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# 1 PERSPECTIVES ON POPULATION GEOGRAPHY, DEMOGRAPHICS, AND FORECASTING

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## 1.1 Introduction

The social relevance of applied demography is widely acknowledged beyond the circles of demographers and population geographers. The famous works by Malthus have now been discussed for ages in circles far wider than those of the applied demography. His gloomy predictions captured the imagination of generations of policy makers and of the public at large. Over time, many policies were devised and implemented --and in turn abandoned-- to ward off the immanent dangers of overpopulation to the human existence. Even after two centuries, his inferences and those of his followers can still arouse heated debates, and lay the basis for policies particularly with regard to the development of the Third World.

There are many demographic processes that attract public attention, also today. We have only to think of the present excessive reactions throughout Europe to international migration. The often heard prediction that up to twenty million people from Eastern Europe might come westward during the next few years, can still make headlines. The violent expressions of xenophobia directed at the massive numbers of foreign migrants and refugees, ethnic strife in the former Yugoslavia, the huddled masses of illegal migrants to the United States from the Caribbean and Asia arrested at sea, mass starvation in Africa, and many disasters affecting large numbers of people, lead to heated political debates. These events also pose challenges to population geographers and demographers. How to research these events, how to explain what is happening, what proposals to formulate to policy makers?

Meanwhile, neo-Malthusian ideas of the late nineteenth century are echoed in the changing age composition of Europe's national states at the turn of the millennium. The sheer endless drop in fertility rates over the twentieth century in most European countries has brought the number of births below replacement level years ago. This would have occurred much earlier if life-expectancy had not risen at the same time. The sharp rise in the absolute numbers and the relative share of the elderly in the population raises public anxiety about present and future provision of housing, welfare and health care. To what extent is the 'pension panic' raised by the UK government a serious attempt to safeguard the level of income transfers towards older persons in the future, or is it overstated to drive the present younger generation into private pension schemes? Will inter-generational solidarity, one of the major cornerstones of Western welfare societies, collapse under the burden of the changing demographic structure? Is cohort replacement leading to a rapid development of the mature market in Europe, as it is often reported from the United States, and will there be a widening of the income gap between the young-old and the old-old? With an average life-expectancy of more than seventy for males and nearly eighty for females and a increasing age at which women become mothers, the demographic metabolism of Western societies has decreased. However, if we look at the elderly population, cohort replacement is very

rapid, with exit rates of seven (females) to ten (males) percent per year. The characteristics of the future elderly are therefore much harder to predict than their numbers. Demographers and population geographers face the challenge to supplement the predictions of the numbers of people per age group with qualitative statements of the changing needs and potentials which will develop alongside the purely demographic trends. To this end, traditional demographic and spatial analysis will have to be extended to incorporate patterns of behaviour on the housing and labour market over the life course.

We should acknowledge that we have only just begun to face these challenges and that progress in research is piecemeal almost by definition. The present state of the art certainly does not provide definite answers to the questions raised above. Nevertheless, we experience an increased tendency among our fellow-researchers to place their research in a wider societal perspective. Issues such as the nature and dynamics of migration of specific population groups, the effects of demographic development for the population structure of smaller regions, and the interactions between population change and the demand for labour, the supply of housing, and the provision of goods, services and facilities, are important questions in the context of the restructuring of Western societies and the policy issues related to them. The link with policy permeates much of the work, whereby policy is considered as an explanatory factor as well as a field of application. It was in this vein that the Fourth Meeting of British and Dutch population geographers of which this book presents a selection from the proceedings, convened in Soesterberg in the Spring of 1991. The papers presented at the meeting were organized under the following themes: General dimensions of demographic change and methodological issues; regional patterns of demographic change; the implications of demographic change for the housing market and the labour market; and small-area forecasting.

## *1.2 Core themes in population geography and applied demographics*

Population geography has a long standing tradition in empirical analysis. Measuring, describing and interpreting the dynamics in the spatial distribution of the population have been the dominant activities for a long time. The previous meetings of the British and Dutch researchers in this field (White & Van der Knaap 1985, Stillwell & Scholten 1989) gave witness of the emphasis that traditionally has been placed on the components of change in structure of the population. Internal migration and the concomitant regional redistribution of the population and of population groups pervaded the discussions. In terms of the modelling effort at hand, model migration schedules and Markov type models of 'pure' demographic processes prevailed. The second meeting also contained some contributions that widened the issue to include household processes and the interaction of the residential mobility process with the housing market. International migration as such took the back-seat to the analysis of the regional distribution of ethnic minorities and the issue of racism in the policy responses to the cyclical demand for labour migrants. In this contribution you will find that the emphasis has shifted. A clear tendency away from description and towards

understanding can be discerned. A 'rethinking' of traditional concepts and a further reflection on the meaning of concepts which for so long have been taken for granted, stimulated the discussions, the results of which you will find in the following chapters. An opening up of the demographic system to incorporate the relevant context, influencing population movement, has been established. The classical demographic and geographic 'toolbox' of multi-state and spatial interaction models has been extended to this end. Following the high tide and shifting currents in international migration, this phenomenon has received new attention, leading not only to an improved insight, but also to the posing of more relevant research question. Again it should be stated that we still have a long way to go, but it seems we have definitely chosen the right path.

### *1.3 Concepts and meaning*

Demographic concepts are not always uni-dimensional, and interpretations of the literature can be misconceived. But this does not necessarily lead to erroneous knowledge; reflection --even if based on misinterpretations-- can lead to new insights. The first two chapters of this book focus on such epistemological questions. Robert Woods deals with the explanation of the demographic transition, by looking into historical discussions in Chapter 2. He shows how the circumstances of Malthus' work have been misinterpreted, looks into the selective reading of Ibsen's plays by Shaw, and finally, he discusses the origin of Notestein's celebrated demographic transition model. In each of the examples, Woods shows the flaws in the later interpretations. Nevertheless, the subsequent work has shown that these mistakes provided strands of new models and explanations, now widely used in population geography and applied demography.

In Chapter 3, Henk de Gans discusses the various dimensions of the concept of migration. His starting point is metaphysical, which leads him to reflect on the intrinsic meaning of concepts. He shows by way of example, how various meanings of migration are linked to different identities of people, and can lead to widely disparate research questions and hypotheses. In his own elaboration, the focus is on persons as nodes in social networks, which generates the outline of a number of relevant research questions. Obviously, each definition has its own set of methodological drawbacks, but also leads to the (re)discovery of the complexity of migration. This is a significant outcome, since the truth can be obscured by the prevalent tendency to reduce social complexity to simple interpretations of meanings and relationships. In the context of this volume of papers, the example is well chosen. It can easily be applied to several of the other chapters, which illuminates the much wider implications of his thesis. It is challenging to read the subsequent chapters with his sobering remarks in mind, and to ponder the implications of his message for the studies in question.

### *1.4 Studies of migration*

Van der Knaap and Odé describe the changing pattern of foreign migration between

and to the member states of the European Community in chapter 4. They take the more traditional interpretation of migration, namely the physical movement of people. Nevertheless, they paint a fascinating picture of a highly dynamic system. The differences between countries and especially the variations over the past two decades are most intriguing. The interpretations connect the patterns to broad social and political developments, and the policy implications --not in the least those concerning the violent backlash in Germany and other countries which became so apparent after they completed their study-- are mind-boggling. Their article provides a good case for the social importance of applied demographic research.

Paul White provides a useful elaboration of the theme of migration discussed in the preceding chapter. He deals with the changing nature of the migration flows -- from simple origin-to-destination flows, to circular migration patterns-- and with the characteristics of the migrants and their motivations. In contrast to the migrants of the 1960s and 1970s, the major flows no longer consist of migrant workers. As a result of the changing economics, they have been largely replaced by highly educated professionals, moving within internal networks; the other dominant group is formed by political (and economic) refugees. By adding these topics, his contribution to this book makes the story of European migration more complex. His narrative also contains elements on the identities of migrants and their motivations that can be connected to the conceptual issues raised in the essay by De Gans.

A potentially important aspect of migration studies comes into focus in chapter 6 of this volume. Over the years, Tony Warnes has acquired a reputation in the field of international seasonal and retirement migration. Here he relates one of his studies. After a discussion of this type of migration studies in North America, he concentrates on the process and implications of the seasonal migration of northern Europeans to Spain. The American studies provide the inspiration for the scope of the study, which deals with the migrants themselves, as well as with the effects of their movements on the host country. The magnitude of the seasonal migration to Spain is now substantial, and the expectation is that it will grow even larger in the near future as new cohorts of people that have acquired personal knowledge of Spain will attain retirement age. This leads to some speculation concerning future problems for the migrants themselves and for the facilities and services needed in their new places of residence. Whether or not the future will unfold as Warnes hypothesizes must remain to be seen, but Warnes is clearly successful in describing the potential importance of this particular field of research.

International migration is also the topic of the preliminary report by Paul Compton on a survey carried out in Northern Ireland. Migration has long formed a volatile issue for the Irish, with many far-reaching implications for Ireland. Compton shows how it has attained some additional dimensions where it concerns the population moving away from the North. He discusses briefly how today's migration from the Seven Counties differs from the traditional outmigration from Ireland. It is clear from the composition of the migrants that the general changes in international migration also apply to this movement. No longer does it concern a redundant population of agricultural and unskilled workers. Nowadays, the participation in the advanced economy is a major motive. People move away to obtain advanced education and professional opportunities. It is rather remarkable that not even the

Troubles provide a strong push factor. *Inter alia*, Compton gives a pertinent illustration of De Gans' thesis of the differences in meaning for different population segments. A move to the Irish Republic is felt as a move abroad for Northern Ireland's protestant population, while a move to England is not considered as such. The reverse is true for the Catholics. This difference in perception most certainly has far-reaching implications for the international migration patterns from Northern Ireland.

In a final article on migration, Clara Mulder studies the different motives among age groups for their spatial mobility. Her data from the Dutch Housing Needs Survey allows her to paint a very detailed picture of the underlying pattern of differences in migration through the life course. The article also demonstrates the strong links of migration with the functioning of the housing market and the labour market. It thereby places the migration process squarely in a policy context.

### 1.5 *Demographic aspects of labour market and housing market research*

The labour and housing market are the classical explanatory frameworks for the redistribution of the population between and within regions respectively. Demographic and geographic research of housing and labour market processes has focused on demand. Inter-regional migration has always been understood in term of the uneven distribution of labour opportunities. Spatial interaction models (including the extension into the Lowry model) have always treated (basic) labour demand as the exogenous variable, generating migration that ameliorates disequilibria. Housing market analysis traditionally focused on patterns of residential mobility and housing 'choice', treating overt behaviour as revealed preferences of housing demand. Although the contributions in this volume on housing and labour markets are of a very diverse nature, their common trait is that attention has completely shifted towards the supply side.

The structure and the dynamics of the labour market obviously reflect many different forces. On the one hand, changes in the economy exert a powerful influence, largely determining the demand side of the market. On the other hand, the supply side is largely ruled by socio-cultural and demographic developments. In chapter 9, Van der Laan concentrates on the supply side, by looking in detail at the effects of changes in participation rates and demographic developments. The study shows the importance of an appropriate disaggregation. In the Netherlands, the gross participation rate has not altered substantially, but this composite statistic hides some dramatic shifts in the different components. The participation rates for men continue to drop, those of women have increased rapidly. Likewise, there are contradictory developments among different age cohorts. In addition, the basic population structure has changed. Consequently, the composition of the labour force has altered substantially within a very short period. In the final part of the study the complexity is increased even further as Van der Laan disaggregates the developments by geographical area within the Randstad, the most urbanized part of the Netherlands. The outcomes of the study support the assertion that the understanding of labour market developments is better

served by the complex, simultaneous analysis of the disparate forces than by a straightforward analysis of a single explanatory variable. The study can also be used to illuminate why so often, labour market policies fail to achieve their purpose.

An example of how demographic processes affect supply on the housing market is elaborated by Filius. She concentrates on the effects of the departure from the housing market of the elderly who move into institutions. The approach is radically different from traditional analysis of spatial mobility at higher ages that concentrates on the processes and intentions that underlie behaviour. Instead she highlights the unintended outcomes of the moves into institutions, by analysing the nature of the vacancies that are created and which in turn trigger vacancy chains. This phenomenon, which is rapidly gaining importance due to the ageing of the population is rarely considered, and has played a limited role in the 'filtering debates' that have dominated policy making with respect to new construction over the last decades.

### *1.6 Micro-level forecasting*

The link between demographic and geographical analysis and policy-making is hardly ever direct. To use the outcomes of these analyses in a policy context, simulation and projection models are needed to provide estimates of future population numbers. It is therefore not surprising that the contributors of small-area population and household projections start by describing the context of decision-making in which their models play a supporting role. The requirement of generating internally consistent estimates of the redistribution of the population (in households) over small-areas within a wider region, poses some methodological problems. The classical framework of multi-regional demography with its elegant mathematical specification is too 'barren' to deal with the behavioural complexity of the system involved. Population movement between small areas can change very rapidly as a result of shifts in housing production and allocation. Even if reliable data on population turnover and on spatial mobility were available (which they are not) at this spatial level, they would bear little relevance to expected flows of population in the projection period. Clearly an opening up of the system is needed to incorporate changes in housing supply.

In the Swansea model, described by Rees, the approach is to combine tools from both disciplines. Analytical demography is used to set up the basic multi-regional cohort-component model, generating occurrence-exposure rates with respect to fertility and mortality in a period-cohort specification. The essential deviation from classical multi-regional demography occurs with respect to migration. Migration from the wards within Swansea to the rest of the UK and vice versa is estimated using rates in the way common to multi-regional demography. Migration within and between wards however, is treated differently. A distinction is made between three types of migration, labelled: turnover migration (moves between existing dwellings), new housing migration and demolition migration. The first step is to estimate the generation of migration using historical data, applying migration rates to the population at risk. From this total pool of migrants, the number of people moving into new housing was subtracted, to enable a separate estimate on the basis of construction plans. As demolitions did not occur in the historical period (but will occur within the projection



interval), the pool of migrants limited is to turnover migration. Next, migration flows are estimated using spatial interaction model. The total pool of turnover migrant is distributed using a origin-constrained model on the basis of 'attractiveness' factors of, and the distance to the destinations, as is the cases with the estimated pool of demolition migrants. To generate new housing migration, a destination-constrained model is employed, the production of migrants being dependent on the propensity to move from a ward and on the distance of the original place of residence to the site of new construction.

The problem definition in the contribution of Hooimeijer and Heida is similar to the Swansea model. To what extent does the development of residential sites lead to a redistribution of the population in the future? Their approach, however, is very different. Even though they state that the design of the model is firmly rooted in multi-state demography, they have moved away from the closed mathematical formulation. Many solutions in the model are algorithmic rather than analytical. However, the loss of mathematical elegance is compensated by an increase in flexibility. The behavioural content of the model could therefore be extended to encompass the interaction between household and housing market behaviour. Many demographic events (migration, leaving the parental home, separation) are dependent on the availability of (suitable) housing opportunities and other events (cohabitation, moves into institutions, mortality, and migration) result in the release of a vacancy. By integrating an event driven household model with a housing market search model, these interactions can be simulated. As a result their treatment of migration is far more detailed than in the approach followed by Rees. They distinguish between four types of migration: structural migration (labour migration derived from historical data using distance deterrence functions), household migration (dependent on household events), residential migration (housing adjustment moves) and forced migration (as a result of demolition). The housing market search model generates estimates of the actual moves on the basis of the multiplication of three rates: the search intensity, the arrival rate of housing opportunities and the acceptance rate. The search intensity varies with the type of (intended) migration, and between groups of potential residential migrants, depending on the specific combinations of the demographic and socio-economic characteristics of the household with their present housing situation. The arrival rate is determined not only by new construction, but also by vacancy creation due to household events and by residential moves within the area. The acceptance rate is defined as the group specific vector of housing preferences with respect to a bundle of housing characteristics (including location), describing the rate at which various households will accept an opportunity that is being offered on the market. The result is a model that is sensitive to both household and housing market dynamics in generating flows of migrants between small areas and that can be used in an *ex ante* evaluation of different scenarios with respect to new construction and housing allocation (by imposing constraints on the arrival rates).

### 1.7 Towards a synthesis

This volumes shows that applied demography and population geography are widening



their scope, in two ways. The first is with respect to the geographical scale. Regional population policy is largely abandoned in most countries in Europe. The traditional focus on regional redistribution of the population seems to have vanished alongside this policy change. Instead focus has shifted both to a larger and a smaller geographical scale. On the one hand, we find models of intra-regional spatial mobility leading to small-area population projections. On the other hand, we find descriptions and analyses of migration to and between the countries of Europe. The second refers to the substantive issues that are being raised. Instead of concentrating on traditional components of population change, researchers seem to become more aware of the necessity to decompose population dynamics in terms of the underlying behavioural processes, building conceptual rather than accounting frameworks to widen our understanding and elucidating motives for migration rather than numbers of migrants.

This widening of scope creates new problems and new opportunities. The problems mostly concern the lack of (high quality) data, but White argues that the researchers should not lament this, but rather contrive ways to make do with what is available. This approach goes against the grain of most demographers, having been able to rely on huge investments by governments in their data collection. Censuses and population registers have always provided them with the vital statistics they needed for their models. The high quality of these data and the emphasis on providing 'population' estimates have even prevented many demographers to pose research questions that can not be answered on the basis of these data.

Quality is often defined as reliability of the registration. The relatively poor performance of the registers with respect to international migration, observing 'official' immigrants only and missing many emigrants, has persuaded researchers to refrain from the subject altogether. Less concern seems to exist with respect to the definition of internal migrations as crossing an administrative boundary or, being closer to the truth, as showing up in the registers. Problems of crypto and pseudo migration and more important of selectivity bias that are inherent to this definition, have always lingered in the back of the minds of those engaged in the analyses of internal migration, but have rarely led to a refutation of these (internally consistent) data.

Two strategies can be successfully employed to follow White's recommendation to make do with what is available. The first is to relax the assumption that research in demography and population geography should be based on population counts almost by definition. Research on samples might provide valuable insights as Mulder and Compton show, because of the richness in behavioural detail, even if the sampling framework does not provide a straightforward estimation of numbers for the total population. The second is to combine various data sources, literally filling in the blanks by means of iterative proportional fitting as applied by Rees and by Hooimeijer and Heida. The generation of synthetic data, making the most of all data that is available, bridges the gap between the analytical opportunities provided by micro-data and the reliability of the population registers, combining the best of both.

Removing inhibitions, both factual and psychological, with respect to data use, might be a necessary condition to meet the challenges offered by the widening scope of the research. Opening up the population system to include the relevant context,

does not only provide us with a more profound insight into the causal processes underlying population dynamics, but also creates the opportunity to evaluate policy interventions in this system, both with regard to the intended goals of the intervention, and to the unintended outcomes. As this volume shows, we have been more successful in this approach at the level of the regional housing and labour markets, than at the level of population movement between countries and even continents. The difference can not be explained by the larger conceptual complexity of the international migration system, but might be found in the limited familiarity of researchers with the subject and in the lack of rich and/or reliable data. We have made a lot of progress over the last few years, but there is far more that remains to be done.

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