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Towards an Explicit Research Methodology: Adapting Research Onion Model for Futures Studies

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Abstract

This article explores the issues of developing the research methodology and construction of research design within the field of futures studies. The article analyzes systematic approach for developing a research methodology in business studies – the “research onion” model and examines the relevance and appropriateness of this model for futures studies. On the basis of the research onion model analysis, the research onion for futures studies is developed. The article delineates and explains seven steps of developing the research methodology and construction of research design for researching the future, starting with definition of main philosophical stance and gradually leading to the construction of the research design.

Keywords: Futures Studies, Methodology, Research Onion, Research Design.

Introduction

The beginning of acquaintance with futures studies might be quite complicated for students and scholars – the new field of study opens interesting and broad possibilities, however the core question before writing a thesis or dissertation usually stands out: “*What should I start with?*” And, of course, methodology is one the most important aspects that should be addressed in the first place.

The experts in the field of futures studies claim that majority of methods came to futures studies from other fields (Bell, 2003; May, 2000), thus it might be said that futures studies is a rather flexible field of study having a great potential of adapting various techniques and methods. However, the lack of literature on methodology of futures studies makes it complicated to distinguish between different philosophies and methods thus building up a distinct research design is much of a task especially for futures studies newcomers. The majority of scholarly articles on methodology of futures studies focus on distinct methods and their implementation (Amara, 1991; Ramos, 2002; Saul, 2001), however the logic behind choosing one of them or the mixture of few is not quite clear. Although future studies for a certain period of time suffered from methodological chaos which put the legitimacy of futures studies as such under question (Delaney, 2002; R. Slaughter & R. A. Slaughter, 1999) a substantial amount of work of such foresight researchers as List (2005), Patomaki (2006), Saleh, Agami, Omran

and El-Shishiny (2008), Inayatullah (2004, 2008, 2013), Poli (2011), Miller, Poli and Rossel (2013), Sardar and Sweeney (2016) and others has been done in order to increase the methodological coherence of the field. However, constantly changing and rather chaotic nature of modern social reality imposes the new challenges on futures studies – Sardar and Sweeney (2016) still question if existing futures studies methods can cope with researching the complex, contradictory and uncertain futures.

Exploration of future is not a recent phenomenon, though it is comparatively new approach for scientific studies (Delaney, 2002), therefore it is necessary to analyze the development of futures studies as a scientific approach in order to distinguish the basics for theoretical framework. Even though the methodology of futures studies is quite widely discussed within futurologists' society, building up a decent futures research methodology is still much of a challenge due to the lack of coherent and systemized models of futures methodology development. In order to fill this gap and provide students and scholars with a tool for methodology development it would make sense to analyze existing systemic models within related fields. One of the existing models – so called “research onion”, developed by Saunders, Lewis and Thornhill (2016) for business studies is widely used in social sciences for construction of theoretical framework of the research. Muranganwa (2016) notices that research onion concepts create a firm basis for development of coherent and justifiable research design. Raithatha (2017) also claims that on the basis of the research onion model an appropriate research methodology can be designed step-by-step, thus it can be used as the main academic research model. Although the research onion is an efficient model widely used in social sciences (works of Raithatha (2017), Ramdhani, Mnyamana and Karodia (2017) in marketing), it is also used in exact sciences (work of Muranganwa, 2016 in computer science, Lloyd, 2012 in information technology). However, it is crucial to assess whether this model is suitable in the context of futures studies and adapt it to the specifics of researching the future.

Futures Studies: From Intuitive Forecast Towards Scientific Approach

People think about the future and prepare themselves for desirable and undesirable events on a constant basis. In psychology this phenomenon is known as future-oriented thinking – our plans, hopes, expectations, predictions and construction of possible scenarios of future outcomes – is a natural part of our mental life and in many cases has a potential to determine the present behavior (Aspinwall, 2005). Miller, Poli and Rossel (2013) define these efforts to know the future as “anticipation” or imagination of actions, which is, in fact, the way of thinking about the possible consequences of decisions that allows considering and evaluating future options. According to Miller, Poli and Rossel (2013) anticipation covers all ways of knowing the “later-than-now” thus forming the *discipline of anticipation*. Being an integral part of futures studies, discipline of anticipation focuses on the processes how later-than-now enters the reality, thus enabling the conscious use of future in the present (Miller, Poli, & Rossel., 2013). Similarly, Voros (2017) defines anticipation as a way of foresight. As a cognitive or methodological approach anticipation may be associated with explorative and predictive ways of thinking (Voros, 2017) and on individual level may be summarized by the demands to (Aspinwall, 2005; Miller et al., 2013; Molis, 2008; Voros, 2017):

1. Anticipate future situations and their possible impacts for himself/herself and surrounding people;
2. Decide on current actions, taking into account possible future scenarios;
3. Balance short-term and long-term interests to reach stated goals;
4. Determine and control the causes of significant events;
5. Enhance motivation, assuming that it is possible to improve the current situation.

Closer examination of these demands makes it obvious that future-oriented thinking and will to know the future on the individual level may be primarily associated with decision-making process. But the demand to know future rises not only on individual level – as Phillips (1973) claims, governments and leaders throughout the history made a lot of efforts to achieve foresight – from hiring astrologers to establishing special committees and even academies for futures research as a means of strategic planning. Thus the demand for futures studies may be originated from both – inner individual and external collective levels.

On the other hand, changeability and unpredictability are the main attributes of future as such, making it nearly impossible to apply modern investigative tools and expert systems, therefore many scientists put the “research ability” of the future and thus scientific basis of future studies under question. The main critics of researching the future may be summarized by following conclusions:

1. Social reality is constantly changing and developing in a non-repetitive way, therefore scientific prediction as such is impossible (Popper, 1965).
2. Scientific predictions may be applied only to isolated, stationary and recurrent systems, which are rare in nature. Social system is an open-system, thus application of prediction to such system cannot be referred to as scientific (Popper, 1965).
3. Prediction is usually derived from present factors which may change or be irrelevant in the future, and as a result cause false assumptions about the future in the first place (R. A. Slaughter, 1990).
4. Predictions precisely derived from present are rather synthetic, therefore impertinent. On the other hand, predictions derived too far from reality are considered as utopias (Molnar, 1973).
5. Adaptation of future techniques creates a possibility to confuse the analogy with causal relationship, thus finding nonexistent causal relationship between variables (Molis, 2008).

There is, of course, a lot of common sense in critics of futures studies as a scientific field, though, Slaughter (1990) and Bell (2002) argue, that most of the critics are based on misunderstanding of the main aspects of futures studies.

First of all, to discuss the scientific basis of futures studies it is crucial to distinguish what is “science” and its key features. As Ruse (1982) reasonably notices it is quite complicated to give a decent definition of “science”, as this phenomenon has developed through centuries, separating itself from religion, superstitions, philosophy and other domains of mental activities, therefore it is crucial to unfold the key features of what can be called “science”. The definition of “science” according to Ruse (1982) may be summarized by a number of characteristic features:

1. Science is aimed at searching for laws – orders or natural regularities.
2. Explanation is used to describe the law, its possibilities and limitations.
3. Prediction, being a natural extension of explanation, is used to describe how the law indicates future events.
4. Testability – in order to make sure the law is causing predicted effects, it has to be tested in real world, usually conducting an experiment.
5. Confirmation – in a classical scientific approach after experiment a scientific theory is either confirmed by positive evidence or rejected.

On the basis of these statements it can be noticed, that prediction *per se* is a natural part of a scientific approach.

Niiniluoto (2001) notices that futuristic trend is a common feature of many scientific disciplines, such as economics, physics and psychology – laws, orders or natural regularities create a set of constraints for present environment and lead to prediction of observable events in the future. Niiniluoto (2001) argues that without prediction any scientific theory will not meet testability criteria. Patomaki (2006) also claims that even though social sciences usually do not use predictions, anticipation of futures is an integral part of all social actions, thus social sciences should also have the ability to give explanations of possible or likely futures in order to stay relevant in a contemporary environment.

Niiniluoto (2001) notices, however, that according to Plato, from a classical point of view, knowledge is *a justified true belief*, thus author questions if “foresight” as such can possibly be a form of knowledge and states that even though there are propositions about the future that can be verified as true at present, this mostly applies to the field of exact sciences, and predictions about contingent events or states in the future can not be known in a classical sense. On the other hand, Slaughter (1990) argues that foresight should not be considered from an earlier worldview for that it is based on assumptions which do not comply with current circumstances or needs. For this reason, Niiniluoto (2001) proposes a clear distinction between the object and the evidence of the research: the object of futures studies is not the future but the present and the knowledge of the present is evidence about the future.

Another approach to define the object of futures studies is based on assumption that there is no “the one and the only” future, which can rather be defined as a “branching tree” (Niiniluoto, 2001) or a variety of alternative possibilities as a part of real world which is not manifested yet (Patomaki, 2006). Therefore, the future consists of multiple possibilities and non-actualized powers of existing environment which may unfold under certain circumstances. In terms of researching the future in an open-system, contemporary futures studies have changed the research perspective from prediction to trend analysis, possibilities and scenario construction (Patomaki, 2006), and moved from forecast or prediction towards foresight – possible, preferable future analysis and designing the future. (Kosow & Gaßner, 2008; Niiniluoto, 2001).

Further attempts to consolidate futures studies as a scientific approach may be associated with the discussions on ontological assumptions of futures studies. Jouvenel (1967) attempted to define the ontology of futures studies through *facta* and *futura* concepts, claiming that *facta* refers to scientific approach which primarily based on collecting data about tangible past events, so that predictions can be made on the basis of collected data using extrapolation method. On the contrary, the concept of *futura* implies the absence of past data, which could be analyzed. *Futura* refers to cognitive products, such as wishes, fears, expectations, etc. thus it cannot be linked with science.

This paradigm was further developed by Polak and Boulding (1973). Researching human perception authors admit the dual nature of reality and distinguish the *present* which is actual and the *imagined* which is referred to the thought-realm. This dualism shapes the preconditions for the definition of future as such – the division and categorizing of feelings, perceptions and responses within time continuum enables men to experience the movement of the events in time, thus distinguish between *before*, *now* and *after* or the past, present and the future. However, Polak and Boulding (1973) also claim the future must not only be perceived, but shaped as well through the *image of the future*.

A critical shift of futures studies ontology paradigms can be associated with introduction of disposition concept by Bell (2003). According to Poli (2011) the core difference in understanding the future was the concept of multiple possibilities where disposition is referred to as a fact, that can actualize in future under certain circumstances. From ontology point of view, disposition is no longer a cognitive product, but a fact that has a potential to condition the future.

Although these assumptions create a firm basis for building up theoretical framework of the research, it still does not provide a coherent notion for designing research methodology and building

up a distinct research design. In order to develop a coherent futures research design it is crucial to identify the logical steps which would link epistemological and ontological assumptions with research methods and ways to interpret the findings.

Research Onion as a Model of Designing Research Methodology

Methodology is a general research strategy which delineates the way how research should be undertaken. It includes a system of beliefs and philosophical assumptions which shape the understanding of the research questions and underpin the choice of research methods. Research methodology is an integral part of a dissertation or thesis which helps to ensure the consistency between chosen tools, techniques and underlying philosophy.

One of the ways of research methodology construction is based on theoretical concept of “research onion” (Figure 1), proposed by Saunders et al. (2016). The research onion provides a rather exhausting description of the main layers or stages which are to be accomplished in order to formulate an effective methodology (Raithatha, 2017).

The research methodology has its starting point with delineation of the main philosophy, choosing approaches, methods and strategies as well as defining time horizons, which altogether take the research logic to the research design – main techniques and procedures of data collection and analysis (Figure 1).

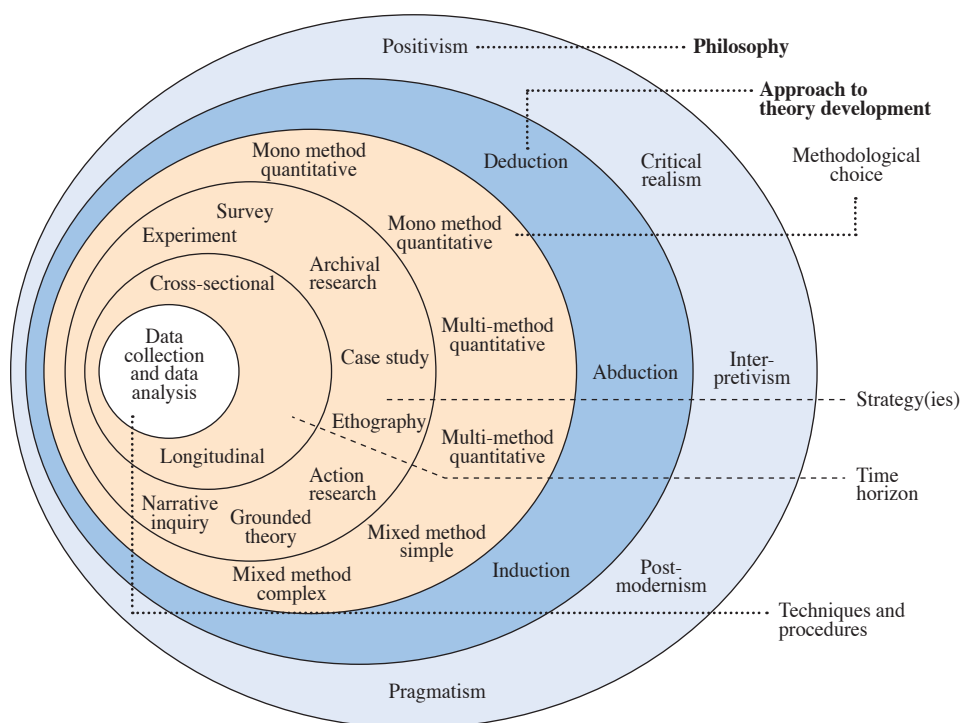


Figure 1. Research onion¹

The research onion consists of six main layers:

1. *Research philosophy* – forms a basis of the research by delineation of *ontology* – nature of reality, *epistemology* – nature, sources of knowledge or facts and *axiology* – values, beliefs and ethics of the research.

2. *Approach to theory development* – can be implied by the research philosophy on previous level and usually include: *deduction* – the research starts with an existing theory, then rising a question or hypothesis and data collection in order to confirm or reject the hypothesis; *induction* – the research starts with observation and data collection, moving to description and analysis in order to form a theory; *abduction* – observation of an empirical phenomena is followed by the research which comes up with a best guess or conclusion based on available evidence. Deductive approach is applied for existing theory testing, while inductive approach is commonly used in developing a theory or in fields with little researches on the topic. Abductive approach usually starts with a surprising fact and is moving between induction and deduction in order to find the most likely explanation.
3. *Methodological choice* – determines the use of quantitative and qualitative methods or various mixtures of both.
4. *Strategy* – to collect and analyze data: experiment, survey, archival research, case study, ethnography, action research, grounded theory, narrative inquiry.
5. *Time horizons*. This layer defines the time frame for the research – *cross-sectional* or short term study, involving collection of data at a specific point of time; *longitudinal* – collection of data repeatedly over a long period of time in order to compare data.
6. *Techniques and procedures* include data collection and analysis – the use of primary/secondary data, choosing sample groups, developing questionnaire content, preparing interviews, etc.

The research onion, proposed by Saunders et al. (2016) is a tool which helps to organize the research and develop research design following the layers of the research onion step by step. However, the research onion model was primarily designed for business studies, therefore it would be incorrect to adapt this model “as is” for researching the future. The analysis of literature on futures studies methodology has revealed that futures studies is a specific research field as it deals with phenomena which are not actualized yet, thus it underpins specific ontological and epistemological assumptions which lead to choice of strategies, techniques and methods different from ones used in business studies.

Adapting the Research Onion Model for Futures Studies

In order to adapt the research onion model it is crucial to analyze and determine the appropriateness of the model for futures studies and make necessary logical corrections within six original layers of the model.

A critical overview of six research onion layers has led to discovery of one additional layer – *Layer 2: Approaches to futures research*, which could be logically included into original model thus forming a coherent research onion model for futures studies. Altogether, seven main layers of the research onion for futures studies were distinguished: 1) research philosophy; 2) approaches to futures research; 3) approaches to theory development; 4) research strategy; 5) methodological choice; 6) time horizons; 7) techniques and procedures.

Layer 1: Research philosophy

In order to address the matter of scientific basis of futures studies, it is important to highlight the basic techniques of the research first. A classical research methodology is based on a certain philosophical theory which then implies strategies and techniques of the research (Nweke & Orji 2009; Saunders et al., 2016). From a historical point of view there may be distinguished two classical or mainstream – positivist and interpretivist, and two rather recent – pragmatist and critical realist, positions of scientific research philosophy (Mingers, 2006; Molis, 2008; Saunders et al., 2016).

1. *Positivism* – mainly reflects philosophical stance of a natural scientist. Ontology is based on objectivist assumptions that entities are observed, atomistic events, existing external to social actors, therefore only observation and empirical data may be referred to as “credible”. Knowledge is obtained by observation and finding event regularities, which are based on causal, law-like and functional relations.
2. *Interpretivism* – an approach based on subjectivist ontological assumptions that entities are constituted of discourse, thus existing or socially constructed reality may be only researched through social constructions as consciousness or language (Myers, 2008). Reality is socially constructed and constantly evolving, therefore knowledge and facts are relative and subjective.

The strict dichotomy between positivist and interpretivist position is a matter of constant critics on the basis of distinction between natural and social sciences. Positivist philosophy admitting that entities such as ideas or social structures exist independently of human beings, does not take into account the role of individual in a social reality. Conversely, interpretivists claim that existence of the world, independent of human thought and perception is impossible. In the middle of 1970’s a new philosophy challenging ideas of positivism and interpretivism has emerged on the basis of Bhaskar’s works.

Bhaskar proposed an idea of transcendental realism and critical naturalism, combined into a theory of *critical realism*. First of all, Bhaskar (2008) challenges the classical empiricism idea of atomistic events, being the ultimate object of knowledge and distinguishes two types of knowledge:

1. *Transitive* – knowledge as a product of social activity; changing objects of knowledge. Objects of such knowledge depend on human activity.
2. *Intransitive* – knowledge of things, not produced by men; relatively stable/unchanging objects of knowledge. Objects of such knowledge would remain exactly the same even if humanity ceased to exist.

According to Bhaskar (2008) the existence of present, past and future does not depend on our knowledge or experience of it – real entities exist independently of events and events occur independently of experience, thus the domains of *real*, *actual* and *empirical* can be distinguished (Table 1).

Table 1. *Domains of reality*²

	Domain of Real	Domain of Actual	Domain of Empirical
Mechanisms	X		
Events	X	X	
Experiences	X	X	X

The core aim of science is to produce knowledge of mechanisms (which are intransitive objects, existing independently of men) and the statements (laws), describing these mechanisms. Traditional scientific approach is aimed at discovering the natural sequences, laws and causation mechanisms which then are tested by conducting an experiment in a controlled environment – relatively “closed system”. Traditional definition of causal laws based on Hume works implies that causation mechanism is based on a simple conjunction of events, where event 2 follows event 1, although such causation is true mostly for closed systems. The reality is complex and changeable, therefore is referred to as an “open system”, where event 2 does not always follow event 1 – the real world consists of actual, as well as non-actualized possibilities and non-manifested powers of existing

structures and mechanisms within given environment. In this context causal laws are defined as *generative mechanisms of nature*, which can be determined within closed system by experimental activity and are efficacious outside closed system, therefore – *transfactual*. Causal laws are understood to operate as tendencies, for that they do not explain *what would happen* under certain circumstances, rather than *what is happening* in an unmanifested way.

According to Bhaskar (2008), social phenomenon is both – causal and interpretive in nature, thus critical realism in a certain way reconciles the two main ontological positions – positive and interpretive, providing a basis to bridge *explanation* and *understanding*. Empirical observation, however, cannot be the only basis for explanation – causality can be understood only in regard to hidden, unobservable causal mechanisms, which are activated under certain conditions and these mechanisms or tendencies, whether actualized or not, may not be empirically observable (Welch, Piekkari, Plakoyiannaki & Paavilainen-Mantymäki, 2011). Causation cannot be reduced to the search for regularities due to the fact that relationship between cause and effect does not necessarily produce regularity, therefore development of causal explanations should be based on exploration of *generative mechanisms* (Danermark, Ekström, Jakobsen & Karlsson, 2002). Within the scientific research this position causes the change of focus – from researching events as such to investigation of mechanisms, producing these events. In case of futures research, the exploration of generative mechanisms is significant in the search for regularities, having potential to foster future events.

Saunders et al. (2016) also admit, that choosing between positive or interpretive position may be unrealistic, thus other philosophical positions of scientific research are proposed in addition to the two offered above:

3. *Pragmatism* – based on assumption that within the research it is possible to adapt both positivist and interpretivist positions whichever works best for particular research question.
4. *Critical realism* – based on two ontological assumptions: 1) the world consists of real entities; 2) we perceive the sensations and images of real entities, not the real entities themselves (Saunders et al., 2016). Knowledge is obtained by discovering generative mechanisms.

Within the field of futures studies there exist various ways of understanding the future and its relation to the present and past. Kosow and Gaßner (2008), claim that from the present perspective future can be perceived in three different views: 1) first view – future is *predictable*, anything that is going to happen can be predicted; 2) second view – future is *evolutive*, purposeful control of future is impossible; 3) third view – future is *malleable*, therefore can be influenced to some extent by participating actors. Inayatullah, (2013) proposes quite similar distinction of three basic views of future: 1) *predictive* – assumes deterministic nature of future, therefore the future can be known; 2) *interpretive* – is aimed not at prediction, but insight, therefore is mainly based on interpretive analysis of different images; 3) *critical* – there is no one determined future, rather than one among many possible futures. It may be stated, that Kosow and Gaßner (2008) and Inayatullah, (2013) propose quite similar views of future, which may be linked to three positions of scientific research philosophy discussed above – *positivism*, *interpretivism* and *critical realism*:

Positivism

Assumes the *predictability* and *controllability* of future. Future prognoses are based on our knowledge of present and past – finding events regularities, based on causal, law-like and functional relations, enables precise calculation of future events by extrapolation.

Interpretivism

Assumes *unpredictable* nature of future. The future is perceived as random, chaotic and unpredictable chain of events, thus the control or prediction of future as such is impossible, knowledge of future can only be obtained through intuitive strategy.

Critical Realism

Assumes the *flexibility* of future. The future is real, although not manifested yet, it consists of multiple possibilities and actualizes through transformative events, therefore the future can be influenced (at least to some extent) by participating actors.

Patomaki (2006), Bell (2003), Van der Heijden (2000) claim critical realist position provides rather distinct basis for futures studies, while List (2005) and Aligica (2011) reasonably notice that critical realist approach can be employed for explanation of possible future constraints.

On the basis of analysis of Patomaki (2006), Bell (2003) and Van der Heijden (2000) critical realist ideas for futures studies, the most significant assumptions may be summarized as follows:

1. Reality can be divided into three domains (table 1) – the domain of real being the largest, the domain of actual and the domain of empirical being respectively the smallest, therefore there are much more real possibilities, than actual or empirically observed events even in closed systems. Knowledge about the world lies within the domain of real, therefore real world can be known.
2. Future as an entity is real, even though not manifested yet, consists of multiple possibilities, which actualize through different transformative events and nodal points, creating particular context and presupposing actions for certain possibilities realization.
3. Social reality is an open-system, containing both – observable, as well as non-observable components and dimensions, therefore precise scientific prediction as such is impossible. However, anticipation of future, based on observation of generative mechanisms can still take place.
4. The knowledge of the future is possible on the basis of logical deduction from the past and the present – observation of unfolding events create conditions to discern a certain trend, which lead to exploration of its causal mechanisms and extrapolation of the trend.
5. Analysis of possible futures creates different narratives of how the future may unfold. The complex of these narratives may constitute a grand narrative of the possibilities for researched phenomenon.
6. Futures studies are focused on on-going processes and actions, rather than on past events, therefore futurologists explain the development of various social structures, specify the boundary conditions and construct a narrative up to a certain point in the future, creating an explanatory history and future scenarios.

All things considered, it can be argued that critical realist philosophy provides rather distinct theoretical framework for futures studies. The idea of multiple futures, which are real, but not manifested yet, shifts the focus from precise scientific prediction of the future to exploration of causal mechanisms and extrapolation of trend by construction of narratives up to a certain point in the future and creating possible development scenarios.

On the basis of ontological classification of futures studies stated above it can be concluded that *positive* philosophy has a potential to provide theoretical ground for futures studies in areas where obtaining tangible data is possible, for instance in fields such as demography, economic development. *Interpretive* position is based on understanding the spectrum of images of the future, rather than on scientific forecasting, therefore it aims to provide an insight not a prediction. *Critical realism* on the other hand, assumes the possibility of different futures which can be influenced

from present at least to some extent, thus it can be employed as ontological position for scenario construction and analysis in areas such as institutions, culture, politics.

Layer 2: Approaches to futures research

List (2005) distinguishes two approaches of studying the future: *quantitative forecasting* is based on mathematical operations such as extrapolation, econometric modelling, etc.; *alternative futures* refer to idea of multiple futures and is based on methods of *foresight*. Inayatullah (2013) distinguishes four main approaches of futures studies: *predictive* – based on empirical sciences; *interpretive* – understanding competing images of the future; *critical* – focused on asking who benefits from certain future; *participatory action learning/research* – focused on developing the future. By the way of summarizing these ideas, Kosow and Gaßner (2008) claim that from a historical point of view approaches of futures studies have gradually evolved from *forecasting*, based on quantitative techniques, towards *foresight* – based on qualitative/combined techniques, being more appropriate for studying complex futures. The first approach – *forecasting*, is mainly applied in areas where tangible quantitative data is available, e.g. demography, economic development, while the second approach – *foresight*, leading to a complex cognitive-analytical view of multiple futures, is used in areas such as institutions, culture, politics.

Layer 3: Approaches to theory development

Saunders et al. (2016) distinguish three main approaches to theory development – *deductive*, *inductive* and *abductive*. Deductive research logic is referred to reasoning moving from general rule to a specific law-like inference and is usually used for theory testing. Inductive reasoning is a way of theory building, starts with specific observation on the basis of which a general rule is formulated. According to Kuosa (2011), in futures studies inductive reasoning is mainly associated with “intuitive” techniques, while deductive reasoning, based on physical argumentation, is aimed to control functions and direct knowledge.

Kuosa (2011) also argues that one of the most significant errors in contemporary futures studies is the demand to control or exactly predict the future, because future as an entity is changeable and unpredictable. A failure to provide “exact” prediction of future is often considered by contemporary scientists as a lack of scientific basis of futures studies *per se*. However, failure in real life is a common phenomenon which is also a part of scientific knowledge, therefore it is important to accept failing as a part of scientific approach. Although both deductive and inductive inferences are widely used in contemporary futures studies, Kuosa (2011) reasonably notices the shift towards *abductive* reasoning. According to Paavola, Hakkarainen and Sintonen (2006) *abductive* reasoning is a form of inference, starting with observation of clue-like signs, which provide the basic notion for further research. Thus, *abductive inference is a best guess or conclusion based on available evidence*.

Referring to Kuosa (2011) three research approaches may be distinguished for futures studies: 1) *deductive* – aimed to direct knowledge and functions control, involves the use of physical argumentation; 2) *inductive* – aimed to control information, involves the use of structural and categorization argumentation; 3) *abductive* – aims to identify structures, connections, contexts and constraints, involves the use of cognitive argumentation.

Layer 4: Research strategy

Presenting research strategies, Saunders et al. (2016) suggests experiment, survey, archival research, case study, ethnography, action research, grounded theory and narrative inquiry to be the main strategies for research. However, research strategies in the field of futures studies can be distinguished in a slightly different manner.

Research strategy can be referred to as a general way which helps the researcher to choose main data collection methods or sets of methods in order to answer the research question and meet the research objectives. List (2005) distinguishes two main types of research methods in futures studies – *quantitative* and *qualitative*. Kosow and Gaßner (2008), Puglisi (2001) besides quantitative and qualitative distinguish *explorative* and *normative* groups of research methods. Explorative methods are aimed at studying multiple futures and exploration of possible developments, while normative methods aim to shape the desirable/undesirable future and build the pathways or chain of events for reaching it. In futures studies all these groups of methods may be used for reaching the specific research objectives – to *describe* the exact patterns of future development, what future will be like; *prescribe* the set of actions in order to reach desirable future; *explore* the possible development of future events. Therefore, the three main research strategies may be distinguished – *descriptive*, *normative* (prescriptive) and *explorative*.

Layer 5: Methodological choice

Saunders et al. (2016) define research choices with reference to the use of quantitative and qualitative research methods, as well as the simple or complex mix of both or the use of mono methods. Qualitative research methods involve numbers and mathematical operations, while qualitative methods imply collection of a vast descriptive data. *Mono method* is used when the research is focused either on quantitative or qualitative data gathering; *mixed methods* – quantitative and qualitative methods used within the same research in order to achieve different aims and offset the constraints of the use of single method; *multi-method* choice undermines the use of both, qualitative and quantitative methods, although the research is based on of them, while the other method is auxiliary or supplementary.

Such presentation of research choices is also relevant to futures studies, according to Saleh et al., (2008) the scope of methods can also be divided into quantitative methods, such as time series analysis, causal analysis, trend analysis, etc., as well as qualitative – Delphi surveys, futures wheel, environmental scanning, etc. There are also methods, that are successfully employed as both quantitative and qualitative – scenario construction, modelling.

Layer 6: Time horizons

Time horizons in futures studies usually refer to periods to be studied or chronological horizon of varying breadth. Kosow and Gaßner (2008) distinguish three basic time horizons: *short-term* – up to 10 years; *medium-term* – up to 25 years; *long-term* – more than 25 years.

Kosow and Gaßner (2008) also distinguish static observations from a point in time in future, usually associated with normative strategies as an alternative time horizon. Such *point of retrospective* is usually used for “static” or “end-state” scenarios construction.

Layer 7: Techniques and procedures

Following the research onion step-by-step, the final layer – techniques and procedures, moves the research design towards data collection and analysis. All previous choices determine the type of basic data collection and analysis procedures, which will help to answer the research question.

Construction of Research Design Using Research Onion for Futures Studies

The construction of research design in futures studies may be based on the concept of research onion, proposed by Saunders et al. (2016). After adapting the concept for futures studies the research onion may be presented as a system that integrates certain theoretical knowledge already developed within the field of futures studies and can be summarized by seven layers (Figure 2).

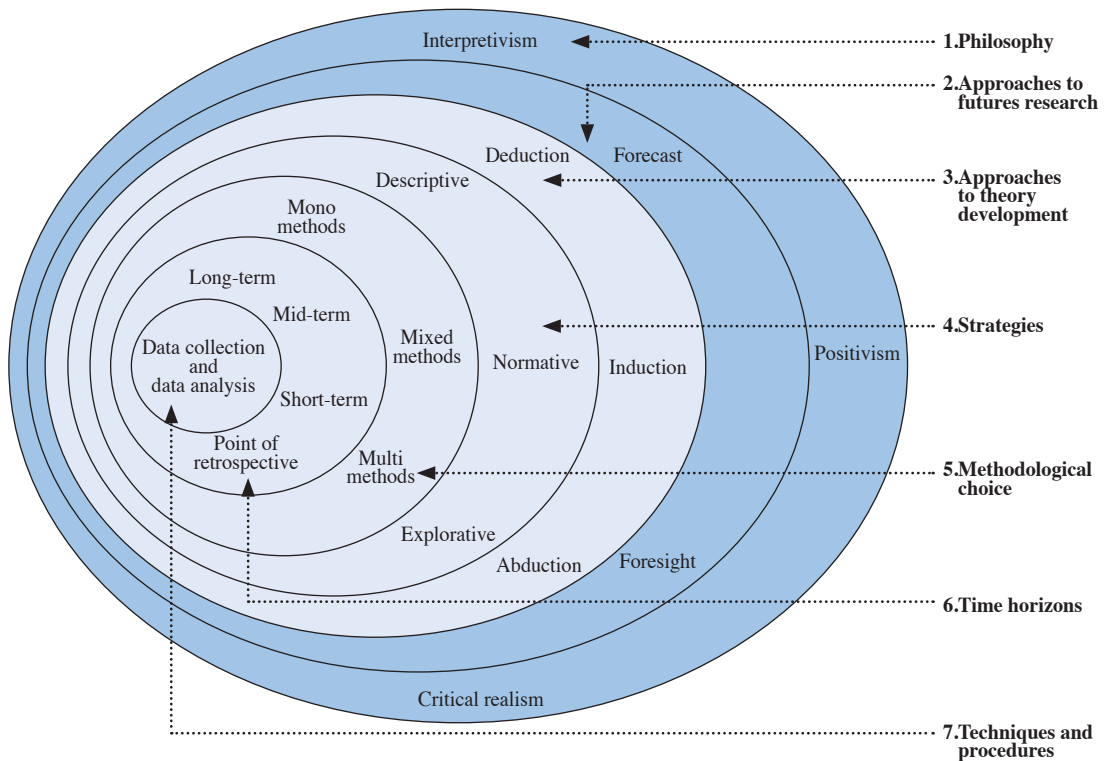


Figure 2. Research onion for futures studies
Source: author following Saunders et al. (2016)

Choosing the research methodology and building up a research design in futures studies may be carried out following seven steps corresponding the seven layers of the research onion for futures studies:

Philosophy

Choosing philosophy in futures studies may be complicated due to the fact that there is no empirical evidence of the future as such. In order to choose an appropriate philosophy, it is important to determine the operational field of the research and available data sources. *Positivism* may be chosen as the main philosophical stance for the research where tangible quantitative data is available, which makes the basis for “calculating” the future and make exact predictions, usually in fields such as demography, economic development. If the research will focus on the use of qualitative data which is often the case, *interpretivism* or *critical realism* may be chosen as the main philosophy. *Interpretive* position can be chosen if the research would mainly focus on construction of futures narratives and understanding the spectrum of images of the future to provide an insight. *Critical realist* position assumes the possibility of different futures which can be influenced from present at least to some extent, thus it is often used for scenario construction in areas such as institutions, culture and politics.

Approaches to Futures Research

The second step is to choose the right futures research approach. Positive philosophical stance is usually followed by forecast approach. Forecasting is based on mathematical operations such as extrapolation, econometric modelling and is aimed at discovering the exact future events. Foresight

is based on qualitative/combined techniques and is used for studying a complex view of multiple futures.

Approaches to Theory Development

Choosing the right approach also depends on chosen philosophy and research approach – *deductive* theory development approach may be associated with forecast, as deductive reasoning leads to certain conclusions which are logical necessities and developed theory is tested or verified by data collection. *Inductive* and *abductive* approaches start with data collection and then move to development of a clear theoretical position. According to Patokorpi and Ahvenainen (2009) *deductive* and *inductive* approaches in futures studies are based on projection from past probabilities, whereas *abductive* approach focuses on discovery of “weak signals”, which are the first symptoms of change. Abductive approach is mainly applied to draw a conclusion from low knowledge (Patokorpi & Ahvenainen, 2009).

Strategies

Descriptive strategy may be associated with forecasting approach and deductive reasoning as it primarily aims at exact description of future events. Normative strategy is aimed at exploring what the future should or should not be like and to search for the ways of reaching it. Explorative strategy is aimed at the study of multiple futures and exploration of possible developments.

Methodological Choice

The choice for methods within the research may be implied by research problem question and the overall aim of the research, therefore at this stage mono, mixed or multi methods may be chosen for reaching specific tasks of the research.

Time Horizons

Depending on the objectives of the research, *long-term*, *mid-term*, *short-term* future as well as *point of retrospective* may be selected as research time horizon.

Techniques and Procedures

At this step a research tool such as questionnaire or interview is constructed in a way it fits all choices, made within previous layers.

Conclusion

Within the past few decades’ futures studies have developed into a scientific approach. Distinct methods create a theoretical basis for studying the future, however methodological uncertainty and chaotic nature of modern social reality does not add to the coherence of futures studies. In this situation the research onion for futures studies can serve as a heuristic approach for building up methodology and developing research design.

The research onion for futures studies, however, does not aim to become “the one and the only” approach for developing the research design, on the contrary – it aims to bring the general notion on the use of existing methodologies and approaches developed within the field of futures studies and serve as a guide for futures studies researchers and practitioners. The research onion for futures studies offers a flexible model of methodology development as it enables the researcher to choose most suitable theories or practices within existing layers in order to answer the research questions.

The presented model may be considered as a process guiding step-by-step towards construction of theoretical framework of the research, which helps to ensure the consistency between chosen tools, techniques and underlying philosophy, thus leading to a construction of a research design in coherent and logical manner.

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Notes

1. From: Research Methods for Business Students, (p.124), by Mark Saunders, Philip Lewis and Adrian Thornhill, 2016, England, Pearson Education Limited. © 2015 Mark Saunders, Philip Lewis and Adrian Thornhill, reproduced with permission of the authors.
2. From: A Realist Theory of Science, (p.2) by Bhaskar, 2008, London and New York, Routledge.

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