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Sampling Military Personnel Records: Data Quality and Theoretical Uses of Organizational Process-generated Data

Christoph Rass *

Abstract: »Stichprobenbildung in militärischen Personalunterlagen: Datenqualität und Forschungsperspektiven der Nutzung prozessgenerierter Quellen«. The paper discusses methodological issues relating to the use of historical sources by social scientists. It is focussed on the particularities of sampling historical mass data and an assessment of the achievable data quality in respect to the theoretical uses of such material. Conclusions are drawn from a project in which a number of samples have been created that contain biographical data on German males who served in the Wehrmacht or the Waffen-SS during the Second World War. This dataset combines the four most important collections of individual-related files for this target group: the army's personnel files and personnel registers, as well as Red Cross information on prisoners of war and missing soldiers. The data contains a large number of variables covering a soldier's life from birth to the end of his military service and is available at the German Federal Archives.

Keywords: Process-Generated Data, Long-term Social Processes, Military Personnel Records, Biographical Research, Mixed Methods, Triangulation, Social History, Military Sociology, Organizational Sociology.

1. Introduction

Karl S. was born on January 20th 1920 in Bochum into a Roman Catholic working class family. After attending elementary school, he became a baker's apprentice. In 1936 at the age of 16 he joined the Hitler Youth for two years. At the age of 18 he became eligible for conscription into military service and was mustered at Dortmund, with a recorded weight of 60,6 kg and a height of 1.7 m. Karl S. was deemed fit for military service and was called up as a soldier in October 1940, when he was assigned to the 2nd company of Infantry Reserve Regiment 216, garrisoned at Herford. After only a few days, the young soldier was transferred to Infantry Regiment 473 for basic training. His new unit was part of the 253rd Infantry Division, which belonged to the German Army of occupation in France when Karl S. joined his Regiment.

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Within the 253rd Infantry Division, he took part in the military build up of 1941, which preceded the assault on the Soviet Union. In the winter of 1941, he suffered first battle injuries in action in the Eastern Theatre of the war. Hit by shrapnel, he continued fighting at the front, before being wounded for a second time by a bullet a few days later. Karl S. was hospitalized and transported back to the home garrison of his unit at Aachen where he stayed as a convalescent patient until June 1942. Returning to the front, he found his company near Rshew, northwest of Moscow. Almost exactly a year after he first became a casualty, Karl S. was wounded again in December 1942 and had to stay at a military hospital for four months. Returning to the Eastern Front yet again in April 1943, he was thrown into the German offensive at Orel. After its failure he experienced the first large withdrawal of the Wehrmacht, and it was during this operation that he met his fate. Karl S. was killed in battle on the 2nd of October 1943 near Gomel in White Russia. His comrades buried him in an improvised field grave almost to the day three years after Karl S. had become a soldier in Hitler's Wehrmacht. He had received five decorations and held the rank of lance corporal. He died at the age of 23 (Rass 2004a: 26).

1.1 Personnel Records as a Data Source

This brief sketch of a professional biography, or structural biography (Rass 2008: 92), has been recorded by the personnel administration branch of the German Army ("Wehrmacht") in a service record book ("Wehrstammbuch"). In itself, the biographical information provided is limited to a rather small number of variables. The file does not contain any narrative information about Karl S. and no ego-documents. But his service record book is not only, presumably, the sole written account of the life of Karl S., but also just one in a collection of four million documents of this kind. While it seems clear that military personnel files can only supplement qualitative biographical studies, their full potential can be exploited in quantitative research, making use of large samples of such process-generated mass data (Hilberg 2001; Riemann 2006).

Service record books served amongst other individual-related documents as personnel files for rank and file soldiers of the German Army. They were generated and maintained by an extensive bureaucracy, which continually collected data on military personnel between 1935 and 1945. Today, the remaining files of the German Army's personnel administration represent one of the largest and most detailed collection of process-generated biographical data on German males born between the late 1870s and the late 1920s (Deloie 2007: 203).

The Third Reich ("Drittes Reich") went to war in 1939 with more than four million men under arms. Despite already mounting losses, the personnel strengths of the German armed forces peaked at about 9½ million men around

the turn of the year 1943/44. The accelerating process of disintegration during the last stage of the Second World War whittled the German military down to 7½ million men in early 1945 (Rass 2004). The casualty figures ultimately reached some 5.3 million soldiers dead or missing in action to several million wounded and disabled (Overmans 1999: 228-232). To keep its war machine working, the Third Reich mobilized more than 18 million men in total to serve in the armed forces or their auxiliaries during the Second World War (Overmans 1999: 215). The armed forces, mainly consisting of the Wehrmacht and the Waffen-SS, grew into the largest organization of Nazi Germany and comprised almost half of Germany's male population (Statistisches Jahrbuch des Deutschen Reiches 1938: 21). Within only a few years the Third Reich imposed an unprecedented degree of militarization on society as a whole and built one of the largest and most effective military organizations of the 20th century. It was capable not only of waging a prolonged war and to perform under increasingly adverse conditions but also to commit the most heinous crimes against mankind in a war of annihilation (Heer/Naumann 1997, Hamburger Institut für Sozialforschung 2002).

It thus seems fatal to neglect the existing stacks of systematically collected data on the personnel engaged within such crucial institutions of the Third Reich based on methodological concerns and a lack of appropriate research strategies. Instead of surrendering the conceivable empirical and theoretical gains, promising options to exploit these unique sources for process-generated data have to be carefully explored and cautiously developed.

1.2. Current State of Research and Theoretical Approaches

The German military has become one of the most prominent objects of historical study. Critical research, employing a multidisciplinary array of theories and methods has expanded our knowledge and understanding of this military institution tremendously in recent years. Studies analyzing large datasets of biographical data rather than individual biographies have played an increasingly important role in this process and have often blurred the line between qualitative and quantitative biographical research. However, personnel files of "ordinary men" (Browning 1992) from the Wehrmacht and the Waffen-SS have until recently conspicuously been ignored as a hugely promising type of source on the subject (Rass 2001). This has not only led to the neglect of a vast amount of data suitable for tackling a great variety of questions, but has also impaired the analysis of the social history (Speitkamp 2004) of the Wehrmacht through quantitative applications. This seems all the more surprising, given the intense discussion across different disciplines of the social sciences regarding the use of historical process-generated mass data and quantitative methods for their research (Scheuch 2006; Mann 1980, Mann 2002, Best/Schröder 2006, Aumann et al. 1999; Sahle 1999; Bick/Müller 2002), and the existence of a

number of historical studies on the Third Reich that have very successfully used samples of biographical data attained from process-generated files. Starting with the pioneering studies of Kater (1983), Jamin (1984), Bartov (1985) and the path breaking work of Browning (1992) and Wegner (1988) an ever growing number of projects has not only developed methods to retrieve information from individual-related files, but also taken more and more classes of such historical sources under scrutiny. While more recent publications like Banach (1998), Orth (2000), Mann (2000), Wildt (2002) and Kupfer (2006) have further expanded this field of research, a comparable effort to broaden the samples of Browning and Bartov and collect data on the lower strata of German military personnel has long been missing or has been restricted to qualitative work (Fritz 1998). Instead, empirical studies on social and/or functional groups within the German armed forces have maintained their traditional focus on military elites (Preradovich 1978, Bald 1982, Stumpf 1982, Lammers 1990, Hürter 2006). This imbalance has only partially been adjusted by initial attempts to unlock the vast amounts of personnel files on rank and file soldiers from the German armed forces of the Second World War (Rass 2003, Rass 2004). While studies on the social history of “ordinary men” in the Wehrmacht still tend to predominantly rely on administrative records and ego-documents, this approach wants to overcome one of the most severe constraints to research in this field: the complete lack of non-aggregate information on the group under scrutiny. To this end, a large-scale and in-depth reconstruction of data on the social profile of the military on the basis of the individual-related files kept on its personnel was necessary (Rass/Rohrkamp 2007).

This line of research contributes to the advance of biographical studies in the field, and, moreover, complements the spectrum of methodological approaches. It is part of a process that sees the introduction of a widening range of sophisticated approaches from social research to the study of military institutions (Reiter 2000, Rass 2006). After Schröder (1985, 1992) presented the first qualitative studies based on methodologically collected samples of biographical interviews with Wehrmacht veterans, Latzel (1998) and Humburg (1998) introduced quantitative analysis to qualitative data with their examination of soldiers’ letters. At the same time, Overmans (1999) completed the first representative quantitative study on casualties suffered by the German armed forces in the Second World War, which was based on a random sample drawn from the only complete collection of historical data on this matter: the central card file index of the Deutsche Dienststelle (WASt). Research projects, launched most recently, further expand the use of process-generated data and the use of social science methodology. For example, Welzer and Neizel (Neitzel 2008) started to collect data on soldiers’ mentalities and dispositions. They analyze transcripts of conversations between prisoners, which were secretly recorded in Allied POW camps. Their research will allow quantitative analysis of large data samples gained from such sources and aims at linking the transcripts to biographi-

cal data on the tapped soldiers. Similarly, a project on regional jurisdiction during the Third Reich, initiated at the University of Cologne, also promises methodological advances. It strives to combine large samples of case files from the Wehrmacht court-martials with biographical profiles of the military judges involved (Herbers/Theis 2008). Another project gathering biographical information on military judges is currently underway at the Hannah-Arendt-Institute at Dresden and will provide an additional sample of data gained from the personnel files of military judges (Bade 2007, Rass/Rohrkamp 2008). Literature indicates not only an ascending importance of social science methodology in historical work but also a move from predominantly quantitative or qualitative studies towards an integration of various approaches and a reliance on an expanding basis of diverse sources, especially process-generated mass data stemming from individual- and case-related files.

1.3 Description of the Research Project

The research project *Supraregional digitalization of individual related sources on members of the armed forces of the Third Reich* (“Überregionale Erschließung personenbezogener Quellen zu Angehörigen der bewaffneten Formationen des ‘Dritten Reiches’”), funded by the German Research Foundation from 2004 to 2007, has focussed on biographical data from personnel files of Wehrmacht and Waffen-SS soldiers to overcome the severe lack of digitally available samples combining the major holdings of individual related sources. The project was designed to overcome these shortcomings with a fivefold objective:

- 1) to create samples from the surviving service record books of, at the least, restricted representativeness;
- 2) to supply data on the different branches of the Wehrmacht (army and air force were eventually covered, the navy had to be excluded for practical reasons) and the Waffen-SS;
- 3) to supplement the data from the service record books with additional biographical information on the target group;
- 4) to provide data which allows conducting longitudinal studies of the social profile of military units (Menard 2008);
- 5) to create a dataset representing non-commissioned officers and other ranks in particular (rather than the officer corps) (Rass 2004a).

Accordingly several large samples were created, contributing a biographical database on German soldiers to the growing corpus of studies in empirical social history of the Third Reich and the Second World War (Rass 2008), and to the concerted effort to digitize archival sources to facilitate their use (Thaller 2003, Coppi et al. 2002, Grotum 2004). The data is intended to provide a basis for secondary samples and an addendum to the analysis of qualitative sources.

It is publicly available at the German Federal Archives (call number MD2) and will hopefully encourage the spread of quantitative as well as mixed method research on Germany in the Second World War and the sociology of military institutions.

This paper is chiefly concerned with the application of quantitative methods to German military personnel files as biographical sources. It specifically addresses two issues: The first and main section introduces military personnel files as biographical sources and methods to retrieve samples from preserved files given that random samples can not be drawn from the incompletely preserved files. The second section discusses research perspectives considering that the available data is biased by gaps in the overall collection of files as well as incomplete individual records. Finally theoretical uses of the material that arise from the improved digital accessibility of the material as achieved by the above-mentioned project will be explored as well.

2. Data on German Military Personnel 1935 to 1945

Any attempt to sample biographical data on German military personnel from the first half of the 20th century suitable for quantitative analysis has to cope with a rather complex array of historical sources. As no single complete collection of military personnel records exists and none of the various archival holdings of individual related files provides easy access or complete records a combination of various sources is the only way to reach the objective. On the one hand data triangulation based on different kinds of sources recovers biographical information with an acceptable density concerning the individual record as well as the overall sample. On the other hand an interlocking process of joining several types of records opens up the data to the required sampling procedures.

Amongst the larger collections of individual-related sources on German military personnel, four process-generated data sets stand out for their extraordinary importance: the Wehrmacht itself produced service record books and identification-tag indices up to 1945; in addition the Red Cross collated a list of missing soldiers and an index of returning Prisoners of War (PoW) during the 1950s. Once these data sets, kept by different institutions at various locations, had been identified and could be accessed, they served as sources for biographical data on rank and file soldiers of the Wehrmacht and Waffen-SS in the discussed project (Rass 2003, Rass 2004, Rass/Rohrkamp 2007).

2.1 Service Record Books

The four million service record books of enlisted men and non-commissioned officers that have survived from the 18 million files created before 1945 offer by far the richest collection of data, and provided the central resource. The service record books were originally archived at the “Zentralnachweisstelle” of

the German Federal Archives and were moved to the “Deutsche Dienststelle (WASSt)”, an organization initially created to notify next-of-kin of members of the former German Wehrmacht who were killed in action, at Berlin to be joined with several other collections of individual-related data on military personnel in 2006. This gigantic transfer turned the “Deutsche Dienststelle” into a hub with all major individual-related sources on German rank and file military personnel that had served during the Second World War, produced prior to 1945.

2.2 Identifikation-Tag Indices

In addition to the service record books and a number of other collections, the “Deutsche Dienststelle (WASSt)” holds the second type of process-generated data on the social history of the Wehrmacht that became vital for our study: the identification-tag indices (“Erkennungsmarkenverzeichnisse” and “Veränderungsmeldungen”). These lists recorded every change in the personnel assigned to a specific military unit at the level of a company on a day-to-day basis throughout the war. In total the preserved registers document more than 100 million transfers of individual soldiers between different units of the armed forces between 1939 and 1945. Also, the identification-tag indices have survived to a far greater extent than any other source discussed here and can be rated near complete and reliable (Dillgard 1989, Remmers 1999, Rass/Rohrkamp 2007).

2.3 The Tracing Service of the German Red Cross

After 1945 the only systematic large-scale collections of biographic data of German military personnel from the Second World War were collated by the tracing service of the German Red Cross (“Suchdienst des Deutschen Roten Kreuzes”) situated in Munich (Böhme 1970, Ampferl 2002). The tracing service published a list of more than one million missing soldiers in the 1950s (“Vermisstenbildliste”). This index also provides some basic social data for every entry and can be used to supplement and expand biographies derived from personnel files. In addition, an index of returnees from Allied Prisoner of War camps was created by the agency when interviewing returnees about their PoW-experience and their knowledge about soldiers still missing. A file-card for every interviewed veteran records personal information ranging from military assignments to profession and place of residence before and after the war (Deloie/Hahne 2007: 61).

3. Problems in Data Quality

The use of such process-generated data for biographical research has to take into account a number of methodological questions touching the nature of this

historical data (Bick/Müller 2002, Best/Hornbostel 2003). Three major issues relate to the reliability of historical sources, their intentions and losses in their tradition to present day.

3.1 Quality and Completeness of Individual Files

The quality and completeness of individual files can vary dramatically. One has to bear in mind that the German armed forces had designed their personnel files during the interwar years to administer a limited number of cases under peacetime conditions. As the Wehrmacht initially expanded the army of 100.000 men allowed by the Treaty of Versailles to a still manageable size of 550.000 soldiers in 1935, the service record book aimed at keeping a detailed account on each of them in order to administer the growing number of conscripts now passing through its ranks.

This system was continued when the armed forces went into accelerated growth during the last years of peace and virtually exploded in size after the beginning of the war. The necessity to constantly update almost 10 million files under increasingly difficult conditions caused a steady decrease in data quality by 1943 and throughout the final years of the war. Not only became the number of entries unmanageable, the system itself was no longer fit for purpose.

The personnel files of rank and file soldiers were kept at local personnel administration offices scattered across Germany while the events they recorded could occur at far-away places, wherever a soldier was posted. Messages had to be conveyed from all theatres of war to which German troops were deployed, often under the most difficult circumstances. The timely and reliable transmission of information deteriorated simultaneously with the increasing inability of the military bureaucracy to handle the vast amount of data. In August 1944, the German Armed Forces High Command (“Oberkommando der Wehrmacht”) finally dealt with the situation by ordering that the service record books should be maintained only up to completion of basic training. Incoming reports were to be collected and kept with the files for updating after the war.

Ultimately, the quality of the records is better than might be expected and this is due to a combination of circumstances. On the one hand, reports on biographical events were sent back regularly to personnel administration offices by most units, even during the later stages of the war. Thus, many service record books contain dense collections of complementing paperwork. On the other hand, two further documents, the soldier’s service record booklet (“Wehrpaß”) and his paybook (“Soldbuch”), constitute almost identical copies of his service record book. The booklet was kept with the soldier’s unit and travelled with him from posting to posting. The paybook remained with the soldier himself to serve as a document of identification. One, or even both can be found in many personnel files and often fill gaps. Moreover, the additional

sources discussed above can serve the same purpose if records on an individual in different datasets are linked up (Rass 2004).

3.2 Coverage and Accuracy of Records

A second problem in data quality arises from the purpose different individual-related files were created for and concerns accuracy and scope. Military personnel files only contain information relevant to the army for assessing the abilities and tracking the whereabouts of a soldier. A service record book had to cover a soldier's life from his birth to his death or discharge, and the categories of information to be recorded were tailored to the requirements of military personnel administration. For instance, while physical features and handicaps as well as everything concerning a soldier's life in the army were covered in great detail, data on social, political and professional background was recorded far less elaborate. However, military personnel files provide standardized information on each individual, and the accuracy of data can be rated high.

In contrast, the accuracy of individual-related files from the post-war era can be considerably lower. For instance, the Red Cross collected information specifically on the final stage of a soldier's wartime experience with the intention to shed light on the circumstances leading to the unaccounted disappearance of men. The respective registers and files cover exactly the period for which the Wehrmacht files are weakest, but the accuracy of information has to be assessed with care. Data are either derived from veterans accounts or from relatives and comrades and was recorded years after the events took place. Indeed, the comparison of data from pre- and post-1945 sources often reveals discrepancies, not only caused by patchy memory but also deliberate ones.

3.3 Loss of Original Files

A third issue stems from the gaps in historical tradition and predominantly affects quantitative research. Like with almost all historical sources from before 1945, the war and its aftermath have caused huge losses of material. Roughly 18 million personnel files were created for rank and file soldiers between 1935 and 1945, but only about four million have survived and are today stored at the "Deutsche Dienststelle" in alphabetical order. Unfortunately, this fragment does by no means represent the whole population of soldiers and is structurally largely unmapped.

In this regard, pretests in the course of the data collection project have shown that about 75 % of the preserved files which were originally kept at the Federal Archive refer to soldiers recruited in military district VI (which roughly equalled modern North Rhine Westphalia) while the remaining 25 % refer to soldiers from other parts of the Third Reich. The process of destruction and reconstruction of the records can be depicted in two stages. The service record books were kept decentralized at about 150 local recruitment and per-

sonnel administration offices. Air raids and ground combat started to inflict losses locally during the last months of the war. Finally, the offices were abandoned and files left behind to become subject to looting, confiscation and destruction by forces of war and nature.

It was only in the early 1950s that interest in military records rose again. Now, many veterans needed a certification of their war time service to claim social benefits. The first attempts to collect the remaining documents were initiated in North Rhine Westphalia and spread concentrically from there throughout Western Germany. As a consequence, most files were saved in North Rhine Westphalia, and generally speaking, the density of information diminishes with growing distance from these early preservation activities. Only in a few other regions of Western Germany could large batches of files be recovered and now provide a more complete picture. On top of that solely fragmented records from East Germany made it into the Federal Archives during the first decades. Occasional findings in East German Archives have slowly been merged into the collection only since 1989 (Rass/Rohrkamp 2007: 42).

However, the body of preserved records represents one of the largest and most detailed systematic collections of data on German males for the first half of the 20th century. Nonetheless, the condition of the collection seems to forestall statistical analysis for apparent difficulties in drawing a statistically representative sample.

There have been two academic reactions to this situation: Researchers with a quantitative focus have outright dismissed personal records (Overmans 1999), while traditional historians pick illustrative examples or use the collection to supplement individual biographies in case studies if the respective file has survived by coincidence (Klausch 1995). Both positions are characteristic for the prevalent approaches of historians and social scientists to quantitative data hidden in process-generated historical sources. The lack of an appropriate sampling method appears to have been the main obstacle in using this important resource in a more systematic fashion. Adequate methodological solutions to arrive at samples of acceptable data quality in such an environment are a difficult issue with no general or easy solutions in sight. Instead each research project involving historical process-generated sources depends on sampling procedures tailored not only to address the questions pursued but also to the properties of the historical sources involved. A description and discussion of the sampling procedures applied in our case will serve to illustrate this crucial point below.

4. Sample Building and Digitalization

The premise of any social study on German soldiers from the Second World War that is to be based on a large dataset of biographical information must be

to collect samples from the surviving service record books. As the structure of the existing files it is largely unclear, and there is little detailed information on the events that inflicted the losses that reduced the historical basic population of 18 million documents to four million, there has been a common understanding that it would be futile to simply draw a random sample. Consequently, this has not been attempted up to now.

4.1 General Sampling Approaches

The strategic aims of the project, and the fact that creating a general sample was impossible, provided a rationale for two alternative approaches:

- 1) Several samples target *files originating from military district VI* given the high survival rate for files in that area. After all, the district covered a substantial area comprising large parts of the Rhineland and Westphalia. It included densely populated urban and industrialized areas as well as rural regions, predominantly catholic or protestant as well as mixed areas, and was the most populous military district of the German Reich (Rass 2003).
- 2) Other samples were constructed around a *specific set of military units*. This method relies on the identification-tag indices, which, in many cases, provide a (almost) complete list of soldiers who spent time in a given unit. This list may serve to define a basic population for which all preserved personnel files can then be retrieved (Rass 2008).

Besides methodological deliberations concerning the representativeness of the data, which can be estimated by comparing the basic population and the retrieved files, several *axiomatic considerations* promote this approach.

For instance, soldiers with certain characteristics are generally not distributed equally throughout a military organization. In fact, a complex set of institutional and situational forces determine the social composition of functional groups within a military institution. Not only do distinct criteria determine who is subject to conscription, but the distribution and redistribution of manpower is also governed by specific personnel allocation policies. While casualties inflicted in combat continuously eliminate individuals and make replacements necessary, armies themselves try to manage their personnel in order to most effectively exploit their primary resource: human actors. In the German case this resulted in a policy to assign soldiers with certain characteristics to certain kinds of troops. This led for instance to a predominance of rather young and low qualified soldiers from working class backgrounds in infantry units based on their physical fitness and vice versa older soldiers in the supply branches. At the same time soldiers from rural areas were slightly overrepresented in artillery units which needed personnel acquainted to handling horses. Relatively young but well qualified men trained as electricians or clerks who tended to originate from lower middle class families in contrast were assigned to com-

munications units as highly appreciated specialists. Hence, as only one effects of this system, biographical features of soldiers used by the military in trying to maximize their resources would contribute to drastically different experiences of war on the individual level and also effect the chances of survival or death (Rass 2003).

In addition, soldiers generally belong to and perceive themselves as part of social and functional collectives smaller than an entire army. Military institutions are hierarchies of similarly structured functional elements which exist within a specific context that varies through time and space while the individuals who vivify the structures enter the institution, fluctuate between different subunits and finally exit some time later (Rass 2004).

Questions tackling changes in the social profile or biographical patterns of military personnel and their bearings on collective performance and individual behaviour within such structures can be addressed adequately based on data targeting specific strata in military organizations in a specific context. This is of particular importance because the focus on selected military units allows linking and triangulating quantitative biographical data with qualitative historical sources like administrative files or ego-documents that relate to the same unit or the group of individuals that constitute it.

In total, the study resulted in five separate samples, which can be divided into three categories. Three samples have been drawn randomly from the existing service record books using the first approach detailed above. The (1) *Waffen-SS sample* (“Waffen-SS Stichprobe”) as well as the (2) *air force sample* (“Luftwaffen Stichprobe”) are made up of randomly selected files on soldiers who were enlisted at a recruiting office in military district VI. The Waffen-SS sample consists of 2.567 digitized service record books; the air force sample holds 2.524 datasets. The crucial reason for the decision to compile samples on the air force and the Waffen-SS in this way rests on the available historical sources. Neither organization has left significant inventories of identification-tag indices, and hence the unit-focussed approach could not be implemented here. A (3) third *regional sample* (“Aachen/Düren Stichprobe”), which was also randomly drawn from the surviving files, narrows the geographic focus and widens the organizational range. It contains 2.732 files for soldiers of all Wehrmacht branches as well as the Waffen-SS who enlisted at the recruitment offices at Aachen or Düren (Rass/Rohrkamp 2007).

A second sample category is represented by a (4) fourth *minor sample* (“Eupen/Malmedy Stichprobe”) of military personnel recruited from Luxemburg, Alsace and Lorraine and the Belgian counties of Eupen and Malmedy. Due to the very poor survival rate of service record books for these groups, the sample consists of merely 810 biographical datasets collected from various archives (Quadflieg 2008).

The (5) fifth *unit based sample* (“Hauptstichprobe”) falls in yet another category as it was created following the second sample strategy discussed

above. This sample, the most complex and by far the largest one, follows two basic principles. It centres on a selection of small military units and combines all four afore-mentioned individual related process-generated sources.

The data extraction process involved five stages which will subsequently be looked at in detail: (1) A group of target units was selected and (2) an index of all traceable soldiers who were assigned to these units during the war created. Afterwards (3) personnel files and records from the different sources involved were sampled and digitized and (4) the resulting samples fused. Finally (5) an integrated data structure was built and careful measures to adjust and stratify the data were taken.

4.2 Selecting Military Units

To prepare the selection of companies to be included in the sample a large number of potential target units had to be determined first. Units from military district VI were chosen to guarantee maximum rate of service record books yield. The rationale here is that the Wehrmacht used a regional pattern of mobilization and predominantly placed soldiers living in a certain military district into units raised from this district, and the return rate for service record books is best for units from military district VI.

Subsequently, 68 army units on company level were selected that met certain criteria in an attempt to map the army by a cluster of small samples. For this reason, different kinds of units are covered, like the infantry, armoured, signal and various other technical troops as well as reconnaissance and sapper units. At the same time the chosen units have been raised at different times before and during the war and have taken part in various important military operations. This also guaranteed that all major theatres of war the Wehrmacht fought in were included. As a last criterion, the identification-tag indices of all selected units had to meet a certain degree of completeness.

Thereafter these lists were digitized to gain a full prosopographic account on all men who belonged to one of the selected companies.

4.3 Identifying Soldiers Belonging to Selected Units

This process resulted in 68.209 datasets on personnel transfers involving one of the target units, with each entry either recording the arrival or the departure of a soldier. Record linkage yielded the names of 36.683 soldiers who belonged to one of the selected units for at least one day between 1939 and 1945. To appreciate the social dynamics of a military institution and the dimensions of these basic populations, one has to bear in mind that the size of a unit at a certain point in time and the number of men belonging to a unit throughout its existence greatly vary. An average rifle company for instance had an authorized strength of around 150 men. During the war its size would vary between 30 and 200 soldiers depending on the course of the war, the losses suffered and the

replacements available and assigned. This permanent influx and depletion of personnel could result in more than 1.200 men passing through an infantry company during the six years of the war to keep it operational. Some soldiers would, like the introductory example demonstrated, return several times to their unit, some would only spend a few days, others years with a specific company. Of course, numbers varied across types of units, combat situations and the length of time for which a unit existed (Rass 2004).

4.4 Sampling Personnel Files and Records

Based on an alphabetical list of all soldiers belonging to the basic population defined by the selection of military units, the final sample of personnel files was created by assessing the existence of a service record book or equivalent documents for each name. As a consequence of regional recruitment and the exceptional position of military district VI, documents were available for between 20 and 50 percent of all soldiers listed on the roster of a specific unit originating from today's North Rhine Westphalia (Deloie 2007: 185). The final sample numbered 9.903 datasets. This equals a ratio of 27 % of all individuals named in the identification-tag indices for which a service record book could be retrieved.

Despite all efforts, this is not a probability sample but it benefits from the fact that the data gained from the service record books can be matched against the complete basic population to evaluate its quality. On this basis, secondary purposive samples can be composed to answer specific questions (Collins et. al. 2007: 271).

4.5 Fusing Samples

Finally, the two remaining classes of sources were added to the sample. Segments relevant to complement the sample could easily be selected from the Red Cross data collections, which are arranged by military unit. In total 2.004 file-cards on soldiers from selected units were attained from the index of returnees and a further 1.956 entries added from the list of missing soldiers. Due to the purpose and circumstances of their creation, as well as gaps in all four sources, the data retrieved from the identification-tag lists, the service record books and related files, the list of missing soldiers and the index of returnees is often non-redundant. While each subset of data can be used individually, record linkage via first-name, surname and date of birth joins up data from various sources on a specific soldier and expands the information available on his biography (Deloie 2007: 57).

4.6 Data Structure of the Final Sample

The resulting relational database is organized in a number of tables. It provides a comprehensive digital extract for each file processed. Almost every variable found in the files has been transferred into the database. Only redundant as well as sporadic information has been filtered out. This allows for the reconstruction of each individual file as well as for quantitative analysis using single or a set of variables.

To facilitate the use of the data collection as basic material for researchers from different disciplines, there has been no coding, and stratification of the data has been kept to a minimum. Standardizations and corrections in spelling and abbreviations have only been applied in clearly defined cases. Solely restricted by the initial sampling method the data thus allows researchers to pursue their own questions and provides a starting point for a wide range of studies.

5. Theoretical Potential of Data

The data thus available broadens the prospects for future research. In this section a number of exemplary questions and designs will be discussed to illustrate its theoretical potential. Without any claim to completeness conceivable fields of research touched on below include contributions to (1) general social profile analysis, (2) social and organizational studies of the German Army, (3) comparative approaches to the social history of military institutions, (4) life course studies and finally (5) the advance of mixed method approaches to the social history of the Second World War.

5.1 Data on the German Population in General

Researching social structures and biographical patterns within the German population prior to the post war era is painfully constrained by a scarcity of systematically collected data which is more detailed and less aggregate than general statistics. In this respect the millions of biographical accounts on German soldiers which provide a cross-section of the male German population aged between 10 and 60 in 1939 can help to bridge some gaps. Moreover, samples concentrating on rank and file soldiers instead of military elites in particular provide information on the lower and lower middle classes of the German population at the time which can hardly be found elsewhere in comparable quality.

The German military personnel files, which stand at the heart of the dataset, contain a record of a soldier's pre-military life as far as it mattered to the army, followed by a detailed account of his itinerary through the military and the war. The general *data on an individual* includes for example the date and place of birth, information about the composition and social status of his parent family,

his education and vocational training, the profession at the time of enlistment, religious affiliation and membership in National Socialist organizations. It also provides information about his marital status and the number and sex of children in his own family. Additional information was collected on a soldier's pre-military criminal record and a declaration certifying his "Arian" descent is part of almost every file.

Information related to a soldier's military service starts with a protocol of his physical examination. It provides data on height and weight as well as on hearing and eyesight and certain medical constraints to his physical fitness. From the time of enlistment, a chronological list of all military units a soldier belonged to on company level allows tracing an individual through the war. It is supplemented by entries on promotions, awards and decorations as well as on disciplinary and judicial punishment. Data on the war experience includes information on wounds, injuries and sickness and, in many cases, on the circumstances of a soldier's death. Other files end with a soldier's discharge after a mutilation that prevented him from further military service.

While the data obtained from the list of *missing soldiers* often provides extra information not available from the service record books, the index of returnees expands the biographical account into the post-war years if a soldier spent time as a PoW (Rass 2003; Deloie 2007).

All in all, the 18.535 biographic datasets in the four samples of the database cover the birth cohort from 1878 to 1930. The age profile of the sample matches the age profile of the German armed forces and thus represents the segment of the male German population called up for military service during the Second World War (Overmans 1999, Rass 2003). The soldiers originate from more than 4.000 places in Germany and abroad and stem from nearly all social backgrounds. In total they have served in about 100.000 different units of the Wehrmacht and Waffen-SS and have participated in operations in every major theatre of the Second World War in Europe and Africa (Rass 2008).

At large, military biographies contain valuable social data on German males, which can provide quantitative evidence on a number of more general questions: Soldiers belonged to families from different social strata and followed distinct paths of school education and vocational training. Subgroups can be isolated to look at young men from particular cities or even neighbourhoods, data on social and geographical mobility as well as on specific birth cohorts can be extracted. On the same token, the available medical data can be used for anthropometric studies or the affiliation with National Socialist organizations to estimate the impact of ideology on the socialization of future soldiers. Taken apart and out of the military context the dataset thus provides standardized information on individuals, which is in many cases not available from any other source. This is especially true for the segments of the population targeted by the project, which have very rarely left written biographical accounts.

5.2 Structural and Social Change within the German Military

In the more specific context of research on military institutions the data from the unit-centred sample permits to monitor social change at the lowest organizational level of the army in a longitudinal study over the entire duration of the Second World War or the period a specific unit existed, respectively. Further use of the available data will thus help to advance research into social cohesion and the existence, characteristics and relevance of primary groups within the military.

For each sampled unit the exact chronology of each soldier's presence can be extracted from the identification-tag lists. This results in a very detailed picture of the changing social composition of the class of collectives that constitute the smallest administrative element of a military organization. In addition, the available service record books provide rich information on a certain proportion of the group members at a given point in time. This can also serve as a social microscope to monitor the distribution and redistribution of features recorded in the files.

Vice versa, the social experience amidst a specific military collective can be placed within a soldier's biography. Findings from this kind of analysis, combined with other evidence, will not only contribute to our understanding of the social structures of military institutions and the behaviour of individuals and groups of soldiers in war, but also draw a detailed picture of the impact of war on such organizations and the individuals within them (Rass 2004).

The nature of the unit based sample calls for a careful evaluation of this approach though. While on the one hand it can be debated whether 68 army units are sufficient to draw a general picture data quality for the structure of the individual units promises highly reliable results. On the other hand any structural analysis of military collectives based on quantitative data derived from process-generated sources will have to be supplemented by qualitative information gained for instance from the analysis of letters and memoirs as discussed in chapter 5.6. to disclose the social networks within such structures.

5.3 Comparative Social History of Military Institutions

A third line of research explores comparative approaches to the social history of military institutions. Internationally, the extraction of data from military personnel files concerning the Second World War as described here is scarce. This is in part due to the novelty of the idea to use mass data from process-generated files as sources for historical studies. Different traditions and regulations towards the protection of personal data and the access to military records is a second important reason. Thirdly, some countries did not keep detailed personnel files on rank and file soldiers at the time or have not preserved such files in archives.

A remarkable exception to this scarcity of personal data on military personnel are the U.S.A. The National Archives and Records Administration provides access to files that contain information on soldiers and military units from the Second World War similar to the German documents. For example, a combination of U.S. Army morning reports, which are a rough equivalent to the German identification-tag registers, with the enlistment records of American soldiers (which are in fact available online from the National Archives), allows building up datasets with a number of variables matching those attained from the German sources (Rush 2001). Even more detailed records on American servicemen can be accessed directly at different branches of the National Archives and Records Administration. The data, systematically gathered by American sociologists on soldiers and units during and immediately after the Second World War, provide an abundance of additional information, which completes the biographical and structural data in the military files (Stouffer 1949). This situation creates an opportunity for comparative studies, which could even be extended to monitoring the changing social profile of military units that faced each other on a battlefield (Rass 2008).

5.4 Biographical and Life Course Research

The combination of data gained from different sources opens the door to a fourth promising area of research. It is common sense that information acquired from different kinds of documents represents changing perspectives at the past. Historians usually combine a variety of sources to reconstruct a version of historical events from diverse stories. The same logic can be applied to biographical records from different times and contexts (Miethe/Schiebel 2008). Since the different sources incorporated into the database on Wehrmacht and Waffen-SS soldiers date from before and after 1945, questions on the 'construction' of biographies by the protagonists themselves can directly be addressed.

A comparison between military careers as recorded in the service record books and as narrated in the interviews conducted by the German Red Cross amongst returning PoWs after the war unveils remarkable differences between these two versions. One important finding concerns human memory. Many discrepancies between views expressed in the late 1940s or early 1950s and the personnel files can be attributed to the fading recollection of details. This raises important questions on the use of such sources.

At another level differences between individual perceptions and objective data can be detected. It was, for example, not uncommon for soldiers and veterans to name a division when asked what unit they belonged to. Although a division of the German Army was a large military formation of more than 15.000 men, it seems to have been an important point of reference within a soldier's military identity, more so than smaller units such as regiments or

battalions. While service records often show more than a dozen transfers on company level, the soldiers later remembered to have spent years within a certain division.

A third point which deserves scrutiny touches on attempts of veterans to alter their biographies after the war. Members of the Waffen-SS for instance can be found to omit their transfer into this organization or to provide false information pretending having served with the Wehrmacht instead (Rass 2003). Such findings encourage the combination of data from personnel files with biographical data from other studies.

On the basis of the currently existing Wehrmacht and Waffen-SS sample, extensive overlaps with other datasets are extremely unlikely. Nonetheless, a comparative evaluation of data from biographical interviews and from biographical records can further our understanding from both sources. One obvious approach could rely on interview data from the German Life History Study and the samples discussed here for the birth cohorts covered in both datasets (Brückner 1993; Konietzka 1999; Lüdicke in this volume).

5.5 Contributions to a Social History of the Second World War

Finally, a network of qualitative sources could be built around the biographical data in order to accomplish mixed-method studies on the social history of the Second World War (Teddlie/Fen 2007; Denscombe 2008).

It is an inherent part of the historical approach to place quantitative findings in an institutional as well as circumstantial context reconstructed from administrative files (Rass 2003). It is also a classical historical method to use qualitative sources from the broad range of available ego-documents to reflect individual perceptions, mentalities, social relationships and agency within the functional and social structures of a military organization (Müller 2007). Pursuing a systematic combination of quantitative and qualitative data and methods could help to overcome the chasm between both schools of research in social history and to integrate the study of structures and actors (Fairburn 1999, Jourdanova 2000, Welskopp 2003, Burke 2005).

However, the nature of historical sources makes mixed method studies difficult. The preserved sources of qualitative and quantitative character concerning the Second World War and/or the National Socialist era are distributed very disproportionately across time and space. This is especially true for ego-documents. It's simply not likely to find equivalent quantitative as well as qualitative material for a given set of individuals. Moreover chances to gain information from interviewing contemporary witnesses do not only dwindle but the use of such sources is also limited by methodological constraints (Wierling 2003). Given these confinements, the input required to achieve an acceptable collection of qualitative material corresponding with the available quantitative samples and vice versa can surpass the capacity of the individual researcher or

in fact be impossible. Nevertheless, in the face of only few attempts to accomplish this kind of research so far, the synopsis of quantitative and qualitative samples derived from historical sources in a specific context remains a major objective (Rass 2007).

The most important individual-related process-generated sources of qualitative character that can be linked on an individual basis to the data discussed here are letters, diaries, court martial records, PoW interrogation reports or conversation transcripts, complemented by post war oral history interviews with veterans. Each class of sources comes with its specific set of methodological obstacles though which has to be overcome. Linking ego-documents to specific individuals who are part of a quantitative sample for instance would in most cases afford hunting down everything that has survived and still not lead to a viable amount of information. In other cases, for example court records, conceiving methods to unlock very large but fragmented and unmapped heaps of data to find a very limited amount of relevant information can be the key problem (Rass/ Rohrkamp 2008).

The extraordinary benefit of mixing methods rests in the option to connect information on individuality and context with data on social and functional structures. Quantitative data represents the environment the qualitative material originates from and refers to. Qualitative accounts tell us how people lived within such structures. Historians thus get a chance to study the past as depicted in objective quantitative data and as reflected in subjective qualitative sources and use both elements in their reconstructions and interpretations.

6. Conclusion

The purpose of this paper has been to demonstrate how individual-related data can be attained from historical sources and put to use for the analysis of social processes. The example chosen for this exercise was German military personnel files from the Nazi era. Presentation and discussion circled around three issues:

- 1) The various sets of process-generated mass data left behind by the bureaucracy of the Wehrmacht as a modern military institution and the relationship between the original basic population of documents and the subsets that have survived in archives until today.
- 2) Strategies to design samples in order to access incomplete historical sources and the kind of data, which can be retrieved from individual-related military documents.
- 3) The opportunities to social historians and sociologists, which arise from the use of such data and its combination with other sources.

The preceding considerations allow for general and specific conclusions to be drawn. Archives preserve large quantities and a wide variety of process-

generated mass data stored in historical sources left behind by the institutions of the modern state. This well of information does not only cover recent decades or the post-1945 years, but extends far back into the 19th century and beyond. While many of these holdings were deemed inaccessible and even worthless because they were said to only contain scarce and standardized data and seemed to be somewhat repetitive, today, not only accessibility but also awareness for their scientific importance grows. This calls for a more intense cooperation of archivists, historians and social scientists in an effort to detect, preserve, and exploit these sources. An incomplete tradition of files or an unknown structure of large archival collections should not be perceived as an insurmountable barrier but rather as a challenge to map structures and develop strategies to explore and sample data from such sources. They will in many cases reveal information about the past, which is not available from anywhere else.

The work with individual-related sources on Wehrmacht and Waffen-SS personnel, which was exemplarily discussed above, is only one of several historical studies which try to incorporate social science methodology, especially when working with large amounts of process-generated data. This underlines the importance of interdisciplinary learning and communication (Baur 2008). As a rising number of historical projects use mixed method approaches in a highly pragmatic fashion, historians will generally profit from absorbing the sound methodological reasoning of sociologists. Particularly the transformation of an occasional into a systematic combination of quantitative and qualitative data and methods should be a joint undertaking. At the same time, the process of finding, using and analyzing historical sources within the social sciences may benefit from historical expertise.

This paper has strived to point out the potential of historical sources for providing quantitative and qualitative process-generated data to historians and social scientists. The abundance of data they preserve calls for their wider use as well as for creative access strategies and sampling methods which will permit the application of advanced research designs.

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