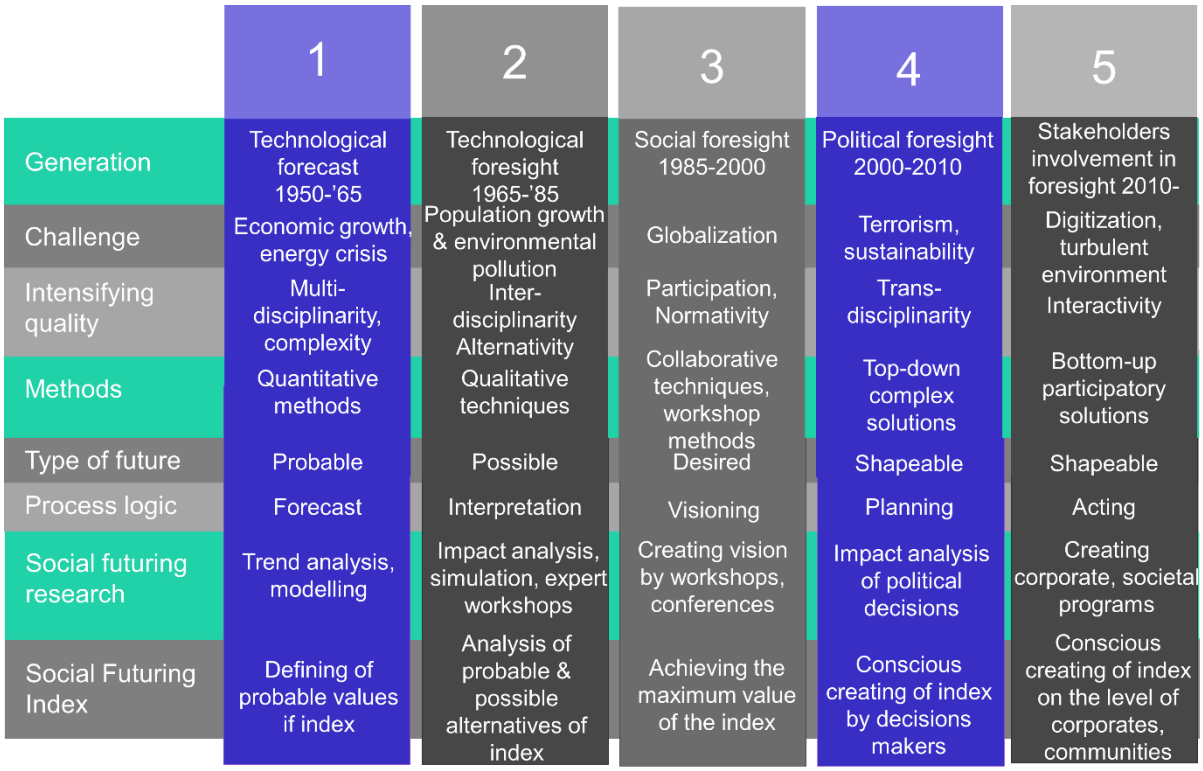

Figure 9: The development of futures studies
and the interpretation of its link to research into social futuring
(Source: the author)

When researching social futuring, measurement is indispensable. We want to do this by creating a global index. The index values are best determined by trends analysis and modelling methods. Also, further steps must be taken for a deeper and more diverse understanding of social futuring. In addition to the index's predictable values, the analysis of alternative ways allows for describing a diverse vision, 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 tries to combine potential shared points and interests, preferably containing a consensus solution. The vision is only really efficient if it becomes measurable in the index values.

For social futuring, decision-makers should be encouraged to make sure they communicate about active social futuring. In this process, decision-makers 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 index's concrete value is altered by a political decision and its future effect.

To increase social futuring, there is a need for supporting bottom-up programs and initiatives that help organisations and other social entities shape social futuring; these programs are the right area for surveying the practical application of social futuring.

The basic forms of social futuring are proactive, active, and reactive (Szántó, 2018). It should be emphasised 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 is the so-called "backcasting" method rather than "forecasting", meaning the imagination and dreaming about the future and then taking it back to the present. This method also requires planning but does not build on the existing knowledge to the same extent as forecasting. Proactive social entities can become more and more capable of social futuring if they think over and implement different types of alternatives, innovation, and a version of the future which differs from the present.

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

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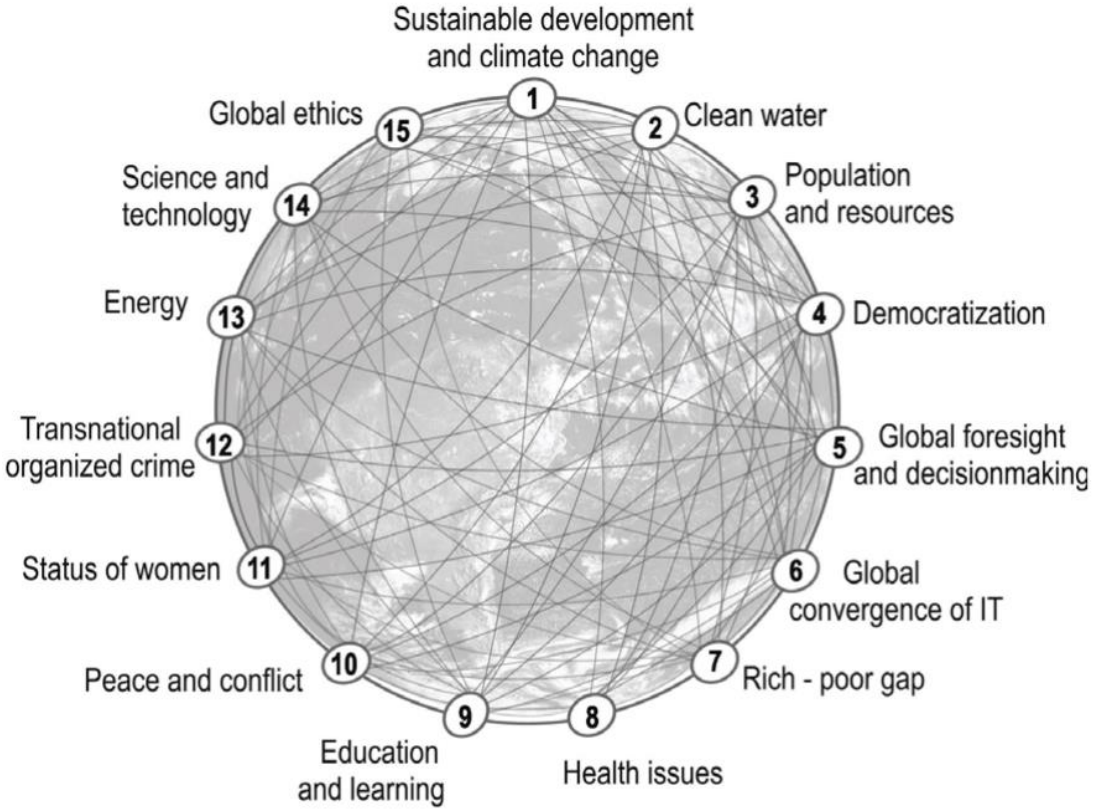
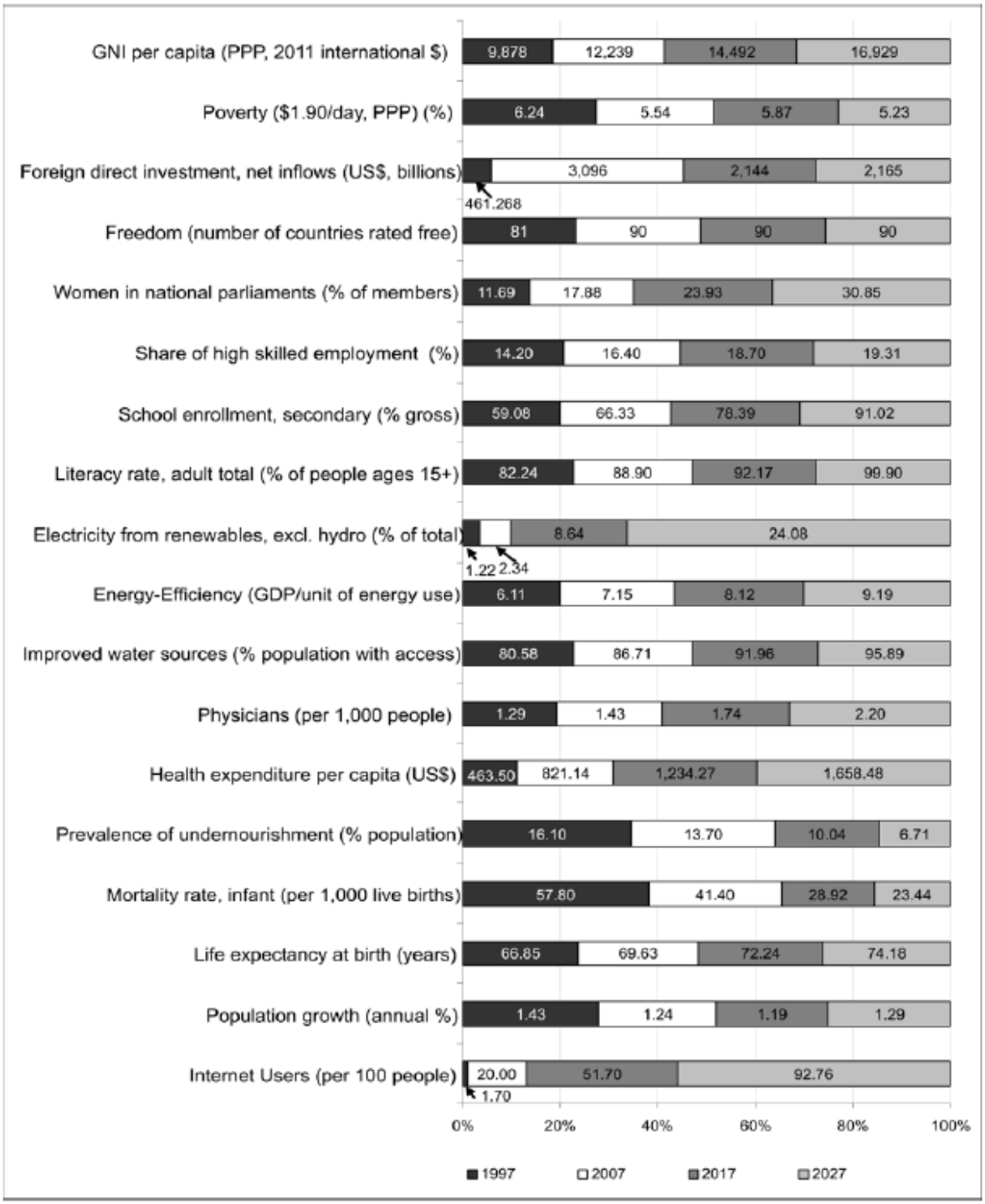
ANNEX

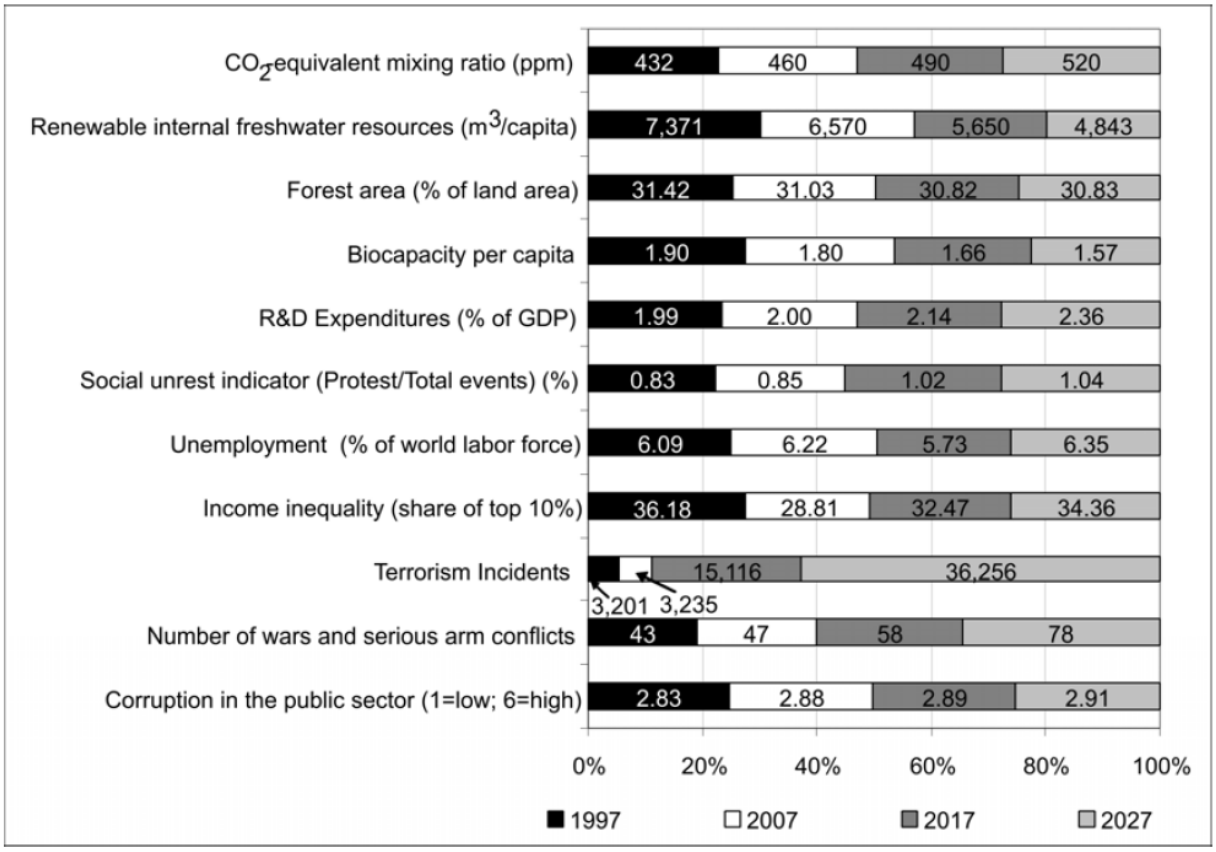
Annex No. 1: SOFI areas, source: GFIS, 2017



Annex No. 2: Positive changes based on the State of the Future Index, source: Glenn et al, 2017, p. 14, Figure 2. Where we are winning



Annex No. 3 Negative changes based on the State of the Future Index, source: Glenn et al, 2017, p. 15. Figure 3. Where we are losing or there is no progress



NOTES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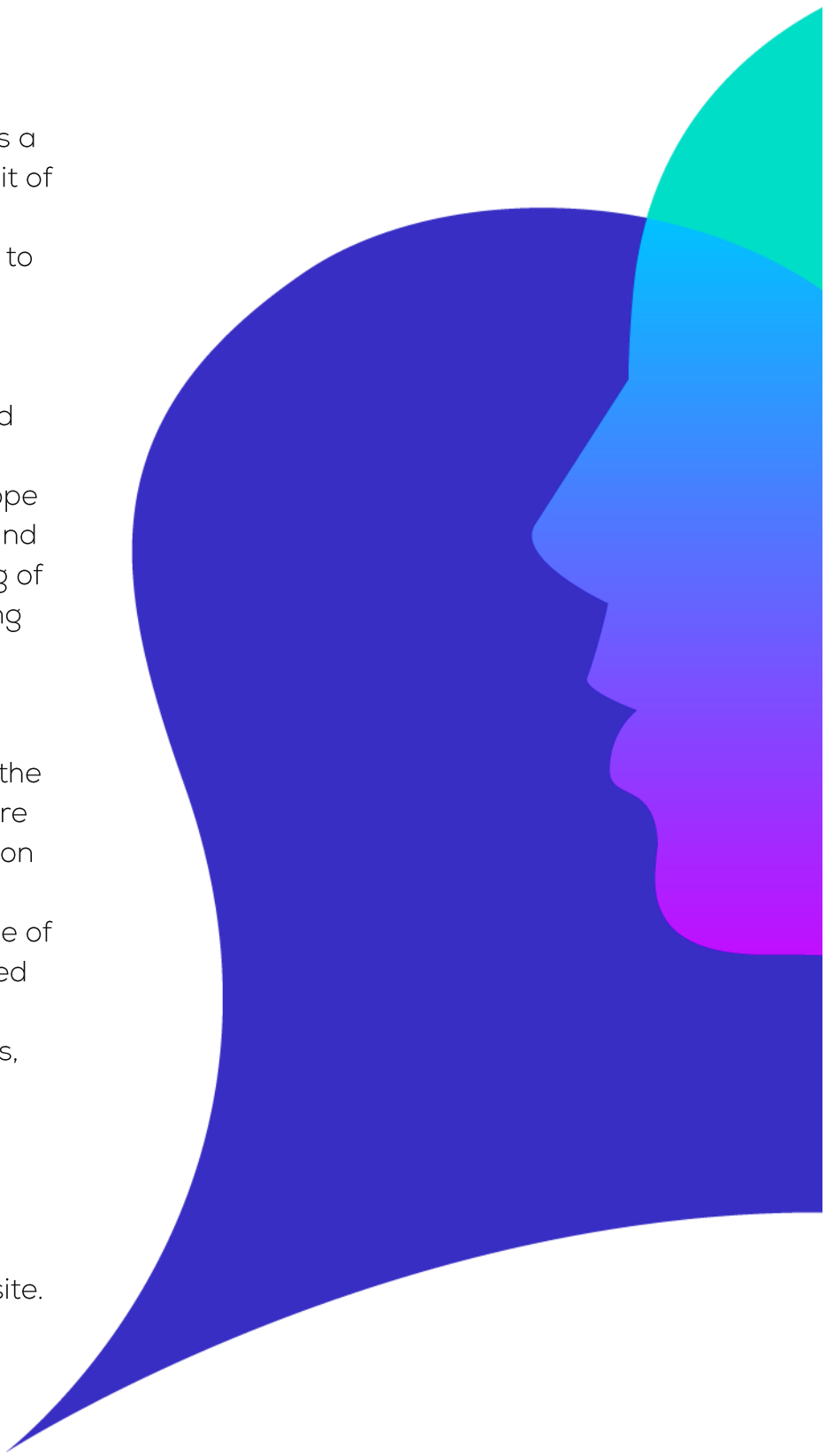
Social Futuring Center (SFC) is a multidisciplinarian research unit of the Corvinus University of Budapest (CUB). Our aims are to develop the conceptual and normative framework of social futuring, to construct the **Social Futuring Index (SFI)** and to manage the **ConNext2050** research project. The main scope of its research is the analysis and interpretation of social futuring of different social entities, focusing on short and long-term future changes (2017-2050).

The SFC periodically publishes **working papers** that highlight the findings of its research. They are published to stimulate discussion and contribute to the advancement of our knowledge of multidisciplinary matters related to philosophy, sociology, psychology, bionics, informatics, economics, political science, environmental studies, futures studies, network science. SFC working papers are available online on the **www.socialfuturing.com** website.



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