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## Introduction

On September 21-22, 2015, 6th International Scientific Conference “Quality of Life 2015. Human and Ecosystems Well-being” was held in Wrocław.

The conference was a part of the cycle of the conferences on the topic of quality of life that have been organized by the Department of Statistics (Wrocław University of Economics) since 1999. The aim of the cycle is to participate in the still rising all over the world wave of scientific studies on quality of life: ethical background and definitions of quality of life, investigating (how to measure it), presenting the results of differences of quality of life over time and space, its interdependences with natural environment, mathematical methods useful for the methodology of measuring quality of life and finally – possible methods of improving it. The conferences are meant to integrate the Polish scientific community doing research on these topics as well as to make contacts with foreign scientists.

This year our honorary guest was Professor Filomena Maggino, past President of International Society for Quality-of-Life Studies (ISQOLS), who presented a plenary lecture.

We hosted about 30 participants, among them scientists from Spain, Romania, Italy and Japan. We had 24 lectures on such a variety of topics as carbon footprint and mathematical properties of some estimators. The common background of all of them was to better comprehend, measure and possibly to improve the quality of humans' life.

The present volume contains the extended versions of some selected lectures presented during the conference. We wish to thank all of the participants of the conference for co-creating very inspiring character of this meeting, stimulating productive discussions and resulting in some potentially fruitful cooperation over new research problems. We wish also to thank the authors for their prolonged cooperation in preparing this volume, the reviewers for their hard work and for many valuable, although anonymous, suggestions that helped some of us to improve their works.

Finally, we wish to thank the members of the Editorial Office of Wrocław University of Economics for their hard work while preparing the edition of this volume, continuous kindness and helpfulness exceeding their duties of the job.

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**LIFE COURSE – PARADIGM SHIFT –  
QUALITY OF LIFE. AT THE MEETING POINT  
OF SOCIAL SCIENCES AND MANAGEMENT**

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**CYKL ŻYCIA – ZMIANA PARADYGMATU –  
JAKOŚĆ ŻYCIA. NA STYKU NAUK SPOŁECZNYCH  
I ZARZĄDZANIA**

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**Summary:** The aim of this paper is to present the concept of combining the theoretical studies and the results of surveys conducted so far on the following subjects: life course, life quality and managing one's own life (self-management) utilizing the longitudinal analysis methodology. An original approach is to analyze the topic of life quality management in life course using the historical experience of life course studies in social sciences. In order to illustrate the original concept and translate it to empirical studies and analyses, we used the example of professional burnout identification. The first two parts of this paper present the history and achievements of life course studies and the changes of paradigms in sociology and demography. The third part presents issues of the anatomy of a life course and life quality, as well as the arguments for combining these two research domains. The fourth part presents the deliberations on life the management quality of life in life course, along with a presentation of a possible study on identifying the risk of professional burnout. The fifth and the final part presents methods and models of analysis, which can be used in the life quality management in life course studies.

**Keywords:** life course, life course anatomy, paradigm – paradigm shift, life quality, life quality management, longitudinal study, longitudinal data analysis models (latent class models, survival models).

**Streszczenie:** W artykule zaprezentowano koncepcję łączącą studia teoretyczne i badania empiryczne z zakresu cyklu życia i zarządzania własnym życiem, bazując na koncepcji i metodologii badań wzdluznych. Oryginalne podejście do zarządzania własnym życiem w cyklu życia wykorzystuje historyczne podejście znane w naukach społecznych jako badania nad cyklem (trajektorią) życia. W celu zilustrowania oryginalnej koncepcji i zaaplikowania jej w badaniach empirycznych przytoczono przykład identyfikacji zjawiska, jakim jest „zawodowe wypalenie się” (*professional burnout*). W pierwszych dwóch częściach artykułu przedstawiono historyczne ujęcie studiów nad cyklem życia w demografii i socjologii. Trzecia część to rozważania nad anatomią cyklu życia i jakością życia oraz próba połączenia tych

dwóch obszarów. Czwarta część tekstu to przełożenie rozważań teoretycznych na przykład zastosowań w badaniu, którego celem będzie identyfikacja ryzyka wypalania się zawodowego w ujęciu cyklu życia, a dokładniej zarządzania własnym życiem. W ostatniej, piątej części przedstawiono metody i modele na użytek analizy wyników studiów empirycznych.

**Słowa kluczowe:** cykl życia, anatomia cyklu życia, paradygmat – zmiana paradygmatu, jakość życia, zarządzanie jakością życia, badania wzdlużne, analiza danych wzdlużnych (modele klas ukrytych, modele przeżycia).

## 1. Introduction

In various publications on this subject, the concept of life course is investigated, studied and analyzed in light of many sciences: anthropology, demography, economy, psychology, sociology, management etc. At the heart of this concept is any entity, such as a person, institution, device or product, and the events it experiences over time. The notion of time in life course studies has many aspects, three of which are:

- **biographic time:** reflecting the chronological sequence of events in a given individual's life course, assuming that earlier events influence the ones taking place later. The term "individual biography" is very broad and is defined as a sum on n-careers: professional, family, educational, emigrational etc. [Frątczak 1999];
- **historic time:** most often it includes historic events influencing the life of an individual;
- **social time:** reflects the influence of social life calendar or, in other words, influence of the broadly understood institutions, norms, social values, which may influence the individual's life.

Every event experienced by an individual is assigned to (placed in) the three above mentioned time dimensions. Because the events are never experienced in isolation, very often the interactions between individuals are also included in the definition of life course. This concept is called linked lives, which denotes the influence of other people on a given individual's life course. The life course concept also emphasizes the importance of sequences of processes and interactions, especially in psychology [Runyan 1977; Haan 1977]<sup>1</sup>. It is argued that the concept of personality may be best described in terms of processes and their organization. In this approach we should consider three processes and their organization:

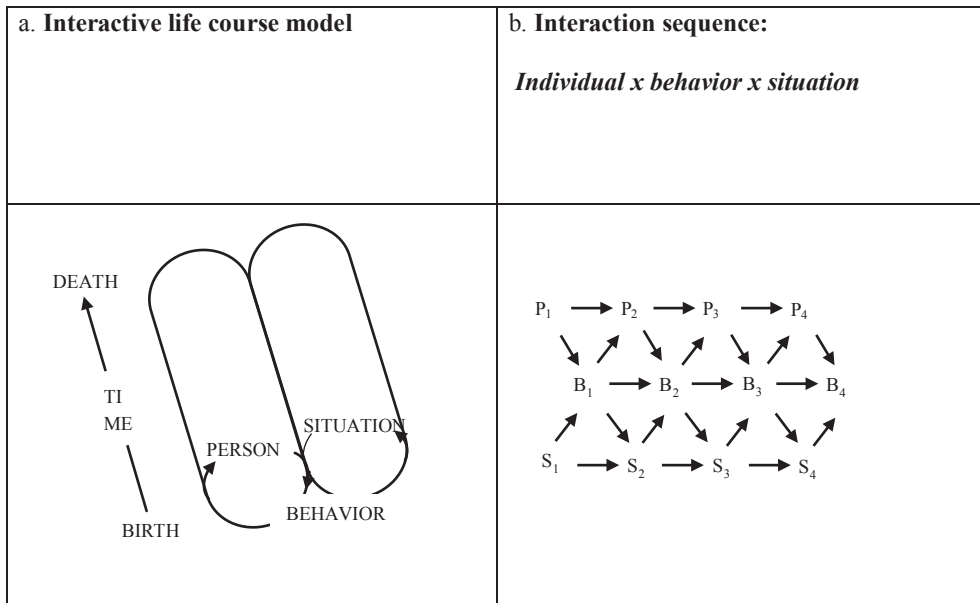
1. **behavior-determining processes** – resulting from interactions between people and situations,
2. **person-determining processes** – creating, maintaining and changing individual states and characteristics,

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<sup>1</sup> It is worth noting, that the presented life course concept, which includes the interaction, is only one of many definitions of life course that can be found in specialist literature.

3. **situation-determining processes** – which individuals use to select, create, and influence the situations they encounter.

The relations between the three processes are presented in Figure 1.



**Figure 1.** Life course – interactions in the life course model

Source: own elaboration based on W.M. Runyan [1977], Fig. 1 p. 573, Fig. 2. p. 574.

Each arrow presented in Figure 1 depicts one of three causal processes defined above. Part 1a does not include arrows that would directly depict interactions between people and situations, however, the underlying assumption is that effect of a situation on a certain person and vice versa – the person’s influence over the situation – are negotiated in behavior. In other words, they are reflected in the behavior process. On the other hand, Part 1b does not include arrows depicting causal mechanisms acting between processes, but includes the ones depicting sequences of interactions. It is worth noting that situations and persons may influence each other, but the behaviors are excluded from this mechanism. This means that there is no directly registered causal mechanism between behaviors. Therefore a modification of behavior is mediated (filtered) by a person. Of course in situations where modelling is involved, most often utilizing various classes of statistical models, each process is reflected by variables, which may be constant or time-dependent. The notion of life course presented here in this case based mostly on psychological publications, is one of many possible approaches.

The paradigm shifts play an important role in the life course studies<sup>2</sup>. Their documenting and scientific argumentation in literature is best presented in sociology and demography. Therefore in this article we will firstly present the life course and paradigm shift concepts in sociology and demography, then we will enumerate the links between the life course anatomy and quality of life, and from there we will move to the original concept of life quality management in life course, which constitutes the fourth part of this article. The final, the fifth part of the text includes the analysis of selected theories and methods (models) of analysis, which can be used for this type of research. The text concludes with final remarks devoted to a proposal of new research concept combining life course, quality of life and the life quality management.

## 2. The concept of life course and paradigm in sociology

According to Elder [1985], two main concepts of life course analysis are: transition and trajectory. They are described as central, or basic. Transitions are movements through states (statuses), which denote socially and individually significant changes in personal life. The concept of trajectory denotes the subsequent phases of human life connected by relations and interdependencies. Movement along a trajectory means moving through various states (statuses) during the course of an entire life. Sequences or phases determined by events constitute a biography of an individual. Both transitions and trajectories can be analyzed on micro and macro levels, along with their particular goals [Hagestad 1991]. However, before this systematization was introduced, social sciences dealing with life course analysis came a long way.

Before the life course notion appeared, scholars working in the field of social sciences used to follow one of two main ways of observing human behavior:

- a) structural approach, or the observation of moments of “social relations”, which dealt with observing the influence of social environment on a given individual, or
- b) “film”, or dynamic, approach, which followed the history of life over time.

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<sup>2</sup> The definition of the word “paradigm” was developed by T. Kun [1962]. The word comes from ancient Greek word *parádeigma* and means “model”, “example”. Paradigm is treated as the original model for sensual things, a schematic model, possessing a didactic value, which allowed for a clear and direct view of particularly complex research objects. The paradigm consists of tradition and applicable practice, which includes the views on science (what it is) and the world (what it is like). It is supposed to be a set of notions and theories, which should form a basis of a given science. It is different from axiom because it can be modified. Paradigm is not unquestionable, given once and for all, but is accepted as a consensus of opinions among the majority of scholars. It can also undergo changes in the course of scientific revolutions. Paradigm in itself undermines the sense of absolute right. Another definition of the word “paradigm” was developed by G.G. Granger [1994]. He defines paradigms as a means to describe the relationship between an observed phenomena and the scientific object. In the case of demography, the scientific object is primarily a population level change – but as we shall see, recent developments indicate a shift in this fundamental perspective.



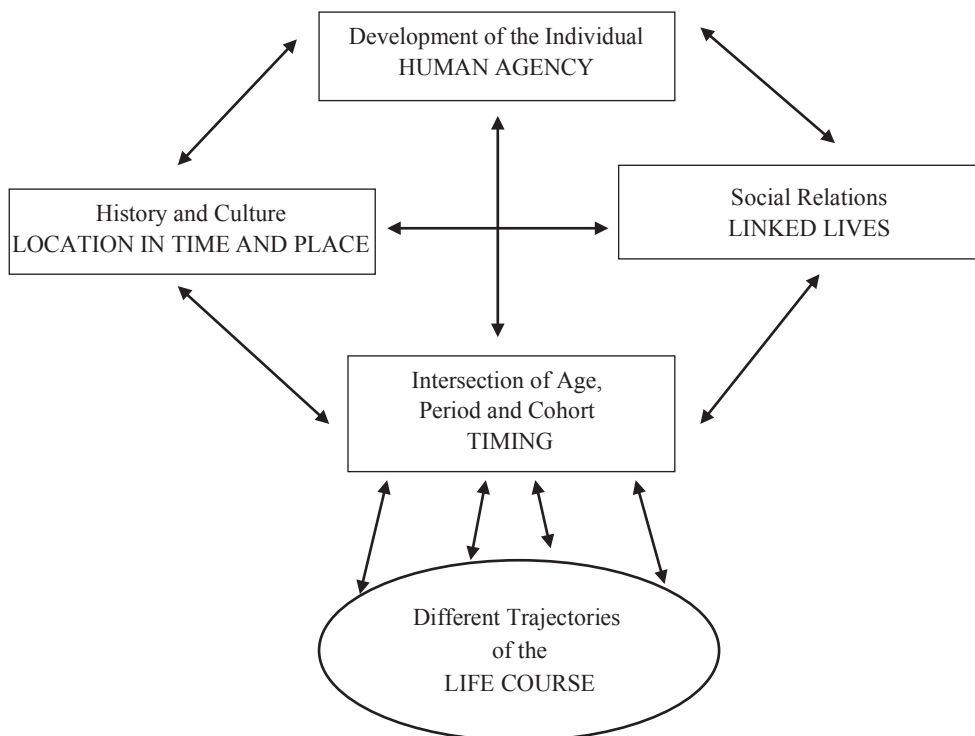
The main difficulty was to comprehensively combine the structural and dynamic approaches in a way which would take into consideration multiple levels of social structure, and at the same time include the dynamic changes. The work in this area dates back to the theories of Marx, Weber and others.

In social sciences [cf. Kok 2007, p. 203 onwards], systematic analysis of life courses was inspired by the life history techniques developed by Thomas and Znaniecki, who studied the life of Polish immigrant peasants in the USA [Thomas, Znaniecki 1920]. In the Chicago school of sociology these techniques were quite popular, especially in the studies of aberrant behaviors. In the 1950s and 1960s, when social sciences became heavily influenced by functionalism, the analysis of biography became less attractive. In the 1970s and 1980s there was a significant revival and growing interest of historical development and complex relations between the lives of individuals and social processes. The scholars analyzing social structures in sociology started to broadly include the approach based on the life course philosophy. It was considered appropriate for providing a theoretical framework for analyzing the phenomena at the junction of various social paths, development trajectories and social changes. There are many authors who contributed greatly to this field of study and worked hard on combining the abovementioned structural and dynamic approaches. These authors are, among others: Elder [1974; 1985; 1994; 1995; 1998] Giele [1988; 1995], Hareven [1978; 1982; 2000]. The research and scientific inquiry on the subject of life course paradigm conducted by Elder and Giele were combined into one consistent system – the relations system in the form of a paradigm. According to the authors [Giele, Elder (eds.) 1998, pp. 9-12] four elements of analysis of Elder's life course are filtered through an individual, while the four matching dimensions described by Giele focus on the relations between an individual and its surrounding social structures. Combining these two theoretical frameworks is useful for tracking the relations between a person and its surrounding, as well as the dynamic changes performed by the individual in the context of social advancements and delays. The paradigm based on four basic keys and the relations between them is presented in Figure 2.

Particular elements of the paradigm created by Elder and Giele [1998, pp. 9-11] have the following interpretation:

**Location in time and space** (cultural background). Social and individual behavior is a complex phenomenon related to several levels of social and physical contexts. However, the experience of each person is, in certain aspects, singular. Both general and detailed aspects of individual situation influence personal experience, and as such can be perceived as socially and individually schematized in a way which is influenced by the flow of time.

**Linked lives** (social integration). All levels of social actions (cultural, institutional, social, psychological and socio-biological) influence each other, not only as parts of a whole, but also as a result of contacting other people who share similar values. Different expectations, norms or social institutions are to varying degree integrated



**Figure 2.** Four Key Elements of the Life Course Paradigm

Source: [Giele, Elder 1998, p. 11].

or internalized. Some of them will exhibit intermittency or distortions, others will reflect smooth interpenetration of personal achievements with social and cultural expectations. In any case we can expect differences between people with different family histories, or professional, educational or other experiences.

**Human agency** (individual goal orientation). Each dynamic system is permanent over time and adapts its behavior to the surroundings, in order to meet its expectations. The motives of people and groups who want to fulfil their own goals result in an active decision-making and organizing the lives around goals, such as economic safety, seeking satisfaction and avoiding suffering.

**Timing of lives** (strategic adaptation). In order to achieve their goals, both individuals and groups respond to the external events' chronology and undertake actions, as well as take part in events and behaviors in a way, which best utilizes the resources at their disposal. Therefore the chronology of events in life can be understood both as passive and active adaptation to achieving individual or collective goals. When and where a certain person gathers or utilizes their wealth or education, begins a professional career or starts a family, are examples of various potential strategies.

As we can see in Figure 2 the relations between the paradigm's keys are vertical and horizontal, but the common element is time. Regardless of the individual social standing and cultural heritage, the scope of social networks, their relations, as well as personal motivations, all these spheres connect and are experienced by individual adaptation to particular situations and events. As a result, these experiences, changes, decisions etc., form various individual life course trajectories. The verification of the paradigm required and still requires numerous quantitative and qualitative studies, both cross-sectional and longitudinal. Their intensive development in sociology, or more broadly speaking in social sciences, dates back to the end of the 1980s and the beginning of the 1990s. Currently these are wide interdisciplinary studies, which include also cross-national comparison.

The works of many sociologists [cf. Kohli 2007; Mayer, Schoepflin 1989; Mayer 2004; 2009; Mitchell 2003] present the view that many scholars accept the life course perspective as a new paradigm in behavioral studies, because such research approaches were not widely popular until the 1990s. The last decade of the 20<sup>th</sup> century was characterized by fast-paced social changes, the process of change of demographic structures, population ageing process, changes in family, labour market – in other words micro- and macro-level changes, which made it necessary to comprehensively analyse social changes in relation to historical influences and circumstances. According to Mitchell [2003] the life course approach is characterized by a number of fundamental rules. According to the author these are: (1) socio-historical and geographical location, (2) timing of lives, (3) heterogeneity or variability, (4) “linked lives” and “linked social ties”, (5) human agency and personal control, and (6) how the past shapes the future.

Each of these elements is characterized and described in detail. For example, when analyzing the timing of lives, the time is defined in three dimensions: individual or ontogenetic time refers to the chronological age; generational time refers to age groups or cohorts – popular terms in this case are: baby boom or population decline. Finally the third dimension – historical time refers to large scale social, political, economic, technological changes. Each of the 6 abovementioned fundamental rules was analysed in numerous sociological publications, document the theory and empirical studies, as well as various example of modelling of processes and phenomena concerning the paradigm changes. In sociological literature the concept of life course sociology, based on the concept of life course as an analytical construct, has been present for over 50 years. Mayer [2004] defines two types of research perspective by asking the question: How do history, societies, and institutions define and shape life courses? First research perspective focuses on historical periods as a sequence of regimes, which regulate life courses. The second focuses on the crosswise differences between countries in regards to the development of institutions as a mechanism shaping the life courses of individuals. The institutional approach to life course studies has been present in sociology for over 30 years. The model was formulated in the mid 1980s and relates to the evolution of institutional programmes influencing the sequences

and positions, as well as their changes in the biographies of individuals, over the last two centuries. According to Kohli [1986, p. 272; 2007, pp. 255-256] the changes in the model of life course institutionalization can be summed up as follows:

1. The importance of life course as a social institution. There has been a change from the system where age was an appropriate category for analyzing the status changes, to a system where life time is the basic structural characteristics. This phenomenon is called temporalization.

2. Temporalization of time to a large extent means the chronological time, which resulted in introducing a standardized, chronological, normative life course (also called chronologization).

3. This evolution is part of a general process, in which a person becomes free from various bonds: status, familial ties etc., which leads to the individualization of a given person's lifestyle.

4. The life of a given individual was organized around the new labour system based on hired work, which was an enormous change. The most visible sign was the organization of individuals' life by the so-called "trifold division" into stages of: education (preparation for work), professional activity and the retirement period.

5. Patterns of rules constituting a life course operate on two levels of social reality. First of these is the transition of an individual through life as a sequence of positions (states), the second are biographical perspectives and actions.

The transition from household economy to an economy based on free labour market, where the issues of labour market deregulation are well understood, forced rational behaviours not only in the field of broadly defined economy, but also rational behaviors and individual, who can influence the shaping of their life events and the decisions regarding transitions between subsequent stages in their life course. Right now young generations face various choices and decisions, which shape their future life course to a much greater extent than in case of older generations. At the same time we have to remember that greater possibilities are accompanied by numerous limitations. After all, times of globalization and living in society of risk limit the range of possible choices.

According to McDonald [2006] there are two waves of main social and economic change, ie.:

- social liberalism (also termed reflexive modernization), beginning in the 1960s and consolidated in the 1970s, and;
- a sharp shift to economic deregulation including mostly labour market deregulation (also termed new capitalism), beginning in the 1980s and consolidated in the 1990s.

Both processes reinforced the individual aspirations in regards to personal and economic life quality. However, in case of markets which differ both culturally and economically, there is a growing pressure to exceed one's possibilities in forming new families and maintaining the already existing ones. Social liberalism and economic deregulation contributed to the emergence of two key changes on the individual level.

On one hand these processes started the phenomenon of ensuring gender equality by creating opportunities of work for women aside from household duties, and on the other hand they contributed to a growing level of young people's aversion towards risk regarding the competitiveness on the labour market [Coleman 2007].

Globalization and the significant growth in the level of education, both for men and women, contributed to young people's growing economic aspirations. At the same time the competitiveness of deregulations at the labour market contributed to the wider differentiation of pays and stabilization of professional career. Such a labour market is now perceived as a place for accepting a constantly growing risk. In these conditions the majority of young people show a growing aversion towards it, following a path characterized by a lower risk. Investing in one's own development (education or professional experience) is perceived by young people as an optimal way of avoiding risk.

### 3. The concepts of life cycle and paradigm in demography

Since the moment when in 1662 J. Graunt published his work: *Natural and political observations mentioned in a following index, and made upon the bills of mortality*, demography as a science, and the models and analyses used in it, have gone through a series of changes resulting from expanding the field of population studies. Assessments and analyses, which emerged in the demography based on cross-sectional approach and which observe the processes and phenomena on a macro scale, were the measurements taken mostly according to historical time. The introduction of cohort analysis means emphasizing the longitudinal approach, however, the macro aspect remained. The analysis focused on the life duration of various cohorts and various processes. Both in cohort and cross-sectional approach the phenomena and demographic processes were analysed in a so-called "pure state", and the individuals and processes were considered to be homogenous. French scholars, such as Henry [1959; 1972], Pressat [1966] made a note of this limitation.

According to many researchers of demographic processes, the new life course approach was not only a new addition to the set of historic demography tools, but also meant a complete paradigm shift. It can replace the demography's dominant "pure state" paradigm, and supplemented with event history analysis methods and models contribute to a completely new quality of population processes studies, and result in another paradigm shift [Billari 2006; Courgeau, Lelièvre 1991; 1997; 2006; Willekens 1999; 2013; Sandre de 2006]. The emergence of life course paradigm, which occupies a central position in demographic studies all over the world, is a part of a large scale change taking place in social sciences in four directions [Willekens 1999, pp. 26-30]: (a) **from structure to process**, (b) **from macro to micro**, (c) **from analysis to synthesis**, (d) **from certainty to uncertainty**.

**(a) from structure to process**

A significant part of life course analysis concerns the identification and characterization of life stages, ie. detecting and recording the structure within individual lifepaths. Focusing on the system's structure suggests that such taxonomy or typology and classification are dominant issues – that the phenomena and objects are ordered within a structure. Along with the growing awareness of creation processes behind each entity and each process, the focus shifts from the structure onto the process: source, progression, interaction with other processes and the emergence of structure (e.g. life structures) as a result of cooperating processes.

**(b) from macro to micro**

Coleman [1990] identifies two explanations of behaviour of social systems (e.g. populations). The first one analyses the behaviour on a system level by determining the system variables, which are interconnected. The second one analyses the internal processes for a given system, involving its constituents or units on an inter-system level. Each of these populations has its own dynamics and each of them influences other populations, and is influenced by them in turn. These interactions are realized as transactions or exchanges, e.g. migrations. The population-level behaviour is analysed as a result of various subpopulations' behaviour, as well as the exchanges between them. The crucial issue for the transition from macro to micro is that it takes place in a particular context. There are interactions between the processes which shape the development. Despite the fact that for analysis purposes it is often better to isolate a certain process and study it apart from other processes (in "pure" state, in vitro), such isolation is impossible in real world. Instead of trying to isolate particular events and processes for research purposes, we should focus on characterizing the context of various processes operating on different levels of grouping.

**(c) from analysis to synthesis**

Traditional demography, similarly to other sciences, focuses on decomposition and analysis. When the basic elements (components, constituents) are determined, and their position explained, they can be arranged in a different way, forming higher tier population structures. Synthesis complements analysis. The synthetic approach forms "groupings" from simple elements selected from a finite repertoire and these are then combined according to the system of certain rules. These rules are formal and abstract limitations. They pertain to the logic of demographic processes and population changes, and not to the population itself.

**(d) from certainty to uncertainty**

The frequency and timing of events occurring during a life course, or in other words the results of event processes, cannot be predicted with a complete certainty. Therefore the events are random. The probability theory offers a framework necessary for the assessment of the influence of random elements of human lives. Despite the fact that it is impossible to predict the exact outcome, the range of possible outcomes is known. Additionally, it is possible to calculate the probability of each

outcome – in other words, the probability distribution of particular results may be known. Uncertainty is a characteristic feature of a given event. We often differentiate between uncertainty, risk and surprise, e.g. decisions taken in conditions of risk versus those taken in conditions of uncertainty.

The most synthetic and summarizing overview of the development of paradigms in demography can be found in a text by four authors: Silverman, Bijak, Courgeau, Franck [2014]. The authors present a synthetic analysis of the changes in event analysis and demographic processes' philosophy, in the approach to the analysis methods and their changes, as well as enumerate, in the context of historical demography, the existing paradigms, which they then describe and put in a chronological order. The result of the existence of paradigms in demography is what the authors call "cumulativity in demography".

In case of demography it means situations in which the developments in the analysis of processes and the advances in research methods led to the cumulativity of knowledge, and not to the emergence of fragmented and mutually exclusive approaches. Each subsequent paradigm attempted to complement the shortcomings of the previous ones, providing means for overcoming their limitations. However, this process never led to the elimination of the previous theories' achievements.

As Courgeau [2012] puts it: "The cumulativity of knowledge seems to be obvious in the entire history of population research [...]: the transition from the regularity of factors to their variation; from the independent phenomena and homogenous populations to independent phenomena and heterogeneous populations; from the dependence on society to the dependence on individual, and finally the fully multilevel approach. Each new stage utilizes some elements of the previous one, and discards others. As a result the whole branch of science advances thanks to the inclusion of subsequent paradigms".

Then how does the synthesis of paradigms look in the historic approach in demography? The answer is presented in Table 1.

**Table 1.** The five paradigms of demography – summary

No.	Paradigm	Period	Key focus
1	Period (cross-sectional)	1662–	Population-level (macro) phenomena, observed and measured according to the historical time
2	Cohort (longitudinal)	1950s–	Population-level phenomena, observed and measured along the lifetime of individual cohorts
3	Event history	1980s–	Individual-level (micro) phenomena, observed and measured according to the individual time
4	Multilevel	1980s–	Individual, population, and interim-level phenomena, observed and measured from multiple perspectives
5	System-based	2000s–	Interactions between population systems of individuals, groups and institutions

Source: [Silverman et al. 2014].

As the authors suggest, each of these paradigms approaches the relation between the observations and the subject of the study in a different way, which enables the emergence of new methodologies, which are in turn able to deal with difficulties encountered by previous methods. At the same time each paradigm exists in a different context, which means that all previous ones are still relevant, despite the emergence of new ones. It is of course clear in demographic literature – cohort analysis is still absolutely sufficient for explaining a wide range of demographic issues, exactly the same as event history analysis and multilevel analysis. What is more, cohort and level information may be utilized as variables in modelling using the event history analysis.

**First paradigm** is the paradigm of cross-section (cross-sectional, crosswise), where social phenomena are independent of people (individuals) and can be explained using various economic, political, religious, and social characteristics. Each demographic process is analysed separately and the measurements of various demographic processes are independent. Macro aggregates are used most often.

**Second paradigm** is a period when many analyses are longitudinal (cohort). However, the demographic processes realized in cohorts are still analysed separately. In each generation one group or population retains the same parameters as long as the phenomenon continues. Similarly to the first paradigm, the population is homogenous and the phenomena are mutually dependent. Macro simulation methods are used for analysis processes and phenomena, in order to simulate population and homogenous groups' level changes. Analytic methods for analyzing the longitudinal changes in homogenous cohorts are also utilized.

**Third paradigm** is the wide-scale use of event history analysis methods for studying the demographic phenomena and processes. These methods are mostly related to the micro-level data analysis, but they assume that these phenomena and processes do not appear in pure state. They are realized in particular environment, there are interactions both between individuals, as well as processes and events. The 1980s brought “a lot of modernity to demographic analysis”. There were large scale retrospective studies conducted in many countries, which restored the life history of an individual among various careers (sequences of events). It was a huge progress.

**Fourth paradigm** (multilevel) is an advancement of the previous paradigm. Processes and interactions operating on micro-level are not isolated from the macro-level. Therefore the analyses and modelling methods include the micro-macro level relations. Also, the interactions do not take place between the levels, but within each level as well. Data on macro-level phenomena are combined with data from micro-level (the so-called “context databases”), which allows for the introduction of a rather comprehensive and complex system of dependencies.

**Paradigm five**, proposed by the authors as the future of demography is a system paradigm, deeply rooted in a broader functional-mechanistic research program. This paradigm assumes that demography should study the interactions between various



population systems, as well as the functional mechanisms, which influence them. This paradigm, in a natural and cumulative way, broadens the scope of the previous four paradigms, and at the same time extends the scope of demographic research. However, in order for it to fully develop, according to the authors of this concept, the demographers and other scientists studying the population have to accept the new requirements they are faced with – after all, all these new elements require a different conceptualization of the relations between various systems of populations, as well as proficiency in using a completely new set of tools.

From the overview of paradigms in demography, presented above, we can clearly see that since its beginnings, that is from the 17th century, demography has gone through a series of changes resulting from the growing area of population studies. Each subsequent paradigm describes various relations between the observed phenomena and processes, engaging new analytical approaches and forcing new types of empirical studies (e.g. retrospective or prospective) for the purpose of studies and analyses. It is important to note what Courgeau [2012] calls the “cumulativity of knowledge in demography”, and what should be considered a mechanism which consolidates all the five paradigms, as well as combines and accelerates the development of demography as a science.

#### **4. Anatomy of a life course and quality of life**

Sociologists, psychologists, demographers, social analysts, economists etc. are all interested in life histories, because they provide a great wealth of knowledge for all social sciences. However, each of these areas of science approaches the life course (history of life) in a particular way, focusing on elements which are of particular interest, emphasizing some elements and disregarding others. And yet the study of life course has the same purpose for each science – better understanding of mechanisms of changes in calculations regarding the individuals and societies. The external structure of the history of life is identical in every case.

It can be described as a series of changes and states, which delineate the individual's life course, and which can be defined as occupying a certain position in time and space. However, scholars from various fields will not define and locate a given state in space and time in the same way. Every scholar will do it depending on personally adopted and appropriate approach. The number of possible combinations of goals and research approaches is relatively large. In this part of our paper we will focus on two issues: the anatomy of a life course and the quality of life. We will try to answer the following questions:

1. What is, and how should we describe the anatomy of a life course, and what groups of analysis methods are used for that purpose?

2. What is the quality of life, how is it defined, measured and analysed?

### **Answer to question 1**

Life course is a process which an individual experiences from the moment of birth to the moment of death. These terms – birth and death – are very broad concepts and can refer not only to people, but also products, companies, various devices (e.g. cars or fridges), and even to legislation process of laws, or the functioning of political entities. In the context of paradigm changes described here, we should look at the life course as an evolving process. In case of a human being it is an evolution from infancy, through childhood, adolescence, adulthood, to maturity. Regardless of the area of science taken into consideration, we can identify two approaches in the life course studies: the description of life course using events and states, and the description of life course based on the description of stages between the events. The first approach focuses on the processes, while the second on the structure. According to Willekens [1999] it is said that people have different life histories if they differ in regard to:

- a) types of events occurring, i.e. the change of attributes taking part in an event,
- b) the number of events occurring,
- c) the time of their occurrence,
- d) the sequence in time.

Many factors can help explain the differences in event history, for example: biological and behavioral factors, those related to individual values or aspirations, norms, attitudes, legal limitations, economic or institutional restrictions. People often experience events which constitute a significant change in the structure (trajectory) of their lives. These events may be results of personal interventions or decisions, or might be caused by other events which take place in their environment, location or institutional surrounding. Therefore the events and the transitions to other states related to them are not completely random, they do not occur in isolation, but they have a certain structure. They are realized in a particular place and time, they can be described using biological, chronological and social time. The linked lives concept, which is common to many fields of study, means, among others, the effect of influence of other individuals on their life events [Wissen, Dykstra 1999].

Summing up, we can repeat after F. Willekens [1999], that the analysis of life course (life history) has three main goals:

- a) Discovering the structure of time and sequence of events in life, i.e. the identification and description of “life structure”.
- b) Determining whether various events in life are linked, and then if yes how. In other words the explanation of “life structure” by determining the underlying basic processes and describing how a given structure is formed as a result of interaction between the processes.
- c) Predicting or creating the life course from partial information, i.e. predicting the entire life history based on available data.

These goals may be connected to the quality of life, and understood the same way the quality of life is defined by social politics experts, social statisticians, psychologists

etc. We can say that on every stage of life and in every career forming the life course we deal with the quality of life. While it is true that no published research makes this connection, going back to the roots, that is to the work of Thomas and Znaniecki [1920], can help find such inspirations. The globalization of life, and the resulting globalization of science more and more often requires an interdisciplinary approach, and combining the research on life course, quality of life and the actions connected to directing one's own life (as much as it is possible) by means of management, fulfills the characteristic of an interdisciplinary approach.

### **Answer to question 2**

Current state of search for the methodology for life quality studies is an expressive depiction of Kołakowski's [2011, p. 163] view, who wrote: "The quality of life is not able to define itself. It is never constant and commonly accepted". It is a notion that is commonly abused by media to describe the conditions and level of one's life. Another notion that also appears quite often is "dignity of life", but so far statistics, including its practitioners in Poland, have not attempted to properly deal with the terminology of life's "dignity", despite the fact that the degradation of environment, financial crisis, or irresponsible consumption makes life of people far from "dignity". Focusing on the life quality studies, we have to state that it is a social construct linked to the theory of human needs, which is the basis for the theory of consumers' choice. It is also dependent on the junction of many areas of human life, including (which has to be especially emphasized) the human psyche. Its perception is subjective and cannot be measured in the same way as objective features. However, this does not mean that there have never been attempts to more precisely define the notion of quality of life. We can even see that such attempts have become more intensive in recent years. As a result, because of the multidimensional character of this concept, there are still many definitions of quality of life.

The increased research attempts to study the life quality methodology result also from the undermining of GNP (gross national product) as a measure of social effects of economic changes. All country rankings using this measure have ceased to be reliable, although in time and space they are convenient for comparison purposes. Instead of GNP, there were attempts to use other measures, such as for example Human Development index – HDI (modified in 2011 after a lot of criticism), or the happiness measure called the Gross National Happiness – GNH. We have to underline here that the bases for constructing the synthetic measures were either partial objective measures (HDI) or subjective assessments of areas of life. One of the disputable problems of the methodology of life quality is the use of Likert's scale. A proposal of adopting a continuous character of measurements of this scale is presented by Kot and Słaby [2013].

It is worth reminding that the precursor of this approach to defining the quality of life was Jeremy Bentham, who in 1781 suggested the assessment of human life situation using the so-called happiness calculation, which result came from

comparing the pleasure and unpleasantness. It is worth noting that one of the pleasures was the possession of wealth.

At the end of the 20<sup>th</sup> century, psychologists, economists, and social statisticians looked for a way to assess the quality of life by measuring the feeling of happiness. In Poland the quality of life appeared in research as a triad: conditions – level – quality of life, proposed by Luszczewicz [1982]. This construct was extended by Słaby [1994] with the notion of “life dignity”. Measures (objective and subjective, always treated separately for each element of the above mentioned triad/tetrad) formed a system of social indicators. For many years economists have tried to separate the categories of well-being and life quality. Kot [2004], quoted Aristoteles, who “connected well-being with happiness, bearing in mind that the economic prosperity was only a mean for happiness achieving”. Accepting positively such a view means that the conditions and level of life should be treated as determinants of life quality. It is confirmed by Constanza [2007, p. 268, who wrote: “The Quality of life is a function of needs’ fulfilment level (level of life) and the degree of individual and group satisfaction with such a level”, and at the same time suggesting the integration of objective (micro and macro) and subjective (micro) data. Panek [2015] agreed with this view, which functions as a concept in the studies of ESS (European Social Survey). He conducted an analysis of subjective well-being of European countries, and identified the empirical differentiation of the 2012 data from the voivodeships of Poland.

Assuming that this approach is debatable, we should note that the difficulties with the definition were the basis for separation of positive psychology and behavioural economics, what allowed for the separation of life conditions analysis from the studies of emotional states, which can be independent of life standard. Michoń [2010] stated that the assessment of life quality is relational. Comparing one’s life situation to the situation of others with similar status, and confronting what is owed with what is desired are two basic sources of growth or decline in the perceived emotional state. Another approach is the trend inspired by J. Marsh, who, during the TED conference in Sydney in February 2011, said: “Thousands of people lead their lives in silent desperation, spending long, exhausting hours in work they hate, in order to buy not needed things only to make an impression on people they don’t like”. The article quoted above includes many examples of criticism of longer and longer working hours, which only goal is greater and greater consumption. There we can also find many ideas of “various ideas of different life”, which begins to be more and more popular. Such a different life is reoriented towards the prioritization of human life goals, abandoning the need to do many things at the same time in favour of almost ascetic approach, focused on one, most important thing, selected without any pressure. This approach to building high quality life is possible by managing oneself. It is also one of the newer approaches in searching for the sources of “different” quality of life, defined as an effect of domination of spiritual values over material ones. In short, the quality of life defined in this way might be a result

of managing one's life, understood as conscious shaping, searching and arranging such lifestyle that includes simple, economical consumption which is above all shaped as if contrary to the current trends and professional and societal pressure. Such managing of oneself in accordance with own beliefs and attitudes may be an expression of prioritizing of values over advantages – just like Lubecka [2010] and Wawak [2015] point out.

This research issue comes from the trend of looking for methods of company management “humanizig”, where a new approach to life quality philosophy, based on – according to Lisiecka [2001] – responsibility, morality and purposefulness of life may help. This approach refers to these definitions of human life quality described in subject literature, which stem from the actions in accordance with accepted system of values and attitudes, and result from actions only in a given individual's own range.

Empirical survey [Słaby 2014] in a specially selected group of young postgraduates working in corporations, might be a basis for larger studies. Its subject is strongly related to the assessment of chances for changes in attitudes of humans, who attempt to manage their lifestyle, which can – in case of wider emulation (trend effect) – cause a greater importance of spiritual and emotional life in building quality of life.

Hitherto existing studies on the life quality of populations have not led to creating one standard methodology, mostly because of different views regarding the issue of what high quality of life means. Although the first ever life quality study (in the USA) concerned the mental health, and in particular the ways of dealing with fear and anxiety, every subsequent studies, regardless of their locations, focused mainly on satisfaction and happiness, and their evaluation was based exclusively on subjective measures. A sort of aggregate, or synthetic evaluation, was the response to the question regarding life quality as a whole.

Therefore there is no simple “recipe” for perceiving high quality of life, just like there is no “author's” idea for discovering the source of greatest happiness and standard of living, which would result in high perception of life quality.

Concluding these deliberations it is worth asking another question: Is there a place in the life course approach for the quality of life issue? The answer should be “yes” – there is a place for quality of life in the life course approach. The life course concept is a philosophy of life from the moment of birth to the day of death; every stage of the life course should include the attempts to achieve the best quality of life possible. Both life course and quality of life are the concepts characterized by multidimensionality, the difference being that life quality analysis is based on cross-sectional studies, while life course approach is based on longitudinal studies. Therefore combining these two areas of research necessitates the inclusion of longitudinal analysis in life quality studies, which means that the data regarding areas (domains) of quality of life should take into consideration changes over time (the dynamics of changes) and not only changes in spatial dimensions, as it has been done so far.

## 5. Managing quality of life in life course

The issue of managing life quality is a quite new interdisciplinary approach combining several aspects. The notions of life quality and life course are presented above. The methodology of life quality research belongs in the sphere of activities aimed at searching for ways to manage oneself in order to find ways not to do anything in life in spite of oneself. The results of research regarding the barriers of such behaviour may help us achieve this goal. This can also allow us to gather data required for modelling and analysis. A separate issue of equal importance, are the theoretical premises, which can be used in this approach. The next part of this text is devoted precisely to this issue.

We live in times when the expectations towards employees are constantly growing. Meeting these expectations is very often possible only by reaching the limits of one's endurance. When this limit is exceeded, we can observe – especially in case of management and their teams – the “professional burnout”. Professional work is an important part of life course (it defines the professional career) of every person. The satisfaction of a well done job and the pleasure derived from this fact are important elements of life quality. However, the level of satisfaction from the quality of work done can be disrupted by the professional burnout symptoms. **The professional burnout syndrome** occurs when work ceases to provide satisfaction, an employee feels overworked and unhappy with his/her performed duties, which once were a source of joy. In such a situation the employee is not developing, and the lack of creativity is transferred to lower tier employees. The self-burnout model developed by Maslach [1993; 1998] includes three basic factors: (1) emotional exhaustion, (2) depersonalization, (3) decreasing joy derived from professional achievements.

In order to deal with this phenomenon (similarly to other factors constituting the life quality deterioration), it has to be comprehensively diagnosed, and then actions should be undertaken which will allow us to solve the problem. We have to remember, however, that in the process of identifying the state of professional burnout, which takes place in a certain real-time period as well as in certain stage of life course, we need to combine various dimensions (in other words approach perspectives). Therefore, as an example, in the following paragraphs we will answer the following question: how to “combine” quality of life with professional burnout and actions characteristic of self-management. For the purpose of diagnosing and analysing data gathered in life quality research, the idea of self-management in the life course perspective might prove useful.

Wawak [2015, p. 9], adapting the definition of ISCO NORM (900:2005), relates the definition of quality management to the life quality management, defining it as follows: “Individual management of own life quality is a coordinated set of activities related to managing oneself and supervising it in regards to its quality”. At the same time the author believes that managing the individual quality of one's own life requires one to undertake certain actions regarding:

- identifying and stratifying the quality goals,
- defining, adopting and consistently realizing life quality policy,
- planning and guiding life quality, along with its constant improvement.

Kolman [2004, p. 128] states: “Managing own life quality is a conscious shaping own life quality in all areas, using material and non-material goods available in certain circumstances”. From the book “On Managing Yourself (HBR’s 10 Must Reads On Managing Yourself)”, ICAN, Institute 2013, a reader can learn how to successfully manage oneself and make chances available to everyone. One of the tips states: “fight for the satisfaction and a life you can be proud of”. The authors of collaborative work point out the tools which can allow everyone to look at their lives from a different perspective and shape it in an even more conscious way<sup>3</sup>.

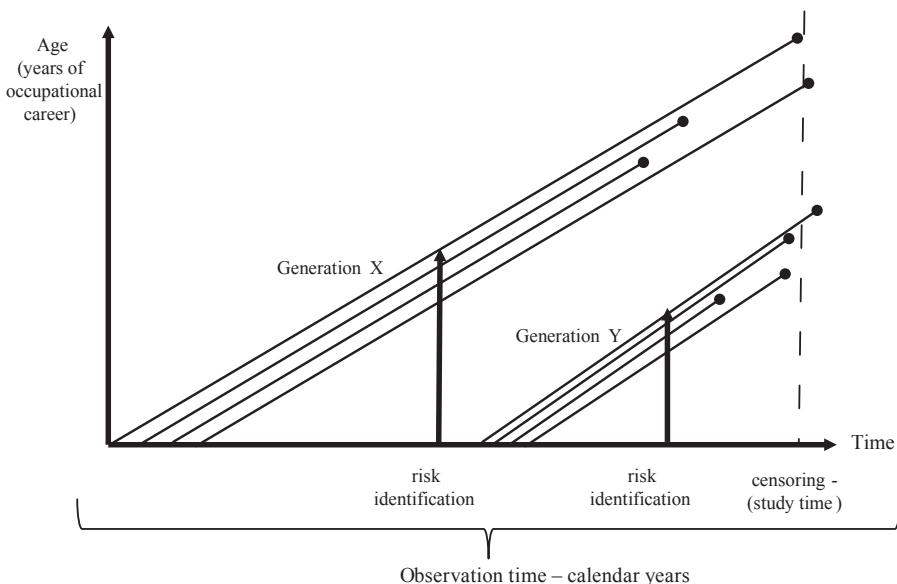
Słaby [2014, p. 2] believes that “life quality may be a result of management, understood as conscious shaping, searching and arranging a way of life that includes, among others, simple, modest consumption, and which is above all else shaped as if in spite of trends and work and society pressure”.

Going back to the promised example we assume that the information required for the analysis of the three dimensions (quality of life, life course and life quality management in life course) has to come from longitudinal studies – either retrospective or prospective. Figures 2 and 3, included below, present graphically the philosophy of the possible study of professional burnout phenomenon in longitudinal approach, assuming that there are two generations (cohorts) of employees.

This research can be extended to all domains which constitute the subjective well-being. Of course the measurement of subjective well-being depends on the adopted subjective quality of life, which element is the subjective well-being. In the conducted surveys, Panek [2015, pp. 2-4] adopts the definition of subjective well-being after Huppert et al. [2009; 2013], which includes both personal and interpersonal viewpoint (personal level) and the strength of relations with the surrounding (social level). Subjective personal well-being consists of: emotional well-being, happy life, vitality, resilience and self-evaluation, and functioning. The subjective social well-being includes two elements: social support, trust and sense of belonging. As we can see, the presented phenomena, processes, domains and research concepts are characterized not only by multidimensionality, but also the interdisciplinary nature of the connections.

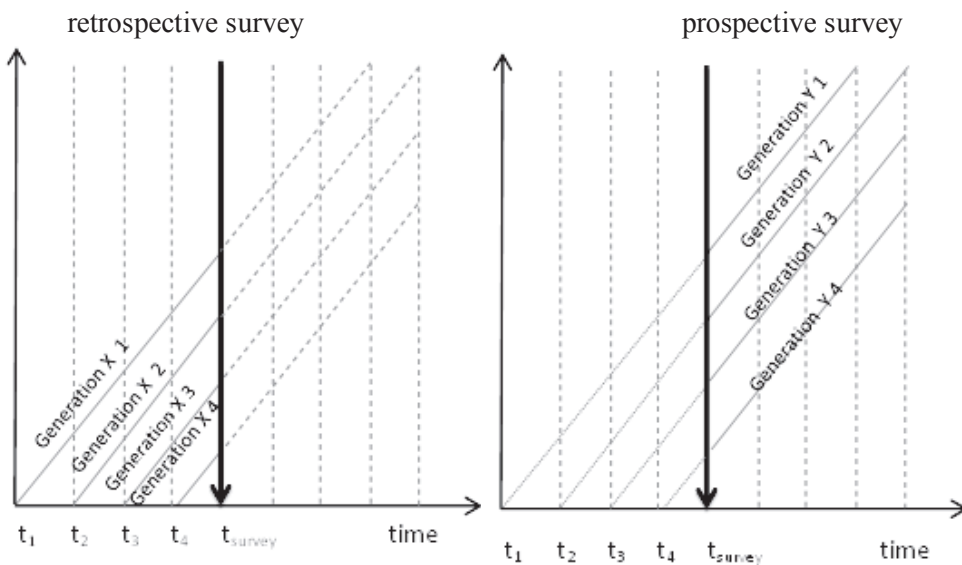
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<sup>3</sup> In his review of the book, Dariusz Grzywaczewski, the Chairman of the Board of Radio PiN says: “Today self-management is not only a privilege of people who have a significant grounding in psychology. It is a duty of everyone of us” [<http://sklep.hbrp.pl/o-zarzadzaniu-soba.html>]. While Magdalena Czaja, the Chairwoman of the Board of Agencja Reklamowa San Markos, gives the following comment: “Publication such as “On managing yourself” gives a completely new perspective and points towards particular tools for getting rid of old, constraining schemata. It allows us to find power and joy of discovering that our strength is teamwork and that professional work might be one of many exciting elements of our lives, not only an unpleasant chore. I sincerely recommend it [<http://sklep.hbrp.pl/o-zarzadzaniu-soba.html>].”



**Figure 3.** Framework for longitudinal studies – risk identification of the job burnout for two generations: Generation X and Generation Y

Source: own elaboration.



**Figure 4.** Framework for longitudinal studies – risk identification of the job burnout for two generations: Generation X and Generation Y – retrospective and prospective survey

Source: own elaboration.



## 6. Selected theories and methods possible to apply

For analysing the life quality in its course including elements of management we can use numerous theories from various sciences: economy, sociology, psychology, management, etc. Below we present three theories, which we think might be useful: theory of rational choice (economy, sociology), social capital and social networks theory (broadly understood as social sciences) and the theory of planned behaviour (psychology). The concept of longitudinal life quality studies is linked with certain type of modelling and its usefulness. The most suitable methods in this case are the latent class and survival analysis methods.

### **Rational choice theory**

In the economic approach the rational choice theory assumes that every person is an independent individual with free choice, who perceives life decisions as a part of system of norms and imperatives. The rational choice theory [Coleman 1988; 1990] assumes the rationality of undertaken decisions. Out of all possible choices one always selects the one providing most satisfaction. The rational choice theory defines which choices should be made in order to achieve a particular goal. However, differently than ethical theories it does not point toward the goals, does not judge, focusing instead on the means which are suitable for achieving a particular goal. We can assume that there are certain conditions which – after noticing them – a given acting individual subject submits to. In this case there is no explanation or judgement, but rather predictions that after the arising of certain circumstances an appropriate action takes place. This type of decision-making process, assuming the individual's activity, became popular at the beginning of the 1980s and the 1990s [Hedström, Swedberg 1996]. At the core of this theory there are four basic concepts: domination, functionality, preferences caused by intentions, and consideration, which is the basis of rational behaviour [Anand 1991, pp. 200-203].

- Domination – if the set of preferred, not dominated solutions (options) is not empty, an individual should choose one of the available options.
- Consideration – in normal circumstances an individual controls his/her own behaviour.
- Functionality – the choice made has at least one conscious justification.
- The known preferences determine the choice made, which allows us to rule out the possibility of random decision.

The core of the rational choice theory are the relations between the preferences of individuals, who strive to include all the possible options and the maximizing the expected results or minimizing losses. The optimal choice is possible after investigating all the possible variants and their results.

### **Social capital – social networks**

The theoretical basis for social capital are based on the following statement: any person making a certain decision is not isolated, but is closely linked to his

or her surrounding [Bühler, Frątczak 2004; 2007]. There are many understandings of social capital, which apart from sociology made their way to other fields of study as well, including demography, economy and management. The definitions and approaches to social capital vary significantly: from macro-scale [Putnam 1995; 2001; Fukuyama 2000; 2003], through mid-scale [Coleman 1988; 1990] to micro-scale approaches [Bourdieu 1986]. According to Putnam [1995, pp. 664-665] “social capital are the features of social organizations, such as networks (systems) of individuals or households, and the related norms and values, which create the external effects for the entire community”. According to Fukuyama’s definition [2003, p. 196] “social capital is a set of informal values and ethical norms common for the members of a certain group, allowing them to cooperate successfully”, putting particular emphasis on trust and the role of family as a source of social capital. The notion of family social capital is understood as bonds among family members, which allow them to cooperate and collaborate, and which at the same time are not against social interest. These bonds are realized in attitudes of respect, trust, love, interest, care, help and concern for family members. Analysing the economic theory of family, Becker [1991] stressed that family shaped such characteristics as reliability, honesty, solidarity, ability to cooperate and sacrifice oneself, diligence and penchant for order.

Coleman [1990] perceived social capital as, above all, a feature of small groups, where strong relations are formed. People form groups in order to realize their own goals, but at the same time an additional value (social capital) is created – which becomes a resource available to all, including even new members of the group. Social capital, understood this way, is not formed consciously by people, but is a result of emergence of strong bonds in small communities, which were formed because of the existence of individual goals. This way individual goals may be transformed into benefits resulting from friendly relations with other people.

Bourdieu [1986, p. 248] defines the existence of the so-called individual social capital in the following way: “social capital is a set of real and potential resources, which are related to the possession of a permanent network of more or less institutionalized relations based on mutual acquaintance and trust – or in other words being a member of a group – which provides each and every of its member with support in the form of capital shared by the collective, reliability, which allows them to make use of a credit in the broadest possible understanding of this term”. According to the author, social capital denotes the number of acquaintances which a given individual has. It is important to note that the varying access to social capital is a cause of the emergence of social inequality, which is strongly related to quality of life, both in its subjective and objective aspect.

The most general definition of social capital is the potential resulting from the cohesion of interpersonal relations, which serve social purposes and not only group or individual interests. Extending these theoretical analysis, social capital can be also understood as all the resources, which are available to the individual because

of its social bonds, that is resources which are in possession of (or are controlled by) a person situated within an individual's network of contacts, or which can be obtained by relations of any member of the network of contact with other people. The overview of social capital measurements and definitions can be found in a publication by Sierocińska [2011].

### **Theory of planned behaviour**

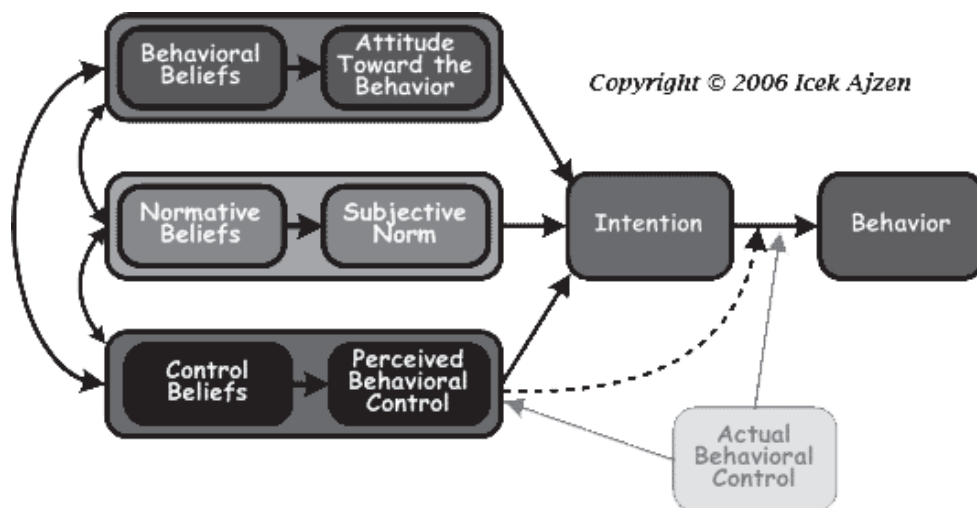
The theoretical approach which we use as a starting point for analysing individual decisions is the planned behaviour theory by Ajzen [1991]. This theory is built around the notion of intention, which includes all the motivational components leading to behaviour. The intentions are “indicators of how dedicated people are to realizing certain behaviour” [Ajzen 1991; 2012]. The main assumption of the model is that if there are no unexpected circumstances, people behave according to their intentions. These intentions can of course change over time as a result of changes in one of the three groups of factors influencing them. These factors are: attitudes, subjective norms and enforcing control over behaviour.

a) Attitudes. Every behaviour of an individual is shaped above all by their attitude. These attitudes are in turn based on beliefs regarding the effects of a given behaviour. The higher the subjective value of a given behaviour, the more positive the attitude towards it, and as a result, the stronger the intention to realize it.

b) Subjective norms. Another group of factors influencing the intentions of individuals are subjective norms. According to Ajzen's theory [1991; 2012], these norms are closely related to social pressure, exerted towards the realization of or refraining from certain behaviour. Subjective norms are created based on personal beliefs, that a given behaviour will or will not be approved of by “significant others”. An individual may consider these “significant others” to be their parents, friends, but also the society as a whole. Moreover, some subjective norms may be so strongly internalized, that they are independent of any reference people. Such norms are called moral norms by Ajzen.

c) Enforcing control over behaviour. While norms and attitudes described above are responsible for forming intentions, the control over behaviour is a factor which allows individuals to put their intentions into action. Ajzen [1991] identifies two types of control: real and subjectively perceived. The real enforcement of control is related to resources and possibilities that an individual has at their disposal: time, money, skills, cooperation with other people, etc. [Ajzen 1985; 2012a].

However, Ajzen believes that not only real enforcement of control is important for the understanding of individual behaviour – subjectively perceived enforcement of control is also important. Therefore the studies should take into consideration not only the objective resources of an individual, but also a subjective judgement. The schemata of the model are presented in Figure 5.



**Figure 5.** Theory of planned behaviour

Source: [Ajzen, Sexton 1999, pp. 117-138].

The presented theoretical model is a framework model, which can be applied to any behaviour. In order to analyse various life decisions, the question has been answered what attitudes, norms and elements controlling the behaviour are important from the perspective of certain life decisions and their planning, and in particular life quality management. This theory is used in many areas of scientific research because of its universal structure. It has recently experienced a revival in its application. One example might be the publication by Ajzen [2012a]. In this article the author takes issue with the recurrent reliance on job satisfaction to explain job-related effort and performance. The disappointing findings in this tradition are explained by the lack of compatibility between job satisfaction (a very broad attitude) and more specific effort and performance criteria. The model created using the theory of planned behaviour is the “Expectancy-value model of job performance”. Therefore the TPB theory can be successfully used in the studies of life quality in generational approach including the important self-management element.

### Potential analysis methods

Over the last 30 years we have observed significant development of research and analysis methods related to the broadly defined “longitudinal data analysis”. The data and models used in their analysis are applied in many fields, such as: biology, medicine, social sciences, economics, natural sciences, management [Frątczak 2014]. Out of the multitude of methods and models existing today, the following seem to be particularly useful in quality of life analysis and its management in longitudinal approach: hidden class methods and models and survival analysis. Their short description is included below.

### **Latent class analysis**

The features of individuals, objects, subjects, etc. in longitudinal studies of life quality and life course can be both observable and unobservable. The analysis of unobservable features is more difficult, but at the same time very useful. The answer to this need is the analysis of latent class. Generally we can identify three main areas of application of latent class models [cf. Sikorska 2012; Collins, Lanza 2010]: analysis of particular cases (situations) and placing them in segments (Latent Class Cluster Models), variable reduction (Latent Class Factor Models), scale construction and predicting the dependant variable (Latent Class Regression and Choice Models). For analysing data from retrospective or prospective research, the most useful method is the analysis of transition between latent states, called the Latent Transition Analysis. LTA, which is an extension of the Latent Class Analysis methodology for longitudinal data, makes it possible to measure the intensity and direction of migration in the period between latent states which cannot be directly observed. This type of modelling is particularly useful in the assessment quality of life, in subjective approach, where a lot of qualitative variables are utilized.

### **Survival analysis methods and models**

Survival models, event history analysis models are a specific group of models which were introduced to statistical analysis a very long time ago [Graunt 1662]. More on the subject of history of modelling can be found in [Frątczak 1997; 2014; Frątczak et al. 2005]. The versatility of this group of models and their use in various disciplines resulted in the fact that the same group of methods functions under different names: for example, in medicine and demography it is called survival analysis, in sociology – event history analysis, in economy, social sciences – duration analysis or transition analysis, in engineering – reliability analysis or failure time analysis. A characteristic feature, distinguishing this groups of models from other regression models, is the fact that the dependent variable in this group is the hazard function, also called the intensity function, which does not appear in an empiric form, but the values of which can be inferred from the estimation of models. This group of models includes:

- non-parametric models,
- parametric models – accelerated failure time models,
- semi-parametric models – proportional hazards model and non-proportional hazards model.

The remaining types of models are: competitive risk models, multi-state models, recurrent models.

**Non-parametric models** for  $T$  variable (duration, survival time) are those models in which the analytical distribution form given as a density function or probability distribution for  $T$  variable is undefined. Non-parametric models are used for assessing the course of events' intensity using the estimation of functions such as: hazard function, survival function, distribution function, cumulative hazard risk.

More on non-parametric models can be found in the publications by [Allison 2010; 2014; Frątczak et al. 2005; Shenyang 2010; Box-Steffensmeier, Jones 2004; Hosmer, Lemeshow 2008].

**Parametric models for random variable  $T$**  (duration and survival time) are those models in which the analytical form of probability distribution is known (defined). Apart from density functions there are other functions describing the distribution, i.e. hazard function, survival function and the distribution parameters: expected value, variance, standard deviation. This category of models includes the Accelerated Failure Time Models (AFT). AFT model is defined as:  $\log T = \mu + \sigma \varepsilon$ , where  $\mu$  and  $\sigma$  are the parameters of location and scale, respectively. This group of models includes the logarithmic-normal, exponential and Weibull's models (more on this model class: [Allison 2010; Broström 2012; Lee, Wang 2013; Liu 2012]).

**Semi-parametric models** are often used in event history analysis. Their application in demographic, medical, social, economic and business analyses has been growing since the 1970s. The beginning of their popularity is related to the article by David R. Cox [1972, pp. 187-220]. Cox proposed a model commonly known as the proportional hazard model. His model can be equally correctly called the non-proportional hazard model. There are numerous extensive publications on this subject, for example: [Cox 1972; 1975; Cox, Oaxen 1984; Allison 2010; Lee, Wang 2013; Liu 2012].

## 7. Conclusions

The globalization of life and the resulting globalization of scientific research more and more often requires an interdisciplinary approach. The research concept presented in the text, based on Polish and foreign literature of this subject, tackles the issue of combining the studies and research on: life course, life quality, and actions related to one's own life by means of self-management. According to the authors, this is a new concept of studies, which fulfils the criteria of interdisciplinary approach. An original approach is undertaking the subject of life quality management in life course. The discussion starts with the essence of a concept of life course and life course paradigm shift in social sciences. A characteristic feature of these changes, in historical approach, is the cumulateness of knowledge, which was and still is the driving force behind the development of research and analysis concept. In the section devoted to life course anatomy and its connection with quality of life after an in-depth discussion of research areas, we pose the following question: Is there a place in the life course approach for the issue: quality of life? The answer is affirmative, and therefore the following deliberations cover the issue of life quality management in life course. In order to illustrate a possible empirical survey the authors used an example of professional career of two generations of managers, where the phenomenon analysed – according to the longitudinal survey concept – is the **identification of professional burnout risk**. The research concept presented in

the article requires the use of certain theories and analysis methods taken from various disciplines. Out of many theories from such fields as economy, sociology, psychology and management, we have selected and characterized three theories, which, according to the authors, might be utilized: rational choice theory, social capital – social networks theory and the theory of planned behaviour. A certain type of modelling is required for the proposed concept of longitudinal survey of life quality in life course. The following were deemed most suitable for this task: latent class methods and models and survival analysis models (non-parametric and semi-parametric Cox's models).

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