Part 1
DEMOGRAPHIC DATA

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Chapter 1.
TROUBLESOME RICHES: GENEALOGICAL DATA AS SOURCES FOR HISTORICAL DEMOGRAPHY IN GERMANY

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Introduction

Historical demography is not the kind of science that can live from models only; its practioners are always in need of data. Regional variations within and beyond Europe tend to become more interesting to a discipline that has long ago overcome simple dichotomies pitching the west against the rest. In this perspective, Germany is a particularly interesting field for quite a few reasons. First, it is situated in between countries that have much stronger traditions of historical demography: south of Scandinavia, east of France and the Low Countries, mostly lagging behind in terms of scientific output also after what is published on the historical demography of other central European countries. Germany itself has a rather weak tradition of social science history, and most German historians shy away from quantitative methods, leaving a broad scope of historical interpretations open to others. Unfortunately, this applies also to the big questions of historical structures and changes that actually do call for quantitative testing. But then, a strong tradition of regional, contextual, more qualitative research is available–the only drawback is that it is transparent only to those who master the language. It is of course a truism, which applies in every country of the world, that only those who learn the language will ever be able to understand the field.

Second, Germany is a rather large and heterogeneous country which offers lots of possibilities for comparison.[1] Other than most European countries, historic Germany consisted of many religiously (mostly) homogeneous territories, with either Catholic, or Calvinist, or Lutheran denominations. Until 1900, multiple legal systems governed the civil law within the recently unified Empire. Western regions of Germany were, and still are, part of the 'blue banana', the economic core of western Europe running from south west England to northern Italy, to which another core population belt running through Saxony towards southern Poland was adjoined (Klüsener, Zagheni 2014). Other regions, however, such as in the north east, were only sparsely populated. Ecotypes ranged from protoindustry to grazing to manorial export farming (and many more). The river Elbe separated systems of free and unfree peasantry and agricultural labour (or so the older literature had it). High variability also applies to more demographic topics such as household systems, demographic turnover, the epidemic transition or the fertility decline. Germany is thus a field where it is feasible to draw meaningful comparisons, deliberately holding some regional characteristics constant (say, religion and law), and studying others as variables of interest (say, ecotype and household system–or vice versa).

Computer Genealogy in Germany

This chapter will focus on a third reason why Germany is an attractive field for international historical demography: its strong tradition of data generating citizen science which is shockingly underexploited by the non-quantitative mainstream academic historians within Germany. I will first present an overview of the databases collected by CompGen, the German association for computer genealogy, and some other genealogical associations. I will skip commercial databases, since their accessibility for quantitative research depends on firm policies which have not yet been documented systematically. Rather, I will focus on a specific type of data, the local heritage books (*Ortsfamilienbücher* or *Ortssippenbücher*; literally: local family books or local lineage books), which exist both as printed books and as online databases.

Computer genealogy, as practiced by CompGen, is basically the collaboration of genealogists using modern information science tech-

[1] Those who wish to dig deeper into German social and economic history might start with the three volume series edited by Sheilagh Ogilvie and Robert Scribner, Germany: A new social and economic history (London, 1996–2003).

niques for the purpose of producing open source data which is meant to benefit both non-academic genealogy and academic science. In principle, there exist three styles of genealogical work.[2] The classical approach is descent oriented, often by family name, recently also using genetic techniques. A second approach is source type oriented, focusing on photographing and indexing one particular source (say, grave stones). The third approach is place oriented, bringing all sources for a particular town or area together. The resulting data collections are partly in the responsibility of CompGen, partly in that of other associations or projects. They can be categorized as memorial data, spatial data, and life course data. Moreover, computer genealogy generates software standards which may solve problems also in a demographic context. As to memorial data, it includes collections of grave stones, family advertisements, and private photographies which are typically not in the focus of historical demography.

In the field of spatial, or cross-sectional data, a first asset of CompGen is the historic gazetteer GOV (Geschichtliches Ortsverzeichnis). It covers geographic location, names (including historical names), and most importantly, the historically changing hierarchies of sub- and superordinate administrative and ecclesiastical entities. It has been estimated that about 85 % of all settlement names for the time around 1900 (that is quite below units such as parish or town) within Germany are already covered in GOV (Zedlitz, Luttenberger 2014). GOV is continually expanded by a team that uses historical administrative gazetteers mostly from the late 19th and from the 20th centuries. Coverage before the 1840s is still limited.

What	When	Where	How many	Whose
GOV: Place and administrative unit identification database	19th c. to present	Germany, Western Europe, Eastern US, Australia	1.1 mil. places	CompGen
Address books	Mostly mid 19th to 20th c.	German localities	4.4 mil. entries, 469 books, 279 places	CompGen
Casualty lists	1914-18	Germany	8.5 mil. entries	CompGen

Source: compgen.de.

[2] For a more thorough discussion contrasting different modes of genealogical research, see Timm 2016.

Addresses are a second, more small-scale type of spatial data. They are available in printed address books in considerable frequencies since the early or mid 19th century, and they contain not only names and street locations, but also occupations. CompGen teams have digitized several hundred books, covering considerable time spans for some larger places such as Berlin, Aachen, or Dresden. Spatial social inequalities within cities are indeed a currently hotly debated aspect particularly in German educational politics, while academic discussions of social topography have largely been put to rest by German social historians (for a recent overview, see Lenger, 2014).

Nominative lists of casualties published during wars are a third type. For the First World War, CompGen has organised a successful crowdsourcing project where all 8.5 million entries–soldiers who were killed in action, deceased otherwise, wounded, missing, or captured–were digitized. Beyond the date of casualty, the lists typically also contain the birth places.[3] Thus, they can be interpreted in terms of micro-regional consequences of war, beyond offering a statistical base for more conventional questions of military history. Regional health, family, or employment consequences of war casualties remain further paths of enquiry to be studied. A comparable project for casualties in the army of Austria-Hungary is ongoing.

The other and more typical kind of data genealogists collect and refer to are life courses and kinship. The production cycle of such data begins with parish registers, which are indexed or transcribed, and finally interlinked by genealogists to form either family-wide lists of descendants or ancestors, or parish-wide local heritage registers. Earlier projects in academic historical demography[4] have organised the entire process using the working time of doctoral students, which is a costly decision since it can be estimated that even for a small parish, one hundred years of manual family reconstitution will require about a year of full time labour.

Parish registers exist for practically all places. Their availability has been largely enhanced when the Genealogical Society of Utah started to microfilm them during the 1950s. These films have been available in

[3] http://wiki-de.genealogy.net/w/index.php?title=Datei:VL-Erfassung-Plakat-1.pdf&page=1.

[4] The largest group in Germany was directed by the late Walter Rödel. For a bibliography of the studies he directed, see https://www.regionalgeschichte.net/fileadmin/Superportal/Bibliothek/Autoren/HistDemographAK/VerzHist-DemArbeiten_AKMz.pdf.

Latter Day Saints 'Family Research Centers' scattered across Germany, and the world; a practice now replaced by online access (partly limited to Family Research Centers). Geographically, most of these films are from the westernmost parts of Germany; they also tend to cover more Protestant than Catholic parishes. In 2008, the Catholic Church has ended its cooperation with the Mormon genealogical societies since genealogy has a strong theological function in Mormon belief, which Catholics do not share. Protestant churches are currently building a system for the paid online distribution of scanned parish registers, Archion, while the archival network Icarus offers a free system, Matricula, for both Catholic and Protestant dioceses.

Demographers cannot work from scanned films, they need transcribed or indexed registers. Fortunately, indexing is a genealogical megatrend. Transcriptions, or indexes, of registers exist within the FamilySearch system and are accessible for free online. Their quality and completeness is, however, questionable and many genealogists suggest to use this material only as a starting point. Ancestry.com also is creating a paid system, where more indexes can be found than are available in FamilySearch. Other transcriptions have been organised by genealogical societies, most importantly in the Rhine land region, and some have been published in print. There is no central pool of transcription or index data; CompGen does not currently own any of them, but keeps track of those that exist within its Wiki system.[5]

The next step in the production of genealogical data is to link entries. This is a crucial step also for historical demography, where family reconstitution is a core practice. If you want to study life expectancies, it is quite a plausible step to connect the birth dates and death dates of people and then to apply life table methods; the only alternative would be to use projection and simulation techniques such as Populate or Camsim which are technically quite challenging. The same goes for the study of fertility or kinship networks–linked data, not original entries, are where demography starts to be interesting. Linkage can in principle be done entirely through algorithms, with the help of algorithms, or manually (Christen, 2012, Schraagen, 2014). Grounds for linking two or more entries can either be made transparent and reversable, or not. Genealogists typically do not use algorithms, and they also do not write down rules that say under which conditions they decide to link or not

[5] http://wiki-de.genealogy.net/Kategorie:Verkartung

to link entries. They also do not document cases where two or more diverging linkage decisions could be justifiable. To be fair, even advanced projects in historical demography have not done so, either. In countries where patronyms are a standard part of naming conventions, such as Russia and Iceland (but also the Frisian region within Germany), linkage decisions are easier to make; in others, including most of Germany, much less so. Enhancing the transparency and revisability of linkage decisions is a core aim of CompGen longterm software development project, Gedbas4all, a graph data base. The standard format of genealogical computing, Gedcom, rests upon the concepts of individuals, families, and events. The longitudinal data standard of historical demography as far as there is one, the Intermediate Data Structure (IDS), is not much different; it rests upon the concepts of individuals, contexts, and events. Gedbas4all brings in the additional concept of assertion, opening the possibility of a more transparent and source oriented data organization. Developing Gedbas4all could enrich international historical demography strongly.

Linkage data are the main product of genealogical activity. They are produced in the form of descendant lists or more frequently ancestor lists. CompGen hosts an open database system, Gedbas, where genealogies of both types can be uploaded and searched, with 18 million persons. Analysing this kind of material meets two challenges: first, there are many duplicate entries in Gedbas, and second, a population out of which this huge sample has been drawn is impossible to define. In other words, any analysis must explicitly address the question of representativity–which may, however, be doable.

Local heritage books (Ortsfamilienbücher, OFB) are basically family reconstitutions for entire places. They do not suffer from the same weaknesses as genealogical lists. Insofar they cover the entire population of a given place, representativeness is not a real issue. The population at risk should cover every person that was living in the given place during the period of interest; it does so with one qualification: as long as no census type data are integrated, the information we have will refer to every person that was born, married, had children or died in the place. Hence, it is necessary to define clearly for what time period we consider a person as present, and particularly how to deal with truncated and censored data. CompGen keeps track of about 3.700 printed OFB, and offers a database of Online OFB which covers about 700 places and 10 million individuals. As is the case with genealogical lists, the books always have authors, who should be asked personally for any evaluation

of their data. The rest of this chapter will be devoted to discussing this particular type of data source.

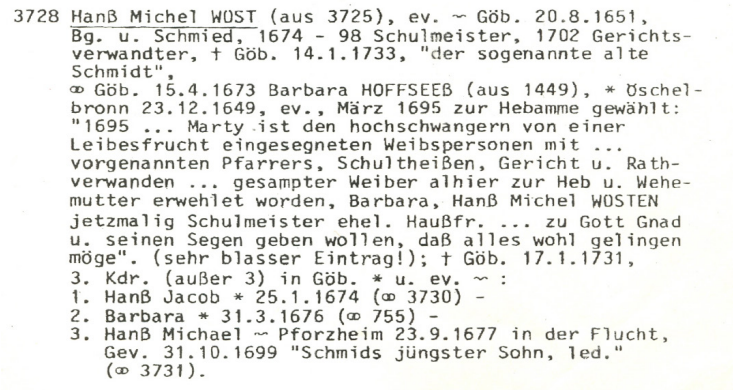
What	When	Where	How many	Whose
Parish register indexes	16th to 19th c.	Multiple; most frequent in Rhineland	Unknown (about 1.000 places?)	Regional societies, FamilySearch, Ancestry, individual genealogists
Gedbas ancestry lists	Unlimited	Unlimited	18.0 mil. entries	Authors
Online-OFB	16th to 19th c.	Multiple places	9.6 mil. entries (for 700 places)	Authors
Printed OFB	16th to 19th c.	Multiple places	3.700 places	Authors

Source: compgen.de.

Local Heritage Books as a source for historical demography

Typical Local Heritage Books give a couple of thousand entries, one for each family–that is, a married man together with his wife and children. The entries give birth or baptism, marriage, and death or burial dates and places, as well as additional information and transcripts from parish registers. They are numbered by family entry; numbers point both backwards to the families of origin for husband and wife, and forward to families of procreation for children who married and for those husbands or wives who remarried. Typographies vary considerably, as do the organisation and source content of the books.

The OFB are not a new format. First local genealogies of this type were published during the 19th and early 20th century. After 1933, the term *Sippenbuch*–book of kinship groups or lineages–was established, as were certain conventions for layout and data presentation. Production of *Sippenbücher* was encouraged by the Nazi state, as was popular genealogy in general (Knodel, 1975, Weiss, Münchow 1998, Pinwinkler, 2014, p. 36–41). As with many aspects of the regime, there existed at least two bitterly competing variations of state supported genealogical research: one based in the *Reichssippenamt* (part of the interior ministry), aiming at documenting the entire and particularly urban population in


3728 Hanß Michel WÜST (aus 3725), ev. ~ Göb. 20.8.1651,
Bg. u. Schmied, 1674 - 98 Schulmeister, 1702 Gerichts-
verwandter, † Göb. 14.1.1733, "der sogenannte alte
Schmidt",
∞ Göb. 15.4.1673 Barbara HOFFSEEß (aus 1449), * Öschel-
bronn 23.12.1649, ev., März 1695 zur Hebamme gewählt:
"1695 ... Marty ist den hochschwangern von einer
Leibesfrucht eingesegneten Weibspersonen mit ...
vorgenannten Pfarrers, Schultheißen, Gericht u. Rath-
verwanden ... gesampter Weiber alhier zur Heb u. Wehe-
mutter erwehlet worden, Barbara, Hanß Michel WOSTEN
jetzmalig Schulmeister ehel. Haußfr. ... zu Gott Gnad
u. seinen Segen geben wollen, daß alles wohl gelingen
möge". (sehr blasser Eintrag!); † Göb. 17.1.1731,
3. Kdr. (außer 3) in Göb. * u. ev. ~ :
1. Hanß Jacob * 25.1.1674 (∞ 3730) -
2. Barbara * 31.3.1676 (∞ 755) -
3. Hanß Michael ~ Pforzheim 23.9.1677 in der Flucht,
Gev. 31.10.1699 "Schmids jüngster Sohn, led."
(∞ 3731).

Graph 1: Sample entry from Ortssippenbuch Göbrichen
Source: Hahner, 1989.[1]

one giant card index, and another one based in the *Reichsnährstand,* a corporate organisation of agricultural producers, which focussed on the concepts of local peasant families and their land-family bond. As a percentage, the about 50 books published under the NS regime–i.e., under the *Reichsnährstand*–are not numerous in comparison to the about 200 that appeared between 1945 and 1975 (when John Knodel analysed this type of source material under a demographic perspective), let alone the about 2.800 that have been compiled since. Still, it is a question what to make of these origins. At the time, the *Sippenbücher* had a dual function: administrative and ideological. The administrative function–documenting non-Jewish ancestry–had become obsolete in 1945. The ideological function particularly for the *Reichsnährstand* was to promote a sense of popular community for plain, rural, non-noble people, based on descent,

[1] Translation: 3728 Hans Michel WÜST (from 3725), Protestant, baptized in Göbrichen 20/8/1651, citizen and blacksmith, 1674–1698 teacher, 1702 member of the local court of justice, buried in Göbrichen 14/1/1733, called 'the old blacksmith', married 15/4/1673 Barbara HOFFSEESS (from 1449), born in Öschelbronn 23/12/1649, Protestant, elected midwife in March 1695: '1695 … in March, for the women who are advanced in pregnancy, and are blessed with a fruit of womb, elected by the wives of me, the pastor, of the mayor, of the members of the local court of justice and of the council, and by all the wives here, Barbara, the wife of Hans Michel WÜST here, currently teacher. May God give her his mercy and blessing that everything will work out well' (entry is very light!); buried in Göbrichen 17/1/1731. 3 children, born and baptized in Göbrichen (except the third one): 1. Hanss Jacob born 25/1/1674 (marriage 3730), 2. Barbara born 31/3/1676 (marriage 755), 3. Hanss Michael baptized in Pforzheim while refugee, godfather 31/10/1699 'the smith's youngest son, unmarried' (marriage 3731).

and excluding those who did not belong. It is not quite self-evident that this ideological function was ended in 1945 as well. Publication of local heritage books continued after 1945, with the term 'Sippenbuch' resurfacing in the mid 1950s. It may hence be worthwhile to consider more deeply if there are any implicit biases of this type of material, even if substantially there is scarcely any difference to the family reconstitutions in the tradition of Henry (1967).

A first limitation is that although potentially OFB can contain all kinds of life course related data at least as notes, their core is about three events documented in the parish registers: birth, marriage, and death. Even within parish registers, there is more serial information than that: persons are often identified using locational and occupational characteristics; godparentship relations are given at all baptism entries; causes of death are often given systematically. Moreover, other person-level sources such as tax lists, census lists, petitions, hypothecary and cadastral registers, inventories and many more exist in many places, and may or may not be integrated in any given OFB. All of this is relevant for some types of questions that historical demographers, historians of the family, social and economic historians might ask. Privileging just birth, marriage, and death certainly gives a reduced view of the social fabric and individual life course. This is, however, a problem shared by much of historical demography rather than that it is embedded in this particular type of genealogies. Conversely, the tendency of genealogical work is to include as much person-related information as possible. In other words, modern genealogy is a combination of prosopography, family and network history rather than pure descent research.

A second limitation is that it might be that some parts of the population are seen as more worthy of inclusion than others. To give an example, Adolf Clarenbach, a Lutheran pastor in the parish of Borgeln as well as a highly respected member of the historical profession, transcribed, interlinked, sorted and published thousands of biographical entries from the Borgeln parish registers. His publications are organised by houses, not by families, starting with the farmholders (in what he published between 1939 and, post mortem, 1954), while data on non-farming house dwellers were only published much later by co-authors (the earliest is Clarenbach 1939, the latest Clarenbach and Rudack 1984). His selective approach went even further, as he explained in 1938 in an article for a publication widely read by pastors: card files of vagrants should be marked 'V' and sent to a central card file collection on antisocial elements (Clarenbach, 1938). This was planned at

the time, but not carried out systematically, while 1938 indeed marks a year when 'antisocials' were massively put into concentration camps. Indeed, only two cards marked 'V' remain in the card file collection he created for Borgeln, both for beggar women who died in Borgeln (LKA Bielefeld, Familienkartei Borgeln, cards Buschkemper and Anonyma). It is quite likely that many more travellers passed by that village over the centuries, occasionally dying or giving birth. Privileging the farm holders and established local families, and ignoring or deleting the less stable parts of the population, is thus certainly a possible source of bias. A less politically charged aspect of inclusiveness bias regards those children who did not survive their birth or early life. If a genealogist is only interested in those who had descendants themselves, the stillborn or early deaths seem to be less important. Again, the tendency of genealogical research goes clearly against both types of exclusion.

A third potential limitation of genealogical work arises from the fact that there are actually two aspects of it: making source material accessible, and inferring links. For some genealogists, transcribing is for the general good, while inferring is something more private about which everybody has to decide for themselves. Hence, they publish the family entries but not the relations between them, so that their OFB do not contain forward and backward linking.

Table 1

Number of OFB, by collection and definition

Titles documented in Genwiki	3,606
Books collected at Ludwigshafen library	3,700
Online-OFB	638
Local data sets in Leipzig database	8,243
Titles in Leipzig database	4,652
'Family books', 'OSB', 'OFB' in Leipzig database	1,252
'Typical OFB' in Leipzig database	438

Sources: compgen.de and Leipzig database.

It is far from clear how many books exist (see Table 1), and where to draw the boundaries between the typical books and comparable material. A research project guided by Volkmar Weiss at the State Archive of Leipzig has, until the late 1990s, collected titles of OFB in a very broad sense, also including unpublished material and projects that never got beyond

the planning stage. The project database contains several thousand title entries until 1997; however, only a smaller part of these titles were acquired by the Leipzig archive, evaluated, and considered a typical OFB.[6]

In the Leipzig project, the evaluation revolved around the questions of whether the entire population was covered, if family entries were forward and backward interlinked, if additional sources beyond the parish registers were added, and if occupational and property information is given. Table 2 and 3 are based on a sub-sample of Weiss's database, including only those 'typical' OFB. I make a distinction between those books printed under National Socialism, those that were available during the peak period of historical demography in the 1970s, when John Knodel started to work from this type of sources, and the many books that were published later. I also added two later sub-samples that I evaluated using Weiss's criteria: a set of 50 books published by the regional association for genealogy in what is called middle Germany (i.e., Saxony, Thuringia, and Saxony-Anhalt; the *Arbeitsgemeinschaft Mitteldeutsche Familienforschung*) after 2000, and a set of 41 databases from the same area that are published on CompGen's website online-ofb.de. From table 2, we see a slight tendency to include earlier registers, and also to publish books that do not have the 19th century included. It is, however, table 3 that tells us most in terms of the quality issues discussed above.

Table 2

Temporal coverage of OFB, by period and sample

	N	1699 and earlier	1799 and earlier	1800-70	1870-1900s
NS Period	31	0.58	0.94	0.94	0.15
Pre Knodel	64	0.66	0.91	0.86	0.81
Pre 2000	339	0.54	0.67	0.50	0.27
Central German printed	50	0.94	0.70	0.32	0.97
Central German online	41	0.90	0.78	0.46	0.15
All	525	0.62	0.72	0.55	0.34

Sources: compgen.de and Leipzig database.

[6] I owe thanks both to Volkmar Weiss and to his successor Thekla Kluttig for providing me with (slightly diverging) copies of the project database. A printed version of the database is Weiss et al. 1997.

Table 3

Quality indicators for OFB, by period and sample

	N	Non Parish Register Sources	Occupational and Property Data	Coverage	Interlinkage
NS Period	31	0.03	1.00	0.81	0.74
Pre Knodel	64	0.28	0.98	0.72	0.80
Pre 2000	339	0.35	0.74	0.46	0.69
Central German printed	50	0.36	0.88	0.88	0.98
Central German online	41	0.02	0.34	0.95	1.00
All	525	0.30	0.77	0.59	0.76

Sources: compgen.de and Leipzig database.

In terms of the first type of limitations discussed, the question whether data beyond birth, marriage, and death from parish registers are included, Table 3 shows ambivalent results. The books published under the *Reichsnährstand* typically were not based on any sources beyond the parish registers, but still they consistently include some occupational and property data. Given the original focus on farmers, this is not surprising. In later printed books, genealogists started to work on additional sources in about a third of the cases, while occupational and property data remained present in most but not all. Recent online databases are different: they contain less occupational data and scarcely any source material beyond parish registers. This may, however, be a technical effect since non parish register data may be held in other database tables than those for the individuals and the couples which form the backbone of the online OFB. Moreover, the function of the online publication is often to provide fellow genealogists with a provisional insight into an ongoing project.

The second type of limitation is not to cover the full population. This was not only a problem, it obviously still is, and particularly was between 1975 and 2000. Even in recent printed works it is not rare that stillborn or those without local residence are left out. The third problem, non-interlinked family entries, seems on the verge of

disappearance. This is certainly a consequence of the shift towards computer genealogy; genealogical database systems organise families in an interlinked way.

The issue of quality control is far from settled with these observations. In the demographic literature, most discussions of the quality of family reconstitutions (Knodel, 1975, Medick, 1996, p. 618, Wrigley et al. 1997, p. 73–118; 574–577) refer to four questions: underregistration in the original sources, the impact of migration on the share of statistically useful families (Henry's *mariages ouverts* and *mariages fermées*), biases introduced by ignoring certain subgroups, and linkage decisions that are logically impossible. Typical methods for testing include manual reconstitution for a sample of entries in order to compare it with the genealogy, and comparing some demographic parameters calculated from the genealogy to the same parameters from other data sets constructed in academic research. Both methods imply that linkage by academic researchers is essentially more reliable than linkage by genealogists. This is of course an extremely self-confident assumption which runs counter to the common observation that errors of judgement do happen among academics at some unknown, but certainly non-zero rate.

Conclusion and agenda for further research

In order to harness the massive amount of knowledge embedded in these books, collecting and documenting them is a first step. This seems to be something where libraries, archives, and authors hold the relevant information; genealogical associations have a key role in bringing it together.

A second one is to document the range and quality of the underlying sources: identifying the start and end years of the registers as well as gaps in between. Parish registers were written by pastors; their quality certainly correlates with their individual biographies. For most of Germany, the names, tenures and biographies of pastors are well documented. Documentation of events in the sources will plausibly vary by writer. Some potential biases are easy to identify using simple methods (gender ratio, infant mortality, illegitimacy). A connected issue are underlying behavioural patterns that make it difficult to link entries together. Different intensities of migration lead to different proportions of *mariages fermées* within the reconstituted population. Naming conventions can influence the recognizabilities of persons, e. g. where husbands take their wives' names if she is a farm successor, or the usage of

patronyms as a best case scenario. Frequencies of first and last names matter too: it is much easier to reconstitute families where there are many different names, than where half of the families are named Mueller, and all women go by Marie.

A third field is assessing the quality of the record linkage itself. A basic assumption of the Cambridge Groups' family reconstitution study was that if the underlying sources are reasonably complete, reconstitutions are good enough for demographic analysis. This pragmatic approach can certainly be justified. Knodel, in contrast, explicitly addressed the issue of underlinkage. Birth intervals are obviously too long if some births are linked to the wrong family. But overlinkage can distort the results, too. Genealogists tend to be more satisfied when they find some linkage than when they do not. Simulation of record linkage using different algorithms and comparing these to manual results would help address this problem.

Taken together, this chapter was aimed at introducing historical demographers to the growing pool of local life course and kinship data that awaits analysis in Germany, one of Europe's most differentiated and central fields for study. Collaboration both internationally and between academic and citizen science (Fertig, 2016) is the 'future of historical demography' in Germany.

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