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Morgane Labbe

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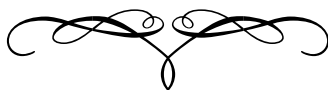
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# “REPRODUCTION” AS A NEW DEMOGRAPHIC ISSUE IN INTERWAR POLAND

*Morgane Labbé*



## Introduction

Since the second half of the nineteenth century the issue of population has been a central concern of nationalism in Europe. In particular, it shaped Polish territorial claims at the end of the century when the population censuses used to produce official, scientific nationality statistics enumerated the Polish population under the sovereignty of the Prussian, Russian and Austrian states. The results were strongly contested by Polish national activists who made further calculations, although based on the same sources, which were more advantageous for the Polish nation. At the end of World War I, when negotiations about the restoration of the Polish state and its spatial extension took place, the Polish experts had already prepared their own statistics. They contended that Poland was one of the most populated nations in Europe and therefore “a great nation” ready to play a political role.<sup>1</sup> With its eastern border not yet officially drawn, and awaiting the repatriation of its population, the new government in 1921 conducted a population census that was expected to consolidate Poland’s national legitimacy and sovereignty statistically. The issue of population was still tied to the problem of nation building as the new Polish state encompassed large minorities.

Apart from serving as a discursive concept for the purpose of securing political demands, population was also a category used in theoretical models. Early on, Polish geographers worked out the relation between population density, state, and land, in a geopolitical model that assumed the geographical individuality of the Polish territory and its extension. They used scientific arguments to respond to German geographers who asserted that the area called “Mittel-Europa” was transitional and therefore could not be the space of a state.<sup>2</sup> During the interwar period the issue of population was developed in two additional theoretical frames:

one addressed the problem of overpopulation in Malthusian terms, and the other dealt with the issue of reproduction in reference to the theoretical proposals of Lotka and Kuczynski. While the importance of the Polish scientific work dealing with the issue of population is striking, in each of these cases the scientists and experts involved based their work on foreign scientific models. These models were not simply adopted but were transformed through their reception. This process of adaptation is remarkable, seeing as the Polish geographers who tried to defend Polish territorial claims against German geopolitical assertions did so by drawing on the German academic tradition, from Ratzel to Penck, in which they had been trained.

These findings are congruent with recent research on expertise, eugenics, and public health in Central and Southeast Europe that emphasizes the role of science in the building and administration of the newly created states, whose elites aspired to modernize the new nations' societies with the help of science.<sup>3</sup> The new studies underscore the process of knowledge transfer and appropriation by national elites who were mainly trained at foreign universities and supported by the scholarly programs of American foundations.<sup>4</sup> A distinctive feature of these science-based policies in Eastern Europe was a continuous interaction between local and international agencies during the interwar period; the same applies to the Polish population experts as well. What makes Poland an interesting case is the variety of experiences that its elites gained before World War I in three state traditions, which later had to be included in the new state structure.

The intense circulation of books, ideas, and knowledge stimulated by training, fellowship programs, or international conferences, and the outstanding ability of numerous Eastern European scholars to move and communicate in a multilingual and multicultural environment outline a transnational space for the formation of sciences that was absent in the Western countries. But while the formation of this scientific knowledge in a transnational perspective can be taken for granted, the question remains whether the sciences remained transnational in their national setting.

Against this background, the research presented in this chapter deals with the emergence of demography in interwar Poland as both a science and a practice developed in a new institute that defined “reproduction” as its primary topic of investigation. Relying on the new theoretical synthesis of Lotka and Kuczynski on the one hand, and on the program of international agencies on the other, the newly founded Polish Institute for the Scientific Investigation of Population approached the field of demography from a variety of aspects, in particular long-held geopolitical and economical views, but also new biological and eugenic approaches. The first part of this chapter is devoted to the presentation of the institutional stakes around the issue of population. In the second part, we focus on the first fertility survey undertaken by the institute and its attempts to produce new indices for reproduction amongst the Polish population. The Polish case,

with its various local settings, contributes to our understanding of the dynamics of scientific knowledge produced both locally and internationally, and highlights how the national space was divided by competing projects.

### **Two Theses on the Polish Population in the Interwar Period: Overpopulation or Birth Decline?**

During the interwar period, population was an issue dealt with in various institutional and scientific fields, whose representatives promoted different theoretical and political interests. In Poland the issue of population was discussed in the context of two conflicting theses. Two world conferences taking place in Paris in 1937 can serve as the best examples of those theses, which were equally influential in the second half of the 1930s. The first conference, entitled “Peaceful Change,” was organized by the International Institute for Intellectual Cooperation, an agency of the League of Nations. It was the tenth session of a cycle named the “International Studies Conference,” whose primary concern was international policy. Experts from a wide range of countries and disciplines were invited to take part, mostly as members of their national committees.<sup>5</sup> The conference enjoyed relative autonomy from the governmental authorities, and it received substantial financial support from two U.S. foundations, the Rockefeller Foundation and the Carnegie Endowment for International Peace, which were entitled to take part in its preparation.

One of the main topics of the Parisian conference was the “Demographic Questions,” in fact the issue of overpopulation, which was of great interest to observers of the demographic situation of Eastern Europe. At the end of World War I, it was only with much difficulty that peace was restored in this part of Europe where national states had been created in territories long framed by imperial rules. Yet it was not the problem of minorities that worried the international agencies as a source of conflict, but that of overpopulation. Although the experts were constantly discussing definitions and criteria for overpopulation, they nevertheless understood the concept as rising demographic pressure on a limited amount of land and resources, which would lead to struggles over access and sharing, territorial claims, and spatial expansion. In the view of the international agencies, overpopulation was a potential threat to peace and thus a matter of international policy. Malthusian and Optimum Population theories helped the experts to model the nexus between population, growth, density, land, food, etc.

The members of the conference were population statisticians as well as economists and geographers. The scope of the conference was to formulate international recommendations to find solutions to the issue of overpopulation. For a long time migration was viewed as the peaceful solution to population

pressure, but several countries such as the United States or France had recently introduced strong restrictions. The closing of their borders affected countries like Poland, whose representatives in the conference complained.<sup>6</sup> The director of the Polish committee, Stanisław Grabski,<sup>7</sup> from the University of Lwów, began his presentation on “The Problem of population in Poland and the interests of the overpopulated states” with the following words: “Poland is a country in which the population problem is particularly acute, and dominates all social and economic policy.”<sup>8</sup> Arguing that the highest rate of population increase in Europe could be observed in Poland, he drew attention to migration as a traditional way of releasing overpopulated lands. Grabski’s opinion was shared by the other Polish members as well as those in his academic environment: economists, jurists, political scientists, and geographers working mainly at the universities of Lwów or Kraków, where the doctrine of Malthus had been taught since the nineteenth century. The issue of population was considered from the point of view of international relations. This understanding was reproduced in courses developed by the Institute of Constitutional and International Law, which received substantial financial support from the Rockefeller Foundation.<sup>9</sup>

What is striking about these discussions is that they did not consider birth control as a solution to overpopulation. Alison Bashford has highlighted this point by arguing that the issue of birth control at the international level was too controversial (in particular for religious reasons) to achieve a necessary consensus between states.<sup>10</sup> Yet at the Paris conference, the issue of birth control was addressed in relation to the works of Kuczynski, who was an authority in this respect. His works showed the fertility decline that occurred in numerous populations as a consequence of the economic crisis of the 1930s. But at the conference the mention of birth control remained marginal, and in any case it was not considered as the solution to the present problem of overpopulation. That they did not even discuss it is probably due to the fact that migration had important political advantages: it was a flexible instrument for adjusting population density in the short-term that could be regulated and fixed in international conventions. In this international arena the Polish representatives complained about the new legislation imposed by Western countries that strongly limited migration flows from their country. They asked for redistribution and compensation, stressing for instance the comparative advantage of countries with colonies. This argument was also present in scholarly works. Warren Thompson in his article “Population,” published in 1929, had already described the large range of world population densities in terms of inequalities, concluding: “Great Britain, France, Holland, and Australia hold enormous land areas which they cannot settle and at present will allow no one else to settle. Here we have in its crudest form the most urgent population problem of the near future. Peoples who have ceased to expand (Great Britain and Australia) are now holding great areas of unused lands, while the peoples who are just coming into their great

period of expansion are confined to rather narrow territories that in some cases are also almost destitute of mineral resources.”<sup>11</sup> Birth control would have meant a renunciation of arguments about justice, inequalities and compensation.

In the same year, also in Paris, the International Population Congress took place, gathered for the fourth time by the International Union for the Scientific Investigation of Population Problems (IUSIPS). In some respects this conference showed similarities with the first one: an international and official structure, numerous and famous participants, and support from an American foundation, this time the Milbank Memorial Fund. But it also differed from the earlier conference by focusing on the topic of reproduction. This difference is noteworthy in the case of Poland: the presentations drew attention to the issue of birth decline and developed a model of fertility transition in Poland using the results of an innovative survey conducted on this topic. The results were displayed as statistics on fertility rates. The Polish participants’ apprehension regarding the population issue was thus also differential, but it referred to social, not spatial divisions. Not surprisingly, the Polish participants were not the same as those at the Peaceful Change conference, and their professional as well as institutional characteristics were also different: they were statistician-mathematicians, sociologists, physicians, coming mostly from Warsaw, and employed not at the university but in the Polish Statistical Office, where in 1931 a demographic institute was created. These participants also made up the Polish Committee of the IUSIPS.

To evaluate which of the two conferences—the Peaceful Change conference or the International Population Congress—could be regarded as being closer to “real” demography is not a relevant issue because all of the participants claimed to be specialists in population issues, and both sides underlined their arguments with theoretical and methodological references. The proceedings of the international conferences enable us to identify two distinct and contemporary Polish stances on the issue of population, and to relate them to their institutional spaces in Poland. Other features allow us to see their unequal but changing positions: the first group had a long-lasting dominant position based on a prestigious academic network with connections abroad, while the second deployed its skill more in the field of state administration and lacked international resources (most of its members had not taken part in international meetings before), but from this minor position was starting to gain international recognition.

It is therefore necessary to understand how these demographers succeeded in developing an alternative thesis focusing on the decline of fertility in an international context, while the view of an overpopulated Poland seemed unwavering, and gave solid structure to the discourses on population. If this seems to be primarily an issue for the history of scientific and expert institutions, it is as much a concern for the history of science since the condition of this

success was previously a refounding of demography as a science closed to the issue of reproduction. This refounding occurred in a transnational space.

### The Creation of the Polish Institute of Demography

The Polish Institute for the Scientific Investigation of Population Problems, created in 1931 within the Statistical Office, had only very few members. The most active were Stefan Szulc from the Statistical Office and Marcin Kacprzak from the Institute for Hygiene and Public Health. At its head the institute had an Honorary Director, Ludwik Krzywicki, a famous sociologist, known for his involvement in many social institutes and programs, also one of the first directors of the Statistical Office. The circumstances of the creation of the institute are poorly documented; only the official text published at this occasion described the status of the institute and defined its vocation; then in 1932, a note in the Polish Statistical Review reported on it.<sup>12</sup> This short, enlightening text, in which the creation of the institute is related to the impulse given by IUSIPS to gather representatives from different countries justifies its claim to be the future Polish committee (which only came into being in 1935).<sup>13</sup> Consequently the institute, in choosing its name and status, stayed close to the mission of IUSIPS: “The aim of the institute is the scientific study of problems of population.” It added, “The institute does not entertain or seek to define any policy on population matters,” and explained its position as the following: “The question of population arouses different opinions . . . The positive or negative meaning of the fast growth of the population raises so many passions that it would compromise the success of the scientific work.”<sup>14</sup> Following another statement from IUSIPS, the institute defined its task as researching scientific methods to find the solution to population problems.

IUSIPS had defined its mission as strictly scientific under the direction of R. Pearl, who stressed the necessity of dissociating any non-scientific concerns that would undermine the validity of its activities.<sup>15</sup> It might be surprising to find this statement that was initially linked to the American context, being taken as such by Polish demographers. But as far as the function of the statement was to do boundary work, it also applied to the Polish situation. The text of the Polish institute also aimed to raise scientific and institutional barriers around the field of demography, criticizing other scientific claims on population as attempts at gaining acknowledgment and material resources. Its program attested to this function with its emphasis on the topic of reproduction, on statistical and mathematical formalizations, and on the collection of data.<sup>16</sup> It was a closing of the field, moreover: by requiring skills and competences for a statistical office rather than a university, this was a way of protecting the new science behind the walls of a pre-existing institution. The Polish opinion of the union’s scientific

claims allows us to observe how it unified demography in a restrictive way through its network of national committees.

In its statement the institute announced that reproduction would be the main research topic, and justified this choice by drawing attention to the decline of birth rates in Poland of around 30 to 40 percent over the last thirty years. It mentioned that it disagreed with the stances of “some economists and among the most outstanding (for instance Prof. Ad. Krzyżanowski), who consider that the disaster of Poland is the excessively fast growth of the population.”<sup>17</sup> This refers to the famous professor of the University of Kraków who had introduced the recent Polish translation of Malthus’ essay. Yet the institute considered birth statistics as too general, telling us nothing about the process of decline in various social groups. In its research program it therefore decided that its first activity would be to undertake a population survey. To inquire into the issue of reproduction was a new project, yet it was not new at the international level. The Polish demographers might have been aware of the new measurements of reproduction leading to the calculation of fertility indicators that take into account the age of women and the duration of marriage. These new indicators required detailed data, but in Poland data collection was highly imperfect. At the same time the need for new and detailed information, and for improvements in data collection outlined a new field of expertise in statistics for the demographers of the institute, and raised the barriers around the profession for economist-demographers.

To draw attention to the change occurring in the Polish population without any proof other than birth rates, the institute emphasized the long temporality of the demographic phenomenon. It asserted in this way that the population in Poland could be still increasing, but added: “In the general numbers of births, this trend is still hardly visible: we have still a high level of natality. It seems unlikely from the point of view of demography that Poland is in a situation that will lead sooner or later to what happened in the past in the western states.”<sup>18</sup> This consideration of the new trend of Polish natality, which would announce a change in the demographic level, could be read as a forerunner of transition theory, which was conceptualized in the postwar era. It evidences what Simon Szreter identified in various precursor works of the 1930s as the birth of the theory and the early formulations of the demographic change.<sup>19</sup> The most comprehensive formulation was given by Warren S. Thompson in his article, “Population,” in 1929.<sup>20</sup> Thompson classified countries into three main groups according to the level and decline of birth rates, death rates, and the rates of natural increase that represented the three steps of a transitional model. Poland was in the intermediary group including all the “Slavic People of Central Europe,” Italy, and Spain. Thompson characterized them by the declines of both birth and death rates, but also by a temporal but acute growth in population caused by the faster decline of mortality. The Polish demographers



did not refer to a particular publication or author, but their reasoning on the Polish population change was not here by chance; they used this frame in all their articles, including the article for the IUSIPS Journal *Population*: “Poland presents an exceptionally favorable terrain for the investigation of differential fertility as she is passing through a transitional period; although she still has high fertility on the whole, she is one of the countries having a declining birth rate.”<sup>21</sup> The model also fitted with the traditional and stereotypical representation of the diffusion of “civilization” from the Western countries to “backward” Eastern Europe and what Polish intellectuals like Romer promoted in a new version in favor of Poland, considered as an *avant-poste* of the progress at the eastern border of Europe, while Russia still remained behind.

The Polish demographers had another ambition for their survey: to measure the natality of the different social classes, an essential distinction in their view in order to understand the decline of natality overall. Their purpose was “not only to make the survey in the intellectual profession but also in various categories of workers, craftsmen, merchants . . .”<sup>22</sup> The survey introduced a notion of the Polish population that was socially differentiated but that encompassed all the social classes of the national community. This perception of a social stratification consubstantial with the Polish population broke with the unifying populationist and national view, or the long prevailing elitist view of the Polish *intelligentsia*, whilst at the same time religious and ethnic differences were not considered as significant for the purposes of separating the population into relevant groups for the demographic inquiry.

The insistence of the institute on conducting a differential study on fertility must also be considered in the international context and in particular to the recent experiences of American demographers. In the 1920s, the biometrical and eugenics movements made differential natality a scientific topic and interpreted it as the result of differential biological vitalism. But in the early 1930s in the United States, in the demographic field, sociologists gained a dominant position in reaction to biological notions and undertook studies of differential fertility with the aim of explaining the difference by social causes, in particular the different practices of contraception.<sup>23</sup> With the support of the philanthropic foundations willing to mark out eugenics as now being associated with the rising fascist and Nazi movements, these studies multiplied and became a landmark of social demography.<sup>24</sup> To choose an international standard, *a fortiori* certified by the American foundations, was likely a way to gain acknowledgment and integration into international networks. It provided the Polish demographers of the institute with a frame on which to shape their assumptions on population change. Nevertheless, to carry out such a survey among the Polish population was far from being a simple matter of transferring a model, and was undoubtedly a challenge. In the specific Polish context, the demographers were required to adapt and transform it. Its reception gave rise to an innovative way of surveying,

albeit imposed by material and cultural constraints, scarce financial resources, misunderstanding of new questions, and suspicion by the population.

### The Survey on the “Number of Children in Families”

In contrast to other countries, the Polish institute had very limited means for undertaking a survey on the whole of, or even part of the population, whilst emphasizing the need for results on the whole-population scale. The little data collected on household composition by the population census was by no means comprehensive—the first census of 1921 was in any case too old to support the thesis of the recent change in fertility—but by 1931, the second census was in progress. The institute succeeded in receiving a grant of 3,000 zlotys from the National Fund of Culture, and while the survey was in progress, was provided with substantial help for working out the results in the shorter term.<sup>25</sup> It was undoubtedly proof of official recognition for their project and its constant promotion by the institute. Before receiving this grant, it was only by drawing on other resources, both scientific and social, that the institute succeeded in performing the fertility survey among the Polish population.

The survey of 1932–1933, under the heading “Number of children in families,” consisted of a short questionnaire in which women’s biographical data was the main information collected to describe their marital and maternal life. The collection of precise information on the dates of events such as marriage, birth, and child death, necessary for measuring fertility, was a new operation with a high risk of failure. The institute was aware of these risks and had to take them into account, and these constraints explain how the institute organized the survey.

Instead of a single survey on a part of the population, the institute undertook a set of micro-surveys in local populations, each of them having been selected as being representative of a social category. As it was not possible at that time to assess statistically how representative the figures resulting from samples were,<sup>26</sup> their validity was secured by the assumption of the homogeneity of the surveyed groups. Assumptions also made in the foreign surveys<sup>27</sup> submitted to the same constraints, but the larger size of the samples made the results more reliable. The institute gave a detailed account of three of these local surveys in the Polish Statistical Review. First they chose the agrarian communities of two villages situated in Volhynia in the eastern part of Poland.<sup>28</sup> They were chosen because of their high social and cultural homogeneity. These protestant communities of small landowners devoted almost exclusively to agriculture displayed a very high natality, and for this reason were considered as quasi-isolated. The information that the institute collected was nevertheless considered of very good quality.

Secondly, the institute undertook a survey in Warsaw, on the population of two housing cooperatives representative of other social groups. The first one covered

two buildings of social housing belonging to the Wawelberg philanthropic foundation<sup>29</sup> situated in the worker district of Wola.<sup>30</sup> This low-income housing was mainly allocated to working class and office worker families. A second area of social housing situated in Łzoliborz, another district of Warsaw, provided the institute with a further field for surveying these groups.<sup>31</sup> A survey was also undertaken in the industrial town of Łodz with the help of its Statistical Office, whose director was associated with the demographic institute, and the Institute of Hygiene and Public Health also conducted a survey by Polish physicians. In addition to these surveys targeting specific populations, the institute took advantage of several little individual or corporative initiatives in various places in Poland such as teachers of secondary schools, trade unions, etc.

To realize these surveys the institute relied on a range of mediators—associations, social insurance funds, local authorities, priests, and others. They brought essential resources like the material and financial help of the Wawelberg foundation, the advice and mediation of the pastor in Volhynia, and played a crucial role in defusing the population’s widespread suspicion. The risk of receiving refusals and also defective replies, in particular among the working class, threatened the success of the survey. The selection of the targeted population aimed precisely to limit these risks. For instance, the Protestant communities of Volhynia were chosen because of their known high fertility, and the collection of precise information was secured by the cooperation of their pastors and probably also their good levels of literacy. Far from working like a panopticon, a metaphor often used to describe the activities of the statistical office, the institute was rather like a large social enterprise, calling for a plurality of actors and an interactive mode of exchange.

The institute gathered 15,000 full questionnaires, which was of course less than the population of all the areas covered (to give an example from of the second housing cooperative, only 250 full questionnaires were collected for an area encompassing around 700 residences), and it was indeed small-scale in comparison to foreign surveys on this topic. But this didn’t prevent the institute from publishing the results in several publications. As early as 1932 they were released in Polish journals, in particular from the Statistical Office. Later they appeared in foreign reviews: in 1934 and 1935 they appeared in English in *Population*, the IUSIPS journal, as well as in the *Review of the International Statistical Institute*. Lastly, in 1937 the results appeared in French in the proceedings of the *International Population Congress*.

### From the Survey to Demographic Analysis

In Poland the results were first released in 1932 in the journal of the Statistical Office in a voluminous paper of about a hundred pages with a programmatic title:

“Research on Reproduction in Poland.”<sup>32</sup> The paper began with an introduction to demographical terminology with the aim of stressing what were considered the basic concepts of demography, whilst at the same time outlining the purpose of demography that the institute intended to achieve. This also involved emphasizing the distinction between the notions of natality, fertility, and reproduction,<sup>33</sup> the age dimension of the events, the importance of recording data on individuals’ past lives, and so on. The article gave the results for each survey and started with the population of Volhynia, which was considered as representative of an agricultural population with a high fertility pattern. This level was stated as one “without limitation,” which in the postwar period would be qualified as one of “natural fertility,” which captured the attention of the demographers. The quality of the data collected encouraged the institute to work with this experimental case. In spite of the small sample size, the results were displayed in numerous cross-sectional tables. The cultural and social homogeneity of the community enabled the characterization of the whole population by its early age of marriage, which was considered to have a positive effect on fertility at all ages. The distribution of births according to the age of the mother and her age at marriage made it possible to study the marital fertility over generations. The results were stressed as the most innovative by the author, in spite of the very small figures (550 births for 100 women), because they were also a way of proving the conformity of the Polish research to the analysis of fertility promoted at an international level. A fertility table was also used by the author to explain the results given, with the various ways to read the figures in the table: the columns from top to bottom show how fertility is falling with the age of the mother; the rows from right to left show how fertility is higher the more recent the marriage; and the diagonals show how fertility varies by age, both at birth and marriage. This reading grasped the attention of the author, who asserted that the level of fertility depends less on the age of the woman than the duration of the marriage. In spite of the fluctuations explained by the very small sample size, the author highlighted trends calling for further research on larger samples with the application of mathematical statistics.

The surveys in the housing cooperatives gave rise to the same tables and calculations but this time by social groups. The respondents’ occupations were divided into five categories—skilled and unskilled workers, officials, office-workers, and merchants. The large number of detailed tables (more than eighty) is striking, while the numbers of births were crossed with several variables in addition to age, social groups, level of education, religion, birth place, etc. The numbers were often small, and empty squares frequent, as though the author were willing to anticipate a further survey on a larger population and had already prepared the tables for the results. Here again the results seem to be released above all to attest to the skill of the demographers in this field.

As the survey was primarily motivated by the recent decline of the Polish natality, the article gave evidence against this by comparing the fertility rates

in three periods. It concluded that the decline occurred mainly after the war but that “This fall is unequally distributed between the various groups.”<sup>34</sup> A part is also devoted to the fertility of Poland in an international comparative frame, but the statistics used here were not detailed fertility rates, but the usual standardized natality rates, that allow comparison between the level of natality and age structure.

### The Polish Survey’s Reception Abroad

From 1934, the institute released articles in foreign demographic reviews. The articles were of a smaller size than in the Polish review and displayed only the main results, more cautiously preceded by a long methodological introduction. It was a common feature of statistical papers to state the rules for the production of the figures as a condition of their validity, and here this section was intended to link the Polish survey to the experiences in other countries: “The method adopted was identical with that followed in other countries for similar investigations.”<sup>35</sup> For the international and specialized readership the article targeted the tenuous conclusions drawn from the small samples, which also had to be mitigated. It described therefore in detail how the institute had selected the sub-populations, and it stressed the assumption of their homogeneity: “It was ascertained that by examining such homogeneous groups, even when the material secured would be based on a very limited number of observations (one hundred, or even fewer, families), it was possible to formulate conclusions that it would have been impossible to justify even on the basis of a much larger number of observations on any heterogeneous groups.”<sup>36</sup> The statement here again attested to a shared demographic knowledge, since all the statisticians in this period were facing the problem of statistical representation of results given by samples, and the censuses could not satisfy the need for precise information.<sup>37</sup>

The first articles were published in *Population*, the IUSIPS review,<sup>38</sup> with the results displayed in four tables. In contrast to the tables of the Polish review, they immediately gave the global results on fertility rates by age group for the same five social categories. The local origins of the sub-populations (villages of Volhynia, housing cooperatives of Warsaw, etc.) had been removed to make way for their social status. The rates showed high differences, which the author explained with social categories: “the fertility rate for unskilled manual workers is lower than for agriculturists, still lower for skilled manual workers, and lowest for office workers.”<sup>39</sup> He asserted the differences in a wider pattern reducing the Polish specificity: “these proportional relations are for that matter not peculiar to Poland alone.”<sup>40</sup> Comparisons with foreign countries were done through standardized rates of fertility, but here the level of each social category was related to the case of a particular country or place displaying the same level in a

time of its demographic evolution, like for instance the Scandinavian countries and German states in 1870–80, or France in 1925–27, or even the city of Leipzig in 1924–26.<sup>41</sup> The diversity of the Polish rates therefore took place in this time and spatial frame of demographic change. In order to report on the decline in fertility in Poland during the preceding years, and lacking reliable figures for the oldest generations, the author again took the standardized rates at different periods between 1900 and 1930. The rates computed only for two categories—skilled workers and officials—and enabled him to measure the change: “The drop in fertility among the manual workers can be confidently termed catastrophic . . . The decreased fertility of the office workers is also considerable.”<sup>42</sup> The figures at least gave evidence of the fertility decline, and above all its spread to the middle social groups.

The demographic claim of the institute was not seen as being limited to this empirical proof. For its leader, Szulc, the study of differential fertility by age of the mother and marital duration remained the royal way of demographic analysis and thus shaped the theoretical contribution that he wanted to make. “Perhaps the most interesting results secured when investigating differential fertility are those yielded by simultaneous considerations of the age of the women and the number of years they have been married.”<sup>43</sup> Here again the lack of reliable figures for all the social categories led him to calculate age fertility rates by duration of marriage for only two groups, the agricultural population and the physicians. He highlights the same pattern of variation: “The values of the fertility rates are virtually unrelated to the age of the women, but almost solely vary with the duration of married life.” He stressed that this variation also occurred in the different social groups: “the most striking fact is that the phenomena observed appear with equal force in the case of the rural population, with its high fertility rate, and in that of the physicians, where the rate is very low.”<sup>44</sup> The author went from the description of empirical observations to a relation between fertility and marriage. While always cautious with the limited validity of the figures, he sketched the condition of their possibility:

An investigation cannot be considered as concluded with this comparison: the material must also be more abundant and the methods of analysis applied must be more precise, whilst above all, the methods of mathematical statistics must be utilized. If, however we succeed in generalizing our observations then the whole method of research on marital fertility will have to be other than what has been used until now.<sup>45</sup>

Three years later, in 1937, the International Population Congress in Paris gave the Polish demographers another occasion to present the results of their research. Although it was the same demographic community, three of their papers discussed the topic of fertility again. The first one, “The Influence of the

Age of Women at Marriage on Fertility and Natality,” by S. Szulc,<sup>46</sup> supported his theoretical claims. He shifted from using empirical data to reasoning based on hypotheses about the calendar and the intensity of fertility in a fictive population to demonstrate how variations in fertility depend on both variables. This way of modeling to demonstrate the validity of empirical variations, though lacking mathematical formalism, was in fact shared by the demography community in general, and in particular by those present at this conference, including Lotka.<sup>47</sup> After giving evidence for the influence of marriage age on the level of fertility, Szulc closed his paper with concrete suggestions for how to improve data collection to study this issue in practice. Linking empirical study, modeling, and registering was once again a strong and shared basis for developing demography as a science.<sup>48</sup>

In his second paper, “Differential Fertility in Poland,”<sup>49</sup> Szulc went back to the survey. His concern was very similar to his article in *Population*, yet the difference could be understood as a further adaptation by the Polish demographers to appeal to their international audience. It is notable through the ever cautious consideration regarding the results: “The samples of the survey cannot in any way be viewed as representative of the whole population of Poland, or even as representative of this or that main subset of the population; they could only be considered as examples of the trends in these groups.”<sup>50</sup> The term “sample” was followed with the warning of its non-representativeness. The same reserve could explain why the author discussed only the standardized natality rates. But at the same time this global measure gave him the opportunity to assess their differential levels for a wider range of social cases: the five main occupational categories were divided into twenty-eight sub-categories named “samples.” For each of them, values of natality rate were computed. These sub-categories consisted of the various small cases of the survey. For instance, the category of workers was now divided into “skilled workers in Łódź,” “workers in the rural districts,” or “working class families recorded in a relief program and taking advantage from its aids.”<sup>51</sup> As he had renounced any claim on the representative value of the results, Szulc could at the same time give up the condition of homogeneity of the main categories and lead his investigation on a less generalized level to take advantage of the diversity of the cases surveyed. Moreover, he extended the calculation of the standardized rates on three periods to evince the fall in natality among workers and officials, the groups he had targeted in his assumption regarding its spread.

### Measuring Reproduction in the Footsteps of Kuczynski and Lotka

In the mid-1930s, while the institute gained prominence due to the results of the fertility survey, it received an additional financial grant from a governmental

agency to carry out another important project: a publication of demographic data and population indicators for the whole of Poland covering the period from 1895 to 1935. The recent achievement of the second population census and the improvement of the civil register enabled the institute to consider calculating the reproduction index on a nation-wide scale with great confidence. The Polish demographers were already familiar with the algebraic and mathematical formalisms of Kuczynski and Lotka<sup>52</sup> as has been attested in previous articles, but also by the mathematical training and publications of two members of the institute, Samuel Fogelson and Jerzy Neyman.<sup>53</sup> They were consequently eager to have the opportunity to apply them to the Polish population for the first time. The results were edited by the Statistical Office in 1936 in a voluminous publication.<sup>54</sup> Similar to a yearbook of vital statistics, the book consisted of 120 tables presenting statistical time series back to the nineteenth century, and demographic rates for recent dates, including graphics and maps. The book also left spaces for comments, analysis of the demographic change or presentation of technical points like a substantial chapter devoted to the long defective register system in Poland.<sup>55</sup> By means of this book the institute linked the publication of statistical series with the improvement of statistical recording and the calculation of indicators. In this way it tried to make explicit once again how the three stages made up the demographic knowledge that it claimed as its own.

The work performed was innovative in many respects but in particular in the chapter “The Polish Demographical Potential: Views of the Future,”<sup>56</sup> was a crucial issue, as it investigated following Kuczynski’s formalisms and Lotka’s concept of stable population. Both had given mathematical expression to population change: Lotka, using equations that linked the various demographical indicators measuring change and state of a population (birth rate, death rate, rate of increase, age distribution) came to the synthesis known as the “population stable,” which is a kind of “limiting type” brought about by constant conditions of mortality and natality. In this formulation the values of the indicators are supposed to express not the values observed in the concrete population, but those resulting from constant conditions of mortality and fertility; in other words, formulated like functions or laws governing population change through the influence of any external factors. Therefore it called the rate of increase in this stable condition the “true” rate, “true” because it was not affected by age structure. Kuczynski focused on the reproduction of a population measured by means of a new indicator: the net reproduction rate, that is the number of daughters from a generation of women. He considered it the best rate because it measures the replacement that natality and fertility rates miss.

In his chapter Szulc mixed ambitious claims with reserve. By adopting the model of a stable population, he paradoxically broke with the perspectives of the methods of its components because it relied on the assumptions of evolution being taken for granted. He mentioned the ambitious recent demographic



prospects made by the German Statistical Office based on this method and dealing not only with the German population but also with other European populations including Poland. Szulc's text was punctuated with warnings against an interpretation in terms of perspective, and stressed that they were only developed to characterize given levels of mortality and fertility:

The measures obtained by this method cannot be considered as prospects, as they give precise characteristics with important implications for fertility and mortality, and allow us from the present conditions to assess how they result in the stable population, determining the demographic potential. It is possible to follow through which change in the demographic potential would lead to this or that change in the mortality or the fertility chosen.<sup>57</sup>

The first part of the chapter was devoted to international comparisons that typically provided the legitimate frame for introducing the new methods and at the same time assuring the professional skills of the institute. The tables displayed the new indices, the net reproduction rate and the true rate of increase, given for several countries in 1900 and 1930, with a map displaying the reproduction rates in Europe in 1933. The data came mainly from Kuczynski's works, who turned out to be a reference demographer. But the Polish institute had also completed and updated some series that led Szulc to emphasize: "it is interesting to note that the calculations made by the GUS give results similar to those of Kuczynski."<sup>58</sup> The second part of the chapter deals with the Polish population, described by means of the same indicators at different dates (1896/97, 1927/28, 1932, and 1934), in order to cover the whole period of demographic change. The calculations were made by the institute, which provided more detailed information about the methods, and in particular the necessity of assuming life tables and age-fertility rates to be constant to find out the value of the true rate of increase. In the mid-1930s the institute had more reliable statistical series, but not for all years and regions. There were still persisting errors in the recording of mortality, mainly for infantile deaths. Moreover, recent data were still lacking. To overcome these problems, Szulc substituted the missing table with another table considered as more reliable. For instance, for the mortality in 1932 and 1934, he selected the table of 1927/28 of the Posenia-Pomerania province, which related to a lower level of mortality that he considered as representative of the present Polish level. For 1900 he assessed the fertility rates of Poland from the rates available in that date only in Galicia, assuming that the natality in the different part of Poland was homogenous enough. To assess the level of mortality he chose the life table of Germany in 1871/80 whose mortality rates turned out to be close to the Polish one at that time. At each time the choice was based on assuming similarities. In this way Szulc introduced Polish readers to a new mode of reasoning, and the calculations were also displayed for demonstrative scope.

The values of the indicators led him to consider the natural increase (the difference between natality and mortality) in Poland in 1900 as exceptionally high, with a rate of stable population reaching 16.5 percent. Yet his aim was to characterize the increase by comparing this rate with the observed rate. Thirty years later, in 1927/28, this rate was still high, at 15.1 percent, because, he argued, the age distribution still played in favor of a high natality. But if one considers the true rate that reached 8.6 percent in 1927/28, then 3.6 percent in 1934, the decline was clear. For Szulc this “significant fall of the true rates” corresponded with a net reproduction rate reaching 1.11 at that date. It was quite a reasonable level of replacement, far from the fear of the explosive growth of the Polish population, and Szulc could oppose the grim opinion of the economists in Lwów with scientific arguments. He thus proved his mastery of demography by his reading of the various measures of population increase, successfully juggling real, true, and estimated values, whilst introducing a reasoning for modeling the evolutions. In the last part of his chapter, he focused precisely on this reasoning as he displayed new results of calculations made with an inverse hypothesis on mortality, by computing the rate in 1900 and taking the life table of Poland in 1927/28 and of Germany in 1924. He warned not to read the results as real, as “such a rate of mortality cannot exist in the circumstances to which it was applied,” and explained that “it is only to show how significant the influence of mortality is on the increase of the population.”<sup>59</sup> It is interesting to note that Szulc adopted another abstract mode of reasoning conveying new notions and meanings, that of statistical experience and simulation. This was to characterize the scientific thinking of demography modeling relations between variables, which were already widespread in theoretical works—those of Lotka in particular—but were now extending to the empirical fields. The necessity of articulating this, as Lotka stressed, would found demographic analysis as a distinct field.<sup>60</sup> The Warsaw institute had, if not explicitly demonstrated the issue of the “real” increase of the Polish population, at least figured out how it had to be scientifically stated to be recognized.

## Conclusion

In the beginning of the 1930s there was no reason to believe that a small group of statisticians and sociologists would succeed in founding a new way of conceptualizing demography in Poland on the assumption of birth decline. The issue of population, so far mainly treated by economists and geographers with a strong academic establishment extending abroad, was addressed as a problem of overpopulation. The convergence of two events—the creation of the International Union of Population, which structured its activities with the involvement of national committees, and the founding of a Statistical Office in Warsaw assigned

to the tedious duties of conducting statistical surveys and registering—connected by the interest of a few individuals, created the opportunity for their ambitious initiative. Founding and delimiting demography around reproduction and its dynamics, they succeeded in carrying out the first fertility survey in Poland with various innovative means of overcoming the huge number of difficulties in producing concrete results. Their knowledge of foreign demographic literature enabled them to shape the local issue of fertility according to the most recent international patterns, even though they gave less of a measure of fertility decline than a statistical demonstration of it. While in many countries, including in Eastern Europe, the issue of eugenics was associated with demography, here it was left aside. It is likely that on one side the links between these demographers and social scientists of the famous institute of social economics (Instytut Gospodarstwa Społecznego), and the consequences of the economic crisis in terms of the limits on the number of children in families led them to scheme differential fertility as a strictly social issue.<sup>61</sup>

The activities of the Polish demographical institute brings a further case study congruent with the recent research on the development of science and expertise in Eastern Europe as an interactive process between the local, national, and international levels. But the case also shows the limits of this transnational interaction, which gave rise neither to a network nor a community bearing an international project on population; it was not even a regional concern. In the world of the 1930s, “international” more often meant the coexistence of competitive nation-states than a real international cooperation around an ideal of science as a placeless and shared universal knowledge.<sup>62</sup> It is also congruent with another feature mentioned in this new historiography: the contribution of the state in the promotion of science and expertise. In contrast to the group of economists in Kraków and Lwów, whose activities were developed in academic or university institutions, the demographic institute in Warsaw was a state institution. The founders’ claim that they were separating science and politics was more a statement of experts working for the state than the ideal of IUSIPS to conduct objective science. But the IUSIPS project was also to collect national experiences as many case studies, by contrast with the American foundations, which were willing to develop a real regional cooperation in Eastern Europe, in particular with the creation of a Danubian institute. While Kuczynski was the leading reference for the Polish demographers, there was no attempt to share a closer scientific partnership with him. Engaged in the building of their new states, these Polish experts first used the international space for technical and symbolic resources as for them, these strengthened their national concern and political struggle. This nationalization of demography should not lead us to minimize the importance of this knowledge transfer and its impulsion for scientific innovation as evidenced by the outstanding activism of the Polish institute in surveying, calculating, and formalism, as well as social concerns.

## Notes

1. E. Romer, *Ilu nas jest?* (Kraków, 1917); in German translation: *Die Gesamtzahl der Polen* (Vienna, 1917).
2. D. Jędrzejczyk, "Geopolitical Essence of Central Europe in Writings of Eugeniusz Romer," *Miscellanea Geographica* 11 (2004): 199–206.
3. See M. Turda and P. Weindling, eds., "Blood and Homeland": *Eugenics and Racial Nationalism in Central and Southeast Europe: 1900–1940* (Budapest, 2007); C. Promitzer, S. Troumpeta and M. Turda eds., *Health, Hygiene, and Eugenics in Southeastern Europe to 1945* (Budapest, 2010); M. Kohlrausch, K. Steffen and S. Wiederkehr, eds., *Expert Cultures in Central Eastern Europe: The Internationalization of Knowledge and the Transformation of Nation States since World War I* (Osnabrück, 2010).
4. M. Bucur, "Remapping the Historiography of Modernization and State-Building in Southeastern Europe through Health, Hygiene and Eugenics," in *Health, Hygiene, and Eugenics in Southeastern Europe to 1945*, C. Promitzer, S. Troumpeta and M. Turda eds. (Budapest, 2010), 429–445.
5. Conférence Permanente des Hautes Etudes Internationales, *Le problème des changements pacifiques dans les relations internationales* (1938). On the importance of the economical and spatial approaches in the international policy of population issues, and in particular in this conference, see A. Bashford, "Population, Geopolitics, and International Organizations in the Mid Twentieth Century," *Journal of World History* 19, no. 3 (2008): 327–348.
6. See in particular, "Séances de la commission pour l'étude des questions démographiques," in *Le problème des changements pacifiques dans les relations internationales*, Conférence Permanente des Hautes Etudes Internationales ed. (1938), 368–424.
7. He was also a former minister and one of the main experts in the negotiations for the Treaty of Riga.
8. S. Grabski, "Le problème de la population en Pologne et les intérêts des États surpeuplés," in *Commission polonaise de coordination des Hautes Etudes Internationales, Conférence permanente des Hautes Etudes Internationales* (Lwów, 1937), 1–2.
9. The foundations were involved in this conference as far as overpopulation was considered to be an issue of international policies, but they did not cooperate with the state regarding how to deal with the issue. They did however follow and discuss the organization in the sense that the main organizers all had close relationships with the foundations, and often engaged in other programs with the foundations.
10. Bashford, "Population," 330.
11. W.S. Thompson, "Population," *American Journal of Sociology* 34, no. 6 (1929): 975.
12. S. Szulc, "Polski Instytut Badania Zagadnień Ludnościowych," *Kwartalnik Statystyczny* IX (1932), 61–63, 221–222.
13. By comparison with other Central European countries: Czechoslovakia in 1934, Hungary in 1937.
14. S. Szulc, "Polski Instytut," 61.
15. E. Ramsden, "Carving up Population Science: Eugenics, Demography and the Controversy over the 'Biological Law' of Population Growth," *Social Studies of Science* 32, no. 5–6 (2002): 857–899.
16. On the closing-up of demography, see S. Greenlagh, "The Social Construction of Population Science: An Intellectual, Institutional, and Political History of Twentieth-Century Demography," *Comparative Studies in Society and History* 38, no. 1 (1996): 26–66.
17. S. Szulc, "Polski Instytut," 62.
18. *Ibid.*
19. S. Szreter, "The Idea of Demographic Transition and the Study of Fertility Change: A Critical Intellectual History," *Population and Development Review* 19, no. 4 (1993): 659–701.

20. W.S. Thompson, “Population,” *American Journal of Sociology* 34, no. 6 (1929): 959–975.
21. S. Szulc, “The Polish Institute for the Scientific Investigation of Population Problems. Research on Differential Fertility in Poland,” *Population* 1, no. 3 (1934): 26.
22. S. Szulc, “Polski Instytut,” 62.
23. For instance, see E. Sydenstricker and F. Notestein, “Differential Fertility According to Social Class,” *Journal of the American Statistical Association* 25, no. 169 (1930): 9–32.
24. E. Ramsden, *Carving up Population Science*, 878. Also P. Weindling, “Modernising Eugenics: The Role of Foundations in International Population Studies,” in *American Foundations in Europe. Grant-Giving Policies, Cultural Diplomacy and Trans-Atlantic Relations, 1920–1980*, G. Gemelli and R. MacLeod eds. (Brussels, 2003), 167–180.
25. “Instytucje i Zjazdy naukowe. Polski Instytut Badania Zagadnień Ludnościowych,” *Kwartalnik Statystyczny* (1933): 221.
26. The theory of stratified sampling would be developed a few years later, in particular by a Polish statistician, Jerzy Neyman, who was also a member of the Polish demographic institute before emigrating to the United States in the 1930s. On the history of sampling theory: A. Desrosières, *The Politics of Large Numbers: A History of Statistical Reasoning* (Cambridge, 1998).
27. Sydenstricker and Notestein, “Differential Fertility,” 10–18.
28. “Badania nad rozrodznością w Polsce,” *Kwartalnik Statystyczny* (1933), part “Ewangelickie kolonie rolnicze na Wołyniu. Kolonie Janowka i Jamki powiatu łuckiego na Wołyniu,” 53.
29. Built under the name “Tanie Mieszkania im. Hipolit i Ludwiki mał. Wawelbergow” in 1898 by the Polish banker H. Wawelberg, a great philanthropist who funded social and educative programs for poor families, with the aim of fostering the coexistence of Jewish and Christian families.
30. “W. Domy Fundacji Tanich Mieszkan im. Hipolita i Ludwiki mał. Wawelbergow,” see *Badania nad rozrodznością w Polsce*, *Kwartalnik Statystyczny* (1933), 71.
31. Warszawa Spółdzielna Mieszkaniowa na Zoliborzu, *ibid.*, 98.
32. “Badania nad rozrodznością w Polsce. Z polskiego Instytutu Badania Zagadnień Ludnościowych,” *Kwartalnik Statystyczny* (1933): 53–141.
33. The Polish term *Rozrodzność* was often used, maybe because the alternative term *Płodność* meant both “fertility” and “fecundity.”
34. *Badania nad rozrodznością w Polsce. Z polskiego Instytutu Badania Zagadnień Ludnościowych*, *Kwartalnik Statystyczny* (1933), 111.
35. *Ibid.*, 16.
36. S. Szulc, “The Polish Institute for the Scientific Investigation of Population Problems: Research on Differential Fertility in Poland” *Population* 1, no. 3 (1934): 18.
37. A. Desrosières, “Three Studies on the History of Sampling Surveys: Norway, Russia-USSR, United States,” *Science in Context* 15, no. 3 (2002): 377–383.
38. Szulc, “The Polish Institute,” 14–35.
39. *Ibid.*, 28.
40. *Ibid.*
41. *Ibid.*, 30.
42. *Ibid.*, 31.
43. *Ibid.*, 32.
44. *Ibid.*, 33–34.
45. *Ibid.*, 33.
46. S. Szulc, “L’influence de l’âge des femmes au moment de la conclusion du mariage sur la fertilité et la natalité,” in *Démographie statistique: études spéciales: nuptialité, natalité, mortalité*, Congrès international de la population ed. (Paris, 1938), 133–147.

47. J. Veron, "Alfred J. Lotka and the Mathematics of Population," *Electronic Journal for History of Probability and Statistics* 4, no. 1 (2008).
48. U. Ferdinand, "Die Kritik Robert René Kuczynskis an der englischen statistischen Registrierungspraxis," in *Zukunftswissen. Prognosen in Wirtschaft, Politik und Gesellschaft seit 1900*, H. Hartmann and J. Vogel eds. (Frankfurt, 2010), 153–174.
49. S. Szulc, "Fertilité différentielle en Pologne d'après l'enquête de l'Institut polonais d'étude scientifique des problèmes de population," in *Démographie statistique: études spéciales: nuptialité, natalité, mortalité*, Congrès international de la population (Paris, 1938), 148–161.
50. *Ibid.*, 151.
51. *Ibid.*, 153–158.
52. The term "formalism" means here the mathematical expression given by Lotka and Kuczynski to the population growth.
53. In particular in the article of S. Fogelson, "Matematyczna teoria ludności," *Kwartalnik Statystyczny* (1932).
54. *Zagadnienia demograficzne Polski*, Statystyka Polski, Seria C, zeszyt 41 (Warszawa, 1936).
55. S. Szulc, "Dokładność rejestracji urodzeń i zgonów," in *Zagadnienia demograficzne Polski*, Statystyka Polski, Seria C, zeszyt 41 (Warszawa, 1936), 133–158.
56. S. Szulc, "Potencjał demograficzny Polski. Widoki na przyszłość," in *Zagadnienia demograficzne Polski*, Statystyka Polski, Seria C, zeszyt 41 (Warszawa, 1936), 112–126.
57. *Ibid.*, 113.
58. *Ibid.*, 119.
59. *Ibid.*, 125.
60. Veron, "Alfred J. Lotka," 6.
61. In this respect it is worth mentioning that in the population conference, the papers by demographers from Hungary and Czechoslovakia dealt with the impact of the economic crisis on the decline of the natality.
62. On the limits on the international cooperation in the 1930s, see the Introduction in *Shifting Boundaries of Public Health: Europe in the Twentieth Century*, S. Gross Solomon, L. Murard and P. Zylberman eds. (Rochester, 2008), 3–20.

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