

## **Project “Multidimensional Biographies and Social Structure: Poland 1988-2018”**

Full description [excerpts of the grant proposal accepted by the National Science Centre, OPUS 13 competition]

### **DETAILED DESCRIPTION OF THE RESEARCH PROJECT**

#### **1. Scientific Objective of the Project**

The main goals of this project are to advance the theory, methods and empirical base for studying the dynamic relationship between multidimensional biographies and the social structure during the last 30 years in Poland. The project allows scholars to address fundamental research questions in the social sciences: How do intellectual and social resources impact individuals’ economic, political and cultural biographies, and how do these biographies shape the social structure through time? These problematics are at the center of stratification and life course research. However, dynamic empirical analyses are few, due to scholars mostly having access to cross-sectional survey data that can capture broad societal shifts but do not apprehend individual-level change.

This project is uniquely positioned to overcome this major limitation of social science research with panel survey data that will measure over-time change in individuals’ resources, together with transformations of structural features. Specifically, we propose to conduct a new face-to-face survey on a representative national sample of adults in Poland in 2018, and match it to the project’s empirical foundation, the Polish Panel Survey POLPAN 1988-2013 ([polpan.org](http://polpan.org)).

The resulting POLPAN 1988-2018 study will constitute a breakthrough in research on social structure. It will enable innovations in both substantive and methodological analyses. Substantively, we will use the POLPAN 1988-2018 data to analyze how people form distinguishable segments of the social structure with specific intellectual and social resources and are involved in social mobility processes over their life span.

Methodologically, we will use the dataset to contribute novel information on (a) optimal statistical techniques for analyzing longitudinal data; (b) how to successfully conduct long term panel studies; and (c) how to assess the quality of such data. The project’s input into the methodology of panel studies stems from the facts that (i) POLPAN 1988-2018 is the only study in the world that follows a representative sample of a country’s adult population for 30 years, and (ii) it has the proposed means for evaluating the quality of data obtained through repeated interviews with respondents, thanks to the already existing 1988-2013 rounds.

To achieve the purpose of this project in terms of advancements in theory, methods, and database for studying the dynamic relationship between social structure and individual biographies, we propose to establish an interdisciplinary research team and develop a research infrastructure. The research team builds on the resources of the Institute of Philosophy and Sociology, Polish Academy of Sciences, and includes the Center for Fieldwork (ORBS) and Cross-National Studies: Interdisciplinary Research and Training Program (CONSIRT). The research infrastructure will enable scholars and other interested actors to access the resources this project generates, including the new integrated database containing seven survey-waves of POLPAN that measure adult Poles every five years since 1988.

### *Hypotheses*

The leading substantive hypothesis is that changes in the social structure are “path dependent” in the sense that some inter-group differences in time  $t$  have a disproportionate impact on later circumstances in time  $t+k$ , producing more pronounced differences. In the “strong” form, this means that severe and durable inequalities operate in various parts of the social structure, according to a cumulative advantage/disadvantage pattern. They lead to polarization, which implies the biblical Matthew effect, provided here in a modern phrase: “For to everyone who has, more shall be given, and he will have abundance; but from the one who does not have, even what he does have shall be taken away” (Bible. King James Version. Public Domain. BibleGateway.com). The well-known colloquialism “the rich get richer and the poor get poorer” expresses this message in a nutshell. Since Merton’s article (1968) a notion of the Matthew effect is used widely in the social sciences.

The hypothesis extends to the correlates of social structure, including economic, political and cultural values, social and human capital, and social networks. We stipulate that, in the long run, polarization in the social structure is accompanied by polarization in social consciousness, reaching some fluctuating state rather than a stable equilibrium. The Matthew effect concept (e.g. Rigney 2010) fits within broad life course paradigms in sociology (e.g., Dannefer W.D. 1987) and social epidemiology (e.g., Kuh and Sholomo 2004) that consider cumulative experiences over the life course, the timing and context of events at different life stages, and the pathways between them. POLPAN is ideal for testing this general hypothesis as well as specific hypotheses about the dynamic aspects of the social structure.

This project is governed by the basic assumptions that the two approaches to social structure – relational and distributional (Słomczyński, Janicka, Shabad and Tomescu-Dubrow 2007) – need to be integrated with group-oriented and actor-oriented approaches (Coleman 1990, Goldthorpe 2006), as indicated in Table 1. We will examine how both class and stratification position influence economic, political and cultural biographies, and people’s social networks, while also being influenced by them through time (cf. Table 1).

Table 1. Relational, distributional, group-oriented, and actor-oriented approaches to studying social structure and its dynamics in the POLPAN 1988-2018 study

Approach	Group-oriented	Actor-oriented
Relational	A. Social classes in economic, political, and cultural dimensions	C. Social networks: contacts of people with family, friends, and strangers
Distributional	B. Social stratification: unequally distributed goods and values	D. Economic, political, and cultural biographies

This figure depicts the main effects. Additional influences on A, B, C, D, such as X – demographics, Z – health, and U – intellectual capacities, will be analyzed with POLPAN 1988-2018 data. The same holds true for the effects of A, B, C, D on attitudes and opinions, W.

The diagram illustrates the relationships between variables. On the left, a box labeled 'Z, X, U' has a double-headed arrow pointing to a central box. Inside this central box, four nodes are arranged in a square: 'A' at the top-left, 'B' at the bottom-left, 'C' at the top-right, and 'D' at the bottom-right. Node 'A' has a downward-pointing arrow, 'B' has an upward-pointing arrow, 'C' has a downward-pointing arrow, and 'D' has an upward-pointing arrow. There are also horizontal arrows between 'A' and 'C', and between 'B' and 'D'. Diagonal arrows connect 'A' to 'D' and 'B' to 'C'. A double-headed arrow points from the central box to a box on the right labeled 'W'.

We assume that inequalities reflected in social stratification are deeply rooted in social classes. We also assume that biographies are crucial for understanding how people engage with family, friends, and acquaintances, that is, one’s social networks.

We will (1) test whether growing social inequalities are rooted in the social-class structure, taking into account economic, political and cultural dimensions; this involves testing the fuzzy-set approach to analyzing social classes (Dompere 2004); (2) examine to what extent economic, political, and cultural biographies contribute to the cumulative advantage/disadvantage processes; and (3) investigate increasing inter-group distance according to various measures of attitudes and opinions. The concept of polarization, operationalized by Esteban and Ray (2012), is crucial here.

**2. Significance of the Project**

Modern societies, Poland included, encounter persistent and rising inequalities (Brzeziński, Jancewicz, and Letki 2013). This project contributes new knowledge to understanding their causes and consequences, by (a) developing theory linking micro-behavioral foundations of economic, political, and cultural inequality with the position of individuals within the social structure, peoples’ values, and beliefs, and their structural outcomes; (b) producing empirical analyses of individual trajectories as they develop through peoples’ lives, from labor market entry to retirement; and (c) creating a dataset that is uniquely suited for studying the dynamics of social structure. POLPAN 1988-2018 will constitute the longest continuously run panel survey in Europe that focuses on transformations of the social structure and has individuals as the units of observation.

### *Current State of Knowledge*

This project is strongly anchored in recent theoretical innovations surrounding analyses of social structure and its change, as well as in the most up-to-date survey methodology. The literatures on both are vast, since our project considers sources from sociology, but also from political science, social psychology, economics, and demography. Below we focus mainly on sociology and emphasize selected studies bearing directly on the substantive focus and methodology of this project.

Social structure is a system of interrelated and large social groups that defines the main setting where fundamental social processes occur. These processes develop within an institutional framework – the political regime and the economic system – in which individuals and groups strive, conflict, and cooperate. Major social, political or economic events at the national or international level, such as the revolutions of 1989 and the global economic crisis of 2008, had profound effects on the social structure. During such major social upheavals, social groups and institutions suddenly ceased to fit the surrounding world. The work of Blossfeld and Prein (1998, Blossfeld and Drobic 2001), Mayer (2009), Goldthorpe (2006), diPrete (2006), and Breen (2010) considers social structure in the framework of rational action and the life course, giving due attention to the methodological problems of longitudinal studies. Weeden and Grusky (2012), Rose and Harrison (2010), Yuval-Davis (2011), Standing (2011), Stephens, Markus, and Taylor Phillips (2014), Savage, Devine, Cunningham, Taylor, Li, Le Roux, Friedman, and Miles (2013), Blossfeld, Skopek, Maurice, and Bayer (2016) provide important insights into conceptualizing social structure in terms of social classes and biographies, and address the topic of how to operationalize such concepts in a panel study.

The POLPAN project fully integrates the rich tradition of Polish sociology (represented by Stanisław Ossowski, Julian Hochfeld, Jan Szczepański, and the research program of Włodzimierz Wesółowski) and the classical empirical research on social structure in Poland (by Włodzimierz Wesółowski, Adam Sarapata, Stefan Nowak, Stanisław Widerszpil, Jan Malanowski, and Michał Pohoski), discussed in Wesółowski and Słomczyński (1977). For the far-reaching analyses of POLPAN 1988-2018, studies conducted in the 1970s and 1980s by Krzysztof Zagórski, Marek Ziółkowski, Edmund Wnuk-Lipiński, and Jacek Wasilewski are of great importance, as indicated in Słomczyński and Tomescu-Dubrow (2016). We will also use the most recent work of Polish sociologists (e.g., Domański 2015, Żuk 2008, Gdula and Sadura 2012, Cebula 2013).

A key insight from Polish sociology is that social class and social stratification should be treated as analytically distinct, although related, elements of the social structure: who controls what” (social class) influences “who gets what and why” (the key stratification question) (Słomczyński et al. 2007). Analyses of social structure in terms of social relations, particularly relations concerning the control and subordination of certain social groups to others, can be identified as the class approach. Analyses of the distribution of commonly desired goods and values correspond to the stratification approach. This project integrates both approaches.

With respect to segmentation, POLPAN 1988-2018 further develops the conceptual and operational distinction between economic, political, and cultural classes. We adopt an extended interpretation of processes of production and distribution, which includes not only

economic but also political and cultural goods; thus, the notion of class is multi-dimensional (Słomczyński and Dubrow 2010). The economic dimensions of class is real economic ownership expressed in the power of control over the uses of the means of production and the labor, and over other resources important for the functioning of the labor market. Assuming that the dimensions of class relations are relatively independent, scholars can also use the conceptions of political and cultural classes, following the classic article, *What makes a social class?* (Bourdieu 1987).

Criticism of the concept of social class as a tool for empirical analysis of people's behavior and attitudes has persisted for some decades. Grusky and Sorensen's note (1998:1187) that "the present round of anti-class rhetoric is unprecedented in its popularity, especially in Europe where class analysis has historically enjoyed a privileged position" applies now, too. The controversy pertains to two issues: (1) the conceptualization of class and its distinctiveness from that of social stratification, and (2) the explanatory power of class with respect to a broad range of behavioral and attitudinal variables. As we have already demonstrated, it is useful to distinguish between social class and social stratification; we also showed that the effects of class persist (e.g. Słomczyński et al 2007; Słomczyński and Janicka 2008).

Multidimensional biographies, characterized through peoples' socio-economic and political trajectories, characterize social inequality in a dynamic manner. Individuals' biographies are core to the POLPAN project, and enable studying different kinds of events (Mayer 2009, O'Rand and Kreckler 1990). Economic biographies are equated with events in the labor market and occupational careers (Sorensen 1974). Political biographies refer to the unique sequence of events or choices that people make as citizens – when they vote, join political organizations, participate in demonstration, sign petitions, or contact politicians (Dalton and Welzel 2014). Political biographies facilitate political inequality research. The current Polish political system, a consolidated democracy, exhibits considerable political inequality in terms of political participation and political representation. Few, however, study this topic using social surveys (Dubrow 2015) and no major study has used panel data. The notion of cultural biographies applies to persons and the objects that they possess (Appadurai 1986). The possibility of studying all these phenomena in the POLPAN project demonstrates that its theoretical background is both broad and disciplinary diverse.

In evaluating the quality of the dataset this project proposes to construct we build on the Total Survey Error (TSE), Total Survey Quality (TSQ) and Total Quality Management (TQM) frameworks. The TSE paradigm focuses on increasing the accuracy of survey estimates given financial, time and ethical constraints researchers face (e.g. Groves 1989; Weisberg 2005; Smith 2011). TSQ regards survey quality as a multidimensional concept that includes responsiveness to customers' needs (e.g. timeliness, data accessibility, usability of the data) next to TSE's concern with accuracy (e.g. Lyberg and Weisberg 2016). The TQM framework (e.g., Morgenstein and Marker 1997) emphasizes that all stages of survey production singularly, and in conjunction with each other, have a direct influence on the overall quality of the end-product.

### ***Innovative nature of the research***

New Theory: First, this project will clarify the concepts of economic, political, and cultural classes, and will link these concepts to the social structure of Poland, and its changes over the last 30 years. Second, we will clarify the concept of multidimensional biographies, which we define in terms of economic, political, and cultural facets. The economic dimension of peoples' biographies involves their labor market activity. The political dimension centers on political behaviors and political attitudes. The cultural dimension involves patterns of cultural consumption. Third, this project will develop theoretical arguments linking economic, political, and cultural classes with individuals' life stories. This includes elaborating the premises under which, and the extent to which people's biographical trajectories change, given the possibly reciprocal relation of economic, political and cultural aspects of trajectories, and the extent to which polarization occurs.

Ours is the first comprehensive research of this type. Although the literature on distinct components of this project (e.g. stratification, political behavior) is very rich, there is no integrating study using 30 year-panel data to combine theories of inequality and multidimensional biographies to analyze the extent to which these correlate, whether they shape each other and to what extent.

Refined Methodology: This project will: (1) refine the operationalization of the different types of social classes; (2) develop measures of individuals' biographies; and (3) contribute innovative methodology for quantitative research using panel survey data.

(1) Regarding economic classes, we will construct a class schema that reflects current social relations in Poland by accounting for different types of precariat (Standing 2011). Analyses on POLPAN 1988-2013 reveal that the Polish class structure changed significantly over 25 years: some classes disappeared following the systemic change, others consolidated (e.g. the self-employed) and a new class of employers appeared (see Słomczyński et al 2007). In this framework, social classes, defined in the economic dimension on the basis of investments and endowments, working conditions and material (income) and non-material (prestige) rewards, are: (1) employers, (2) managers, (3) professionals, (4) supervisors, (5) office workers, (6) self-employed, (7) service workers, (8) skilled manual workers, (9) unskilled manual workers, and (10) farmers. This schema needs to be updated to include various types of precariat. POLPAN 2018 will provide the data to do this. Regarding political classes, we will extend the basic class division of rulers (elite) and the ruled (masses) to the following political classes: (i) political decision-makers, (ii) members of the auxiliary political apparatus, (iii) rank-and-file members of political organizations, (iv) minimal civic-duty followers, and (v) the politically inactive. Regarding cultural classes, the division will be based on the cultural production and cultural control, taking into account processes of cultural assimilation and distinction (Kang, Ha, and Jeong 2014).

(2) Multidimensional Biographies. We operationalize individual biographies in terms of their economic, political and cultural dimensions. Economic biographies are reflected in respondents' detailed labor market activity, which includes spells of unemployment, and career interruptions. This project carries a special software program, CONVERTER (Słomczyński, Sawiński, and Tomescu-Dubrow 2012) that depicts the occupational careers of

all survey respondents. We will extend the program's applicability to constructing political and cultural biographies.

Political biographies will be operationalized as respondents' patterns of participation in political activities (e.g. voting in parliamentary elections, membership in political organizations) and political preferences (e.g. party preferences) through time. Using the new POLPAN 1988-2018 dataset, we will construct respondents' political biographies starting as early as the 1989 parliamentary, and analyze when and why initially similar trajectories began to diverge.

Cultural biographies will be operationalized in terms of cultural consumption, access to various cultural goods, and spending on cultural activities. Cultural consumption indicators will be available through the new 2018 survey, while indicators on access to cultural goods and culture spending exist in the 1988-2013 data.

(3) Developing innovative methodology for quantitative research using panel survey data entails two interrelated parts (see section 4). The first part deals with developing and documenting the methodology for harmonizing the survey data this project proposes to collect in 2018 with the extant 1988-2013 data. The second part involves research within the Total Survey Error and Total Survey Quality paradigms. We will analyze respondents' answers to the same factual questions, such as father's occupation when respondent was 14 years old, or respondent's first job, as provided in different POLPAN rounds, to understand the source of potential inconsistencies in answers across time. Empirical results will provide crucial insights into the concept of total survey error in longitudinal survey data.

New Dataset: This project will produce a unique empirical resource in the social sciences – the integrated POLPAN 1988-2018 dataset. Thanks to its time and topic coverage, and the composition of its samples, this dataset provides the dynamic framework of analysis that is necessary to properly understand the functioning of social structure – that is, how individuals influence social structure while being influenced by it. The integrated 1988-2018 POLPAN data offer the exclusive opportunity to assess, for as many as three decades, the extent of within-person variation (i.e. the change within people over time) in relation to the between-persons variation (i.e. differences between people over time).

The 2018 survey this project proposes to conduct (see Section 4) will contribute key new information to the integrated POLPAN dataset, in terms of both questionnaire items and sample composition. Ours is a time of significant transformations and challenges, whether one considers economic instability and its consequences, tied to political participation, and “cultural clashes.” The 2018 POLPAN survey will be representative for the adult population in Poland, and will enable up-to-date analyses of the economic, political, and cultural changes the Polish society undergoes. Such sweeping investigations will be possible due to the substantive scope of the collected data. Socio-demographic information of respondents and their families is supplemented by items on a wide range of socio-political attitudes. At the same time, POLPAN contains, in contrast to standard surveys, two specialized tests: the nonverbal Raven test, capturing intellectual flexibility, an essential IQ component, and the Nottingham Health Profile, measuring certain aspects of physical and mental health.

Using the new information in POLPAN 2018, researchers will be able to study the life course of a sample of Poles who entered the study in 1988 during state socialism, saw the

triumph of Solidarity, experienced the ups and downs of the post-communist transformation, the consolidation of democracy, the trepidations associated with joining the European Union, and currently, EU challenges given massive in-migration from the Middle East and political turmoil in Eastern Europe. At the same time, the 2018 round will extend the panel nature of the renewal samples of the young who were added to POLPAN since 1998. These successive panels will be very rich themselves, covering from 20 years for respondents who entered the study in 1998, to five years for the Poles aged 21-25 who joined the study in 2013.

Interdisciplinary Research Team and Research Infrastructure: This project will build an inter-disciplinary team of researchers and an innovative infrastructure that relies on physical and virtual platforms to enable young and established scholars to produce high quality research and training products. The project's team will consist of experts from Poland and abroad, doctoral students and a post-doctoral scholar appointed through open competition in Poland and throughout the European Union. The principal investigator, Prof. dr. hab. Kazimierz M. Słomczyński, who is leading the POLPAN study from the start, has extensive experience with interdisciplinary substantive and methodological research, including in his capacity of Head of the Research Team of Comparative Social Inequality at IFiS PAN and director of CONSIRT - Cross-national Studies: Interdisciplinary Research and Training program, of the Polish Academy of Sciences and the Ohio State University.

### ***Positive Impact for Science and Society***

Professional organizations, such as the International Sociological Association, put forth the following postulates for how to further the social sciences: (i) link theoretical thinking with empirical practice, (ii) find new creative uses for existing data and make the data public, (iii) increase scholarly cooperation, including internationally, and (iv) engage mass publics (see Burawoy 2004). We claim that our project fulfills these postulates of the significance of research for the scientific community and for society.

The impacts for the social sciences are: (a) addressing, through a series of high profile publications, critical issues in sociology, economics, political science, psychology and demography on dynamics of social structure and the life course; (b) archiving and publicizing the unique integrated 1988-2018 POLPAN dataset for the social science community to use and build upon. While we construct this dataset for a specific purpose of testing substantive hypotheses about the dynamic relationship between multidimensional biographies and the social structure during the last 30 years in Poland, it can potentially be used in a variety of other projects, including consequences of these inequalities for social, economic, and political attitudes; (c) training the next generation of PhD students and post-doctoral scholars in the social sciences on substantive and methodological issues of the grant project.

The integrated POLPAN 1988-2018 dataset will be publically available, via archiving in Data Archive for Social Sciences (GESIS-Leibniz, Germany), DataVerse in the USA, and the Social Data Archive (Poland). To facilitate international cooperation, the dataset (variable names, labels, coding categories) and all accompanying documentation (codebook and questionnaires) will be available in both English and Polish.

This project strengthens multi- and interdisciplinary research: in theoretical and substantive domains, it joins sociology with political science (e.g., voting behavior, opinions

about political parties, democratic values) economics (e.g., household income and its components, income elasticity of expenditure for food and culture), psychology (e.g., measurement of IQ by the Raven test, measurement of authoritarianism and self-image) and demography (e.g., family composition, retention of marital status, number of children in the family); in methodology, it contributes to all relevant disciplines that use longitudinal survey data deal with issues of data quality assessment and harmonization.

The project has a positive impact potential for society via public engagement that takes various forms. We will produce videos and other media-friendly publications to detail the project and its products, and to update progress throughout its duration, all of which will be disseminated via blogs (e.g. polpan.org) and social media (Twitter, Facebook, ResearchGate, Academia.edu) and archived in perpetuity at IFiS PAN at [www.polpan.org](http://www.polpan.org). To facilitate international communication and dissemination of results, we will continuously update the project's bi-lingual (Polish/English) website that provides access to media-friendly materials: press releases, brochures, and links to POLPAN mentions in print, radio and television. This comprehensive website also contains all relevant materials for researchers interested in panel analyses. We plan to organize a conference for a large audience and to be engaged in public social science.

Our examination of the dynamic relationships between social structure, inequality and peoples' multidimensional biographies is fundamental not only for social science but also for society. As the International Social Science Council recently wrote in their World Social Science Report (2016), a research agenda about rising inequalities, and the intersection of inequalities, is fundamental to understanding and improving societies. We are prepared to give theoretically and empirically-based answers to main questions on this research agenda, using appropriate analytical tools applied to a comprehensive dataset. The products of this project will enhance our knowledge on the functioning of society in Poland and abroad.

### **3. Plan of Research**

#### ***Initial phase: Setting up the project's organizational structure***

To ensure that the four major stages of the planned research and the specific objectives listed below will be carried out efficiently and effectively, during this phase the PI will build an interdisciplinary team of researchers – established scholars, post-doctoral scholars, and PhD students – who work in supporting fields (sociology, political science, economy) and are familiar with the project's data foundation. Added value of the members' composition stems from cooperation between specialists in longitudinal survey design and implementation, experts in advanced quantitative methods, and experts in substantive issues pertaining to dynamics of the social structure. The research team will draw on the resources of the Institute of Philosophy and Sociology – PAN, and the Center for Fieldwork (ORBS) especially.

The Principal Investigator (PI) will regularly monitor progress in the project, via yearly evaluation reports. Our efficient communication structure enables the design and preparation of this project. We will solidify and strengthen it via regular meetings, email, and annual multi-day face-to-face meetings to coordinate activities, assign personnel to tasks, mentor PhD students and the Post-doc, and monitor the timely completion of products.

## *General Plan*

The research is planned to be carried out over three years. We divide it into four major stages that follow the core principles of scientific innovation (King 2014): (I) Theoretical elaboration; (II) Data collection and management; (III) Methods and Analyses, and (IV) Dissemination of results, in a virtuous cycle which continually provides crucial information for refining answers to the main research questions stated in Section 1. The end products of this project will be the state-of-the-art for social scientists and the general public. We will develop research infrastructure to enable scholars and other interested actors to access the major resources this project generates, including the new dataset.

I. Theoretical elaboration: Improving the definition and measurement of the concepts of social classes and multidimensional biographies; refining the theorizing about how structural features shape peoples' economic, political and cultural biographies through time, while also being influenced by them; refining the theoretical thinking about different types of inequality and patterns of polarization (i.e. Mathew effect) across time. Although our basic theoretical framework and operationalization of concepts are well developed, still some improvements are needed. We will organize special seminars to discuss all necessary elements of the theory and methods for this study.

II. Data collection and management: This stage involves creating, maintaining and updating the integrated Polish Panel Survey 1988-2018 dataset (POLPAN 1988-2018; see Section 4). It consists of two parts: Data Collection (to be completed in Year 1) and Data Management (Years 2-3). Data collection (cf. Section 4) involves preparing the 2018 edition of the Polish Panel Survey POLPAN, to be conducted on a sample of 3181 adults in Poland (panel respondents and renewal sample); pretesting the survey instrument, which will contain new questionnaire items and repeated modules; and conducting the fieldwork. Data Management involves data quality assessment; harmonizing the newly collected survey data with the extant POLPAN 1988-2013 data; constructing the integrated POLPAN 1988-2018 dataset; and archiving the integrated dataset in Polish and international data archives. Together with 'Methods and Analyses', these are the most laborious parts of the project.

III. Methods and Analyses: During this stage we will carry out all empirical analyses that solving the scientific problem and testing the hypotheses specified in Section 1 call for (details are provided in Section 4). This includes testing the fuzzy-set approach to analyzing social classes; applying advanced statistical methods, including structural equation modeling, to analyzing multidimensional biographies; applying multilevel and panel regression, as appropriate to studying the dynamic relationships between biographies and social structure. As part of this stage, we will organize training events and produce the empirical results that drive many of the project's products (cf. Specific Objectives).

IV. Dissemination of results: This stage involves preparing the research products for dissemination to targeted audiences, including preparation of the final conference. Products from this project are of two kinds: research and training (detailed below, under Specific Objectives). We distinguish two groups of potential users of the project's research and training products. In the first are researchers who will collaborate with us or will participate in the project organized events. The second group consists of authors of publications using data

from the POLPAN. This heterogeneous group also consists of new users of the data, including scholars versed in quantitative analysis of panel data.

To enhance visibility of the project, and of the integrated 1988-2018 POLPAN dataset, we will register the project as member of the Society for Longitudinal and Life-Course Studies (SLLS, [www.slls.org.uk](http://www.slls.org.uk)), a major international organization which promotes interdisciplinary and inter-study collaboration in longitudinal and life course research, and provides a forum for discussion and publication of new ideas about all aspects of this topic. We will periodically inform members of the Research Committee on Social Stratification and Mobility (RC28, [www.isa-sociology.org/rc28.htm](http://www.isa-sociology.org/rc28.htm)) of the International Sociological Association about this project and its products.

### *Specific Objectives*

This project will produce research and training products with substantial scientific and social impact potential.

#### Research products

A. Papers prepared for high quality publication outlets, including individual articles in high impact factor journals listed in the Web of Science and Poland's Ministry of Science and Higher Education. All papers will be available in their pre-publication form in a series of Working Papers.

B. The integrated POLPAN 1988-2018 dataset (POLPAN) – protecting individual records according to the law – will be publically available (free of charge), in Polish and English, through major archiving agencies, including the Data Archive for Social Sciences (GESIS-Leibniz, Germany), DataVerse in the USA, and the Social Data Archive (Poland). We will also distribute this dataset among selected international organizations, including the World Bank, OECD, and UNESCO. The dataset will be complemented with relevant documentation, including questionnaires and codebooks, and methodology of inter-wave survey harmonization. The data will be part of doctoral dissertations, including those of students at the Graduate School for Social Research IFiS PAN, and post-doctoral scholar publications.

C. The Project website, [www.polpan.org](http://www.polpan.org), will communicate – in both Polish and English – our project's progress and findings to scholars and the public. Due to the complexity of the integrated POLPAN 1988-2018 dataset, the website will provide a series of documentations to facilitate understanding the structure of the data, and guidelines for their use. The website will also serve as a discussion forum for researchers specializing in substantive and methodological issues of panel data and panel analyses.

D. The project will regularly run seminars and specialized courses held at the Graduate School for Social Research, IFiS PAN. They will take place throughout the project's timeline and feature guest speakers and graduate student discussions of theories, scientific literature and methodology related to the project's focus. This includes working within the CONSIRT Lab: Methodology of Survey Data Harmonization, which joins researchers through international workshops and conferences.

E. A concluding international conference, held in the third and final year, will publicize the findings of the research and set the agenda for future research on the topic.

F. Media-friendly audio and visual products include videos and other publications, and the website – polpan.org – that will present media-friendly visual presentation of the results, all of which will be disseminated via social media (Twitter, Facebook, as well as ResearchGate, Academia.edu).

### Training products

Our project has an important professional training component. The panel structure of the integrated 1988-2018 POLPAN dataset makes it a great resource for training doctoral students and Post Docs in complex statistical techniques, such as event history analysis, multilevel modeling, or panel regression. Two graduate students interested in research on dynamics of social structure and survey methodology, will be in the project team and participate in all stages of the project, from creating computer files, planning and executing statistical analysis, to writing reports and preparing papers for publication. We will offer the seminar about this project for graduate students in the social sciences at the Graduate School for Social Research IFiS PAN, and the University of Warsaw. The project will hire one full-time post-doctoral scholar working in the field of survey methodology and inequality who will work at IFiS PAN and be key member of the research group.

### *Impact on academic careers*

This project will have a measurable impact on young scholars in Poland. Members of this project will advance their careers in connection with Poland and therefore enhance Poland's role in international scientific production, collaboration, and dissemination. They will author papers and thereby contribute to the visibility of Polish social sciences.

The PI and other PhD holders involved in the project will collaborate with Polish PhD students according to international standards. These young trainees will acquire skills that are marketable in academia in Poland and abroad. At present, there is a shortage of young social scientists who are well versed in management of large-scale datasets and advanced statistical analyses. This project will ease this situation by bridging skills in survey methodology, including data quality assessment and harmonization, with developing analytic research skills within an interdisciplinary research team that places great emphases on training in advanced statistical analysis. Young researchers – doctoral students and post-doctoral scholars – will work alongside experienced scholars in the network on all steps of the project, including organizational matters, data preparation and analysis, and preparing and disseminating scientific output.

### *Preliminary and initial research indicating feasibility of research objectives*

The PI and his collaborators worked extensively on the issues pertaining to this project. This involved building, over three decades, the Polish Panel Survey POLPAN, which, as of now, measures the transformation of Polish society from 1988 to 2013 (Słomczyński 2000, 2002, Słomczyński and Marquart-Pyatt 2007; Słomczyński and Tomescu-Dubrow 2012, 2013,

2016, Słomczyński and Wysmulek 2016) As the significant number of publications by Polish and international scholars proves (a total of over 50 peer-reviewed articles, chapters in edited volumes and books, cf. [polpan.org/publications/](http://polpan.org/publications/)), the POLPAN data are an invaluable resource for longitudinal research on a wide range of social science topics. From this rich set of publications, the selection below speaks directly to the substantive and methodological focus of this project:

Kiersztyn, A. 2016. Employment Instability Revisited: Are “Trash Contracts” Affecting Long-Term Career Trajectories? Pp. 91-116 in Słomczyński, K. M. and I. Tomescu-Dubrow, with D. Życzyńska-Ciołek and I. Wysmulek, eds. 2016. Dynamics of Social Structure: Poland’s Transformative Years, 1988–2013. Poland: IFiS Publishers.

Sawiński, Z. 2016. “Inconsistent Responses: Hard Adjustment and Soft Adjustment as Solutions for Inter-Wave Harmonization of Panel Surveys” Harmonization: Newsletter on Harmonization in the Social Sciences 2(2): 12 – 16. ISSN 2392-0858

Słomczyński, K. M., I Tomescu-Dubrow and Z. Sawiński. 2012. “Modeling Occupational Careers for a Turbulent Economy: A Differential Equation Approach” International Journal of Sociology Vol 42(4): 56-74

Słomczyński, K. M. and K. Janicka. 2008. “Polarized Social-Class Structure: On the Matthew Effect and Increasing Inequality.” Polish Sociological Review 164: 341-357.

A key element for the realization of this project is to refine the operationalization of peoples’ multidimensional biographies and to construct adequate measures for economic, political and cultural facets of these biographies. Preliminary analyses indicate that the methodology we used for constructing economic trajectories (Słomczyński et al. 2012) can be fruitfully applied to constructing political and cultural trajectories.

Using data from the POLPAN 1988-2003 we studied dynamics of individuals’ jobs in Poland, focusing on both structural opportunities and individual determinants. We built on the technical definition of trajectory, as a time-ordered set of states (values) of a dynamical system to define an occupational trajectory to be a set of values of status (S) as a function (dependent) of time:  $S = f(t)$ . Occupational trajectories characterize social inequality in a dynamic manner. Since the POLPAN panel data provide information on respondent education for each year of the study, and respondents’ full history of employment (including timing of job start, job interruption, or job ending), it is possible to obtain predicted mean values of the socio-economic index (SEI) for each point of respondents’ occupational trajectories.

Originally, the data on jobs are recorded in the floating format: some respondents have a short record (one or two jobs) and other have a long record (several jobs). Thus, information on person’s work in a given calendar year is placed in different places of the data set. The floating format optimizes coding procedures and data size, but it is very difficult to manage for any kind of data analysis that deals with occupational careers explicitly. To overcome this shortcoming we used CONVERTER, a special a special software that transforms records of jobs a particular person holds over the years from a floating time form into fixed time points of a full career. Although this program was developed especially occupational careers, it has general features and can be extended to other data with a longitudinal component. We plan to

use CONVERTER on the integrated 1988-2018 dataset to construct political and cultural trajectories, in addition to occupational careers.

Initial explorations of the presence of Matthew effects show that if one interprets “rich” and “poor” in material terms, increasing social inequality manifests itself through the accumulation of advantages provided by wealth, and by the amassing of disadvantages associated with poverty (Słomczyński and Janicka 2008). Empirical analyses using POLPAN 1988-2003 data, combined with 1978 and 2006 survey data from different sources, show that the change in the class structure occurring between 1989 and 1993 in Poland resulted in the growth of social inequality, and that inequality increased up to 2006. We found strong empirical support for the hypothesis that income inequality is rooted in the class structure, independently of people’s adaptive abilities, is fully supported. We plan to extend these analyses using the integrated 1988-2018 POLPAN dataset, which will provide crucial information about polarization patterns following the 2008 global economic crisis. In addition, we will extend the principle of the Matthew effect to other resources than economic ones. Specifically, we will analyze the extent to which political and cultural resources follow a similar distribution pattern.

In doing the quality assessment of the integrated 1988-2018 POLPAN dataset, we are informed by prior analyses on the consistency of responses across the 1988-2013 rounds of the POLPAN panel study (Sawinski 2016). When respondents are asked the same questions in different waves of a panel survey they may not give the same answers, although the subject of the question could not have changed between waves (e.g. father’s occupation when respondent was 14 years). There are two approaches to resolving this type of inconsistencies in panel data. The first approach, called ‘hard adjustment’, replaces the original response with a different value. Since the original values are preserved, scholars interested in using them, for instance in methodological research, can request the original variables and the survey administrators provide them as attachments to the harmonized data. Additionally, the variables which underwent hard adjustments are flagged by supplementing their descriptive labels with the words “[partly adjusted].” The second approach, ‘soft adjustment’, provides a recommended target variable, based on a set of assumptions and selection rules, as a suggested replacement to the original variable. For data users to determine whether the soft adjustment proposed by the research team is helpful, the procedure for creating the target variable must be fully transparent.

#### **4. Research Methodology**

##### ***Methodology for creating the integrated 1988-2018 POLPAN dataset***

To create the integrated 1988-2018 POLPAN dataset involves the use of most recent advances in the methodology of survey design and implementation, to collect the new, 2018 data, together with state-of-the-art methodology of data quality assessment and harmonization, for matching the 2018 survey with the extant 1988-2018 data. We detail each below.

##### **Data collection**

To design and implement the 2018 survey we will take into consideration all stages of the survey life cycle (Survey Research Center 2016). The PI and members of the research team

have in-depth experience with all the intricacies of the process of producing high-quality survey data. The expertise of IFiS PAN’s Center for Fieldwork (ORBS) will be an additional important asset here.

Since this project aims to collect a sample (estimated N=3181) that cover new respondents aged 21-25 in 2018 (n=600), and panel respondents (i.e. those participating in earlier rounds of POLPAN, n=2581), via face-to-face interviews on a wide range of topics, we need to complete a complex set of tasks to prepare the grounds for data collection. Preparatory work includes: updating the database of addresses of all panel respondents; obtaining participation consent; preparing the basis for random sampling of individuals that will constitute the new sample of 21-25 year-olds; preparing the research instrument (questionnaire) and additional materials (instructions for interviewers, contact forms, etc.); pre-testing the questionnaires on a preliminary pilot sample that includes representatives of the young cohort, and the panel respondents; adjusting the questionnaire, if needed, based on the pilot study results.

After finishing the preliminary work, we will implement the new 2018 study via face-to-face interviews. We will select the survey research company that will carry out the 2018 survey based on open competition (procurement). The estimated total sample of the 2018 study (3181 respondents) will be representative of the adult population of Poland (after applying appropriate weights, which will be constructed during the Data management phase). Thus, the 2018 survey can also stand on its own, as a national representative cross-sectional data source.

Table 2. Expected sample size for POLPAN 2018

Type of respondents	Original sample 2013	Response rate in 2013	Sample size 2018	Assumed response rate for 2018	Expected number of interviews 2018 <sup>a</sup>
Participants in POLPAN 1988-2013					
First time interviewed in 2013	795	62.5	497	62.5	311
Interviewed in 2008 and 2013	540	62.8	339	62.5	212
Interviewed in 2013 & at least once after 1988	2297	59.2	1,360	70.0	952
Interviewed in 2013 and only in 1988	(772) <sup>b</sup>	49.9	385	70.0	270
On the basis of renewal sample of young cohort and additional samples, POLPAN 2018					
First time interviewed in 2018 (born 1993-1997)			600	62.5	375
Total sample for 2018			<b>3,181</b>	-	-
Minimal number of interviews					<b>2,120</b>
Total sample (representative for 2018 with sampling weights)					<b>2,290 <sup>b</sup></b>

<sup>a</sup> Conservative estimate. <sup>b</sup> Cases with well-defined addresses

Face-to-face interviews will be conducted through CAPI by well-trained interviewers, under the supervision of the project PI and select research team members, and in cooperation with the survey research organization tasked with the data collection. Interviewers will use a standardized questionnaire, which will consist of a battery of new items on political activities and cultural consumption, and panel questions.

Data Management: data quality assessment, inter-wave harmonization, and data integration

In light of transparency and replicability considerations, we will develop and document the methodology for the entire process of panel data processing. This entails evaluation of the source data for each wave deciding on specific harmonization rules contained in the Data Documentation Initiative (DDI, [www.ddialliance.org](http://www.ddialliance.org)). The underlying principle, which we propose under the analytic framework of Survey Data Recycling (SDR) is that errors and biases in all survey projects can be dealt with explicitly in substantive analyses, via different types of data-quality control variables (Tomescu-Dubrow and Słomczyński 2016).

In the case of POLPAN 1988-2018 the core of SDR involves formal procedures pertaining to three stages: (1) preparing the source data for harmonization for each wave, (2) harmonization per se, including evaluation of the quality of harmonization processes, and (3) archiving data with the Data Archive for Social Sciences (GESIS-Leibniz, Germany), DataVerse in the USA, and the Social Data Archive (Poland).

Data quality assessments pay special attention to inconsistencies in respondents' answers to 'factual questions' across time. Analyses of the 2003-2013 POLPAN data, for which we have extended verbatim records of respondents' answers to batteries of questions on occupational careers, revealed that respondents' inconsistencies from wave to wave are not random: persons interviewed at younger age give more detailed information on the beginning of their occupational careers than the same persons interviewed at older ages. However, we do not know whether this is only an age effect, or also cohort/period effect. It is likely that in 2018 young respondents will provide a more general description of their jobs than the job descriptions of their age-counterparts of ten or fifteen years earlier, because of the changing nature of jobs: they have simply become more multi-tasking and less confined. Through case-by-case analyses, we aim to reconstruct who changes their reporting on facts from the past, dealing with economic, political and cultural biographies. Sawinski (2016) proposes two approaches to resolving this type of inconsistencies in panel data, namely 'hard adjustment' or 'soft adjustment.' We apply them and assess the outcome, including through expert feedback from survey methodologists.

During the harmonization process, for all variables that need adjustment we retain the source variable, create the target variable, and include the quality-control variable. Thus, for example, for harmonized educational categories for all waves, we provide a variable on goodness of the fit across-waves. This solution does not preclude, but rather accompanies, other cross-wave comparability checks. The end result of data quality assessment and inter-wave harmonization will be the integrated 1988-2018 POLPAN panel survey. By the end of the project's duration, we will make the data available to researchers, free of charge.

### *Statistical analyses*

To examine the general research question this project poses, and to assess the extent to which data provide empirical support for the research hypotheses proposed in Section, 1 calls for applying a combination of advanced statistical analyses, ranging from structural equation modeling to multilevel modeling and panel regression. We illustrate below some specific methodological problems that need solving, and the methods we intend to use.

One important issue deals with measuring social class membership, in the economic as well as political and cultural dimensions. Although a new methodology of assigning people to social classes has been proposed over a decade ago, within the so-called fuzzy-set approach

(Dompere 2004, see also Cooper 2005), it remained largely unexplored. We intend to use fuzzy sets, so that people are assigned to social classes with specific weights reflecting the degree to which their characteristics correspond to a strict definition of a given class. According to this approach individuals can belong to different economic classes, different political classes, and different cultural classes with degrees (probabilities) from 0 to 1. In POPLPAN 1988-2018 we will study the overlap of social classes from different dimensions using membership weights. Having these measures of classes, we will examine their impact using structural equation modeling.

To analyze individual trajectories, we go beyond traditional techniques following the research tradition developed by Sorensen (1974), Tachibanaki (1979), Rosenfeld (1980). This facilitates developing and testing a model of career trajectories that overcomes some major shortcomings of early studies. In particular, previous models of occupational careers were based on the assumptions that there is no decrease of occupational status and that education – on which the jobs strongly depend statistically – is constant through individuals' careers. In light of current realities (e.g. the aftermath of the global economic crisis of 2008, the increasingly common principle of continuing education) both assumptions are difficult to defend. In our analyses of different dimensions of individual biographies, we opt for non-linear modeling. The model suitable for analyzing panel data, which the literature considers (e.g. Słomczyński, Krauze, and Peradzyński 1986; Słomczyński et al 2012), is contained in the equation:

$$d(S - M)/dt = -\alpha(S - M) + \sigma dM/dt$$

where  $S$  denotes observed status in the economic, political, or cultural domain,  $M$  refers to the status imputed by its determinants, the parameter  $\alpha$  is the rate of convergence of actual status  $S$  to an equilibrium enforced by  $M$ , and parameter  $\sigma$  is a correction factor, which increases or decreases the impact of changes in the recalibrated imputed status. The presence of  $\sigma dM/dt$  makes the model flexible, allowing for a decrease in status at the end of career. One could expect that parameters  $\alpha$  and  $\sigma$  differ among groups. Sociologists should explain the reasons for these differences. Differential equations are particularly well suited to studying changes since they involve the concept of a derivative. A derivative can be thought of as how much a quantity is changing at some given time point.

Differential equations can describe the rate of change of status at any point in the biography trajectory. Of course, in this framework the rate of change is not limited to economic dimension and it can refer to the political and cultural dimension as well, captured in POLPAN 1988-2018 data.

For analyses relating to the occurrence of potential Mathew effects, we will follow the literature on polarization indexes (Anderson 2002, Duclos, Esteban and Ray 2004, Esteban and Ray 2013). To capture distances between social classes we select the multi-group polarization index DER rather than the median-divide index, which simplifies the social structure too greatly. DER indicates an increase in polarization when distances between groups increase and when intragroup differentiation is reduced. We will use this measure together with more traditional measures of social inequality, the Gini index in particular.

Usually, for panel data well-known regression models (Woodbridge 2010, Andreß, Golsch and Schmidt 2013, Hsiao 2014) are: pooled regression, fixed effects, random effects,

and random parameters. Pooled regression and fixed effects models require relatively strong assumptions, which must be made because of a shortage of information in the analyzed data. In POLPAN, the random effects model can be tested as a regression model with a random intercept. Since POLPAN data are sufficiently rich, we may extend the idea of randomness to a random parameter model, in which the coefficients vary across individuals as well.

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