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Multigenerational Processes in Demography

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Contents

Abstract

Contemporary social science research has often focused on nuclear family relationships, and has largely neglected kinship and family outside the nuclear household. In this doctoral thesis I explore demographic issues from a multigenerational perspective, using Swedish register data and mathematical modeling. In different chapters I examine intergenerational transmission of fertility—the relationship between the number of siblings and other kin, and the fertility of an individual. The thesis demonstrates the possibilities for empirical research on family and kinship based on Swedish register data. Unique linkage opportunities across three and four generations are applied to previously unexplored research questions. The studies in the thesis demonstrate the importance of kin outside the household, such as grandparents, aunts/uncles, and cousins, for fertility and family dynamics.

Study 1: Research has shown that there is an association between the number of siblings of an individual and his or her own fertility. The first study shows that the fertility of grandparents and aunts/uncles has an additional influence on a person's fertility. This association remains after taking account of the fertility of an individual's parents. The study examines the childbearing of young Swedes born in the 1970s. Swedish registers are used to link these cohorts with their grandparents, aunts/uncles, and cousins.

Study 2: The relationship between childbearing of parents and that of their children is well documented. Study 2 examines if this can be explained by the intergenerational association between children's and parent's educational attainment and occupational class. The article demonstrates that socioeconomic characteristics are largely unimportant in explaining this association and that similarity in values and preferences of childbearing and ideal family size are more likely explanations for intergenerational transmission of fertility.

Study 3: A process in which children inherit the fertility behavior of their parents will over multiple generations result in an increase in fertility levels and population size. Individuals with a large number of children will give birth to many children

who themselves also will have high fertility. We examine these issues through mathematical modeling, and show that this phenomenon significantly increases future fertility. Only if there will be a continuous increase in new lifestyles which are related to low fertility, population size will be maintained at present low levels.

Study 4: The last study examines geographical distance to family members in Sweden. Swedish register data is used to follow men and women born in 1970 until they are age 37 in 2007. I examine the evolution of distance to parents, siblings, and grandparents, as the individuals grow older. The biggest changes take place in the early 20s when the cohort leaves the parental home. After age 25 there are only minor changes in distances to family members. Most Swedes live close to their kin over their life course.

Sammanfattning

Samhällsvetenskaplig forskning har i hög grad varit fokuserad på kärnfamiljer, och i lägre grad undersökt släktskap utanför hushållet. Den här avhandlingen undersöker demografiska frågor utifrån ett flergenerationsperspektiv med hjälp av svenska registerdata och matematisk modellering. I de olika studierna undersöker jag den sociala överföringen av barnafödande mellan fler generationer—sambanden mellan antalet syskon och andra familjemedlemmar, och en persons barnafödande. Avhandlingen demonstrerar hur svenska registerdata möjliggör empirisk forskning om familj och släktskap. De unika kopplingsmöjligheterna över tre till fyra generationer appliceras på tidigare outforskade forskningsfrågor. Avhandlingen visar vikten av släktskap utanför kärnfamiljen, så som far/mor-föräldrar samt kusiner, för familjedemografiska processer.

Artikel 1: Tidigare forskning har visat att det finns ett samband mellan antal syskon och det antal barn en individ själv får. Den första artikeln visar att det även finns en påverkan från barnafödandet hos far/mor-föräldrar samt föräldrars syskon. Sambandet finns kvar även när man tagit hänsyn till det antal barn ens föräldrar har. Studien undersöker barnafödande hos unga personer i Sverige födda under 70-talet. Svenska register används för att koppla ihop dem med deras föräldrar, far/mor-föräldrar, mostrar/fastrar/farbröder/morbröder, samt kusiner.

Artikel 2: Sambandet mellan barnafödande hos föräldrar och deras barn är väldokumenterat. Artikel 2 undersöker om likheter mellan barn och föräldrar i form av utbildningsnivå och social klass kan förklara varför det finns ett samband mellan barnafödande mellan flera generationer. Studien visar att socioekonomiska variabler inte är viktiga för att förklara detta samband, utan att det är mer sannolikt att likheter i värderingar kring barnafödande och önskad familjestorlek kan förklara sambandet i barnafödande mellan olika generationer.

Artikel 3: Ett samband i barnafödande mellan barn och deras föräldrar kan över tid öka barnafödandet och befolkningsstorleken i ett samhälle. Barn till personer som har många barn kommer själva få många barn. Vi undersöker detta med hjälp av

matematiska modeller, och visar att detta fenomen kommer att leda till ett betydligt högre barnafödande i framtiden. Om det i framtiden kontinuerligt introduceras nya kulturella livsstilar som är relaterade till lågt barnafödande är det dock möjligt att befolkningen på lång sikt inte ökar.

Artikel 4: Den sista studien undersöker avståndet till olika familjemedlemmar i Sverige. Svenska registerdata används för att följa män och kvinnor födda 1970 fram till att de är 37 år 2007. Jag undersöker hur avståndet till föräldrar, syskon, och far/mor-föräldrar förändras när individerna blir äldre. De största förändringarna sker i tidig tjugoårsålder när individerna lämnar föräldrahemmet. Efter 25-årsåldern sker enbart små förändringar i avstånd till andra familjemedlemmar. Överlag så bor de flesta svenskar nära sina släktingar under hela livet.

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List of studies

1. Kolk, Martin. (2014). Multigenerational Transmission of Family Size in Contemporary Sweden. *Population Studies*, *68*(1), 111-129.

2. Kolk, Martin. (2014). Understanding Transmission of Fertility across Multiple Generations – Socialization or Socioeconomics? *Research in Social Stratification and Mobility*, *35*, 89-103.

3. Kolk, Martin., Cownden, Daniel., & Enquist, Magnus. (2014). Correlations in Fertility across Generations: Can Low Fertility Persist? *Proceedings of the Royal Society B: Biological Sciences, 281*(1779), 20132561.

4. Kolk, Martin. (2014). A Life Course Analysis of Geographical Distance to Siblings, Parents and Grandparents in Sweden. *Stockholm Research Reports in Demography, 2014:13*, 1-19.

Introduction

This doctoral thesis consists of four substantive chapters in article format and a general introduction to those chapters. The introduction will present research on kinship and demography, and complement the four individual chapters with a broader perspective, rather than further expanding on the issues in the individual chapters. A common theme uniting the four articles is that they adopt a multigenerational view of demographic processes. Kinship and multigenerational processes have been largely understudied in demography and the social sciences. It is my hope that this dissertation will fill a small part of this gap. The introduction will frame my studies within the larger context of kinship and multigenerational approaches in demography. Finally, I will give some suggestions as to how future research could better address demographic issues using a multigenerational and kinship framework.

All four studies examine the consequences of demographic processes over multiple generations. Three of the studies (1, 2, and 4) make use of data linkages possible through Nordic register data, to connect adults to their parents and grandparents. The first two studies examine intergenerational transmission of fertility in contemporary Sweden. The studies extend previous research by applying a multigenerational perspective, studying the role of the completed fertility of grandparents (the number of aunts/uncles) and of aunts/uncles (the number of cousins), in a research field that previously focused exclusively on the effect of parental childbearing (the number of siblings) on individual fertility outcomes. The first study (Kolk 2014c) examines the extent and variations (such as differences by sex of kin, type of kin, and maternal/paternal kin) within these multigenerational continuities. The second study (Kolk 2014d) uses the same multigenerational design as the first study, and expands that study by investigating the underlying pathways that explain observed multigenerational correlations. Most previous research on intergenerational transmission of fertility has been primarily descriptive, and thus the processes underlying these correlations are not clearly understood. The second study expands our knowledge of these processes by applying an event history design, and by using detailed information on socioeconomic characteristics.

The third study (Kolk et al. 2014) is not based on empirical data, but rather theoretically examines the consequences of intergenerational fertility correlation at the

population level using mathematical models. A process in which children inherit the fertility behavior of their parents will over multiple generations result in an increase in fertility levels and population size. The article examines the conditions under which fertility correlations will increase fertility, and explores different implications for future fertility. The first, second, and third studies represent an empirical and theoretical contribution to the understanding of intergenerational correlations in fertility. All three studies go beyond the previous literature on intergenerational transmission of fertility. Novel contributions include: a multigenerational perspective on intergenerational transmission of fertility, research on pathways to explain observed correlations, and the population-level outcomes of fertility correlations.

The fourth study (Kolk 2014b) uses Swedish register data to connect young adults to their parents and grandparents, similar to the register data used in the first and second studies. The study examines geographical distance to family members over the life course from age 10 to age 37. Most previous research on geographical proximity has used cross-sectional data from a single time point to examine the relationship between age and intergenerational proximity. Previous research has also typically focused on only two generations, ignoring the role of grandparents. This study uses a longitudinal design, and all four studies extend the 2-generation focus of traditional intergenerational demography by looking at outcomes over multiple generations. In all four studies, I can show substantive impact of multigenerational processes on the outcomes under study.

In this introduction, I will start with an overview of research on kinship in the social sciences. I will begin with a summary of earlier anthropological and sociological perspectives on kinship, which will be followed by a section on the relevance of kinship in contemporary societies. I will then discuss different theoretical aspects of contemporary research on kinship, followed by a review of literature on Swedish and northern European kinship. Next, I will address different data considerations for research in multigenerational demography, first generally, and then specifically related to Swedish administrative registers. Following the data section, I will review empirical and theoretical research on intergenerational transmission of fertility, given its central importance in three out of the four studies. To conclude, I will discuss directions for future research on multigenerational demography and kinship.

Research on kinship in the social sciences

This section will give a broad overview of the history of kinship research in the social sciences. The research will focus on developments and research in northwestern Europe, and thus will be particularly relevant for populations like Sweden, northern Europe, the United Kingdom, and middle class Americans. While the family and kinship system in northwestern Europe has always represented a small share of the world's population, it has been very influential in shaping social science, and mainstream sociological theory, given that it is the kinship model that dominates the American and British middle class – the most common background of Anglo-Saxon academics. While this model may have had negative intellectual consequences on academic understanding of family and kinship systems in a broader sense, the typical northern European pattern is expressed in a very traditional form in Sweden. The introduction will largely ignore kinship in contemporary developing countries, as well as developed countries with kinship and family patterns that differ widely from the northwest European model, such as those in East Asia.

A general definition of kinship will include many aspects of human behavior. Much like the concept of a family, it resists simple definitions or delimitations. Throughout the introduction both the concept of family and kinship will inevitably be stretched in many directions and used rather loosely, an unavoidable consequence of a broad multidisciplinary perspective. I will primarily use the word kinship throughout this text to refer to consanguine and affinal relationship outside the nuclear family, largely sidestepping the very extensive discussion on what kinship and family really "is" (e.g. Reiss 1965; Schneider 1984; Collier et al. 1982). A broad definition of kinship includes the majority of research in contemporary family sociology, and social demography. The topics of union formation, childrearing, and household formation are at the very core of these disciplines.

In this introduction, kinship will typically refer to family relationships formed outside the neolocal household formation cycle typical of northwestern European populations; growing up in nuclear family, leaving the parental home, finding a partner, and eventually forming a new nuclear family. The family relationships formed within this household formation cycle include parents, siblings, spouses, and children. These processes, studied in mainstream family sociology, are very impor-

tant to our understanding of contemporary families. However, this introduction will go beyond that narrow focus on families and instead focus on family members/kin outside of the immediate / nuclear family. A consequence of my approach is that the review of the theoretical development of kinship and demography, as well as contemporary perspectives on kinship presented here, will largely ignore much mainstream family sociology. I will begin with a very brief introduction to the study of kinship in the 20th century. I will then review contemporary perspectives on kinship.

Kinship research in anthropology

The study of kinship is intricately bound to the history of anthropology. Much early research on kinship would today be characterized as anthropological. However, in the late 19th and early 20th century contemporary delimitations between current disciplines in the social sciences did not exist. Kinship and marriage played an important role in 19th century theories of human pre-history. Lewis Morgan developed theories on how institutions of kinship developed in pre-historical societies (Morgan 1997[1870]) and speculated as to the relationship between kinship and the evolution of human social structure. Similar thoughts were expressed by other 19th century thinkers like Friedrich Engels (1978[1884]). Kinship continued to be a central concern as anthropology developed in the late 19th and early 20th century (e.g. Malinowski 1982[1932]; Rivers 1968[1914]).

Two different takes on kinship systems dominated anthropology in the 1950s and 1960s. In the UK, anthropologists such as Evans-Pritchard and Radcliff-Brown who were interested in African societies viewed kinship systems through the lens of descent groups, in which kinship was primarily understood as the study of lineages and clans. These views were associated with structural-functionalist views of how societies worked. An alternative view was the "alliance" perspective of kinship associated with Levi-Strauss (1969[1949]). Instead of focusing on descent groups and parent-child relationships, anthropologists associated with the "alliance" perspective believed that kinship was best understood as ties among individuals and groups forged through marriage.

Kinship remained one of the most important elements of anthropology through the 1970s, but has since come under increased scrutiny. Researchers, most impor-

tantly Daniel Schneider, have criticized the idea that kinship was a privileged and "fundamental" aspect of human societies (Schneider 1968; Schneider 1984). Following Schneider's critique, kinship has had a less prominent role in anthropology. Kinship which was one of the major traditional fields of anthropology declined very quickly in the 1970s and 1980s. Nevertheless, since the 1990s there has been some revived interest in kinship, although most contemporary research sidesteps the issue of the relationship between kinship and social structure. Instead, research has focused on questions such as micro anthropology, the deinstitutionalization of kinship, the impact of advances in reproductive technology and other technological changes on kinship, and lesbian/gay kinship. Some of these perspectives will be discussed later in the section on contemporary perspectives on kinship.

Kinship research in sociology

Interest in kinship among sociologists in the 20th century (excluding research on the nuclear family) has been far more limited than interest among anthropologists. Studies of kinship in sociology are comparatively rare, and the effects of kinship have been largely neglected in sociological research (Johnson 2000). Several influential sociologists have described kinship as comparatively unimportant in "modern" societies (Habermas 1985; Giddens 1993; Parsons and Bales 1955), and one can easily get the impression that many sociologists consider kinship, outside of the nuclear family, as a relic of the past and largely unimportant to our understanding of contemporary societies. Researchers in the 1950s and 1960s (e.g. Goode 1963; Parsons and Bales 1955) described the contemporary family as "isolated" from other domains in society, and saw each nuclear household as an independent and largely interdependent entity. This view remains influential in both social sciences and popular discourse.

In family sociology, research on kin outside the nuclear family is typically concerned with their role in instrumental support exchange, or in the strength of affective ties (e.g. Rossi and Rossi 1990). Family sociologists and demographers have focused on the role of grandparents as potential providers of support for childrearing (e.g. Pebley and Rudkin 1999; Coall and Hartwig 2010). Research in sociology and gerontology has also focused on relationships between adult children and their aging

parents (e.g. Tomassini et al. 2004; Brubaker 1990; Chudnovskaya and Kolk 2014; Michielin and Mulder 2007; Dykstra et al. 2006). Typically this research still views kinship through a lens of nuclear families, as the focus is either relationships within an individual's family of origin, or within his or her family of destination. Multigenerational relationships such as grandparents are viewed from the perspective of an intermediary generation's position in two linked nuclear families. In developed societies where extended family households are more common, such as southern Europe and east Asia, mainstream family sociology has focused more on multigenerational households (e.g. Reher 1998; Martin 1990).

A common theme in research on intergenerational continuities in parent-child relationships over the life course is gender. While stressing the bilateral aspects of western kinship, researchers have consistently shown a female bias in kin relationships (Rossi and Rossi 1990; Young and Willmott 1957; Di Leonardo 1987; Schneider and Cottrell 1975; Schneider and Smith 1973). The mother-daughter relationship has been described as the strongest tie in the western kinship system (Rossi and Rossi 1990; Hagestad 1986). This tendency is especially pronounced in research on African-Americans in the US, given that more biological fathers in African-American households do not share the residence of their children. African-American communities are a rare instance in which sociological researchers have not neglected the role of extended family. A considerable literature has documented the existence of a matrifocal kinship system with matrilineal tendencies (Sarkisian and Gerstel 2004; Ruggles 1994; Johnson 2000).

Importance of kinship in contemporary societies

Kin have traditionally played an important role in the provision of elder- and child-care, emotional support and financial resources during times of scarcity. Social science research consistently demonstrates the importance of kin in social support networks (e.g. Albertini et al. 2007; Heady and Kohli 2010; Rossi and Rossi 1990; Bengtson 2001). Kin outside the household are important predictors of a large number of socioeconomic and demographic outcomes (e.g. Coall and Hartwig 2010; Jæger 2012; Kaptijn et al. 2010; Torssander 2013). Thus, there is strong evidence

that family relationships outside an individual's current household are of continued importance in developed societies.

Given the importance of kinship structure in the provision of family care, kinship networks may also influence the overall demand for formal and informal care. Even in countries with an extensive welfare state such as Sweden, informal elderly care is more extensive than formal government provided care (Szebehely 2005). Thus, kinship structure plays an important role both for the number of potential care givers and care receivers. Considering the personal and financial cost for caregivers and taxpayers, this research may have important implications for governmental policy. Other examples which would suggest a more nuanced view of the continuing relevance of kinship are the near universality of multigenerational relationships, continuing prevalence of family businesses, and political and economic dynasties (which continue to control a very large share of businesses in Sweden and elsewhere), and demographic characteristics associated with greater generational overlap (Bengtson 2001).

Kinship patterns have important implications for contemporary societies. Demographic changes over the past century have brought about changes to the structure of kinship that will continue into the future. Rapid increases in life expectancy over the 20th century have extended the likelihood that people will interact with kin across multiple generations, though this effect has been moderated by the postponement of childbearing. Similarly, decreases in fertility mean that people have less collateral (horizontal) kin such as siblings, cousins, and aunts/uncles. This has been described as a beanpole kinship structure (e.g. Bengtson et al. 1990; Uhlenberg 1996). Changes in kinship affect the amount of support and resources available to an individual, as well as patterns of interaction with kin. The growing vertical depth of families resulting from these changes have been hypothesized to strengthen kinship bonds across generations (Bengtson 2001), though this remains more of an assertion than an observed phenomenon. Some researchers have speculated that contemporary societies are in an historically unique situation, in which the demographic availability of grandparent-grandchildren relationships is higher than at any other point in history, and likely higher than in the future, due to changes in the timing of fertility and age at mortality (Wachter 1997). Demographic and social changes in kinship will influence contemporary patterns in how kin support family members

(Uhlenberg 2005). Study 3 shows one way in which multigenerational processes may have important demographic implications for the future.

Contemporary perspectives on kinship

In this section, I will discuss some contemporary perspectives on kinship in the social sciences. The section will be organized into several subsections, each dealing with a specific issue of relevance to theories behind changes in kinship.

From many domains to few domains

According to social science theory and popular sentiment, kinship is today of limited importance relative to past societies. Various researchers, in sociology in particular, have described how modernization and industrialization have reduced the importance of kinship structure in political and economic activities. While formerly kin and kinship networks were central to the organization of economic and political life, their importance in most domains has decreased. Kinship is viewed as more important in traditional than in modern societies (Fortes 1969). Just a few examples of researchers who have described kinship this way are: Habermas (1985), Giddens (1993), Parsons (1955), Engels (1978[1884]), and Goode (1963). General societal discourse associates kinship with tradition, continuity, history, community, and pre-industrial societies, and downplays its role in contemporary societies (cf. Strathern 1992a). In the transition from traditional to modern society, kinship gradually loses importance in economic, political, law and other domains in society, resulting in kinship networks being reduced to exclusively nuclear family units.

Some researchers have argued that individualized and neolocal nuclear families are uniquely adapted for modern commercial and industrial societies (Macfarlane 1978; Parsons and Bales 1955; Goode 1963). Weber has described kinship as an obstacle to rational economic organization (Collins 1986). Similarly kinship is seen as incompatible with bureaucracy (Fox 1967[1984]). Goody (1983) similarly described the catholic church as being fundamentally opposed to kinship, due partly to the fact that religion and kinship both compete for authority in overlapping domains. These explanations are linked to political and economic changes over time: kinship

is seen as the foundation of political and economic systems in societies in earlier stages of development, that will gradually have to give way to more modern and rational social organization. The obvious implications of such theories are that kinship has become an increasingly trivial aspect of contemporary societies. Related arguments focus on how kinship has retreated from various domains of the "public sphere", where kinship is an intrinsic part of economic and political organization in traditional societies, into the "private sphere" of the nuclear household (Fortes 1969). A strong separation between family and public life is a common feature of the modern western kinship system.

Broad perspectives which contrast kinship with modernization form the foundation of mainstream theories of kinship, and this remains an important lens through which researchers continue to view kinship. In demography, where researchers embrace modernization from the 1950s and 1960s more readily than other social sciences (i.e. the "cultural" or "post-modern" turn of research has been weaker), these ideas are even stronger. In general, despite the wide variety of criticisms towards the unilineal modernist explanations of the last century, most researchers and non-researchers are still deeply influenced by theories suggesting that kinship is incompatible with modernization. Counterevidence, such as the long history of nuclear households in north-western Europe (Laslett 1977), or the rise of extend family households during the 19th century industrial revolution (Ruggles 1987), seems to have had only minor influence on social science theories of kinship and historic change.

Individualization of kinship

Another common theme in discussions of kinship is a potential increase in individualization of kinship over time. Some researchers have argued that kinship today is increasingly a matter of individual preferences, rather than a given structure to which a person belongs (Braithwaite et al. 2010; Johnson 2000). This perspective on the individualization of kinship structure has been described as a long-term characteristic of English kinship (Strathern 1992a). Evidence of this can be found in the titles associated with different kin. For example, instead of calling your mother's sister your "aunt", you call her by her first name. Similarly, researchers have focused on

how kinship today is a matter of individual choice (e.g. Schneider and Cottrell 1975; Kramer 2011). Individuals, themselves, often decide which distant relatives to consider kin, and can also exclude more proximate kin whom they do not want to include in their kinship structure (Schneider 1968). This theory is in keeping with theories in social demography on the rise of individualization in family behavior in the 20th century, often called "the second demographic transition" (Van de Kaa 1987). In a Swedish context, this can also be linked with ideas of Scandinavian state individualism (Trägårdh 1997). Recent research on the role of kinship in same sex couples (Johnson 2000) can be seen as further evidence of the individualization of kinship networks. Researchers studying same sex kinship have stressed the continuity of kinship relationships with parents and siblings, but many same sex couples have created stable family and kinship networks from individuals they have chosen over their lives (Patterson 2000; Weston 1997).

Diversity and complexity

Variety, complexity, and diversity of kinship are important themes in demographic research. Depending on the perspective, some researchers say that the contemporary kinship pattern is more complex than ever before, while others argue the opposite. If one accepts the theory that kinship networks in contemporary societies influence fewer social domains than in traditional societies, this can be seen as an argument for reduced complexity of kinship. The resemblance between bilateral northwest European kinship and biogenetic models of kinship has also been interpreted as proof of the "fundamental" nature of the kinship system in northwest Europe (cf. the critique from Schneider 1968). Similarly, reductions in mortality and fertility have reduced the overall number of kin (though not necessarily the number of living kin at any given age, cf. Murphy 2011). This could be seen as an argument for a reduction of kin complexity, particularly as the number of children that experience the death of one or both of their parents has declined. Until the 20th century, northern European households frequently included members without biological family ties, such as life-cycle servants, lodgers, or maids (Hajnal 1982; Laslett 1977). The improvement of living standards throughout the 20th century, which can be seen as the escape from "nuclear hardship" (Laslett 1988), could thus be seen as resulting in less

complexity in households and kinship structures. Put simply, people in the developed world today can increasingly afford to choose their living and kin arrangements, which is a plausible reason for the de-standardization of family behavior throughout the final decades of the 20th century.

Another theory that is also well-represented in contemporary family sociology research holds that kinship patterns today are more complex than they were in the past. Typically this theory is related to a decline in union stability since the 1960s. There has been an increase in the number of children growing up with stepsiblings in most western countries (Spanier and Furstenberg 1987; Thomson et al. 2014). This can be interpreted as evidence of an increase in family complexity, though it also represents a return to historical patterns of step-parenthood (Phillips 1997). It has been argued that the increased complexity resulting from union dissolution and step-parenthood is higher than when stepfamilies originate from the death of one of the parents, given that children in blended families will often be in contact with their biological parents (Thomson et al. 2014). Increased life expectancy has resulted in greater overlap across generations, and offers more opportunities for extended family to interact (Bengtson 2001). This results in more complex families structures. The individualization of kinship can also be seen as evidence of more variety, and thus complexity, in kinship today. Finally, theorists argue that novel technological breakthroughs in assisted reproduction result in higher kin complexity. This topic will be discussed in more detail further on.

Postmodern perspectives

In the late 1960s, Daniel Schneider described the American kinship system as a set of symbols (Schneider 1968). He described how American (and European) ideas of kinship are built on a certain set of cultural symbols, most importantly the distinction between "blood" and "law" (or put in another way, consanguine and affine relations). He showed how the most important symbol of the western kinship system is the sexual union (between two individuals without blood relationships), and how a system of kin related by blood is constructed from that foundation. The book showed the connection between western natural sciences, particularly life sciences, and western cultural ideas of kinship as "biogenetic". The book also highlighted the

similarity between anthropologists' conceptualizations of kinship in other societies, and how it closely parallels the kinship system within their own native society. Schneider later developed his original stance, arguing that kinship was not a fundamentally useful concept in the social sciences, and that previous researchers were misguided (Schneider 1980; Schneider 1984). He argued that western social scientists had imposed their own cultural views as a fundamental basis for how societies are organized. Accordingly, there was nothing fundamental about kinship and families as a basis for the organization of human societies (Schneider 1984).

The notion that western kinship systems are built on blood and law has also been further questioned by scholars, as recent technological and societal changes can be interpreted as evidence of a weakened distinction between blood and law. The reduced importance of formalized legal agreements such as marriage, along with the rise in blended families has made the distinction between "blood" and "law" more complex (Cherlin 2004). Same sex couples also fit rather awkwardly into the American kinship system given by Schneider, though it is worth noting how recent advances in the recognition of same sex marriages can be seen as an integration of same sex partnerships into a broader inclusive kinship system (Seidman et al. 1999).

Nature and technology

Advances in biotechnology challenge traditional notions of kinship in recent research. In vitro-fertilization, surrogate motherhood, sperm donation, and cloning (of animals), have been argued to blur and complicate traditional notions of kinship (Strathern 1992b; Inhorn and Birenbaum-Carmeli 2008). Assisted reproductive technologies disturb the notion of reproduction (or connections through "blood") as a strictly "natural" phenomenon (Strathern 1992a). These technologies (along with same sex parenthood) challenge the notion that sexual union is the cornerstone of the western kinship system (Schneider 1968). Furthermore, the relationship between intercourse and childbearing has been further weakened by the introduction of modern contraceptives, and changing norms regarding sexuality.

On the other hand, modern science (e.g. advances in life sciences and genetics) has strengthened the biogenetic idea of kinship (Finkler 2001; Richards 1996). The underlying genetic relationships with ones genitors (as compared to the social par-

ents) become more important when science has the ability to determine who the genitors of a child are, and when that relationship can provide important medical insights (Richards 1996). Thus, contemporary developments in biotechnology may both challenge and strengthen the association between consanguinity, biogenetics, and kinship. In one sense, technology complicates the relationship between genetic inheritance, family formation, and sexual intercourse through sociodemographic changes and scientific advances. On the other hand, both professional and lay knowledge of life sciences are improving, and our worldview is increasingly colored by medicalization of more domains of life, and western natural science.

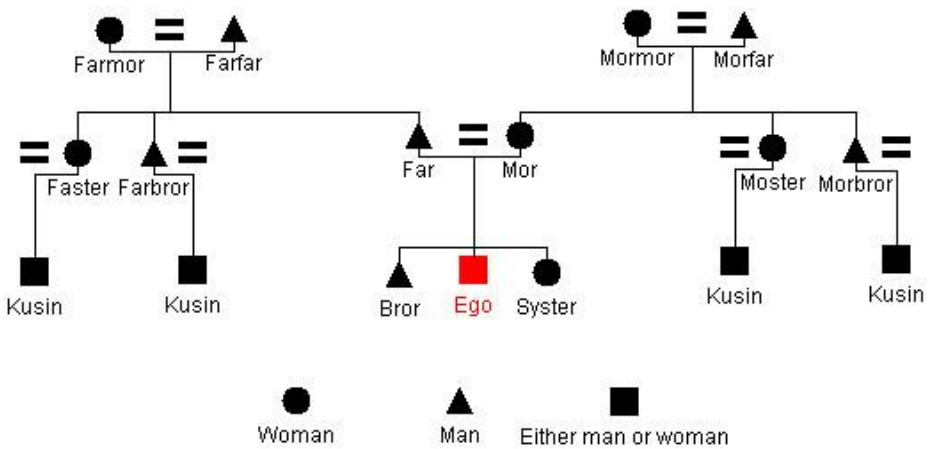
Normative approaches to kinship

Discussions of kinship are often associated with normative judgments. As previously discussed, kinship is often viewed as contrary to modernity, and thus the assumed marginalization of kinship is often seen as either positive or negative, depending on the person's attitude towards social changes that have occurred over the past century. Attitudes towards kinship may be characterized by a nostalgia for something valuable (though perhaps flawed) that has been lost (Laslett 1983; Strathern 1992a). Further, these characterizations of kinship are central to some major political issues of the 20th century (Popenoe 1993), where both sides accept that kinship is of diminished importance. Leaning on work by Laslett and Macfarlane which suggests a long history of individualism in western families, theorists like Ferdinand Mount (1982) have turned the argument around. These theories hold that families and kinship have been a source of opposition to government, the church, and other sources of power. The family has been a rare domain of life which external authorities have been unable to access. This theory is in keeping with previous ideas regarding the influence of the state/family/individual in different welfare regimes (Trägårdh 1997), as well as ideas of a conflict between Christianity and Germanic kinship models (Goody 1983).

Kinship and family in northern Europe and Sweden

Contemporary Swedish kinship patterns still share many characteristics with their Germanic roots (Murray 1983). Like Swedish kinship today, Germanic kinship was bilateral (acknowledging descent from both men and women) and neolocal (spouses form new households after marriage) (Boholm 1983). This is reflected in the kinship terminology used in Swedish which differs from most European countries (Mestheneos and Svensson-Dianellou 2004). For example Swedish distinguishes a *farfar*, literally father's father, or paternal grandfather from a *morfar*, mother's father or maternal grandfather (unlike, e.g. English). Similarly, Swedish distinguishes between paternal/maternal aunts and uncles. However, cousins are not distinguished by sex, or by the consanguine relationship with the individual. The Swedish system thus combines aspects of the Eskimo and Sudanese linguistic kin classification systems used in anthropology. Thus, it appears that at least in linguistic kin classification Swedes (and Scandinavians) place more emphasis on differentiating bilateral kin than other European societies (Mestheneos and Svensson-Dianellou 2004), though they do not employ the classification of cousins often used in societies with important lineage groups.

Figure 1: Swedish kinship terms.



Another example of the distinction between matilateral and patilateral kin can be seen in the terms *syssling* (2nd cousins in Swedish) and *brylling* (3rd cousins in Swe-

dish), originally referring to a general term for kin on the sister's respective brother's side (as can be seen from the etymology of the words). Kinship was recognized from ego-centric kindreds, incorporating both younger/older kin of sons/daughters and fathers/mothers, as well as kin related through marriage (Murray 1983), much like people recognize kinship in Sweden and the west today (this can be contrasted to systems in which a major part of the kinship structure is a descent group, such as a hereditary line among European nobility). These patterns are shared with many other North and West European societies, such as Germany, the Netherlands, the UK, the US, and other Scandinavian countries.

These kinship patterns are similar to western European marriage and family formation patterns (Hajnal 1982; Reher 2005), characterized by neolocal household formation, low co-residence with parents, late marriage and childbearing, and a large proportion men and women remaining unmarried and childless throughout their lives. Contrary to popular and academic notions of a past characterized by large, multigenerational households, these neolocal patterns of household formation are not a new phenomenon (Laslett 1977).

The western European kinship patterns can be contrasted to a Mediterranean kinship pattern (which has similarities to many societies in the near East) in which patrilineal relationships are more pronounced in kinship and household formation (e.g. Reher 1998; Le Roy Ladurie 1979; Goody 1990). Developed countries in East Asia (e.g. South Korea, Taiwan, and Japan) also have kinship systems which retain strong patrilineal, as well as patrilocal characteristics (e.g. Martin 1990).

In many respects, Swedish kinship and household formation represents an unusually "ideal" form of these neolocal and bilateral aspects of kinship that are often seen as representing typical Anglo-Saxon middle class kinship in the UK and the US (Schneider 1968; Schneider and Cottrell 1975; Strathern 1992a). Sweden still retains many features of a northern European kinship system compared to other western societies. For example; multigenerational households are very uncommon; and while leaving the parental home at an early age is commonplace, childbearing has traditionally taken place at later ages. Thus, Swedish kinship is of particular relevance as an exemplar of kinship and family systems that have been influential in academic social science definitions of family.

To understand the evolution of contemporary northern European kinship, the role of the Christian church is also of central importance. While kinship was an important institution in Germanic and Mediterranean Europe, the Christian church opposed the influence of kinship (Goody 1983). Over the course of centuries, the church successfully obtained control over marriage and inheritance (in which the Church had strong economic interests), and stressed the relative theological importance of conjugal bonds over extended kinship ties. This was true both for the Catholic and Protestant churches (the Swedish king declared Sweden a protestant state in the 1520s), but with a protestant state church the government and church's combined interest in limiting the role of kinship reinforced each other (Goody 1983). Over the centuries, the church was a strong force in the establishment of the contemporary European neolocal household system by weakening the role of extended kinship.

Contemporary Sweden kinship also has characteristics that are simultaneously distinct and very similar to trends in other northern European societies. Contemporary Sweden is often noted for its high degree of individualization in family demography (Trägårdh 1997; Popenoe 1987). Sweden has been described as a forerunner in family change (Oláh and Bernhardt 2008), with the rise of non-marital unions, later childbearing, increased divorce, and other "non-traditional" family formation patterns (Andersson and Kolk 2011). Together, these changes to traditional family formation have been referred to as, "the second demographic transition" (Van de Kaa 1987; Lesthaeghe 1995). According to a view of Sweden as forerunners in family formation pattern, trends will be visible in Sweden before similar societal changes in other countries, and may result in similar outcomes. Sweden is often described as a country characterized by a high degree of gender equality. Theorists have searched for the roots of high gender equality in the history of Sweden, but gender equality is often linked to the way the social democratic movement has shaped Swedish society.

According to welfare state typologies, Sweden is typically an archetype of the "social democratic" welfare state, where the government supports individual autonomy vis-a-vis a reliance on other family members (Esping-Andersen 1990). This has been described as an "alliance" of the state and the individual against the family, compared to an alliance of the state and the family against the individual (in Christian-democratic welfare state such as Germany), or an alliance of the family and the

individual against the government (in a liberal welfare state, such as the US) (Trägårdh 1997). The Scandinavian welfare state gives the individual substantive autonomy from the family by providing universal welfare on an individual basis, in cases of strained relations with family members. Thus, the welfare state empowers the individual in his or her interaction with other family members. The concept of state-individualism can explain how Sweden is among the most individualistic countries in the world (Berggren and Trägårdh 2006). Research on intergenerational relationships has found that intergenerational contact and transfers are more common in Sweden than in other European countries, but typically of lower magnitude (Albertini et al. 2007; Hank 2007). Thus, Swedish government policy is likely partly responsible for the contemporary Swedish kinship system.

Intergenerational correlations in fertility

Three of the articles in this dissertation focus on the intergenerational transmission of fertility, or the phenomenon whereby children replicate the fertility patterns of previous generations, and by which people that grow up in a family with many/few children tend to have many/few children themselves. Two of the studies extend previous research on fertility transmission from parents to children by looking at the influence of grandparents' fertility. In addition to looking at the association between an individual's number of siblings and their own fertility, these studies examine if an individual's fertility can be influenced by the fertility of their grandparents (measured by the number of aunts and uncles). I will give a brief overview of previous research on intergenerational fertility correlations. First, I will discuss early research and its connection to evolutionary biology. This will be followed by a discussion of contemporary sociological and family demographic approaches to intergenerational fertility transmission.

Fertility correlations, genetic evolution and cultural evolution

Intergenerational transmission of fertility has been studied for over a century in the social sciences. Many of the pioneers of contemporary statistical methods were interested in fertility correlations across generations from the perspective of genetic

inheritance and fitness. Karl Pearson, one of the founders of mathematical statistics, wrote an article in the late 19th century examining fertility correlations among humans and racehorses (Pearson et al. 1899). Similarly, Ronald Fisher, another major contributor to statistics and population genetics, examined fertility correlations among British peerage (Fisher 1930). Statistical regression analysis, including the concept of linear regression and correlation coefficients, were developed by statisticians such as Galton, Pearson, and Fisher, to study correlations in fertility between parents and offspring.

The interest of these important pioneers of statistics and evolutionary biology highlights the connections between fertility correlation, fitness and demographic trends like population growth. Fitness is most broadly defined as reproductive success (the intuitive link between fitness and reproductive success appears robust in modern populations, Zietsch et al. 2014). In other words, this can alternatively be seen as the population growth rate for a specific allele (a gene at a given position in the human genome), the rate for an individual with many alleles, or the average growth rate in a population or sub-population. The relationship between population genetics and demography can be observed in the Eulor-Lotka equation[1] where the variable "*r*" is both the definition of population growth and a common measure of fitness.

A new research field which uses models from population genetics, to study evolutionary processes of cultural traits has developed since the 1980s (Boyd and Richerson 1985; Cavalli-Sforza and Feldman 1981). This approach inspired study 3, which examines how intergenerational transmission of fertility affects fertility over multiple generations. Cultural evolutionary researchers are interested in how culture[2] (for example preferences for family size) is acquired from parents and other members of society. Interestingly, fertility (or preferences for family size) is not like other cultural ideas. If you transmit the "idea" of having more children to subsequent generations, this "idea" will also become more common (as the idea is to have more children) in the next generation. Thus, using a vocabulary from evolutionary biol-

[1] $1 = \int_0^t e^{-ra}\, l(a)b(a)da$, where l(a) is the survival function by age, b(a) is the fertility function by age, and r the growth rate.

[2] Culture is typically defined very broadly as any learned information which is transmitted from one individual to another.

ogy, intergenerational transmission of fertility can be viewed as a measure of "cultural fitness". The process by which a "culture of fertility" is learned by children from their parents (intergenerational transmission of fertility) shows the strong parallels between research on intergenerational fertility correlations, and cultural and genetic evolutionary models of humans.

Heritability and human fertility

In a controlled experiment where multiple genetically identical individuals can be separated into different environments (something which is not possible for humans, but possible when studying plants), one could estimate heritability in the given environment (the degree to which variation in a trait is due to variation in genetic factors) using correlations in reproductive success. The size of the correlation would show the degree of heritability of fertility. Thus, there is a very straightforward link between fertility correlations and genetic heritability of fertility in an experimental setting.

For humans, this link is much less straightforward as different sets of children and parents experience different environments. Additionally, for human populations all individuals differ from each other genetically (except monozygotic twins), and it is only possible to compute population level mean values of fitness and heritability for a trait such as fertility. The most common way to measure the heritability of specific characteristics in human populations is to apply a classical twin design. A twin design decomposes observed variance into unobserved genetic and environmental variance. Such designs specify how certain individuals differ in the amount of shared genetic variance and shared environmental variance (Visscher et al. 2008). Studies have tried to estimate the heritability of human fertility using data on monozygotic and dizygotic twins, and using statistical designs such as those described above. These studies have found considerable heritability of fertility (Kirk et al. 2001; Rodgers et al. 2001b). They are limited by potential issues including whether monozygotic twins share additional environmental variance compared to dizygotic twins, whether behavior of twins as a group can be generalized to the general population, and the role of gene×enviroment interactions, all of which may be problematic but probably not critical for the validity of these measures (Boomsma et al. 2002).

However there are larger, more fundamental questions related to choice of populations for these measures (Taylor 2008). Observed trait variation in general does not necessarily provide much insight into actual genetic and environmental factors that may influence the observance of a particular trait (Taylor 2010).

Measures of heritability generally apply only to the population under study (Visscher et al. 2008). For example, twin studies in Scandinavian countries generally focus on populations with similar characteristics, from similar communities, from a similar period, within the same country. Given that heritability is calculated as a ratio of variance explained by genetic factors and variance explained by the sum of environmental and genetic factors, minimizing environmental variation increases heritability. A research design that employs monozygotic/dizygotic twins placed separately in random families throughout the world would most likely show very small heritability. Conversely, greater environmental variation will decrease heritability. Additionally, many twin studies choose to adjust for known fixed effects such as age, period, and cohort. These adjustments also decrease estimated environmental variance and increase heritability coefficients (Visscher et al. 2008). Thus, the question of heritability estimates in humans for a trait such as fertility (and other traits such as IQ) will always have many alternative empirical answers as it is dependent on the given environment.

When examining the potential heritability of fertility and intergenerational correlations in historical populations, evolutionary theory predicts lower heritability for (life history) traits directly related to reproductive success, such as fertility (Houle 1992). This decrease in heritability is due to the graduate removal of variation, as successful traits become increasingly universal through natural selection. A quantifiable (albeit controversial) measure of this is 'Fisher's fundamental theorem' (Fisher 1930; Ewens 1989; Frank and Slatkin 1992), which states that the rate of increase in fitness through natural selection (through additive genetic effects) for an organism is the same as its additive variance in fitness.

As fertility is a life history trait, it follows that genetic heritability will be rather small in populations practicing natural fertility (the absence of parity-specific birth control). This hypothesis has been largely supported in empirical research (Reher et al. 2008; Gagnon and Heyer 2001; Langford and Wilson 1985; Imaizume et al. 1970). Despite these mechanisms, there might be room for some genetic correlations

in fertility. This is particularly true for genes associated with novel behaviors. Genes that were until recently unrelated to childbearing may affect fertility in populations practicing fertility control (Rodgers et al. 2001a; Udry 1996). Studies using human genetic material have also found evidence of intergenerational transmission of fertility in human prehistory (Blum et al. 2006). The analytical models in study 3 assume low intergenerational fertility correlations and high fertility in a population, as these characteristics are assumed to be typical for societies before the fertility transition.

A related question to the heritability of fertility is to find the underlying explanations or pathways for observed fertility correlations. These are issues explored in study 2, and less extensively in study 3. The sources of fertility correlations are very complex and one needs to think both about the proximate determinants of fertility (Bongaarts 1978), and whether these determinants are related to cultural or genetic factors that may be passed down from generation to generation. Pathways to fertility correlation may be further complicated by cultural characteristics shared across generations. For example, socioeconomic status or a preference for children, may be related to shared genes. It may also be possible that physiological factors affecting fertility, such as fecundity, have a heritable genetic component. These heritable genetic components have been shown to have a substantive effect on dizygotic twinning (Hoekstra et al. 2008; Parisi et al. 1983). Examining levels of overall correlations in fertility between parents and their children and trying to understand how these correlations arise, have been the focus on research on intergenerational transmission of fertility in demography and sociology, and will be discussed in the next section.

Intergenerational transmission of fertility in contemporary societies

Intergenerational transmission of fertility, irrespective of the source of this phenomenon, can have important societal-levels consequences (Study 3, Murphy and Wang 2003; Preston 1976; Preston and Campbell 1993). Parental fertility (number of siblings) is a moderate predictor of individual-level fertility outcomes, and is thus of general interest in social demography and family sociology. There has been a fair amount of sociological and demographic research on correlations in completed fer-

tility in developed countries (e.g. Murphy 1999; Murphy 2013; Anderton et al. 1987; Dahlberg 2013). Correlations tend to vary between 0.05-0.2 and are typically stronger for mother-daughter dyads than for father-son dyads (Murphy 1999).

Demographic and sociological research on intergenerational transmission of fertility has primarily focused on the role of socialization in the family of origin as an explanation for fertility correlations (e.g. Johnson and Stokes 1976; Preston 1976; Anderton et al. 1987; Duncan et al. 1965). Researchers have stressed the importance of preferences and values acquired during childhood to explain correlations across generations. These include ideal family size, and preferences for birth postponement and birth spacing. Research in the 1950s and 1960s emphasized the role of use of contraception in explaining intergenerational continuity in fertility behavior (e.g. Duncan et al. 1965). Studies 1 and 2 both draw upon this body of research, and Study 2 emphasizes the role of socialization in explaining intergenerational transmission of fertility. Most research has focused on the transmission of completed family size across generations, but research has also looked at the intergenerational transmission of age at first birth (Barber 2001; Steenhof and Liefbroer 2008; Dahlberg 2013), much of it focused on teen childbearing (e.g. Kahn and Anderson 1992). There has also been some research on how siblings' influence each other's fertility decisions (Lyngstad and Prskawetz 2010). Intergenerational fertility correlations appear to increase over time (Murphy 1999; Murphy and Wang 2001). A possible explanation for this trend is the gradual increase in individual agency over fertility decisions. Somewhat counterintuitively, an increase in fertility variance between families within a population may result in higher intergenerational correlation. Thus increasing individual agency, and weaker societal norms regarding fertility, can be associated with increased intergenerational correlations (cf. Study 3, Udry 1996).

Research on intergenerational transmission of fertility is also related to a broader area of research on intergenerational stratification. Intergenerational continuity in socioeconomic status accompanies differential fertility between groups, and in order to understand the perpetuation of inequality across generations, both must be considered simultaneously. Sociologists and demographers have been studying the effect of fertility change across generations while taking into account other characteristics such as education (Kye 2011; Mare 1997; Mare and Maralani 2006), socioeconomic status (Musick and Mare 2004; de la Croix and Doepke 2003; Pearl 1927), IQ

(Preston and Campbell 1993), and race (Mare 1997). The goal is to understand how the frequency of a trait in a population changes over time, given different levels of differential fertility. Despite the fact that intergenerational fertility correlations are often the outcomes of such studies, these researchers are not typically interested in intergenerational transmission of fertility as such, even though intergenerational fertility correlations are often an outcome of their models. Study 2 studies the degree to which intergenerational transmission of fertility is related to intergenerational correlation in socioeconomic status, and thus, is of potential relevance for this area of research. Rather than looking at how socioeconomic differences are reproduced by different fertility rates, study 2 examines whether socioeconomic continuities can explain fertility correlations.

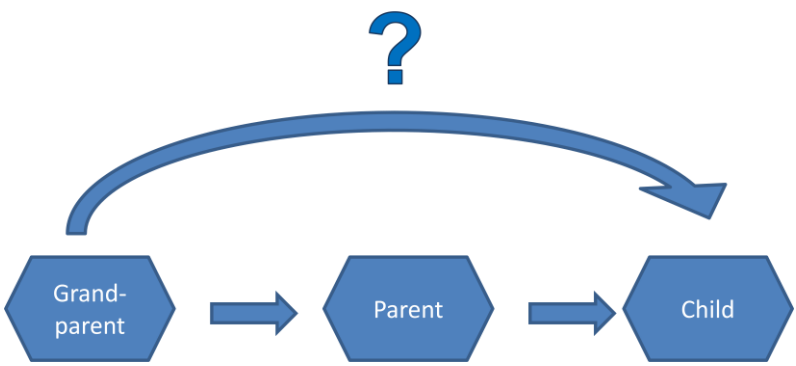
Despite increased interest in intergenerational transmission of fertility, there are still important topics that remain under-researched. In particular, many studies have focused on the broad association between family sizes across generations, and there has been relatively little progress in the understanding of the different pathways that may explain these correlations. Broad correlations are important given that they measure population-level impacts of intergenerational fertility correlation. Nevertheless, more research is needed to better understand the mechanics behind these correlations. For example, in the study of stratification, researchers focus on both overall trends in inequality, and the pathways (e.g. educational choices, and mediating individual level traits) that explain these population-level correlations. One approach is to use sources of exogenous variation in the size of an individual's family of upbringing, arising from the birth of a twin sibling in the family of origin. In this way the causal effect of growing up with an additional sibling can be examined, net of all other factors that are typically shared between children and parents (Kolk 2014a).

Future research on intergenerational transmission of fertility also needs better data. Data sources in which intergenerational transmission of fertility can be followed over time are scarce, as the reproductive histories of two generations must be available. High quality data is particularly important in studies of intergenerational transmission of fertility from family members other than parents, as discussed in studies 1 and 2.

Multigenerational transmission of fertility, the correlation between grandparental fertility (number of aunts/uncles), and fertility of parental siblings (number of cou-

sins) is a new research area. Murphy and Wang (2001) and Danziger and Neuman (1989) have found evidence of associations between the fertility of grandparents and that of their grandchildren. Multigenerational correlations are further explored in studies 1 and 2 of this dissertation. A key distinction in studies of multigenerational research is whether associations across multiple generations are independent of intermediary generations or not (figure 2). Parent-child correlations in family size will automatically also result in correlations across 3 generations. Fertility correlations between grandparents and grandchildren will be the correlation between the grandparent and the parent, multiplied by the fertility correlation between the parent and the child. This approach to fertility correlations across multiple generations has similarities with Markov-like processes, in which the transition to a new state is only dependent on the previous state, and is independent of the history of state membership. An example of a multigenerational processes which result from Markov processes are the models used in study 3, where children are influenced by parents (and non-parents in the same generation), and where grandparents only influence their grandchildren through their parents.

Figure 2: Direct and indirect multigenerational associations between grandparents on their grandchildren



Conversely, recent multigenerational research in demography and stratification has examined whether grandparents' fertility has an independent effect on grandchildren's fertility, taking account of parents' characteristics (Mare 2011; Pfeffer 2014). This can be done using multivariate regressions that include characteristics of both

parents and grandparents. Studies 1 and 2 find evidence of independent effects of grandparental fertility (and fertility of aunts/uncles), even when accounting for the effects of parental fertility. Research on topics examining correlations in socioeconomic status across multiple generations is at the time of writing a dynamic research area (e.g. Hällsten 2014; Chan and Boliver 2013; Erola and Moisio 2007; Jæger 2012). Study 2 is part of a special issue on this topic. An interesting aspect of multigenerational transmission of fertility is that grandparents' fertility is equivalent to an individual's number of aunts and uncles, and that the fertility of parental siblings is equivalent to the number of cousins. Thus, this research can be interpreted both in terms of multigenerational transmission of a trait (in this case family size), but also in terms of the influence of kinship size on fertility.

Data for kinship studies

Research on kinship has been limited by data availability. This is particularly true in demography where researchers are often seeking datasets that can be generalized to a complete population. Older anthropological studies on kinship were typically collected by an individual researcher, and are typically of limited use for statistical studies of kinship in the field of demography. Traditional demographic data such as surveys and censuses are well suited to study household composition. Censuses collect information on households and the relationships of family members residing in the same household. However, censuses are seldom useful to study family members outside the household. Similarly, surveys are often distributed to households, and while they may have information on non-resident family members, these are shaped by the survey design, and the information on kinship structure is only representative for the respondent. For these reasons, there is much knowledge about household composition and size both in historical and contemporary populations, while information on non-resident kin typically is lacking. Thus, changes in proportions of individuals living with grandparents (though as previously mentioned, this has always been rare in Sweden), or patterns of leaving the household of origin, are well known (e.g. Ruggles and Brower 2003; Laslett and Wall 1972; Isengard and Szydlik 2012). Some impressive attempts to collect information on egocentric kinship networks were done in the 1960s and 1970s by long in depth-interviews where

researchers asked respondents to list their entire kinship network (Boholm 1983; Schneider and Cottrell 1975; Schneider and Smith 1978), but these methods were labor intensive and can easily be challenged based on a lack of representativeness.

A data source which avoids many of these issues is complete administrative register systems, such as those found in the Nordic countries and the Netherlands. Administrative register data from Sweden is used in studies 1, 2 and 4 in this dissertation. As these data sources include the complete population, it is possible to compute complete kinship networks for virtually every member of the population. This is unlike survey-based approaches that rely on information from the perspective of the sampled individuals. Kinship networks using register data are typically computed from register events such as births and marriages. Therefore, in order to use register data for kinship studies of non-household members one needs longitudinal data of considerable length. Connecting an individual with their cousin for example requires knowledge of their shared grandparents. Moreover, multiple generations worth of data must be available far back in time, otherwise the data could be biased by selective survival of old individuals such as grandparents. Nordic and Swedish register data are available from the 1960s though birth records are available from earlier periods. This limits the depth of kinship networks that can be constructed from these registers. Information is also truncated by international in and outmigration, which limits the amount of information available on kinship of first and second-generation migrants.

Some historical datasets, which resemble contemporary register data, also allow for the construction of kinship networks. Historical registers of this nature are available for parishes in northern Sweden, and for parishes in Scania, in southern Sweden. There is also data from northeastern China which can be used for similar purposes. However, these sources have other problems. One obvious drawback is that the datasets provide information on historical rather than contemporary societies. Another drawback is that the limited geographical areas covered by the data results in difficulties in constructing kinship networks over several generations, as all members need to have stayed in the parishes where data is available. Iceland has unique data, collected by a for-profit medical company, on the complete population which has been linked to historical sources, and may offer unique opportunities for the reconstruction of kinship networks over several generations (Chadwick 1999).

While some household information is available in Nordic registers, typically kinship linkage will be done through birth, and to a lesser extent, marriage histories (as in the empirical studies in this dissertation). As such, the studies are immune to recollection/disclosure biases from surveys and offer a very objective picture of kinship. On the other hand, register-based linkages do not necessarily correspond to individuals' kinship roles. For example, some individuals are linked as kin, but have no contact or may not even know of each other. Conversely, other individuals may fulfill social kinship roles, but may not be linked through family registers. Thus, this definition of kinship is quite close to what Schneider would refer to as the western 'folk-science' model of kinship, in which blood (and law) is paramount (Schneider 1968). As the western 'folk-science' view of kinship is also quite close to our modern understanding of inheritance of genetic information (as expressed in the science of quantitative genetics), the conceptualization of kinship based on register linkages would be useful for research influenced by genetic evolutionary theory. However, while administrative registers correspond more closely to the "factual" underlying genetic relationship between individuals, one should still be mindful that parent-child linkages in registers still are based on what parents report to the government.

Kinship linkages using birth histories highlight one of the strengths of demography: the unambiguous measurement of the variables of interest. This is most obvious when demographers examine births and deaths, two unusually easily defined sociological and biological phenomena (though there are always complications, as previously discussed in the section on contemporary perspectives of kinship). Demography has been described as a discrete science for these reasons (Coleman 2000). Still, it is important to be aware that this measurement of kinship might differ in important respects from the sociological experience of kinship in people's everyday lives. The middle of the 20th century (when older generations in studies 1 and 2 had their children) was a period in which family dissolution through mortality and divorce was unusually low. Step-families, and successive unions add complexity to this 'discrete' and consanguine approach to kinship, but do not fundamentally limit the usefulness of such an approach, even though it certainly adds to the complexity of data analysis.

Swedish administrative registers

After discussing the theoretical consideration related to data availability and the measurement of kinship, I will briefly cover various aspects of the data used in this study. I will give both a quick overview of the nature of multigenerational linkages in Sweden, and also list some issues associated with their use.

Administrative register data is an excellent resource for demographic analysis. They provide objective and very accurate measurements of demographic data such as births, deaths, migration, area of residence, and civil status. The data covers the complete population and thus avoids issues related to selection bias. If there is not enough statistical power for a research design based on everyone in a 9 million people country, it is probably wise to consider a new research question. Administrative register data also provides information on a large number of socioeconomic variables including government records of taxable earnings, taxable wealth, unemployment benefits, student grants, educational histories, educational grades, conscription data, and many other variables. However, there are also limitations when using administrative registers. Some limitations are related to the fact that the information has to be collected by the government for needs that differ from those of researchers. As the data is based on government records it is also likely that taxable earnings underestimate actual income due to tax avoidance. For multigenerational studies more important limitations are related to the historical circumstances in which the registers where created, as they may determine criteria for inclusion in the registers. Thus, one must understand the history of Swedish administrative registers.

There is a long history of government administrative registers in Sweden. Sweden has the longest time-series of vital statistics in the world. The modern Swedish registers originated with the introduction of a unique personal identity number (*personnummer*) in Sweden in 1947-1948 (Statistics Sweden 2009). In connection with the introduction of this number, information was collected on parenthood for all children under the age of 16. This information forms the basis of the parent-child linkages that will serve as the foundation for the type of kinship analysis carried out in this dissertation. After 1947 information on parents of children is collected from birth records. As information in 1947 was collected for children under the age of 16, 1932 is the earliest date for which there is information on parent-child linkages. This

means that children born after 1932 can be linked to siblings born after 1932. Thus, only younger siblings can be included in kinship networks for the oldest individuals under the age of 75 in 2007 (the latest year for which register data was available when writing this thesis). Estimates of total number of siblings are increasingly reliable for cohorts born after 1932 and are of high quality for cohorts born after 1940 (aged 67 in 2007).

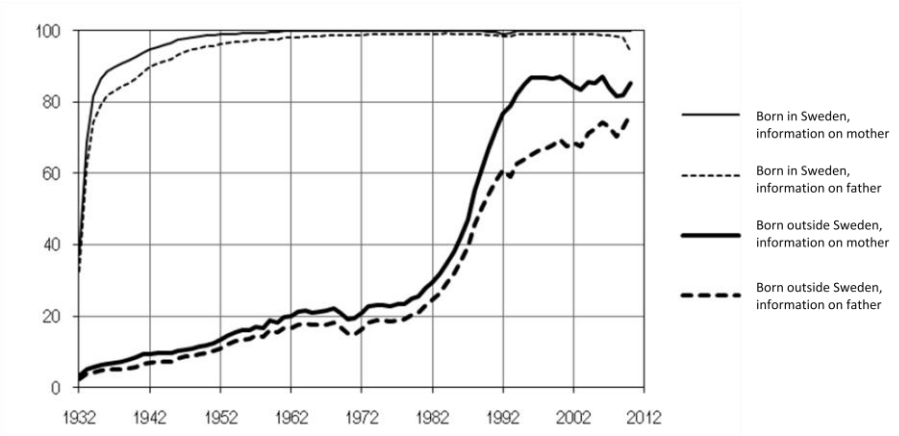
An additional limitation of contemporary Swedish registers is that they were digitized in the late 1960s. Population registers dating back to 1968 were digitized and all subsequent demographic data in Sweden has been entered digitally. Therefore, 1968 is the earliest time for which event-registers on demographic events are available. Additionally, Statistics Sweden digitized the census in 1960 and 1965. As a result, survival to 1960 is another condition for an individual to be included in contemporary Swedish register data (Statistics Sweden 2009).

Of key importance for intergenerational studies is the Swedish multigenerational register (Statistics Sweden 2009). It was created for research and is the source of the intergenerational linkages described above. It was constructed from the perspective of index individuals who have information on (biological) parents. The target population of the register is individuals born after 1932 and alive in 1961. Various improvements in coverage have been done in order to make sure that data is of high quality for this target population. Overall, linkage rates are very high for individuals born in Sweden (figure 3), though information is often missing for individuals born outside Sweden (as the individual's parents often are not residents of Sweden). An additional limitation that may limit the comprehensiveness of the data available to researchers is that information on child-parent links may be incomplete if the index person died before 1991. This is due to incomplete information retrieval from decentralized parish registers before the 1990s (Statistics Sweden 2009). There have been attempts to correct these errors through the digitization of additional person files. In the registers I have had access to, roughly 40% of all individuals deceased between 1968 and 1990 have missing information on their parents. However, because mortality is low for cohorts born after the 1930s, this has only minor impact on the share of successful intergenerational linkages, as can be seen in figure 3.

For this thesis I have used a collection of registers called STAR (Sweden in Time: Activities and Relations), administrated at Stockholm University. This is a

collection of information from several different Swedish government agencies with information on education, taxable earnings and wealth, and social insurance systems. Overall the registers are of very high quality, and give researchers access to accurate data based on government records, rather than requiring that researchers rely on participants' self-reported data. There are, however, some considerations which might be relevant when interpreting this type of data (Coleman 2013). Information on residence is based on "de jure" (legal) registrations. This information will not always correspond to an individual's actual residence, and will be less accurate in early adulthood. Similarly, information on international migration will occasionally not cover information on outmigration (as individuals have fewer incentives to register outmigration), and individuals without legal status in Sweden will also not be included for obvious reasons. The greatest shortcoming of Swedish administrative register data is the lack of refined information on dwellings[3]. People can only be linked to their address which, in case of apartment buildings, will include multiple households. When connecting people linked by birth or marriage (as in Study 4) this omission is not of major concern. However, the lack of refined information is a much greater obstacle when analyzing cohabiting partners.

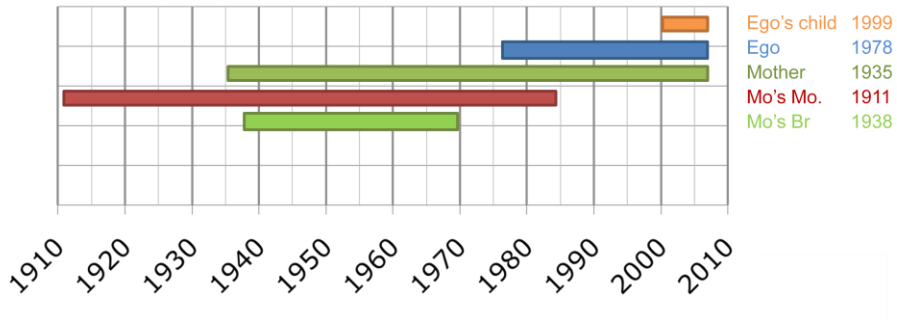
Figure 3: Proportion of index persons in the Swedish multigenerational registers with information on parents, by year of birth.



Source: Statistics Sweden (2009)

[3]Data on dwellings have been collected since 2012, but are not available retroactively.

Figure 4: Typical example of four generations of extended family constructed from Swedish multigenerational registers.



After the presentation of the empirical data for the dissertation, I will now summarize the studies in the dissertation. Finally, I will discuss suggestions for future directions in research on kinship and multigenerational demography.

Overview of the four studies

Study 1: Multigenerational transmission of family size in contemporary Sweden

Published in *Population Studies*

There is evidence of intergenerational transmission of fertility in all developed countries. Researchers have examined the association between a person's completed fertility and the completed fertility of their parents. My first study examines whether there is an additional effect of the fertility of grandparents, independent of the effect of parents' fertility. This research builds on recent research in demography and social stratification examining whether traditional intergenerational models looking at only two generations provide sufficient understanding of intergenerational processes.

This study examines the transmission of fertility patterns across generations: from parents (number of siblings), grandparents (number of aunts/uncles), and uncle/aunts (number of cousins), to young adults in contemporary Sweden. I use event history models to determine the risk of first, second and third birth, and measure the effect of family members' fertility using covariates on the number of children their kin had. I use Swedish administrative register data for the 1970-82 birth cohorts and

their kin. The data allows linkages to virtually all siblings, cousins, parents, aunts/uncles and grandparents of my index generations.

The results demonstrate the existence of an association between the fertility of grandparents and aunts/uncles, and the fertility of the index generation, independent of the fertility of the parents. The strength of fertility correlations is somewhat stronger for correlations with female family members (grandmothers and aunts), female index-persons, and matrilineal family members. The magnitude of the effect is estimated through multistate models. The multistate models use hazard ratios estimated from my event history models, national estimates on conditional age specific fertility rates, and distributions of the overall population by parity, to estimate the effect of covariates on total fertility. An increase from 2 to 4-5 siblings is associated with 0.38 additional children among the index generation, while a similar association from an increase in grandparental fertility from 2 to 4-5, net of that of parents, is 0.1 additional children.

Study 2: Understanding transmission of fertility across multiple generations – Socialization or socioeconomics?

Published in *Research in Social Stratification and Mobility*

Like the first study, the second study examines multigenerational correlations in fertility. While the first study focuses primarily on demonstrating the existence of multigenerational transmission of fertility, the second study examines the mechanisms or pathways to explain why these correlations exist. The primary research question is whether intergenerational transmission of fertility can be attributed to intergenerational stratification - that family members to a large degree inherit the socioeconomic characteristics of older generations. If highly educated parents have highly educated children, similarity in education across generations could explain an observed continuity in number of children across generations within the same family. The article uses Swedish register data, similar to the data used in study 1. The study uses event history models on the transition to first, second and third birth for the 1970-1982 birth cohorts. Measures of occupational class and education are introduced stepwise for the index generation, their parents, and their grandparents, to

examine how socioeconomic similarity mediates the intergenerational transmission of fertility.

The results show that intergenerational transmission of fertility is largely unmediated by socioeconomic status. The influence of parental family size on the index generation's fertility is completely independent of parental socioeconomic characteristics. Slightly less than half of the effect of grandparents' family size (independent of parental characteristics), disappear after controlling for grandparents' socioeconomic characteristics. Thus, it appears that intergenerational fertility continuities are largely independent of parents' and to lesser degree grandparents' characteristics. Other unobserved characteristics such as values, family size preferences, religion, or cultural characteristics shared across generations seem more important for explaining observed intergenerational transmission of fertility.

Study 3**:** Correlations in fertility across generations – can low fertility persist?

Published in *Proceedings of the Royal Society B: Biological Sciences*

The third study is written together with Daniel Cownden and Magnus Enquist, at the Centre for the Study of Cultural Evolution, at Stockholm University. We examine the potential long-term consequences of intergenerational transmission of fertility. We do not use empirical data, but instead examine the theoretical implications of fertility correlations. This study uses cultural evolutionary mathematical models to examine the circumstances under which fertility correlations would result in a long-term increase in fertility. While the models are similar to those used in population genetics, the study is concerned with cultural transmission - the same processes that are studied in studies 1 and 2.

The study demonstrates the possibility of a reversal of the twentieth-century decline in fertility. We demonstrate how the association between parents' and their children's family sizes could result in a long-term increase in population size and a return to higher fertility. We show how the process of intergenerational correlations in fertility over time will increase fertility. We further develop our model to examine if there are circumstances where the increased fertility predicted by our first model would not occur. We show that current low fertility can only be sustained if new

lifestyles which favor reduced childbearing continue to be introduced into the population at a rapid pace.

Study 4: A life course analysis of geographical distance to siblings, parents and grandparents in Sweden

Available in *Stockholm Research Reports in Demography*

Unlike studies 1, 2, and 3, which examine intergenerational correlations in fertility, study 4 examines geographical proximity to family members. This study makes a contribution to research in demography and cultural geography by studying how migration and demographic patterns shape the geographical availability of kin in contemporary Sweden. Migration patterns differ markedly by age and thus geographical proximity to kin will also vary by age. Geographical proximity to kin is shaped by both individual migration decisions, and by the migration decisions of other family members, often of a different generation. Previous research on intergenerational proximity has relied on cross-sectional design, and has thus been unable to isolate age effects from cohort patterns.

The study examines how distance to siblings, parents and grandparents changes over the life course. The complete 1970 cohort of Swedish men and women are followed from age 10 (in 1980) to age 37 (in 2007) using administrative register data on municipality coordinates for all family members for each of those years. The study reveals surprising continuity in geographical distance to parents after age 25. Distance to parents, grandparents, and siblings sees only minor changes after the index cohort reaches their med-twenties. Overall, most Swedes live in close proximity to their kin.

Towards a demography of kinship

Research on kinship in developed countries has been strongly oriented towards the effect of kin on various outcomes and what kin "do" (see section on "Importance of kin"). Gerontologists have looked at support provided by extended family members from the perspective of both younger and older adults. Similarly, demographers and sociologists have examined kin relations, the degree of social and emotional orientation towards kin and family in different groups, and kin support for caring for grandchildren. The "effect" of kin on various outcomes is an important and well-studied topic. It has been shown repeatedly that kinship still matters in developed societies. Historical and contemporary researchers have also compared entire kinship systems, and examined how they are linked to different demographic outcomes (e.g. Bengtsson et al. 2003).

Surprisingly, despite an abundance of evidence showing the importance of kin, researchers know very little about differences in the demography of kinship both between and within countries, and between different sub-populations. Demographic patterns pertaining to number of kin such as cousins, aunts/uncles, and grandparents remains largely unexplored. Demography of kinship has focused primarily on historical populations (e.g. Ruggles 1986; Bengtsson and Mineau 2008), or on how kinship will impact informal elderly care (Agree and Glaser 2009). By comparison, the kinship of contemporary western populations has been less studied. Research on family systems in Europe has focused on differences across countries in normative obligations towards kin, frequency of contact, and household structure (Giuliano 2007; Reher 1998; Albertini et al. 2007; Heady and Kohli 2010; Albertini and Kohli 2012), while demographic differences in kinship structure have been largely ignored. Available knowledge of kinship structures for complete populations is largely the result of micro simulations in which demographic rates are used to create populations consisting of virtual individuals (Murphy 2011; Wachter 1997; Ruggles 1993; Smith 1987).

Three main approaches have been used to map the kinship structures of contemporary populations. The first is specialized surveys that connect information on survey respondents to their reported kinship networks. This approach represents the most common data source in family demography and has been used in the Gender

and Generation Surveys, the French Family Surveys, and the Netherlands Kinship Panel Study. Survey data have been used to study current kinship structure at a given time (Dykstra and Komter 2006), to conduct internationally comparative research (Puur et al. 2011), and to examine issues of heterogeneity in kinship (Goldstein 1999; Goldstein and Warren 2000). While surveys are undoubtedly useful as a data source, they also have several drawbacks for kinship research. Most importantly it is expensive and very cumbersome to collect information on complete kinship networks using surveys. Survey data is inflexible and information is limited to what respondents were specifically asked about. Often information is only collected for a fixed number of kin (e.g. the oldest sibling, or the youngest grandchild). Further, information is only available for the respondent. Thus, it is only possible to create a representative picture for the sampled individuals given that one has only egocentric network data.

When studying the kinship structure of a population, having links between all involved individuals is of utmost interest. Thus, micro-simulation has been perhaps the most promising way to model the kinship structure of a population (Wachter et al., 1997, Murphy, 2011). To date, the only reliable information on population level kinship structure has been computed using micro-simulation data. This approach has many attractive features, including full information on kinship networks for simulated populations – past, present and future. Despite being 'state of the art', this approach has obvious limitations. Simulated data can never entirely replace empirical data. One reason is that simulations require validation from empirical data. Another reason is that simulations are based on an assumed adherence to statistical distributions of various outcomes, as well as assumptions of "independence" for related individuals more likely to be homogenous with respect to various traits (Ruggles 1993). Finally, one advantage of using empirical data to document kinship is that other sociodemographic variables can be linked to the kinship data. For these reasons, demographers have stressed the importance of complementing simulated data with actual empirical data on populations (e.g. Post et al. 1997; Ruggles 1993).

Besides as input to simulated kinship data, demographic rates can be used to analytically derive information on kinship networks. Using mathematical demography, this approach has been used to forecast the availability of kin to provide informal family care (Himes 1992; Murphy et al. 2006). While an elegant solution in

some cases, this forecasting is only possible for some aspects of kinship structure. Analytical tools are only able to provide average estimates of kinship, and cannot be used to study heterogeneity in kinship.

While Nordic and Dutch registers are an excellent data source of data for kinship research, the registers have seldom been used to conduct kinship studies (Lundholm and Malmberg 2009; Noack et al. 2011; study 1, 2, & 4, for some rare examples). Register data has several features that make it conducive to kinship research. Most importantly, the registers include information for the complete population, similar to micro simulation approaches. Furthermore, given that the registers include data on the entire population, there are few concerns regarding selectivity and statistical power. Registers makes it easy to examine issues of heterogeneity, an important topic for kinship studies. This is an advantage as statistical analysis focusing on "mean" values, common in regression analysis and standard demographic measures, is poorly suited for kinship research. Research on kinship typically requires information on the complete distribution of kinship for individuals in a population. Since they are based on actual individuals, register data can also be linked to other relevant individual's level characteristics such as taxable earnings, education and health data.

While there are some shortcoming and selection issues involved (see section on "Swedish Administrative Registers"), Nordic register data could serve as a starting point for research by providing a representative view of the complete kinship network structure of a population. Beyond validating micro-simulation approaches, this research could for example examine ethnic, geographical and socioeconomic heterogeneity in kinship networks (cf. Goldstein and Warren 2000), and examine the degree to which actual clustering and nonlinearity in kinship networks differ from simulated approaches that rely on assumed distributions (cf. Ruggles 1993). Nordic registers can also serve as an excellent resource for research that aims at linking various demographic and socioeconomic outcomes with different kinship structures.

Topics for future research

Future kinship research should aim for studies which are representative of populations as a whole, and also include kin who are not living together in a household. Thus, linkage needs to be done according to histories of consanguine and affine ties,

and should not rely exclusively on residence at the time of observation. Researchers should also aim to construct kinship networks from the vantage of different birth cohorts, and to further explore how different anchor generations relate to trends and quantitative measures of kinship (cf. Preston 1976; Herlofson and Hagestad 2011).

To date, most research has focused on vertical kin relationships, such as parents and children, and grandchildren and grandparents. There has been less focus on **horizontal** (collateral) kinship ties including ties between the index individual and aunts/uncles, cousins, siblings, and nephews/nieces. Similarly, almost all research on kinship has focused on consanguine linkages (including the studies in this thesis). Connecting individuals to their partner's kinship, or connecting them to their consanguine kin's partners has remained virtually unexplored and deserves more attention in scholarly research. Research on kin linked through **affine ties** can provide new insight into how kinship may serve as a bridge into social networks to which an individual would not otherwise have access (Goldstein 1999; Goldstein and Warren 2000).

Future research may also focus on more complex family structures resulting from **childbearing with multiple partners** over the life course. Changes in family structure are likely to transform definitions of kinship in contemporary western societies. More complex kinship structures stemming from union dissolution will most likely increase in importance for future studies of kinship. Currently, the older generations still serve as relatively stable anchors for kinship networks as union stability remained high in these cohorts. However, this will change in the future. Blended families created through union dissolution are also likely to become more complex, as compared to previous blended families resulting from mortality, as in the former case there may be new children born in both the original and subsequent family.

The increase in **international migration** from non-European countries brings with it an increase in the diversity of kinship systems. The bilateral and neolocal kinship system found in middle class US and northern Europe will coexist with Asian and African kinship systems characterized by stronger patrilineal and patrilocal elements, as well as kinship systems in other non-European societies with other characteristics. Comparing kinship networks of native populations to that of recent migrants will provide interesting insights into differences in kinship across cultures, as well as how the cultural context determines the association between kin

and various outcomes. Such comparisons will be difficult given the difficulty of constructing kinship networks across national borders, but is a very worthwhile topic. The degree of intermarriage, blending and exposure across multicultural kinship systems would also be an interesting area for future research (cf. Goldstein 1999).

The topic of **gender** also deserves more attention in demographic studies of kinship. Age differences in union formation (Kolk 2012) and differential mortality patterns between men and women have a large, but largely unexplored, impact on kinship composition. Similarly union formation preferences and migration decisions differ between men and women, and this has implications for the structural availability of kin. Differences in the formation of subsequent unions following a union dissolution or widowhood are also different for men and women, and may have important effects on kinship. Finally, demographic research on kinship has shown that wesern kinship has matrifocal characteristics, that kinship is a matrilineal sphere in which female kin play a more important role (e.g. Di Leonardo 1987; Rossi and Rossi 1990; Young and Willmott 1957). These issues would also be interesting to contrast with the increase of residential, often patrilocal, extended families in some migrant populations.

Researchers also need to focus more on kinship **outside the household**. Demographic research on kinship networks should include kin living in different households, and the process through which kin join and leave shared households. Documenting differences in the proportion of kin living in shared households has been the subject of much research across Europe, North America, and East Asia; however, the degree to which this proportion has been influenced by differences in the demography of kinship – differences in the supply of kin – are largely unknown. Similarly, researchers may examine whether support provided by kin in different countries is associated with demographic differences in kinship structure. Comparative research in family geography may also take into account the ways in which the demography of kinship differs across societies.

Research on the **diversity and heterogeneity** of kinship is also a topic which needs more study. The information that a young adult has, on average, two living grandparents at a given age, is most likely of less informative value than the proportion of young adults that have 0 or 4 living grandparents. Similarly, widely docu-

mented differences in fertility and mortality across sub-populations will result in very different kinship patterns, though this has not been studied explicitly. This is particularly unfortunate, as so much research has been done on differences in kinship across different ethnic groups in developed countries. Kinship in itself is a unique source of exposure to people that are different than yourself, given that, unlike friends, relatives are not chosen (cf. Goldstein and Warren 2000). Heterogeneity within kinship networks (particularly in-laws) is thus an interesting measure of exposure to people who are different than you (e.g. socioeconomically, ethnically, and ideologically). For example, your cousins are probably less similar to you in education than your friends are, but you will still occasionally interact with them. As kin can essentially be assigned to a person (e.g. a person's sister marries a man unknown to the person), it can be viewed as exogenous and random.

To summarize, future research on kinship in developed countries should move beyond a focus on what kin do. Research should avoid the instrumentalist focus on provision of and need for care, in order to examine demographic questions regarding the structure of kinship networks. There is a need for detailed descriptive studies of the demography of kinship, to answer questions such as the number and characteristics of cousins, aunts/uncles, grandparents, and parent-in-laws within countries. However, equally important is comparative research on kinship structure across both time and space. More research on the importance of relevant kin for different outcomes is welcome, but what is truly needed is research on the demography of kinship that is quantitative, descriptive, and representative, and not guided by normative or instrumentalist goals.

Concluding remarks

The uniting theme of the studies in this dissertation is that they all show the relevance of a multigenerational perspective for demographic processes. It is my belief that the dominant theoretical "modernist" view of kinship in the social sciences downplays the role of extended family. Together with data shortcomings, this dominant view of kinship leads to the neglect of demographic perspectives on kinship. This has resulted in a lack of descriptive research on western kinship systems, as well as an underestimation of the importance of extended family. My hope is that

this dissertation, and the studies herein, can serve as inspiration for future research that will bring more attention to demographic aspects of kinship in contemporary developed countries.

References

Agree, E. M., & Glaser, K. (2009). Demography of Informal Caregiving. In P. Uhlenberg (Ed.), *International Handbook of Population Aging* (pp. 647-668). Dordrecht, the Netherlands: Springer.

Albertini, M., & Kohli, M. (2012). The Generational Contract in the Family: An Analysis of Transfer Regimes in Europe. *European sociological review, 29*(4), 828-840.

Albertini, M., Kohli, M., & Vogel, C. (2007). Intergenerational Transfers of Time and Money in European Families: Common Patterns—Different Regimes? *Journal of European Social Policy, 17*(4), 319-334.

Andersson, G., & Kolk, M. (2011). Trends in Childbearing and Nuptiality in Sweden: An Update with Data up to 2007. *Finnish Yearbook of Population Research, 46*, 21-29.

Anderton, D. L., Tsuya, N. O., Bean, L. L., & Mineau, G. P. (1987). Intergenerational Transmission of Relative Fertility and Life Course Patterns. *Demography, 24*(4), 467-480.

Barber, J. S. (2001). The Intergenerational Transmission of Age at First Birth among Married and Unmarried Men and Women. *Social Science Research, 30*(2), 219-247.

Bengtson, V. L. (2001). Beyond the Nuclear Family: The Increasing Importance of Multigenerational Bonds. *Journal of Marriage and the Family, 63*(1), 1-16.

Bengtson, V. L., Rosenthal, C., & Burton, L. (1990). Families and Aging: Diversity and Heterogeneity. In R. H. Binstock, & L. K. George (Eds.), *Handbook of Aging and the Social Sciences* (pp. 263-287). New York: Academic Press.

Bengtsson, T., Campbell, C., & Lee, J. Z. (2003). *Life under Pressure: Mortality and Living Standards in Europe and Asia, 1700-1900*. Cambridge, MA: The MIT Press.

Bengtsson, T., & Mineau, G. P. (Eds.). (2008). *Kinship and Demographic Behavior in the Past*. Dordrecht: Springer.

Berggren, H., & Trägårdh, L. (2006). *Är Svensken Människa?: Gemenskap Och Oberoende I Det Moderna Sverige*. Stockholm: Norstedt.

Blum, M. G. B., Heyer, E., François, O., & Austerlitz, F. (2006). Matrilineal Fertility Inheritance Detected in Hunter–Gatherer Populations Using the Imbalance of Gene Genealogies. *PLoS Genetics, 2*(8).

Boholm, Å. (1983). *Swedish Kinship: An Exploration into Cultural Processes of Belonging and Continuity*. Gothenburg: Acta Universitatis Gothoburgensis.

Bongaarts, J. (1978). A Framework for Analyzing the Proximate Determinants of Fertility. *Population and Development Review, 4*(1), 105-132.

Boomsma, D., Busjahn, A., & Peltonen, L. (2002). Classical Twin Studies and Beyond. *Nature reviews genetics, 3*(11), 872-882.

Boyd, R. P. D., & Richerson, P. J. (1985). *Culture and the Evolutionary Process*. Chicago: University of Chicago Press.

Braithwaite, D. O., Bach, B. W., Baxter, L. A., DiVerniero, R., Hammonds, J. R., Hosek, A. M., et al. (2010). Constructing Family: A Typology of Voluntary Kin. *Journal of Social and Personal Relationships, 27*(3), 388-407.

Brubaker, T. H. (1990). Families in Later Life: A Burgeoning Research Area. *Journal of Marriage and the Family, 52*(4), 959-981.

Cavalli-Sforza, L. L., & Feldman, M. W. (1981). *Cultural Transmission and Evolution: A Quantitative Approach*. Princeton, N.J: Princeton University Press.

Chadwick, R. (1999). The Icelandic Database—Do Modern Times Need Modern Sagas? *BMJ, 319*(7207), 441-444.

Chan, T. W., & Boliver, V. (2013). The Grandparents Effect in Social Mobility Evidence from British Birth Cohort Studies. *American Sociological Review, 78*(4), 662-678.

Cherlin, A. J. (2004). The Deinstitutionalization of American Marriage. *Journal of Marriage and Family, 66*(4), 848-861.

Chudnovskaya, M., & Kolk, M. (2014). Educational Expansion and Intergenerational Proximity in Sweden: Developments in Geographical Distance between Young Adults and Their Parents, 1980-2007. *Stockholm Research Reports in Demography, 2014:12*, 1-30.

Coall, D. A., & Hartwig, R. (2010). Grandparental Investment: Past, Present, and Future. *Behavioral and Brain Sciences, 33*(1), 1-58.

Coleman, D. (2000). Demography in an Intellectual Context: A Subject in Search of a Home. In Z. Pavlík (Ed.), *Position of Demography among Other Disciplines* (pp. 27-35). Prague.

Coleman, D. (2013). The Twilight of the Census. *Population and Development Review, 38*(s1), 334-351.

Collier, J., Rosaldo, M. Z., & Yanagisako, S. (1982). Is There a Family? New Anthropological Views. In B. Thorne (Ed.), *Rethinking the Family: Some Feminist Questions* (pp. 25-39). New York: Longman.

Collins, R. (1986). *Weberian Sociological Theory*. Cambridge, MA: Cambridge University Press.

Dahlberg, J. (2013). Family Influence in Fertility: A Longitudinal Analysis of Sibling Correlations in First Birth Risk and Completed Fertility among Swedish Men and Women. *Demographic Research, 29*(9), 233-246.

Danziger, L., & Neuman, S. (1989). Intergenerational Effects on Fertility - Theory and Evidence from Israel. *Journal of Population Economics, 2*(1), 25-37.

de la Croix, D., & Doepke, M. (2003). Inequality and Growth: Why Differential Fertility Matters. *American Economic Review, 93*(4), 1091-1113.

Di Leonardo, M. (1987). The Female World of Cards and Holidays: Women, Families, and the Work of Kinship. *Signs, 12*(3), 440-453.

Duncan, O. D., Freedman, R., Coble, J. M., & Slesinger, D. P. (1965). Marital Fertility and Size of Family of Orientation. *Demography, 2*(1), 508-515.

Dykstra, P. A., Kalmijn, M., Knijn, G., Komter, A. E., Liefbroer, A. C., & Mulder, C. H. (2006). *Family Solidarity in the Netherlands*. Amsterdam: Dutch University Press.

Dykstra, P. A., & Komter, A. E. (2006). Structural Characteristics of Dutch Kin Networks. In P. A. Dykstra, M. Kalmijn, T. C. M. Knijn, A. E. Komter, A. C. Liefbroer, & C. H. Mulder (Eds.), *Family Solidarity in the Netherlands* (pp. 21-42). Amsterdam: Dutch University Press.

Engels, F. (1978[1884]). *The Origin of the Family, Private Property and the State*. Beijing: Foregin languages press.

Erola, J., & Moisio, P. (2007). Social Mobility over Three Generations in Finland, 1950-2000. *European sociological review, 23*(2), 169-183.

Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*. Cambridge, UK: Polity Press.

Ewens, W. J. (1989). An Interpretation and Proof of the Fundamental Theorem of Natural Selection. *Theoretical population biology, 36*(2), 167-180.

Finkler, K. (2001). The Kin in the Gene: The Medicalization of Family and Kinship in American Society. *Current Anthropology, 42*(2), 235-263.

Fisher, R. (1930). *The Genetical Theory of Natural Selection*. Oxford, England: Clarendon Press.

Fortes, M. (1969). *Kinship and the Social Order : The Legacy of Lewis Henry Morgan* (The Lewis Henry Morgan Lectures, 0075-8922 ; 1963). Chicago: Aldine.

Fox, R. (1967[1984]). *Kinship and Marriage*. Cambridge, UK: Cambridge University Press.

Frank, S. A., & Slatkin, M. (1992). Fisher's Fundamental Theorem of Natural Selection. *Trends in Ecology & Evolution, 7*(3), 92-95.

Gagnon, A., & Heyer, E. (2001). Intergenerational Correlation of Effective Family Size in Early Quebec (Canada). *American Journal of Human Biology, 13*(5), 645-659.

Giddens, A. (1993). *The Transformation of Intimacy: Sexuality, Love and Eroticism in Modern Societies*. Cambridge: Polity Press.

Giuliano, P. (2007). Living Arrangements in Western Europe: Does Cultural Origin Matter? *Journal of the European Economic Association, 5*(5), 927-952.

Goldstein, J. R. (1999). Kinship Networks That Cross Racial Lines: The Exception or the Rule? *Demography, 36*(3), 399-407.

Goldstein, J. R., & Warren, J. R. (2000). Socioeconomic Reach and Heterogeneity in the Extended Family: Contours and Consequences. *Social Science Research, 29*(3), 382-404.

Goode, W. J. (1963). *World Revolution and Family Patterns*. London: Free press of Glencoe.

Goody, J. (1983). *The Development of the Family and Marriage in Europe*. Cambridge, UK: Cambridge University Press.

Goody, J. (1990). *The Oriental, the Ancient and the Primitive: Systems of Marriage and the Family in the Pre-Industrial Societies of Eurasia*. Cambridge, UK: Cambridge University Press.

Habermas, J. (1985). *The Theory of Communicative Action: Reason and the Rationalization of Society*. Boston: Beacon Press.

Hagestad, G. O. (1986). The Family: Women and Grandparents as Kin-Keepers. In A. J. Pifer, & L. Bronte (Eds.), *Our Aging Society: Paradox and Promise* (pp. 141–160). New York: WW Norton & Company.

Hajnal, J. (1982). Two Kinds of Preindustrial Household Formation System. *Population and Development Review, 8*(3), 449-494.

Hällsten, M. (2014). Inequality across Three and Four Generations in Egalitarian Sweden: 1st and 2nd Cousin Correlations in Socio-Economic Outcomes. *Research in Social Stratification and Mobility, 35*, 19-33.

Hank, K. (2007). Proximity and Contacts between Older Parents and Their Children: A European Comparison. *Journal of Marriage and Family, 69*(1), 157-173.

Heady, P., & Kohli, M. (Eds.). (2010). *Family, Kinship and State in Contemporary Europe*. Chicago: The University of Chicago Press.

Herlofson, K., & Hagestad, G. O. (2011). Challenges in Moving from Macro to Micro: Population and Family Structures in Ageing Societies. *Demographic Research, 25*(10), 337-370.

Himes, C. L. (1992). Future Caregivers: Projected Family Structures of Older Persons. *Journal of gerontology, 47*(1), 17-26.

Hoekstra, C., Zhao, Z. Z., Lambalk, C. B., Willemsen, G., Martin, N. G., Boomsma, D. I., et al. (2008). Dizygotic Twinning. *Human Reproduction Update, 14*(1), 37-47.

Houle, D. (1992). Comparing Evolvability and Variability of Quantitative Traits. *Genetics, 130*(1), 195-204.

Imaizume, Y., Nei, M., & Furusho, T. (1970). Variability and Heritability of Human Fertility. *Annals of human genetics, 33*(3), 251-259.

Inhorn, M. C., & Birenbaum-Carmeli, D. (2008). Assisted Reproductive Technologies and Culture Change. *Annual Review of Anthropology, 37*, 177-196.

Isengard, B., & Szydlik, M. (2012). Living Apart (or) Together? Coresidence of Elderly Parents and Their Adult Children in Europe. *Research on Aging, 34*(4), 449-474.

Jæger, M. M. (2012). The Extended Family and Children's Educational Success. *American Sociological Review, 77*(6), 903-922.

Johnson, C. L. (2000). Perspectives on American Kinship in the Later 1990s. *Journal of Marriage and Family, 62*(3), 623-639.

Johnson, N. E., & Stokes, C. S. (1976). Family Size in Successive Generations: The Effects of Birth Order, Intergenerational Change in Lifestyle, and Familial Satisfaction. *Demography, 13*(2), 175-187.

Kahn, J. R., & Anderson, K. E. (1992). Intergenerational Patterns of Teenage Fertility. *Demography, 29*(1), 39-57.

Kaptijn, R., Thomese, F., Van Tilburg, T. G., & Liefbroer, A. C. (2010). How Grandparents Matter. *Human Nature, 21*(4), 393-405.

Kirk, K. M., Blomberg, S. P., Duffy, D. L., Heath, A. C., Owens, I. P. F., & Martin, N. G. (2001). Natural Selection and Quantitative Genetics of Life-History Traits in Western Women: A Twin Study. *Evolution, 55*(2), 423-435.

Kolk, M. (2012). Age Differences in Unions: Continuity and Divergence in Sweden between 1932 and 2007. *Stockholm Research Reports in Demography*(25), 1-37.

Kolk, M. (2014a). *The Causal Effect of Another Sibling on Own Fertility–an Estimation of Intergenerational Fertility Correlations by Looking at Siblings of Twins.* Paper presented at the XVIII ISA World Congress of Sociology, Yokohama, Japan

Kolk, M. (2014b). A Life Course Analysis of Geographical Distance to Siblings, Parents and Grandparents in Sweden. *Stockholm Research Reports in Demography, 2014:13*, 1-19.

Kolk, M. (2014c). Multigenerational Transmission of Family Size in Contemporary Sweden. *Population Studies, 68*(1), 111-129.

Kolk, M. (2014d). Understanding Transmission of Fertility across Multiple Generations – Socialization or Socioeconomics? *Research in Social Stratification and Mobility, 35*, 89-103.

Kolk, M., Cownden, D., & Enquist, M. (2014). Correlations in Fertility across Generations: Can Low Fertility Persist? *Proceedings of the Royal Society B: Biological Sciences, 281*(1779), 20132561.

Kramer, A.-M. (2011). Kinship, Affinity and Connectedness: Exploring the Role of Genealogy in Personal Lives. *Sociology, 45*(3), 379-395.

Kye, B. (2011). Intergenerational Transmission of Women's Educational Attainment in South Korea: An Application of a Multi-Group Population Projection Model. *Demographic Research, 24*(3), 79-112.

Langford, C. M., & Wilson, C. (1985). Is There a Connection between a Woman's Fecundity and That of Her Mother? *Journal of biosocial science, 17*(4), 437-443.

Laslett, P. (1977). Characteristics of the Western Family Considered over Time. *Journal of Family History, 2*(2), 89-115.

Laslett, P. (1983). *The World We Have Lost: Further Explored*. London: Routledge.

Laslett, P. (1988). Family, Kinship and Collectivity as Systems of Support in Pre-Industrial Europe: A Consideration of the 'Nuclear-Hardship' Hypothesis. *Continuity and Change, 3*(2), 153-175.

Laslett, P., & Wall, R. (1972). *Household and Family in Past Time*. Cambridge, UK: Cambridge University Press.

Le Roy Ladurie, E. (1979). *Montaillou: The Promised Land of Error*. New York, USA: Vintage Books.

Lesthaeghe, R. (1995). The Second Demographic Transition in Western Countries: An Interpretation. In K. O. Mason, & A.-M. Jensen (Eds.), *Gender and Family Change in Industrialized Countries* (pp. 17-62). Oxford: Clarendon Press.

Lévi-Strauss, C. (1969[1949]). *The Elementary Structures of Kinship*. London: Eyre & Spottiswood.

Lundholm, E., & Malmberg, G. (2009). Between Elderly Parents and Grandchildren: Geographic Proximity and Trends in Four-Generation Families. *Journal of Population Ageing, 2*(3), 121-137.

Lyngstad, T. H., & Prskawetz, A. (2010). Do Siblings' Fertility Decisions Influence Each Other? *Demography, 47*(4), 923-934.

Macfarlane, A. (1978). *The Origins of English Individualism: The Family, Property and Social Transition*. Oxford: Blackwell.

Malinowski, B. (1982[1932]). *The Sexual Life of Savages in North-Western Melanesia : An Ethnographic Account of Courtship, Marriage, and Family Life among the Natives of the Trobriand Islands, British New Guinea*. London: Routledge.

Mare, R. D. (1997). Differential Fertility, Intergenerational Educational Mobility, and Racial Inequality. *Social Science Research, 26*(3), 263-291.

Mare, R. D. (2011). A Multigenerational View of Inequality. *Demography, 48*(1), 1-23.

Mare, R. D., & Maralani, V. (2006). The Intergenerational Effects of Changes in Women's Educational Attainments. *American Sociological Review, 71*(4), 542-564.

Martin, L. G. (1990). Changing Intergenerational Family Relations in East Asia. *The Annals of the American Academy of Political and Social Science*, 102-114.

Mestheneos, E., & Svensson-Dianellou, A. (2004). Naming Grandparents. *Generations Review, 14*(3), 10-13.

Michielin, F., & Mulder, C. (2007). Geographical Distances between Adult Children and Their Parents in the Netherlands. *Demographic Research, 17*(22), 655-678.

Morgan, L. H. (1997[1870]). *Systems of Consanguinity and Affinity of the Human Family*. Lincoln, Neb.: Univ. of Nebraska Press.

Murphy, M. (1999). Is the Relationship between Fertility of Parents and Children Really Weak? *Social Biology, 46*(1-2), 122-145.

Murphy, M. (2011). Long Term Effects of the Demographic Transition on Family and Kinship Networks in Britain. *Population and Development Review, 37*(supplement s1), 55-80.

Murphy, M. (2013). Cross-National Patterns of Intergenerational Continuities in Childbearing in Developed Countries. *Biodemography and social biology, 59*(2), 101-126.

Murphy, M., Martikainen, P., & Pennec, S. (2006). Demographic Change and the Supply of Potential Family Supporters in Britain, Finland and France in the

Period 1911–2050. *European Journal of Population / Revue européenne de Démographie, 22*(3), 219-240.

Murphy, M., & Wang, D. (2003). The Impact of Intergenerationally-Transmitted Fertility and Nuptuality on Population Dynamics in Contemporary Populations. In J. L. Rodgers, & H.-P. Kohler (Eds.), *Biodemography of Human Reproduction and Fertility* (pp. 209-228). Boston: Kluwer Academic Publishers.

Murphy, M., & Wang, D. L. (2001). Family-Level Continuities in Childbearing in Low-Fertility Societies. *European Journal of Population, 17*(1), 75-96.

Murray, A. C. (1983). *Germanic Kinship Structure: Studies in Law and Society in Antiquity and in the Early Middle Ages*. Toronto, Canada: Pontifical Institute of Mediaeval Studies.

Musick, K., & Mare, R. D. (2004). Family Structure, Intergenerational Mobility, and the Reproduction of Poverty: Evidence for Increasing Polarization? *Demography, 41*(4), 629-648.

Noack, T., Dommermuth, L., & Lyngstad, J. (2011). Hvor Mange Barnebarn Og Når? [How Many Grandchildren and When?]. *Samfunnsspeilet*(1), 37-42.

Oláh, L. S., & Bernhardt, E. M. (2008). Sweden: Combining Childbearing and Gender Equality. *Demographic Research, 19*(28), 1105-1144

Parisi, P., Gatti, M., Prinzi, G., & Caperna, G. (1983). Familial Incidence of Twinning. *Nature, 304*(5927), 626-628.

Parsons, T., & Bales, R. F. (1955). *Family, Socialization and Interaction Process*. Glencoe, Ill: Free Press.

Patterson, C. J. (2000). Family Relationships of Lesbians and Gay Men. *Journal of Marriage and Family, 62*(4), 1052-1069.

Pearl, R. (1927). Differential Fertility. *The Quarterly Review of Biology, 2*(1), 102-118.

Pearson, K., Lee, A., & Bramley-Moore, L. (1899). Mathematical Contributions to the Theory of Evolution. Vi. Genetic (Reproductive) Selection: Inheritance of Fertility in Man, and of Fecundity in Thoroughbred Racehorses. *Philosophical Transactions of the Royal Society of London, Series A, 192*, 257-330.

Pebley, A. R., & Rudkin, L. L. (1999). Grandparents Caring for Grandchildren What Do We Know? *Journal of Family Issues, 20*(2), 218-242.

Pfeffer, F. T. (2014). Multigenerational Approaches to Social Mobility. A Multifaceted Research Agenda. *Research in Social Stratification and Mobility, 35*, 1-12.

Phillips, R. (1997). Stepfamilies from a Historical Perspective. *Marriage & family review, 26*(1-2), 5-18.

Popenoe, D. (1987). Beyond the Nuclear Family - a Statistical Portrait of the Changing Family in Sweden. *Journal of Marriage and the Family, 49*(1), 173-183.

Popenoe, D. (1993). The National Family Wars. *Journal of Marriage and the Family, 55*(3), 553-555.

Post, W., Van Poppel, F., Van Imhoff, E., & Kruse, E. (1997). Reconstructing the Extended Kin-Network in the Netherlands with Genealogical Data: Methods, Problems, and Results. *Population Studies, 51*(3), 263-278.

Preston, S. H. (1976). Family Sizes of Children and Family Sizes of Women. *Demography, 13*(1), 105-114.

Preston, S. H., & Campbell, C. (1993). Differential Fertility and the Distribution of Traits - the Case of Iq. *American Journal of Sociology, 98*(5), 997-1019.

Puur, A., Sakkeus, L., Põldma, A., & Herm, A. (2011). Intergenerational Family Constellations in Contemporary Europe: Evidence from the Generations and Gender Survey. *Demographic Research, 25*(4), 135-172.

Reher, D. (2005). Family Ties in Western Europe. In G. Dalla Zuanna, & G. A. Michel (Eds.), *Strong Family and Low Fertility: A Paradox?* (pp. 45-76, European Studies of Population): Springer.

Reher, D., Ortega, J., & Sanz-Gimeno, A. (2008). Intergenerational Transmission of Reproductive Traits in Spain During the Demographic Transition. *Human Nature, 19*(1), 23-43.

Reher, D. S. (1998). Family Ties in Western Europe: Persistent Contrasts. *Population and Development Review*, 203-234.

Reiss, I. L. (1965). The Universality of the Family: A Conceptual Analysis. *Journal of Marriage and Family, 27*(4), 443-453.

Richards, M. (1996). Families, Kinship and Genetics. In T. Marteau, & M. Richards (Eds.), *The Troubled Helix: Social and Psychological Implications of the New Human Genetics* (pp. 249-273). Cambridge: Cambridge University Press Cambridge.

Rivers, W. H. R. (1968[1914]). *Kinship and Social Organization : Together With "The Genealogical Method of Anthropological Enquiry"*. London: Athlone.

Rodgers, J. L., Hughes, K., Kohler, H. P., Christensen, K., Doughty, D., Rowe, D. C., et al. (2001a). Genetic Influence Helps Explain Variation in Human Fertility: Evidence from Recent Behavioral and Molecular Genetic Studies. *Current Directions in Psychological Science, 10*(5), 184-188.

Rodgers, J. L., Kohler, H.-P., Kyvik, K. O., & Christensen, K. (2001b). Behavior Genetic Modeling of Human Fertility: Findings from a Contemporary Danish Twin Study. *Demography, 38*(1), 29-42.

Rossi, A. S., & Rossi, P. H. (1990). *Of Human Bonding: Parent-Child Relations across the Life Course*. New York: Aldine de Gruyter.

Ruggles, S. (1986). Availability of Kin and the Demography of Historical Family Structure. *Historical Methods: A Journal of Quantitative and Interdisciplinary History, 19*(3), 93-102.

Ruggles, S. (1987). *Prolonged Connections: The Rise of the Extended Family in Nineteenth-Century England and America*. Madison, Wisconsin: University of Wisconsin Press.

Ruggles, S. (1993). Confessions of a Microsimulator. *Historical Methods: A Journal of Quantitative and Interdisciplinary History, 26*(4), 161-169.

Ruggles, S. (1994). The Origins of African-American Family Structure. *American Sociological Review, 59*, 136-151.

Ruggles, S., & Brower, S. (2003). Measurement of Household and Family Composition in the United States, 1850–2000. *Population and Development Review, 29*(1), 73-101.

Sarkisian, N., & Gerstel, N. (2004). Kin Support among Blacks and Whites: Race and Family Organization. *American Sociological Review, 69*(6), 812-837.

Schneider, D. M. (1968). *American Kinship: A Cultural Account*. Chicago: University of Chicago Press.

Schneider, D. M. (1980). 12 Years Later *American kinship: A cultural account*. Chicago: University of Chicago Press.

Schneider, D. M. (1984). *A Critique of the Study of Kinship*. Ann Arbor, Michigan: University of Michigan Press.

Schneider, D. M., & Cottrell, C. B. (1975). *The American Kin Universe: A Genealogical Study*. Chicago: Department of Anthropology, University of Chicago.

Schneider, D. M., & Smith, R. T. (1973). *Class Differences and Sex Roles in American Kinship and Family Structure*. Engelwood Cliff, NJ: Prentice-hall.

Schneider, D. M., & Smith, R. T. (1978). *Class Differences in American Kinship*. Ann Arbor: University of Michigan Press.

Seidman, S., Meeks, C., & Traschen, F. (1999). Beyond the Closet? The Changing Social Meaning of Homosexuality in the United States. *Sexualities, 2*(1), 9-34.

Smith, J. E. (1987). The Computer Simulation of Kin Sets and Kin Counts. In J. Bongaarts, T. K. Burch, & K. W. Wachter (Eds.), *Family Demography: Methods and Their Application* (pp. 249-266). Oxford, UK: Oxford University Press.

Spanier, G., & Furstenberg, F., Jr. (1987). Remarriage and Reconstituted Families. In M. Sussman, & S. Steinmetz (Eds.), *Handbook of Marriage and the Family* (pp. 419-434): Springer US.

Statistics Sweden (2009). *Multi-Generation Register 2009. A Description of Contents and Quality*. Örebro: Statistics Sweden.

Steenhof, L., & Liefbroer, A. C. (2008). Intergenerational Transmission of Age at First Birth in the Netherlands for Birth Cohorts Born between 1935 and 1984: Evidence from Municipal Registers. *Population Studies, 62*(1), 69-84.

Strathern, M. (1992a). *After Nature: English Kinship in the Late Twentieth Century*. Cambridge, UK: Cambridge University Press.

Strathern, M. (1992b). *Reproducing the Future: Essays on Anthropology, Kinship and the New Reproductive Technologies*. Mancherster: Manchester University Press.

Szebehely, M. (2005). Anhörigas Betalda Och Obetalda Äldreomsorgsinsatser. *Statens offentliga utredningar, SOU 2005: 66*, 133-206.

Taylor, P. (2008). The under-Recognized Implications of Heterogeneity: Opportunities for Fresh Views on Scientific, Philosophical, and Social Debates About Heritability. *History and philosophy of the life sciences, 30*(3-4), 431.

Taylor, P. (2010). Three Puzzles and Eight Gaps: What Heritability Studies and Critical Commentaries Have Not Paid Enough Attention To. *Biology & Philosophy, 25*(1), 1-31.

Thomson, E., Lappegård, T., Carlson, M., Evans, A., & Gray, E. (2014). Childbearing across Partnerships in Australia, the United States, Norway, and Sweden. *Demography, 51*(2), 1-24.

Tomassini, C., Kalogirou, S., Grundy, E., Fokkema, T., Martikainen, P., Van Groenou, M. B., et al. (2004). Contacts between Elderly Parents and Their Children in Four European Countries: Current Patterns and Future Prospects. *European Journal of Ageing, 1*(1), 54-63.

Torssander, J. (2013). From Child to Parent? The Significance of Children's Education for Their Parents' Longevity. *Demography, 50*(2), 637-659.

Trägårdh, L. (1997). Statist Individualism: On the Culturality of the Nordic Welfare State. In B. Stråth, & Ø. Sørensen (Eds.), *The Cultural Construction of Norden*. Oslo: Scandinavian University Press.

Udry, J. R. (1996). Biosocial Models of Low-Fertility Societies. *Population and Development Review, 22*, 325-336.

Uhlenberg, P. (1996). Mortality Decline in the Twentieth Century and Supply of Kin over the Life Course. *The Gerontologist, 36*(5), 681-685.

Uhlenberg, P. (2005). Historical Forces Shaping Grandparent-Grandchild Relationships: Demography and Beyond. In M. Silverstein (Ed.), *Intergenerational Relations across Time and Place* (pp. 77-97, Annual Review of Gerontology and Geriatrics, Vol. 24). New York: Springer Publishing Company.

Van de Kaa, D. J. (1987). Europe's Second Demographic Transition. *Population Bulletin, 42*(1), 1-59.

Visscher, P. M., Hill, W. G., & Wray, N. R. (2008). Heritability in the Genomics Era—Concepts and Misconceptions. *Nature Reviews Genetics, 9*(4), 255-266.

Wachter, K. W. (1997). Kinship Resources for the Elderly. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 352*(1363), 1811-1817.

Weston, K. (1997). *Families We Choose: Lesbians, Gays, Kinship*. New York: Columbia University Press.

Young, M. D., & Willmott, P. (1957). *Family and Kinship in East London* (Reports of the Institute of Community Studies, Vol. 1). Glencoe, Ill.: Free Press.

Zietsch, B. P., Kuja-Halkola, R., Walum, H., & Verweij, K. J. (2014). Perfect Genetic Correlation between Number of Offspring and Grandoffspring in an Industrialized Human Population. *Proceedings of the National Academy of Sciences, 111*(3), 1032-1036.