Chapter 9
Trajectories of the Persecuted During the Second World War: Contribution to a Microhistory of the Holocaust

Pierre Mercklé and Claire Zalc

Introduction

The mobilization of prosopographic methods remains relatively uncommon in historical work on the Holocaust, especially in France (Anders and Dubrovskis 2003). This means that the data on which the present analysis is based unquestionably have an exemplary character: a long-term investigation (Mariot and Zalc 2010), in fact, had made it possible to reconstitute the "trajectories of persecution" of the one thousand Jews living in Lens in 1939, a mining town in the north of France with a population of around thirty thousand before the Second World War.

In order to understand the specific character of the history of the Jewish community in Lens during the War, we have first to consider its tragic conclusion: the Jews of Lens took a still greater toll from Nazi persecution than others elsewhere, since out of the 991 individuals that made up the community before the War, 478 were arrested and 467 of these deported, of whom only 18 returned from the extermination camps. In total, only 528 of the 991 Lens Jews survived the War. From this point of view, Lens is not representative: over half the Jews living there in 1939 were deported, whereas the proportion for Jews present in France as a whole is estimated at around one quarter (Klarsfeld 2012).

The question is to explain why Lens is not representative and to understand the incredible harshness of the persecution there. The aim of our work has been to approach the dilemmas faced by Jews in Lens not primarily as psychological phenomena, but rather as choices dependent not only on the particular contexts in which they were made, but also on the social and demographic characteristics of those who made them: occupation, family configuration, and structure of group affiliations. The aim of this study, therefore, is in a sense to model persecution.

P. Mercklé (✉)
Centre Max Weber, ENS de Lyon, CNRS, Lyon, France
e-mail: pierre.merckle@ens-lyon.fr

C. Zalc
Institut d'histoire moderne et contemporaine, ENS Ulm, CNRS, Paris, France
e-mail: claire.zalc@ens.fr

This is why we chose a quantitative approach to explain circumstances that are usually associated with the singularity of suffering. Some other authors have done this, especially in Netherlands (Gross 1994; Croes 2006; Tammes 2007), in order to explain differences in survival rates. Yet, their attempts at quantitatively modelling persecution rely on what Abbott calls the "standard programme" of sociology (Abbott 2001): their approaches are mainly based on regression models, with a few incursions into event history analysis (Tammes 2007).

The first part of this chapter will review the difficulties encountered in mobilizing such tools: is it appropriate to reduce choices made under tragic circumstances to their social determinants? How accurate and realistic is our account of persecution if it reduces its causes to age, income level or family size? The benefits of quantification must not conceal the problems raised by the linear patterns of causality assumed by the techniques we initially tested (correspondence analysis, logistic regression). To conceptualize our data as "trajectories of persecution" seems to offer an interesting prospect for overcoming some of these difficulties. In the second part of the chapter, we will therefore describe how we translated our database into a corpus of "sequences". Our aim was to formalize successions of time sequences into trajectories of individuals confronted with persecution, in order to identify classes of trajectories, patterns and trends. By moving from a logic of properties to a logic of sequential states, and from a logic of causes to a logic of paths, we describe, order and interpret the plurality of trajectories without abandoning quantification. While some previous difficulties may be resolved, new ones may emerge due to certain properties of our sources (missing data, problems with formalizing events into states…), which we also discuss. In the last part of the chapter, we indicate the benefits that may be drawn from approaches mobilizing optimal matching analysis, in order to discuss the contribution of these modes of quantification to a better understanding of interactions, at a local level, between victims and persecutors, and in order to address the possible contribution of an approach in terms of trajectories to a microhistory of the Holocaust.

A Study That Changed Shape

The Original Prosopographic Approach

The study on which this analysis is based had its origin in the desire to reconstitute the individual biographical trajectories of all Jews living in Lens at the start of the Second World War. It was supported by the patient gathering of the greatest possible amount of materials and documents that enabled these trajectories to be described. How did we do this? There is a well-known book by Daniel Mendelsohn, entitled *The Lost: A Search for Six of Six Million* (Mendelsohn 2006). He attempts to rescue a single family's story from oblivion by digging into the details of their lives. Our survey had a similar ambition, but multiplied by 300. It is the story of 300 families: 991 people. Our work thus consisted in tracking one thousand people based on a wide range of

sources, from local and French national archives (such as "Aryanization" files, or naturalization files) through to files documenting deportation from France and Belgium, archives of the United States Holocaust Memorial Museum (USHMM), Auschwitz archives, Swiss refugee records, Yad Vashem testimonies, etc. To reconstitute the individual trajectories of these one thousand Jews through the War, we tracked their names through an average of 10 to 15 different sources per person, recorded in different places and contexts, on different dates and by different persons.

There are certain obvious patterns that structure these trajectories: the Jews living in Lens in 1939 were mainly immigrants who had arrived from Eastern Europe in the 1920s. This mining region of northern France was more generally a land of Polish immigration, and most of these Jews specialized in textiles and sold their goods to Polish miners. They did so within a relatively clearly bounded "interethnic commerce" because they spoke the same language: Polish. More than 80 percent of the Lens Jews lived in the city centre, and all of them within 1,300 m of the train station. Yet, downtown Lens cannot be considered as a "ghetto", since Jews only accounted for 3 % of the whole city population, so that most lived in highly mixed neighbourhoods.

At the outbreak of the Second World War, a significant number of these Jewish immigrants volunteered for service in the French Army. Joining the general exodus from northern France at the time of the German invasion in May 1940, around 40 % of the Jews of Lens left the area at that time and never returned, many of them settling in southern France. We followed these individuals throughout their subsequent lives and found out that leaving Lens in 1940 did not ensure permanent safety: some of them would unfortunately be trapped in later roundups and deportations elsewhere in France.

As for the Jews who stayed in Lens, or returned by late summer 1940, they were soon confronted with an ever-growing list of discriminatory measures. The chronology of the War itself is somewhat specific in Lens since the town was part of the "*zone interdite*" (forbidden zone), annexed to Belgium by the Germans under the terms of the Armistice. But it differs relatively little from the well-known chronology of the "*zone occupée*" (occupied zone): autumn 1940 saw the promulgation of the first statute on Jews, the census of Jews in the northern zone, the first Jews excluded from certain professions, the Aryanization of companies, and the internment of some foreign Jews; June and July 1941 saw the second statute on Jews, the extension of quotas and expulsions from the professions, and a new census; spring and summer 1942 saw the implementation of curfews and the requirement that Jews wear the star of David. It saw frequent roundups, and the handing of Jews over to the Germans. The authorities identified them, isolated them, reduced them to misery, and ultimately arrested and sent half of them to their deaths at Auschwitz-Birkenau. The massive arrests and deportations ran from summer 1942 to 1944 and hit the Lens Jewish community with full force.

Yet, even given this overall pattern, the patient study of individual trajectories through persecution revealed no uniform and mechanical logic. On the contrary, when we followed each one step by step, with the purpose of understanding the concrete lives of individuals facing persecution, it appeared that the town's Jews faced

several options, which we tried to retrace: when confronted with the German invasion in spring 1940, some sold their businesses and embarked on a new exodus, while others stayed and continued their pre-War occupations; among those who left, some returned to Lens (now located in a "forbidden zone" for refugees); when confronted with the successive censuses of Jews, some declared themselves to the authorities and some did not, etc. These questions, with which each of the 991 Jews living in Lens in 1939 was confronted, were nothing less than a matter of life or death.

In order to understand how we managed to follow individuals through their entire life courses, it is necessary to take a closer look at the archives. The originality of the present work is that it relies on historical sources that were not at all intended to serve our purposes: our data were not drawn from survey questionnaires. Historical data are, by definition, not conceived for any subsequent quantitative analysis. On one hand, this could be seen as a problem. But on the other hand, that is why they are so rich, and so helpful in understanding the relationship between executioners and victims in the Holocaust process. That is the main reason why we favoured an archival approach to the trajectories, against the dominant trend of revering the direct testimonies of Holocaust victims which, likewise by definition, are driven by a will to tell a story of survival (Pollak 1990; Browning 2010). To multiply sources means to multiply points of view, in terms of exogenous, endogenous and action variables. Among sources that provide information about persecution (what we called "exogenous variables"), censuses are precious, since they allow us to determine whether the Jews of Lens were identified and located in Lens at these specific moments, or not: December 1940, April 1941, January 1942; likewise the list of stars of David given to Jews (August 1942). Even more crucial are lists of names on deportation convoys, since they allow us to determine deportation and internment trajectories. A particularly hard part of the research involved following these Jews during the deportation process. Thanks to the opening of new archives—especially the Bad Arolsen records digitalized by the United States Holocaust Historical Museum three years ago—it became possible to describe what happened to Jews deported from Lens from their arrival at Auschwitz until their death there. Of the 467 deported Lens Jews, 108 were registered and held at Auschwitz. That means that more than 75% went immediately to the gas chambers. And of those 108 Jews from Lens who were registered and held at Auschwitz, 84% died. Among those whose date of death is known, a quarter died in the first month and 85% within four months, while only 7% survived longer than a year. At that point in our research, we no longer searched for names in the archives, but for numbers: the serial numbers that were given to Jews when entering a camp, and tattooed on their forearms.

While they provide information on exogenous constraints on their trajectories, sources such as Aryanization files or identification censuses may also provide more or less accurate information on the social properties of Lens Jews, such as gender, occupation, address and so forth (what we called "endogenous" variables). And in addition to exogenous and endogenous variables, elements of individual trajectories and actions may be learnt from two kinds of specific source: first, the refugee files of Jews who fled to Switzerland, and second the naturalization files that were compiled after the War.

From the time that we gave ourselves the objective of restoring to observable trajectories and decisions their social density, quantification offered several possibilities. It was not just a matter of counting how many individuals were despoiled, hidden or deported, but also who they were and in what way they were distinguished (or not) from those who were not. Quantification thus makes it possible to break with an individual logic, a considerable advantage in dealing with controversial questions that are also issues of memory. To start from individual trajectories involves the risk of only preserving the most "exemplary" cases, those most "outside the norm", or those which left the strongest or most palpable traces. In a perspective that is not, we should make clear, in any way hostile to or exclusive of a more qualitative approach, we have sought to define individual characteristics with a view to understanding the possible determinants of their trajectories. But how should this data be analysed?

Dead Ends of the 'Standard Programme'

Conducting a prosopographic work on the victims of persecution, in fact, raises questions of both a practical and an epistemological order (Mariot and Zalc 2012). We came up against the difficulties inherent in the analysis of the social that Abbott terms the "standard programme" of American sociology. The criticisms addressed by Abbott to the schema of linear causality go together with a subtle deconstruction of the inferred role of "variables" in sociological analysis. He shows first of all the difficulty of producing stable explanatory variables of the social, given that the reality observed is eminently mobile. This is what he calls the "temporal horizon" (Abbott 2001), recalling how often the same variables are used, depending on researcher and context, to equate behaviours that are sometimes completely different. We can even press this criticism somewhat further: on one and the same terrain, variables can work differently at different times. Following the various stages of the persecution that the 991 Jews of Lens were subjected to invites us to reflect on the explanatory weight attributed to the "variables" initially applied in describing and explaining behaviours. In fact, the weight of certain of these variables may fluctuate greatly according to the particular moment. Take socio-economic status, for example. This variable provides a potential indicator of factors of survival, in the sense that it denotes a space of resources that can be mobilized in the face of persecution: wealth (Croes 2006). This is one of the hypotheses that we wanted to test in the early stages of our research: did the rich emerge better than the poor? But there is nothing self-evident about this question. The effect of socio-economic status, in fact, can be noted at certain moments in the persecution, but not at others. Even if more weakly than age, and especially household size, socio-economic status did play a role in the fact of leaving or remaining in Lens: 62% of independent professionals left, against only 53% of wage-earners. At the time of arrest, on the other hand, socio-economic status no longer played any significant role: more or less equal proportions of professionals, wage-earners and non-employed (around 45%) escaped arrest. The same variable, therefore, played a different role at different stages of persecution.

When we focus on the role of nationality, we find a still more significant yet reversed type of interaction. Nationality played only a small role in the decision whether to remain in or leave Lens, but it remained a very strong predictor of arrest, despite the fact that French citizens were in theory foreigners like any other in the "forbidden zone"—this region being, we recall, attached to the German command in Brussels, and thus treated by the occupants as a zone annexed to Belgium. However, "only" 36% of Lens Jews of French nationality were arrested, as against 59% of Poles and 63% of other nationalities (Romanian, Czech, Russian, etc.). Finally, if we now examine not just the act of leaving, but the date of departure from Lens, the "nationality" variable is once again strongly discriminating: an average of 20% of Lens Jews left in 1942, but these were made up of 41% of French citizens as against 19% of Poles and 8% of other nationalities. Undoubtedly, as we have hypothesized, the former continued for longer to feel relatively protected by their French nationality.

Our study of Lens, moreover, shows that from one day to the next, even the modalities of the variables that characterize individuals can change. To take the example of wealth, if it is possible to establish a socio-economic categorization of Lens Jews in autumn 1939, thanks to the Aryanization files and declarations of occupation that figure in the different censuses carried out throughout the occupation period, the measures of confiscation of goods on the one hand, and professional bans on the other, rendered the majority of these socio-economic classifications null and void by the end of 1940. In this sense, socio-economic characterization changed over time, and this variable cannot be treated as a static attribute that was stable throughout the period under consideration. Quite the contrary: the impossibility of reconverting economic capital in the Vichy context, or even the disappearance of all means of subsistence, enables us to understand a certain number of behaviours: for example, how forced registration in a *Groupement des Travailleurs Étrangers* (GTE) could represent an escape route for certain individuals.

As we see, the question that vexes the analyst ("What determined that some people survived and others did not?") can only be resolved with difficulty via an approach of the "linear causal" type, to use Abbott's term. His critique of the standard methods involves a second point that proves pertinent for describing the difficulties encountered in attempts to explain the itineraries of the Lens Jews in the face of persecution: the difficulty of isolating an indicator or ascribing it a particular status in explanations (Abbott 2001). For example, in a correspondence analysis, how to distinguish the "active" variables from the "illustrative" ones, when possible "outcomes" of persecution (such as identification, or departure from Lens) may become explanatory factors of further persecution, or of escape from it?

Trajectories are indeed a product of the interaction of three types of factors: exogenous variables (being identified, aryanized, arrested), which depended on the context and on the authorities applying the anti-Semitic policy; endogenous variables, which could again be qualified as "individual properties" and which, as we saw with the example of socio-economic status, could develop in a matter of days or months (young/old, single/married, French/Polish, rich/poor); action variables that describe the behaviours of individuals (declaring oneself, leaving, remaining,

hiding, crossing into Switzerland, etc.). Yet, the handling of the causal connections between these three groupings is by no means a trivial matter. It is theoretically and empirically impossible to distinguish causes from effects, and the logics of trajectories are a function of the complex articulation or combination through time of the three sets of variables.

Another difficulty inherent in the "standard model" is that it proceeds from the starting point and as a function of an objective that aims to reveal the specific effect of variables in a causal logic. The problem makes itself felt here in a particularly sensitive way: in a certain sense, proposing a logistic regression that bears on arrest involves seeking to disassociate the supposed effects of different variables on the fact of being arrested or not. But this amounts to obscuring, if not misconstruing, other events that are determinant prior to the moment of arrest. For example, leaving Lens or remaining.

We are faced here with the third pitfall in causal explanations, as described and considered by Abbott: applying an explanation, by way of logistic regression, that seeks to cast light on effects of causality, comes up against the specifically arbitrary character of the persecution policy. The failure of socio-economic status to have any effect on arrest, as we have demonstrated above, already shows this arbitrary character. For summer 1942, does it make sense to decompose variables? Were there unlikely situations whose possibility should nevertheless be examined? Or again, to take the famous quotation that Maurice Halbwachs attributes to François Simiand, is this method adapted to our study, when it"consists in studying and comparing the behaviour of a reindeer in the Sahara with a camel at the North Pole" (Desrosières 2001)? There are a number of hierarchies that underlie the models of quantification that attribute fixed and uniform causal connections between variables. The life of the Lens Jews, however, sometimes seems to hang on a single thread: the boy William Sharfman was rounded up in Lens with his mother on 11 September 1942, but saved by a railway-worker on the station platform. This chance determined his survival. But how would we seek to explain it? This shows how the process of persecution cannot be, from our point of view, analyzed simply as a final result (survival or not) but should be understood as a trajectory. These aspects and difficulties of univocal interpretation contributed to inflecting our study by attempting other ways of reading the data, formulating ideas and modelling. Our goal thus became that of working to formalize the different "trajectories of persecution" in terms of a "quantitative approach".

Trajectories of Persecution: From Archives to Sequences

Biographies to Trajectories

From this point on, the formatting of the prosopographic data gathered on these 991 Jews had to be changed. In the first phase of research, the formatting was conducted with a database, the so-called "individuals base", which, in a big spreadsheet, com-

piled the different bodies of sources used and plotted individuals (in rows) against information given in these sources (in columns): date and place of birth, household composition, occupation, address, nationality, sometimes date of arrival in France. In the course of compiling this database, however, several of the difficulties mentioned above became evident: how could one put in a single box marked "address" the several addresses that appeared in naturalization files after the War, tracing the trajectories of flight? But if this logic right away appeared ill adapted, the fact is that the majority of quantitative treatments used databases formatted according to a sociological questionnaire supplied to those studied (Lemercier and Zalc 2008). Historical data, by their very nature, escape such simple "completion" of questionnaires. But is the historian, particularly when quantifying, not tempted to offer his or her "subjects" a retrospective questionnaire with closed questions, at the price of forgetting the connection with the sources and filling in the boxes, at any cost, to avoid "empty spaces", ignoring that the sources are very often patchy? As we followed our sources, the "individuals" database became steadily transformed into a "trajectories" database. Adoption of a longitudinal logic that marked the different steps in the trajectories of persecution finally succeeded in most closely matching the specificities of our sources. From information segmented on the principle of individuals faced with persecution, for whom we sought to determine the factors favouring survival, we managed to break down this information into the form of "trajectories of persecution". Without for all that abandoning quantification: here again, as shown by the totality of work on occupational careers, it is possible to take into account the totality of sequences observed in order to reveal a fine typology of itineraries. This is why an analysis of trajectories of the "optimal matching analysis" type imposes itself as a solution adapted to our terrain (Abbott 1990).

In order to understand how data taken from different sources are articulated together, examination of individual cases proves particularly enlightening. Take for example Charles Dembinski, whose naturalization file enables us to determine both his place and date of birth, then the whole of his residential trajectory until the end of the War. But the police report included in his naturalization file does not mention that he was arrested on 10 September 1942, that he escaped and joined his wife in Périgueux, and that from this point until his return to Bully-les-Mines he was therefore living a clandestine existence. This information is essential, as it is what makes it possible to determine the succession of "states" that make up the "trajectory of persecution" of Charles Dembinski (Table 9.1).

In the language of sequence analysis, this trajectory is finally formalized in the form of an ordered succession of particular states or "spells" of an individual relationship to persecution, each of these spells being occupied for a certain duration. Thus, the biographic trajectory of Charles Dembinski, as this was finally coded in SPS format by using R (R Core Team 2013) and the TraMineR package software for data analysis (Gabadinho et al. 2011), takes the following form: (F,492)-(R,1)-(F,12)-(R,8)-(N,1)-(C,24). In other words, starting from birth, Charles Dembinski was free during 492 months, then identified during 1 month, then free during 12 months, then identified during 8 months, then interned during 1 month, and eventually underground during 24 months, i.e. until the end of the War.

Table 9.1 The "trajectory of persecution" of Charles Dembinski

Spell	Place	State	Start	End
1	Kowal (Pol.)	Birth	4 Dec. 1899	1922
2	Angevillers	Free	1922	1924
3	Lens	Free	1924	Oct. 1931
4	Vimy	Free	Oct. 1931	Dec. 1931
5	Lens	Free	Dec. 1931	1934
6	Saint-Berain	Free	1934	21 Dec. 1936
7	Bully-les-Mines	Free	21 Dec. 1936	Feb. 1941
8	Paris	Free		16 June 941
9	Bully-les-Mines	Free	16 June 1941	10 Sept. 1942
10	Malines	Interned	10 Sept. 1942	Oct. 1942
11	Périgueux	underground	Oct. 1942	
12	?	underground		
13	Bully-les-Mines	Free	30 Oct. 1944	

Trajectories of Persecution

The body of information that the analysis draws on compiles 991 individual trajectories of Jews from Lens, each of these trajectories being itself defined as a succession of distinct moments or "spells", characterized by a start date, an end date, an individual "state" and a particular place of residence. These 991 sequences are thus made up of a total of 5,875 distinct spells, that is, an average of almost exactly six spells for each sequence. The shortest sequences include just one spell (birth), and the longest, that of Soria Salik (*née Schor*), has sixteen, from her birth in Poland in 1903 to her death in Lens in 2002. Between these two extremes, the distribution of the number of spells per sequence has a very clear mode, since almost half (47%) of the trajectories contain five or six spells (including birth and death). Each of these spells distinguishes a different "status" of relations in which individuals found themselves in the face of persecution (Table 9.2).

The trajectories that we thus try to describe are indeed "trajectories in the face of persecution": from freedom and census registration through to internment and deportation, the spells that make them up are always defined by the relationship to persecution. That said, while these "states" were certainly determined by the factual situations in which the Jews of Lens found themselves in the face of persecution at each moment in their biographical trajectories, they were equally determined by the manner in which we managed to gather the information that has enabled us to determine these situations. The "Identified" status is emblematic of this ambiguity: it denotes both the source of information (the census lists of Jews drawn up by the Lens authorities during the conflict), the fact that the individuals who were in this "situation" lived in Lens, and the fact that they were not exactly in the same situation as those who escaped the census (and are thus defined as "Free"). They were subject to the constant work of identification and censuses carried out by both French and German authorities, particularly between December 1940 and September 1942, and

Table 9.2 States of individuals in the face of persecution

Status	N	%	Mean duration (months)	Status	N	%	Mean duration (months)
Birth	991	16.9	–	Underground	37	0.6	24
Free	2638	44.9	189	Interned	495	8.4	2
Army	35	0.6	9	Deported	475	8.1	3
Prisoner	13	0.2	23	Refugee	53	0.9	26
Identified	594	10.1	15	Deceased	528	9.0	–
Assigned	16	0.3	6	*Total*	*5875*	*100.0*	

it is because of the traces left by this administrative and police work that we are familiar with these parts of their trajectories… In some cases, it is in fact completely impossible to separate what bears on the "real" trajectory from what is a function of the archival artefact, even when the intersection of different sources indicates contradictions: in a non-negligible number of cases, in fact, censuses continue to identify individuals whom we know from other sources were no longer present in Lens. This is the case with Markus Adlerfligel, who appeared on the Lens census in December 1940 though he was in fact a prisoner-of-war in Germany throughout the War, from May 1940 to January 1945. Similarly, the naturalization file for Baruch Stolik, despite his appearing regularly on the Lens censuses until January 1942, indicates that he was actually in Lyon between 1940 and 1945: he was certainly "Free", but he was also "Identified", which corresponds to a very real situation in the face of persecution, if only in so far as it can precisely explain his departure from Lens. We must however be well aware that in the present case, appearing under "Identified" actually meant being "registered in Lens", inasmuch as the reconstitution of trajectories is based on archive material that is initially local. This constitutes a possible bias in the data from which trajectories can be reconstituted, inasmuch as an individual who was not "Identified" in Lens is described in our material as "Free" during this period, whether or not he was "Identified" elsewhere in France.

Trajectories: Defining and Dating

In theory, each spell is defined by a start date and an end date. But in practice, we were not able to reconstitute each trajectory with full precision as an exhaustive series of perfectly time-delimited spells. At the start, less than half (46.5%) of the spells were bonded by both a start date and an end date. The initial data, moreover, as gathered from primary sources, already incorporated a share of hypothetical extrapolation, at least each time we extrapolated continuously enduring states from discrete events. For instance, if we knew a date of birth in Lens and then only a date of departure from Lens, even several years after, we supposed a continuous

residence in Lens between these two dates, instead of considering these spells as missing.

Yet, despite this first way of imputing dates to incomplete spells, we were still confronted with a significant proportion of missing dates. Also, to the extent that TraMineR only accepts spells that are bounded by both a start and an end date, we applied certain simple procedures of imputation. First of all, the end date of the final known moment of each trajectory has been set by convention as 1 January 2012. Despite this, for a very large portion of other spells (42.4% in the raw data, and still 27.7% after imputing end dates to the final spell), only the start date is known, and not the end date. This is quite simply explained by the fact that entry into a given state generally corresponds to an event whose date is known, and which therefore defines its start. The end of this moment, on the other hand, is far less frequently obtainable. For the same reasons, it is also the case with deportation, for which we know the start date, particularly from the lists of convoys, but generally do not know the end date, except in the very rare cases where the date of decease in Auschwitz is known. Faced with these many uncertainties, we imputed to the incomplete spells a start date equal to the end date of the preceding sequence, and an end date equal to that of the start of the following one, if these were known.

There is still a final debatable effect of this simple procedure of imputation of dates: in certain cases, when a moment without a start or an end date is interpolated between a previous moment with an end date and a following moment with a start date, this interpolated moment is then imputed both a start and an end date, which amounts to considering that it actually is adjacent to the two others and occupies the whole interval of time that separates them. In the case of Nelly Hornstein, for example, we know only that she was in Lille during the War, but not for how long or under what status. But, as the end date of the previous moment and the start date of the following moment are known, the imputation procedure here has the consequence of supposing that the moment of residence in Lille (which originally had neither a start nor an end date) covers the whole period of the War, from May 1940 to September 1944.

Despite these few restrictions, the imputation procedure thus applied does have significant effects on the whole, since it makes it possible to end up with a total of 83.6% of complete states instead of only 61.0% at the start. The final procedure then consists in imputing a conventional duration of one month to spells for which only one of the two time boundaries is known. It is thereby supposed that for the rest of the previous or following time, the state is not determined. This final procedure has two effects: on the one hand, it makes it possible to complete almost the totality of spells (98.5% of spells are now bounded by both a start and an end date), but on the other hand it generates a non-negligible proportion of "gaps" in the sequences. We thus find several "holes" of this type at the start of sequences with individuals for whom we know only the date of birth in Poland and then the date of departure from Lens. Between the month following birth and the month preceding departure from Lens, for example in May 1940, the status is not determinable.

From Missing Values to "Biographical Gaps"

The most evident property of our data is that they are thus characterized by a quite unusual proportion of missing values. As in any body of longitudinal data, these are of three types, and it is necessary therefore to distinguish between unknown states prior to the first known state (left-censored), unknown states posterior to the last known state (right-censored), and unknown states located between these limits, within trajectories, otherwise known as "gaps". In the majority of cases, the missing values on the left precede birth, and could thus be treated as void values; in the same way, values missing on the right correspond in the majority of cases to death, generally in deportation but at an unknown date, which means that deportation remains the last known state, for which we originally know only the start but not the end. For these first two types of missing values, we could have applied the relatively customary strategy which consists in treating them as void values and removes them from the analysis. But as far as the "deceased" states and missing values on the right are concerned, that would have amounted to not taking death and date of death into the analysis, whereas in the perspective of a study of the persecution and extermination of Jews this is obviously a fundamental datum. We consequently decided to consider these missing values as positive states, which makes it possible on the one hand to take account of date of birth and thus of the age of individuals, and on the other hand of the moment of death or disappearance.

There remains the third type of missing values, in other words "gaps". For some Jews from Lens, biographical information, as gathered from archival sources, is considerably more brief and patchy than for others. This is one of the problems that the formatting of data into sequences confronted us with: we do not have equal information on trajectories for all individuals. The remaining biographical gaps are substantial in quantitative terms: disappearance (missing states after the last known states) affects some 15% of individuals from the end of 1942 on, and biographical gaps (missing values) steadily rise during the whole wartime period, reaching practically 20% by mid-1940 (Fig. 9.1). Before the work of identification and census registration of Jews in Lens began in December 1940, we no longer know where over one third of these were. The proportion of gaps experiences a first significant dip from December 1940 on, with the lists regularly drawn up by the authorities enabling us to locate one part of them in Lens; and the second, more spectacular fall, corresponds to the two roundups of 11 and 25 September 1942.

Standardizing the Recording of Dates

After imputation, we thus have available a database made up of sequences that include only complete spells (with both a start and an end date) and possible biographical "gaps", that is, spells determined both by a start and an end date, but corresponding to states and places of residence that are unknown. This said, the dates that border the known spells are of variable precision. We have chosen to standardize
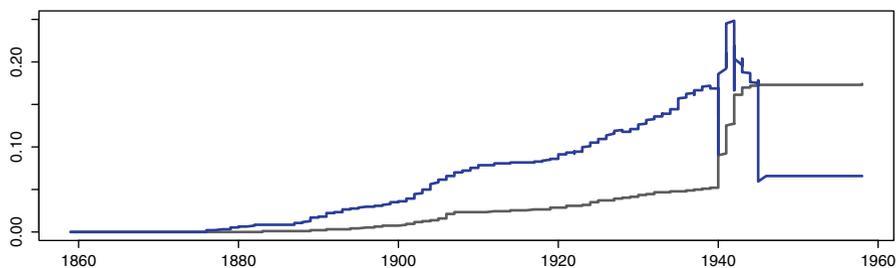
Fig. 9.1 Disappearances (*plotted in grey*) and missing values, or gaps (*plotted in blue*)

the precision of all dates to the month, by applying the following simple rule: the dates that are known only to the year have been rounded to the mid year, that is, to the month of July in the year in question.

This rule of standardization of dates does have consequences, however. Thus, for a certain number of very important spells, the start date and the end date are known to the day, but these two dates fall in the same month. This is the case for rather more than 700 spells out of the 5,875 in total. These spells are particularly the internments in Malines between 11 and 15 September 1942, after the big roundup in Lens, and the ensuing deportations to Auschwitz, between 15 September 1942 and a date of death in the camp that was only a few days later. For all the sequences concerned, we resorted to a small artifice of coding "Free" until August 1942, "Interned" in September 1942, "Deported" in October 1942, and "Deceased" if appropriate from November 1942. This artifice offers the advantage of not obliterating the trajectories of internments lasting less than a month, even if it produces a certain number of distortions in relation to the starting data, in particular an overestimation of the duration of internment and deportation, and a shift of a month in the dates of deportation and decease in a certain number of cases.

Results

What is a "Normal" Life-Course Sequence?

One of the most evident contributions of sequence analysis lies in its ability to offer an extremely synthetic view of status transformations over time. In the histogram below (Fig. 9.2), where time is represented on the horizontal axis, each vertical line shows the distribution of Lens Jews between possible states for each given month between 1859 and today. A glance at the periods preceding and following the 1940s reveals that War appears as a perturbation in a histogram of states distribution that otherwise reflects what life courses usually are: as time goes by, people enter our sample, thus leaving their initial "Unborn" state (this decline being figured in grey at the bottom left of the histogram) and experiencing a lifelong "Free" state until they either eventually die, or enter "Unknown" or "Lost" states in case we lose
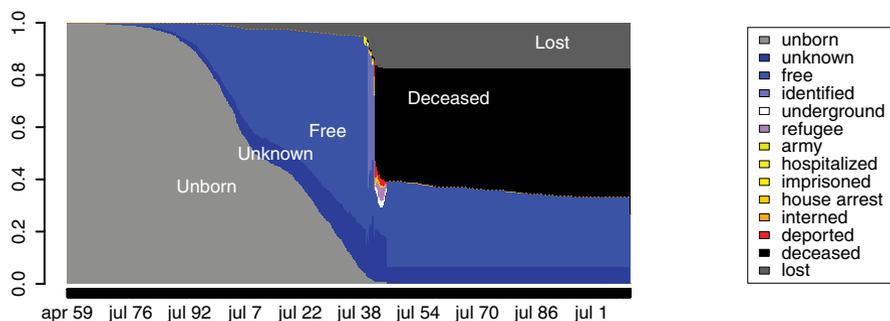
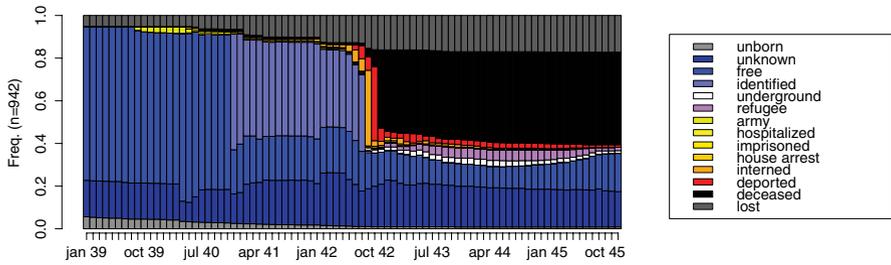**Fig. 9.2** Distribution of states of the Lens Jews between 1859 and 2012

their tracks. That is what we can observe before July 1939: the proportion of "Unborn" individuals steadily declines over time, whereas the proportions of "Free" and "Unknown" states grow, until these eventually represent almost the totality of the population.

After 1945, states are also distributed in a very stable fashion between alive ("Unknown" and "Free") and dead ("Deceased" and "Lost") states. The increase in the proportion of dead is very slow, in fact almost imperceptible, over a 5-year period of time after the War. The very stable "Lost" state corresponds to people who most probably died in the camps, but whose date of death remains unknown and thus whose last known state is "Deported".

What sequence analysts call "entropy" may represent an interesting measure of this pre- and post-War stability against wartime perturbation. It tends to 0 when all cases are in the same unique state and it is maximal when the same proportion of cases is in each different state. Entropy can thus be seen as a measure of the diversity of states observed at the considered time point (Fussell 2005). Before the War, entropy in the present case slowly declined as individuals left the "unborn" state. The War caused entropy to increase in steep steps, among which the most noticeable occurred in December 1940 when the authorities began their systematic enterprise of identifying the Lens Jews, and in September 1942 with the Lens roundups. After the roundups, entropy was at its highest, as significant numbers of people entered new states such as "Underground" and "Refugee" (those escaping to Switzerland). Afterwards it decreased slowly until the end of the War, as the population tended to stabilize in four remaining states ("Unknown", "Free", "Deceased", and "Lost").

Focus on the War

When we then focus on the War period, it appears that the most dramatic change in the state distribution clearly occurs in September 1942, the month of the great Lens roundup (Fig. 9.3).

Fig. 9.3 Distribution of States 1939–1945

Prior to the roundup, more than 80% of Lens Jews were free; after September 1942, this was only the case with one in five, and between September and October 1942, half of the Lens Jews were exterminated. As far as they were concerned, the local application of the Final Solution had a massive and almost instantaneous effect. In August 1942, 34% of Lens Jews were "identified" by the authorities, which means that they were asked at the beginning of the month to retrieve their yellow stars. In September, they were arrested and interned, most of them in Malines. Almost all of them were then deported to Auschwitz in October and deceased by November[1] (Table 9.3).

The ineluctability of the process appears even clearer when we look at transition rates between states. While other states at other times are remarkably stable, transition rates between August and November 1942 describe an almost fatal process: for those who were identified in Lens in one of those four months, the chance of being interned the following month was over 80%; for those interned, the chance of being deported the following month was 86%; and for those deported, the chance was 75% that they were dead the following month.

Classifying and Explaining Trajectories

Observing the individual biographies of each of the 991 Jews of Lens may give the impression of an infinite diversity. Yet, modelling these biographies into sequences allows to uncover underlying forces that tie many of these biographies together. It indeed turns out that the ten most frequent sequences, i.e. less than 10% of the observed different sequences, make up almost half of the individual trajectories through the War. On its own, the most frequent sequence ("Free" until August 1942, "Interned" in September, "Deported" in October and "Deceased" by November 1942) represents 18.7% of the trajectories of Lens Jews through the War.

---

[1] Here we must recall that this mass extermination of Lens Jews actually happened in a much shorter period of time, between 11 September and the end of the month, and that the extension of the process to October is an artifact due to adopting monthly intervals as units for sequence analysis.

Table 9.3 State distribution table and transition rates between August and November 1942

	State distribution				Transition rates				
	Aug-42 (%)	Sept-42 (%)	Oct-42 (%)	Nov-42 (%)		Identified	Interned	Deported	Deceased
Identified	34	0	0	0	Identified	*0.01*	0.81	0.01	0.00
Interned	6	36	3	2	Interned	0.00	*0.13*	0.86	0.00
Deported	6	6	35	6	Deported	0.00	0.00	*0.19*	0.75
Deceased	1	4	8	37	Deceased	0.00	0.00	0.00	*1.00*
Other	53	54	54	55					
Total	100	100	100	100					

The existence of patterns of sequences authorizes recourse to classification procedures that help distinguish their principal types. In that perspective, we mobilized optimal matching methods to separate War trajectories (i.e., between 1939 and 1945) into clusters grouping those who most resembled each other, with substitution costs calculated from transition rates between states (Lesnard 2010; Macindoe and Abbott 2010). The optimal matching procedure separated five different clusters (Table 9.4): two clusters (1 and 5) of trajectories leading to extermination, with cluster 1 grouping trajectories where extermination is preceded by identification, and cluster 5 grouping trajectories where it is preceded by freedom; two clusters (2 and 3) of survival trajectories, with cluster 2 containing a significant amount of gaps (unknown states), and cluster 3 grouping survival trajectories that implied going underground at some point; and eventually one cluster (4) grouping right-censored trajectories, i.e. trajectories that sooner or later end up with losing track of individuals.

Analysis of the relations between types of trajectory and the socio-demographic characteristics of individuals reveals a certain number of particularities. Thus, members of large families (more than four persons) had a much higher risk of undergoing a trajectory of extermination, but not just any of these: those (cluster 1) in which extermination was preceded by a long period of identification and surveillance by the authorities. Close to half (46.3%) of members of families of six persons or more experienced this type of trajectory, as against less than a third of members of families of less than four persons, whom we also lose trace of far more often than others. On the other hand, members of large families did not experience more often than others trajectories of persecution preceded by a long period of freedom (that is, absence of identification).

Do Pre-War Trajectories Explain Persecution Trajectories?

Yet, the explanation of trajectories in terms of socio-demographic characteristics continues to raise a certain number of problems relating to causal relations: did the socio-demographic specificities (such as family size or nationality) we have brought to light "cause" persecution trajectories, or were they simply indicators of other causes that still remain to be determined? If it is true that "the determining cause of

Cluster	1	2	3	4	5	Total
	From identification to extermination	**Survival w/ gaps**	**Survival w/ clandestinity**	**Right-censored trajectories**	**From freedom to extermination**	
Total	**34.1**	**29.3**	**12.1**	**16.6**	**8.0**	**100.0**
Sex						
Female	35.7	27.5	9.8	18.0	9.1	100.0
Male	32.7	31.1	14.3	14.9	7.0	100.0
Status						
Head of household	29.8	31.8	13.1	18.0	7.2	100.0
Spouse	36.4	30.2	9.3	15.1	8.9	100.0
Child	36.0	27.5	12.8	16.0	7.8	100.0
Family Size						
1 or 2	*28.8*	*26.4*	**12.9**	**20.2**	11.7	100.0
3	*30.9*	28.4	**14.4**	**20.6**	5.7	100.0
4	31.2	**37.2**	12.3	14.3	5.0	100.0
5	**38.5**	*25.2*	10.4	12.6	**13.3**	100.0
6+	**46.3**	*21.1*	9.5	15.0	8.2	100.0
Parenthood outside household						
0 family link	*30.7*	26.9	11.8	**22.4**	8.2	100.0
1 family link	**40.6**	31.6	13.1	7.4	7.4	100.0
More than 1	35.8	**34.0**	11.7	10.5	8.0	100.0
Nationality						
French	*28.7*	32.7	14.3	19.7	*4.5*	100.0
Polish	36.2	32.3	12.2	*10.0*	9.3	100.0
Other	**51.3**	*17.1*	11.8	17.1	*2.6*	100.0

Table 9.4 Five clusters of trajectories through persecution

a social fact must be sought among previous social facts" (Durkheim 1894), may we not make the hypothesis that the determining cause of a part of a trajectory must be sought in previous parts of that trajectory? It is precisely the hypothesis that we wanted to test, which is why we also applied a procedure of automatic classification to the portions of trajectories that preceded the War. In that purpose, we focused on the 1920s and 30s, and on the individuals who were already born by 1920, thus being at least 19 years old in 1939; we discriminated "free" states according to residence, by distinguishing between foreign residence, France, and Northern France. That pre-War clustering procedure revealed three distinct types: a first cluster grouped individuals who combined earlier arrival in France and earlier settlement in Lens (N=177); a second cluster of similar size (N=180) grouped Jews who also arrived earlier in France but settled later in Lens (i.e. closer to the beginning of the

Cluster	1	2	3	4	5	Total
	From identification to extermination	**Survival w/ gaps**	**Survival w/ clandestinity**	**Right-censored trajectories**	**From freedom to extermination**	
Total	**34.1**	**29.3**	**12.1**	**16.6**	**8.0**	**100.0**
earlier in France, earlier in Lens	**39.8**	*20.5*	14.6	**19.9**	5.3	100.0
earlier in France, later in Lens	*28.2*	28.2	**16.4**	18.6	8.5	100.0
later in France, later in Lens	**42.5**	31.2	10.0	13.8	*2.5*	100.0

Table 9.5 Pre-War trajectories and persecution trajectories

War); and a third smaller (N=80) cluster grouped people who combined later arrival in France with an equally more recent settlement in Lens[2] (Table 9.5).

The result was striking, establishing relatively clear relations between trajectories of persecution and pre-War residential and migration trajectories. It thus appears that with a similar date of arrival in France, a later settlement in Lens reduced the risk of experiencing a trajectory of extermination preceded by identification (cluster 1); on the other hand, when arrival in France occurred later, the risk of experiencing this type of trajectory was very high: for individuals who had lived for a long time in France before settling in Lens, only 28.2% experienced this kind of trajectory, whereas this was the case with 42.5% of those who arrived in Lens only late, whether directly from Poland or after shorter stays elsewhere in France. Two categories of Jews are distinguished by an early identification: Lens residents of long date, who no doubt thereby displayed a certain trust in the country that had accepted them, where they were often born or granted naturalization, and the most recent immigrants, who lacked the resources to try and escape the administrative injunction. As for survival trajectories, these also took different paths as a function of pre-War residential trajectories: Lens inhabitants of longer date tended more than others to "disappear from the radar" (cluster 4), whereas Jews who had lived elsewhere in France before moving to the North may have had more opportunities to go underground (cluster 3). In total, we may reasonably believe that as well as the traditional socio-demographic factors envisaged above (age, nationality, family size, etc.), it is now necessary to add to the analysis the biographical trajectories themselves as possible explanatory elements of persecution experiences.

---

[2] Two remaining clusters were discarded from analysis and are not displayed in Table 9.5, as they mostly grouped poorly documented trajectories, either right-censored or containing important amounts of "biographical gaps".

Conclusion

As we have seen, the formatting of data collected in a prosopographic perspective into trajectory data is neither simple nor self-evident. It does however produce innovative results. If the systematic application of the tools of sequence analysis to our data constitutes only a first indication of the existence of connections between pre-War trajectories and persecution trajectories, this is undeniably an invitation to explore further the possible factors of biographical coherence that they bring to light: were the residential histories of the Lens Jews before the War endowed with more or less in the way of specific resources (relational, material), which were subsequently more or less readily mobilizable in the face of persecution? Should we also see here an effect of the hysteresis of habituses (Bourdieu 1980; Bourdieu 2002), with dispositions acquired in the course of migratory experiences continuing to play a role, far beyond their point and time of arrival, in chances of survival in the face of persecution? Should we pursue the exploration further, particularly in the direction of analysis of social networks, inasmuch as certain trajectories may constitute opportunities of accumulating a social capital of relations that could be mobilized in the face of persecution, and which could in turn be effects of structures of relations (Mercklé 2011)? Whatever the answers given, which still remain largely to be constructed, there can be no doubt in any case that the formalizing of biographies in the form of trajectories allows us to formulate these questions in an operatory fashion, questions that it would not be possible to raise without the mobilization of the tools of sequence analysis.

In conclusion, despite these difficulties, one of the results of this text is to promote a new way of working on the Holocaust process, using all the traditional methods of historians. We are convinced that the methods of the social sciences can be applied to objects of research that due to their exceptional character are also objects of intense debate and contention. There is no reason to write the history of this period with different tools than those used by other historians and social scientists.

References

Abbott, A. (1990). A primer on sequence methods. *Organization Science, 1*(4), 275–392.

Abbott, A. (2001). *Time matters. On theory and method*. Chicago: University of Chicago Press.

Anders, E., & Dubrovskis, J. (2003). Who died in the holocaust? Recovering names from official records. *Holocaust and Genocide Studies, 17*(1), 114–138.

Bourdieu, P. (1980). *Le sens pratique (Le sens commun)*. Paris: Ed. de Minuit.

Bourdieu, P. (2002). *Le bal des célibataires. Crise de la société paysanne en Béarn*. Paris: Seuil.

Browning, C. R. (2010). *Remembering Survival: Inside a Nazi Slave Labor Camp*. Chicago: W.W. Norton & Co.

Croes, M. (2006). The holocaust in the Netherlands and the rate of jewish survival. *Holocaust and Genocide Studies, 20*(3), 474–499.

Desrosières, A. (2001). Entre réalisme métrologique et conventions d'équivalence : les ambiguïtés de la sociologie quantitative. *Genèses, 43,* 112–127.

Durkheim, E. (1894). *Les règles de la méthode sociologique (rééd. 1988 ed., Champs)*. Paris: Flammarion.

Fussell, E. (2005). Measuring the early adult life course in Mexico: An application of the entropy index. In R. MacMillan (Ed.)., *The structure of the life course: Standardized? Individualized? Differentiated?* (pp. 91–122). Amsterdam: Elsevier.

Gabadinho, A., Ritschard, G., Mueller, N. S., & Studer, M. (2011). Analyzing and visualizing state sequences in R with TraMineR. *Journal of Statistical Software, 40*(4), 1–37.

Gross, M. (1994). Jewish rescue in holland and France during the second world war: Moral cognition and collective action. *Social Forces, 73*(2), 463–496.

Klarsfeld, S. (2012). *Mémorial de la déportation des Juifs de France*: Paris, Fils et Filles des Déportés Juifs de France (FFDJF).

Lemercier, C., & Zalc, C. (2008). *Méthodes quantitatives pour l'historien*. Paris: La Découverte.

Lesnard, L. (2010). Cost setting in optimal matching to uncover contemporaneous socio-temporal patterns. *Sociological Methods & Research, 38*(3), 389–419.

Macindoe, H., & Abbott, A. (2010). Sequence analysis and optimal matching techniques for social science data. In A. Bryman & M. A. Hardy (Ed.), *Handbook of data analysis* (pp. 387406). London: Sage.

Mariot, N., & Zalc, C. (2010). *Face à la persécution. 991 Juifs dans la guerre*. Paris: Odile Jacob. Fondation pour la Mémoire de la Shoah.

Mariot, N., & Zalc, C. (2012). Destins d'une communauté ou communauté de destins? Approche prosopographique. In T. Bruttmann, I. Ermakoff, N. Mariot & C. Zalc (Ed.), *Pour une micro-histoire de la Shoah* (pp. 73–96). Paris: Seuil.

Mendelsohn, D. (2006). *The lost: A search for six of six million*. Scarborough: HarperCollins.

Mercklé, P. (2011). *Sociologie des réseaux sociaux*. Paris: La Découverte.

Pollak, M. (1990). *L'expérience concentrationnaire. Essai sur le maintien de l'identité sociale*. Paris: Métailié.

R Core Team (2013). *R: A language and environment for statistical computing*. Vienna: R Foundation for Statistical Computing. URL: http://www.R-project.org/. Accessed on 17 october 2013.

Tammes, P. (2007). Jewish Immigrants in the Netherlands during the Nazi Occupation. *Journal of Interdisciplinary History, XXXVII*(4), 543–562.