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Infrastructure for large-scale survey measurement: Cooperation between academic research and private-sector agencies

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Infrastructure for large-scale survey measurement: Cooperation between academic research and private-sector agencies

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Abstract

High-quality data from large-scale surveys provide a solid basis for outstanding research in the social sciences. Because of the unique demands of survey measurement in terms of the resources and skills required, it should be viewed as a specific sector of the research data infrastructure. In Germany, large-scale surveys have been established both within and outside academia, and major new projects are underway. Clearly, the sector is expanding. There is a need to discuss future challenges, not only with a focus on individual large projects, but with a view to the sector of large-scale survey measurement in general.

One aspect is the segmentation of large-scale survey measurement in Germany along institutional lines (statistical offices, ministerial or government agency research (*Ressortforschung*), public research institutions, and the academic community). Here, we recommend that an overall framework be developed covering all sub-sectors. A second aspect is the infrastructure required for large-scale, high-quality data collection. In Germany (outside the sector of Statistical Offices), this infrastructure is provided by private survey organisations. We argue that these should be recognised as relevant actors within the research data

infrastructure. They have to invest in technological and human resources in order to provide the professional services required, and they need conditions and forms of cooperation that encourage this investment.

Keywords: survey research, research infrastructure, Germany, quality, data collection, private public partnership

1. The notion of large-scale survey measurement

The survey-based measurement of social and economic structures, behavior, and attitudes is among the great innovations of the social sciences. Today infrastructures exist for surveys of individuals, households, firms and other institutions in all developed countries, although such surveys may differ in size and quality. The present paper focuses on the subset of large-scale, high-quality surveys. This segment of survey research is one of the foundations for excellence in the social sciences. Only with a comprehensive system of large-scale survey measurement (LSM) will the social sciences be in a position to continue and even expand their work as providers of evidence-based information and advice to citizens, political leaders, and other decision-makers (Mohler 2007, 2) . And indeed, the demand for this type of survey measurement is growing.

The notion of LSM implies three elements of a social survey:

1. “Large-scale” refers to sample size. Large samples of respondents are necessary to enlarge the survey’s statistical power and precision. “Large-scale” also indicates the resulting need for an effective field-force for data collection. The lower limit of “large” is not fixed but may be illustrated by the German ALLBUS with a sample of 3,500 respondents. Examples of medium-sized samples are the German SOEP, with about 10-12,000 households and the new PAIRFAM Panel with a starting sample of 12,000 respondents. At the upper end, there is the German Microcensus with a sample of more than 300,000 households surveyed annually.
2. “High-quality” refers to quality standards for survey methodology. Normally this implies some form of probability sampling and, beyond this, a commitment to quality criteria at all stages of the survey process, in accordance with the Total Survey Error (TSE) quality framework. It also implies “quality costs” in terms of higher financial budgets compared to the normal survey business.

3. The third element is some form of continuous measurement. This may be implemented by repeated cross-sections or by longitudinal panel surveys. In organizational terms, the survey will normally be part of a medium or long-term research program with a perspective of observing social trends or individual biographies or other issues of stability and change.

Within the range of these criteria, large-scale survey measurement may cover different populations, such as households, individuals, enterprises, etc., and may be based on different modes of data collection, such as face-to-face interviewing, telephone interviewing, mail and web surveys, or — increasingly — mixed-mode approaches. We would like to underline that the segment of large-scale surveys discussed here covers a specific though essential part of quantitative research in the social sciences. There are many small surveys, studies of special groups or topics, ad-hoc surveys at a lower budget level — all of them are necessary and may satisfy their respective research purposes. When discussing issues of the research data infrastructure, however, the challenges of large-scale survey measurement require specific attention.

This paper reconsiders how research needs for large-scale, high-quality survey data can be met in the future within the German social science infrastructure. We argue for treating this issue as a topic of strategic importance. The agenda of the RatSWD in its starting phase mainly aimed at gaining better access for the research community to the microdata collected by Statistical Offices and other public agencies. This initiative was highly successful. The work program may now move to a broader agenda, envisaging the overall architecture of data supply for the social sciences. Large-scale survey measurement is a core segment of that data supply.

2. Review of large-scale survey measurement in Germany

LSM needs an effective infrastructure for data collection. Whether this infrastructure exists, how it is organized in institutional terms, and how powerful it is may vary across countries. In order to evaluate the German situation we start with a brief review of large-scale surveys in Germany. Subsequently we look at organizational arrangements and quality standards in a comparative perspective, taking the US and the UK as points of reference.

In general terms, survey-based data can be collected by different kinds of data providers. In most countries there are governmental or semi-governmental agencies (statistical offices) conducting “official” or governmental surveys. Aside from this, in most developed countries

there are independent survey organizations. These may be organized within public institutions, e.g., universities, or as professional survey research companies within the private sector. Individual survey organizations may or may not have the capacity for large-scale, high-quality survey measurement as defined above.

Another aspect of data supply is how large-scale surveys are initiated, funded, and governed. One should be aware of the fact that academic research institutions are only one of several actors here. Government and research institutions within the public administration play an important role as well. The specific needs and institutional arrangements of academia should be discussed in this broader context.

We briefly review the main actors initiating LSM in Germany, just mentioning the large surveys under their respective responsibility:[1]

Type 1: Government surveys under specific legal regulation (Amtliche Statistik)

In Germany, such surveys are conducted by the Statistical Offices. In organizational terms this means that the Federal Statistical Office acts as a kind of coordinator and clearing agency for 16 autonomous state Statistical Offices, which normally are the actual data collection agencies. The main surveys are the annual Microcensus, a number of smaller population surveys, and a number of establishment surveys. Continuous population surveys include the Household Expenditure Survey (EVS, every five years) and EU SILC (annually) dealing with income and living conditions. Special surveys conducted only once or at longer time intervals include the Time-Budget Survey and the Survey on ICT Usage. For most of these surveys, scientific user files are currently available. Enabling researchers to access these data sets was the main objective of the KVI initiative and the original agenda of the RatSWD.

Type 2: Surveys commissioned by government agencies in particular policy areas (Ressortforschung)

Federal ministries have initiated, during the last few decades, a number of social surveys that are of general interest for social monitoring in various areas and that meet the criteria of large-scale, high-quality survey measurement. They are designed as repeated cross-sectional surveys with sample sizes between 5,000 and 20,000 respondents. Examples are the surveys on income of the elderly (ASID and AVID), on vocational training and adult learning (BSW and AES), on long-term care (MuG), or on volunteering (*Freiwilligensurvey*). All these projects include extensive reporting to the public as well as scientific use files for secondary

1 More information about a range of projects is provided in Rosenbladt (2008).

analysis.[2]

Type 3: Survey projects of public research institutions

Public research institutions, operating within the public administration or financed by ministries at state or federal level, have launched a number of large-scale, high-quality surveys that are of general interest. Partly these are "Ressortforschung", but partly more basic applied research. Institutes to be mentioned here are

- the IAB (*Institut für Arbeitsmarkt- und Berufsforschung*) with a broad range of projects, such as the annual establishment panel survey (IAB Betriebspanel) or, more recently, the household panel on employment and social security (PASS) or the survey on employment biographies, qualification and competences (ALWA)
- the BIBB (*Bundesinstitut für Berufsbildung*) with large cross-section surveys such as the survey on employment and qualification
- the HIS (*Hochschulinformationssystem*) with its surveys of a variety of student populations
- the DJI (*Deutsches Jugendinstitut*) with its Family Surveys and Youth Surveys, now being redefined to form part of an Integrated Survey starting in 2009
- the BIB (*Bundesinstitut für Bevölkerungsforschung*) with its Gender and Generations Surveys (GGS)
- the BAMF (*Bundesamt für Migration und Flüchtlinge*) with its recent survey of migrants in Germany
- the RKI (*Robert-Koch-Institut*) with its health surveys.

Type 4: Surveys governed by the scientific community (academic research)

In Germany, there are a number of surveys created and run by academic research organizations that meet the criteria of large-scale, high-quality survey measurement. Surveys to be mentioned here are the ALLBUS, including the incorporated German part of the International Social Survey Program (ISSP) conducted every two years; the German part of the European Social Survey (ESS) conducted every two years; the Socio-Economic Panel (SOEP), a household panel with annual interviewing; the German part of the European Survey on Health, Aging and Retirement (SHARE), a panel survey with bi-annual interviewing.

2 Only one exception: Data of AVID are available in tabulated form, not as micro-data file.

The need for such large-scale survey measurement is recognised increasingly in the scientific community and its funding institutions. This will result in a much broader data supply in the future. In 2008, a new panel survey on family and pair relationships was started (PAIRFAM). In 2009 a series of cohort panel surveys under the common label of the National Educational Panel Study (NEPS) will start. The German National Election Study, a system of elections surveys, will also start in 2009.

Structures of funding and governing large-scale surveys as reviewed above are related to typical patterns of data collection:

- Surveys of type 1 are designed and conducted by Statistical Offices.[3]
- Surveys of type 2 are tendered by ministries and contracted to survey organizations, which in this case often take over full research responsibility from design to reporting.
- Surveys of type 3 and type 4 are designed and governed by the respective research institution. These institutions typically do not have their own infrastructure for large-scale data collection; therefore, by way of subcontracting, data collection is handed over to a survey organization.[4]
- These survey organizations are private-sector companies. This is to say that, aside from surveys of the Statistical Offices (type 1), data collection for large-scale surveys in Germany relies on the professional services provided by private firms. The scientific community and the public are often not aware of this fact because the publicly known owner of the survey data is the respective public research institution.

There are two conclusions from the review:

a) In Germany, large-scale survey measurement is not a vision for the future but an existing, well-developed segment of data supply for public bodies and the social sciences. Based on this, German research groups have been able to play a leading role in social research at the international level as well. It is true, though, that the academic community has lagged behind in establishing large-scale, high-quality survey measurement instruments of their own. With the major new projects launched recently, the situation is changing: academia is taking a more active role. The objective for the future is to widen the scope of large-sale survey measurement,

3 There are exceptions to this rule. For instance, in case of telephone surveys, data collection is contracted out to survey organizations because the statistical offices do not have their own infrastructure for large-scale CATI operations. The most prominent example was the ILO employment survey of 2002-2006 (“Arbeitsmarkt in Deutschland”).

4 There are two main exceptions to this pattern: 1) RKI organizes data collection for its Health Surveys, which include some medical treatment, on its own. 2) HIS conducts surveys of student populations, normally implemented through mail or web surveys, on its own. Similarly surveys and assessments implemented in schools normally are conducted by specialized agencies or institutes affiliated to the respective ministry of education.

establishing new surveys and approaching new research questions.

b) The institutional basis of large-scale survey measurement in Germany is a combination of public and private organizations. On the public side one finds, besides governmental agencies, research institutions working in different organizational contexts (public administration as well as academia) but all operating as part of the scientific community. On the private side, one finds survey research institutes organized as professional service companies.

The question is how to evaluate this overall structure. One may argue that it has apparently operated quite well so far, as demonstrated by the fact that LSM is well established. In recent years, much progress has been made in survey technology and measurement methods. The question remains, however, whether the existing infrastructure is sufficient for the future. The demand for large-scale, high-quality survey measurement is rising. The number of such projects is increasing, accompanied by a tendency towards larger sample sizes, more complex survey designs, and more demanding methodological techniques and standards. All of these developments will require significantly expanded survey measurement capacities.

3. Organisation and standards: Germany compared to the US and the UK

Large-scale social science surveys belong to the class of high-precision scientific instruments, similar to those used in the natural sciences. In order to measure social structures, individual behavior, and social change properly, surveys must not only be large-scale but also high-quality. Conducting a large-scale survey at a poor quality level means misallocating money. Quality standards and how to implement them in practice must therefore be part of the discussion on large-scale survey measurement.

Sample surveys may be viewed as a communication process. They are complex instruments generated in a structured and dynamic interplay of several thousand people. They must be organized in production processes requiring intensive, continuous process quality control.

To understand the enormous task of making a large-scale survey, let us consider the (relatively simple) case of an ALLBUS-type survey, a one-nation cross-sectional survey. After having designed and properly tested a questionnaire, a fielding team of about 200 interviewers (plus back-office staff) will be handed the addresses of about 7,000 selected target persons. Most of them have to be contacted several times to achieve the final net of about 3,200 respondents. Let us assume the average contact rate is 2.5. This means that some

17,500 contacts or contact attempts have to be made. The net sample of 3,200 respondents will, on average, communicate with an interviewer in a face-to-face situation for about 70 minutes (i.e., all in all about 460 working days). The instrument measures about 400 variables per respondent resulting in about 800,000 single data points or measurements, which make up the data file.

To design, implement, and successfully conduct such a survey, a number of quite distinct methods and techniques have to be combined into a single streamlined survey process. Among these are communication and cognition methods which allow the transfer of substantive research questions into appropriate survey items; sample statistics, which govern the design, implementation and assessment of actual samples; logistics and process quality methods, which guarantee transparent fielding processes; content analysis as a special field for all open-ended items and coding; documentation methods which relate numerical information with "what it means," and statistical analysis combined with other quality measures to assess the validity and reliability of the data obtained, to mention just the major research areas.

In contrast to the sheer endless number of possible errors or distortions that can happen in this process, one can observe a remarkable robustness in many high-quality surveys over longer periods of time. This indicates that the process can successfully be managed — with ample opportunities for improvement. There is, for instance, the issue of declining response rates in combination with higher aspirations to include all strata of a society (i.e., less integrated groups), which must be tackled by future large-scale surveys.

Only the best survey organizations are able to manage this process observing rigorous scientific standards. The number of such organizations is, for obvious reasons, small in all countries. Institutional settings may vary between countries; thus, for a compact overview, we will discuss the situation in the United States and the United Kingdom compared to Germany.

United States

The number of private and university affiliated agencies which are able to run large-scale instruments is actually very limited in the US. Apart from the two university-affiliated agencies NORC and ISR, there are two other private sector institutes, namely WESTAT and RTI.

Centers like NORC or ISR in the United States, though affiliated with universities, organize their data collection in profit centers, whose aim is obviously to earn a profit. As soon as they require subsidies from the university or their head organisation, they are either

quickly downsized or, as was the case with some smaller survey research centers in the past, simply shut down. As profit centers, they compete for tendered and non-tendered surveys. They carry out surveys in the social sciences as well as government surveys. One can also observe a division of labor within such centers. Often principal investigators and analysts are faculty members, while data collection is dealt with by separate units, which themselves are defined as profit centers. Sometimes, the university data collection organisation will compete for contracts from their own university with other agencies, say WESTAT or RTI.

Concerning standards and methodological rigor, the US has been in the lead for a long time. Discussions about the precision of large-scale instruments (non-response, measurement error, total survey error, etc.) were initiated in the US. Research institutions are prepared to turn down low-quality proposals and to invest substantial sums in high-quality instruments. In general, considerably larger amounts of money are spent on high-quality surveys in the US than in Germany.[5]

United Kingdom

The United Kingdom has a highly developed culture of survey research and considerable public spending for all kinds of surveys, whether evaluation studies of government programs or more basic monitoring of social trends. In contrast to the US, but similar to Germany, there are no academic data collection institutions. Instead, large-scale survey instruments cooperate with private sector institutes in the data collection phase. The number of agencies powerful enough to run large-scale surveys is also very limited. The dominant data collection agency is NATCEN, a private, not-for-profit organisation. Others include large survey companies such as BMRB, TNS or IPSOS.

Regarding standards, it is noteworthy that many UK agencies have introduced quality concepts and have been certified according to ISO or other standards. The Economic and Social Research Council (ESRC) has made great efforts in the last decade to improve instrument quality for quantitative research. This has produced several programs, conferences, projects, etc. targeting higher standards and better quality in social surveys. Increasingly, competitive structures are being introduced for long-term projects as well, i.e., calls for bids for long-term surveys at regular intervals. The bidders for these are academic groups, which in turn collaborate on data collection with private-sector data collection agencies. As in the US, the price level for high-quality surveys is considerably higher in the UK than in Germany.

5 There is little public information on actual survey costs. Krosnik cited the price of $1,000 per interview in a 2006 press statement. Other sources include non-disclosed bids in international surveys and private information. The same holds for the UK.

Germany

Like the United Kingdom, Germany has no academically affiliated data collection agency with the capacity to run large-scale surveys such as ALLBUS, SOEP, ESS, EVS, ISSP, etc. Data collection thus has to be delegated to private-sector agencies. One should note here that "data collection" as a catchword covers a wide range of services that can include instrument design, sampling frame, fieldwork, data editing and processing, documentation, websites, and so on.

Similar to the US and the UK, the number of survey agencies that can manage large-scale, high-quality surveys is very limited. This is particularly true for surveys based on face-to-face interviewing. Although there exist a number of well-known survey companies in Germany, a closer look at the list of large-scale surveys reviewed above reveals that in recent years there were in fact only two agencies involved in this segment of survey research: TNS INFRATEST and INFAS. Others have reduced or even cut their face-to-face field force entirely, or are not trained for probability sampling or methodological documentation as required for high-quality surveys.

Despite the small number of actors, the market for large-scale, high-quality surveys is fairly competitive. The two survey companies mentioned have demonstrated their ability to conduct demanding social surveys successfully. Both companies provide "full service"; that is, they are able to offer data collection by all interview modes (face-to-face, telephone, mail, Internet) and to provide far more than just fieldwork: their professional services include the complete range of data collection steps as well as methodological consulting or writing research reports for clients requesting such services.

As mentioned above, the price level for conducting surveys is lower in Germany than in countries like the US or UK. Survey companies in Germany have invested a great deal in conducting "lean production" surveys in order to cope with clients' expectations of good quality at low budget levels. This is achieved partly by productivity gains through technology or very tight resource management. And partly it is achieved by cost-saving adaptations of methodological procedures (e.g., variations of random route procedures in face-to-face surveys). Relatively few surveys are budgeted sufficiently to meet the highest quality standards according to state-of-the-art social science methodology. At the same time, academic clients and survey methodologists have not really tried to understand the differences in survey production at different cost levels or to assess the quality achieved in the different types of surveys using the Total Survey Error framework.

Given the trend towards lower response rates in surveys — which is a problem in other countries as well — all this has led to some concern in academia about the quality of surveys provided by "commercial" agencies. For many years there have been discussions about potential alternative structures, with a marked preference for an academically affiliated survey organization. We will come back to this issue later. At this juncture, we would like to underscore that the problems addressed in these discussions mainly affect the operation of "normal" surveys, whereas the sub-sector of large-scale surveys is by necessity more quality-driven. The growing demand for large-scale, high-quality survey measurement also provides a suitable framework, therefore, for efforts to strengthen survey methodology and quality standards in German survey research.

4. Issues of infrastructure: assessment and recommendations

When discussing the future of large-scale survey measurement in Germany (and beyond), various infrastructural issues must be taken into consideration. We suggest discussing such issues on three levels: (1) infrastructure in terms of an overall framework for LSM, (2) infrastructure in terms of resources and know-how for data collection, (3) infrastructure in terms of individual LSM instruments.

(1) Infrastructure in terms of an overall framework for large-scale survey measurement

Large-scale, high-quality survey measurement must be defined as a core element in the research data infrastructure for the social sciences. Large-scale surveys offer a particular class of data, distinct from others such as administrative statistics on the one hand and survey or observational data for special (often ad-hoc or smaller-scope) studies on the other hand.

A crucial point is to develop an overview of the field as a whole, covering all of the types and sub-sectors of large-scale survey measurement reviewed above. So far, such a broad view is not common. Instead, large-scale survey measurement is segmented along institutional lines, that is, Statistical Offices (*Amtliche Statistik*) (type 1), ministries (*Ressortforschung*) (type 2), public research institutions (type 3) and the academic community (type 4). All these types of institutions have their specific responsibilities, budgets, and procedures, and will therefore all carry out their own large-scale surveys in the future. Yet one can imagine that there could be some kind of overarching framework or coordination.

Objectives would be to articulate the common interest in strengthening the basis for large-scale, high-quality survey measurement in Germany; to avoid overlaps or conflicts of interest;

to identify problems or needs for action; to develop institutional arrangements for the governance of large-scale survey instruments; to serve as a platform to discuss issues of technological developments and resources with (public and private) data collection agencies; to support linkages of LSM in Germany with European and international structures, etc.

We will refrain from making organizational proposals here. It is evident that the RatSWD forms a kind of institutional nucleus for the representation of all those involved in large-scale survey measurement. It would be worth discussing how to integrate the private survey companies because of their crucial contribution to an effective research data infrastructure. It would also be useful to have a closer look at comparable institutional arrangements in other countries. A number of countries have established structures for a more coordinated or focused development of large-scale surveys. Among recent initiatives one may mention, in particular, the Survey Resources Network (http://surveynet.essex.ac.uk/) in the UK. The institutional framework here is combined with efforts to promote survey methodology.

One may discuss whether the (academic) social science community should focus on its "own" large-scale surveys, which are governed by scientific objectives and academic institutions, or whether this should be part of a broader approach. One argument for a broader approach is social science community's interest in obtaining access to all large-scale survey data, irrespective of their origin in other institutional sectors. A second point is that all institutional sectors use the same "production basis" for large-scale surveys, i.e., the resources and know-how of survey organizations. It should be a matter of common interest to assess future demands for large-scale data collection and to help existing suppliers to meet these demands.

(2) Infrastructure in terms of resources and know-how for data collection

Large-scale, high-quality survey measurement requires technical resources and know-how beyond the scope of what universities or research institutions or even most of the existing survey or market research organizations have at their disposal.

As we have described above, conducting large-scale surveys means organizing complex communication processes according to methodological standards, but also as quickly and as affordably as possible. The revolution in communications media and the resulting changes in communication behavior heavily affect how surveys can be conducted today. The logistics of a survey, and partly the interviewing process as such, make use of advanced technology and need streamlined production processes.

Consequently, large-scale survey measurement is also a matter of economic resources and economic efficiency. To build up and maintain large-scale data collection operations requires substantial financial resources and continuous operations, as well as ongoing investments and innovations to maintain competitiveness. This includes investment in highly qualified staff who are necessary to offer comprehensive professional services and research experience.

It does not go without saying that such resources exist. To give an example, one can design a new survey of 10,000 randomly selected respondents who will take part in a 60-minute personal interview. It is by no means a given that such a survey can simply be "ordered" at some agency.

In Germany, the infrastructure for data collection of this scope does exist. Apart from government surveys conducted by Statistical Offices, the infrastructure is provided by private survey organizations. Whether the given supply satisfies all needs and whether it is advanced and stable enough to meet future requirements, must be subject to debate.

In academia, "for-profit" survey companies are sometimes regarded as service providers that belong to the commercial sphere and are not really part of the research process. Potential alternative structures have been discussed. Theoretically, there are two alternatives:

- The first are the statistical offices (the Federal Statistical Office and 16 state statistical offices), which could act as fieldwork organizations. Indeed one may ask whether the present division of labor between the statistical offices and survey organizations will remain the same in the future. Is it conceivable that the statistical offices might take over data collection functions for large-scale surveys in the social sciences? There are no signs indicating this. Statistical offices work under tight legal, budgetary, and organizational restrictions, which make arrangements of this sort unlikely. Moreover, the German statistical offices do not use the survey design preferred for social science projects.[6] Regarding survey quality, researchers have criticised how key projects such as EU-SILC are being implemented in Germany.[7]
- A second alternative would be to establish an academically affiliated data collection organisation. The vision is to bundle all current and future academically governed surveys to create the critical mass necessary to establish and run a large-scale data collection enterprise profitably. Is this a realistic option for the future? There are

6 Social science surveys normally combine probability sampling with the condition of voluntary participation of respondents. By contrast, population surveys of the statistical offices in Germany either rely on the legal obligation of respondents to take part (Microcensus) or, if participation is voluntary, they use quota sampling.

7 Richard Hauser recommends that EU-SILC "should be improved by using truly random samples, …face-to-face-interviews with multilingual questionnaires, sole responsibility of the German Federal Statistical Office, and outsourcing fieldwork to a private market research company with a well-trained and permanent staff of interviewers." Hauser, R. (2009, p.11)

numerous obstacles to an academic survey organization. One is the enormous investment required to set up and maintain large-scale survey operations. A second is the segmented institutional structure of the German political, administrative, and research system, which is not favorable to centralized solutions. A third problem is how to organize competition of suppliers in such a structure: Would the academic fieldwork organization be protected from competition? Would it be publicly subsidized? Or would it have to act under market conditions like a private company?

Other aspects of this debate deal with the academic world itself. Motivation and career paths within the academic social sciences would have to support an academic fieldwork organization. In the United States, there have been pioneers in survey research who wanted to collect data on their terms, who thus wanted to define standards themselves and who, consequently, spent time and effort in the thicket of fieldwork. To implement the vision of an academic field organization in Germany, one must, first and foremost, create such a culture, which would be a lengthy and thus most unlikely process.

Following from this, our recommendation is to acknowledge the cooperation between public and academic research institutions and private-sector survey agencies as an integral part of the research data infrastructure.[8] Challenges of the future must be met within this framework. This strategy is in line with developments in other European countries.

It may be useful to think about institutional mechanisms to strengthen the public-private cooperation. Basically, however, the economic mechanisms of supply and demand will rule the game. The private economy will supply the required resources insofar as there is sufficient demand and the services are profitable. Investment will be encouraged if there is sufficient planning security and a price level that promises return on investment. Competition among suppliers will be a driving force to improve the effectiveness and quality of the service.

At the same time, the cooperation can take advantage of the professional competence, research experience, and scientific ambitions of many survey managers in those survey agencies that are involved in the large-scale survey business. In fact there are examples of excellent cooperation between survey managers in data collection agencies and survey directors and their teams in public or academic research institutions. Such cooperation is an important element in the research data infrastructure. Both sides should be aware of their common interest in maintaining and developing a strong infrastructure for data collection.

8 One could envisage such a structure along the lines of the partnership between astronomers and the optical industry: the two work together to design telescopes; the industry produces and maintains the instruments and the astronomers use them for their observations.

They are both in the same boat, sailing to new horizons.

(3) Infrastructures in terms of individual large-scale survey instruments

There are many aspects to "infrastructure," and the term is used in a number of different ways. The EU, for instance, has set up a European Strategy Forum on Research Infrastructures (ESFRI). Here infrastructure means a large individual project of general importance. In the ESFRI case, the focus is on research infrastructures of pan-European interest. The program is not restricted to the natural sciences but also includes the social sciences. Out of a list of six acknowledged social science infrastructures of European importance there are two large-scale surveys: the European Social Survey and SHARE.

We suggest that, independent of ESFRI, all large-scale survey measurement instruments should be defined as "infrastructures" in this sense. This would emphasize a number of characteristics that are crucial for such projects: their strategic role in enhancing research in the respective fields; the perspective of continuity, including the need for secure funding; governance structures and institutional arrangements for conceptual decisions, data production, and data access; their function of creating communities of researchers in the respective field, at both the national and the international level.

Large-scale survey instruments must be embedded in an appropriate scientific infrastructure. They should be located in a more comprehensive system of high-quality social surveys, allowing existing elements and missing crucial areas to be easily identified. Moreover, the core instrument—the survey itself—must not work as a closed shop; it should be wide open to its scientific environment. Crucial functions to enable this are R&D for continuous improvement of the core instrument, and outreach to inform the scientific community and the society at large about the potential of the core instrument.

Data collection agencies, which are usually private survey organizations, should be viewed as part of the respective "infrastructure." Selecting the most suitable survey organization will require a competitive procedure. However, after the decision is made, continuity will normally be the most favorable framework for cooperation. Stable working relationships enable learning effects on both sides. Involving survey managers in decisions about methodological design and instrument development can help to optimize the survey. Contract periods of, say, three or six years facilitate investments and returns on investment (both financial resources and know-how).[9]

9 Our arguments put forward here on sustainable knowledge accumulation are similar to those which led to the foundation of ZUMA in 1974.

One might also imagine more innovative forms of cooperation. For instance, imagine that scientists applying for funds for a future large-scale infrastructure were to form a research alliance with a private-sector agency of their choice. It would then be up to the funders to decide whether the quality and originality of the survey justifies the funds asked for. There may even be competing proposals. Price bargaining would be part of proposal development. Or, imagine that funders were to accept the need for better quality and in turn be prepared to spend more on methodological improvement and innovation than they have so far. The effects on how surveys are organised and how quality is achieved would be tremendous. Third, imagine that the quality promised were controlled independently by the funding agencies. We leave it to the reader's imagination what a major change in actual survey measurement quality that could be.

Conclusions and recommendations

- Large-scale, high-quality survey measurement is a crucial foundation for excellence in the social sciences. Because of its unique demands in terms of resources and skills, it should be viewed as a specific sector of the research data infrastructure.
- In Germany, a range of surveys of this type have been established, inside and outside academia, and new large projects are being created. Clearly, the sector is expanding. While this is no doubt a positive development, there is a need to discuss future challenges not only with a focus on individual large projects, but with a view to the sector of large-scale survey measurement in general. Understanding the various meanings of "infrastructure" may help to conceptualize the issue.
- Large-scale surveys are initiated, funded, and governed in different ways. In Germany, the field is segmented along institutional lines. The key actors include the statistical offices (*Amtliche Statistik*), Ministries and public research institutions (*Ressortforschung*) and the academic community. It would be reasonable—in terms of resources, quality standards, and access to the data—to develop an overall framework covering all these sub-sectors. The RatSWD is a kind of nucleus for the infrastructure needed for networking and coordination. Institutional arrangements or programs in other countries may provide additional experience and models.
- Large-scale, high-quality survey measurement (LSM) requires a well developed infrastructure for data collection. In Germany, this infrastructure exists. For surveys other than those of the statistical offices, it is supplied by private-sector survey

organizations. It may be discussed whether this structure is stable and effective enough for future demands. However, alternative structures are not realistically in sight. Private survey organizations should, therefore, be recognised as relevant actors within the research data infrastructure. They have to invest in technological and human resources in order to provide the professional services required, and they need conditions and forms of cooperation which encourage this investment.

- Single large-scale survey measurement instruments may be defined as "infrastructures" in line with the use of the term at the European level (ESFRI). Compared to normal research projects, such programs need a more highly developed institutional infrastructure and must be embedded in the scientific environment. A well-defined map of such infrastructures is a prerequisite for the long-term coherent planning of a national social science infrastructure in Germany and beyond.[10]

10 "Beyond" mainly refers to the European level, which is of particular importance for large-scale survey measurement. A vision for a European System of Social Science Instruments was set out by Mohler and Wagner (2004).

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