"Garbled demography" or "Demographization of the social"? A Foucaultian discourse analysis of German demographic change at the beginning of the 21st century

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"Garbled demography" or "Demographization of the social"? – A Foucaultian Discourse Analysis of German Demographic Change at the Beginning of the 21st Century

Reinhard Messerschmidt [*]

Abstract: *»'Verstümmelte Demografie' oder 'Demografisierung des Gesellschaftlichen'? – Eine Foucaultsche Diskursanalyse des demografischen Wandels in Deutschland des beginnenden 21. Jahrhunderts«.* German discourses of demographic change are characterized by alarmist scenarios. Especially since the turn of the millennium, a growing amount of publications addresses population aging and shrinking by depicting mostly dystopian future scenarios. Allegedly inevitable consequences with fundamental relevance for society are often proclaimed in the media and social-scientific discourses. Although most demographers alert to the fact that population projections should not be interpreted as prognoses, they are often employed as irrefutable knowledge as well as camouflage for normative positions. Complex demographic measures are frequently misinterpreted by journalists, who consequently produce "garbled demography" (Teitelbaum 2004). However, the "demographization of the social" (Barlösius 2007) turns out to be more complex than a misunderstanding or a distortion of "neutral" scientific facts. Michel Foucault's works provide a framework of suitable complexity in order to analyze the depth-structures of both discourses and their interrelations. This paper will first describe relevant conditions of existence of demographic knowledge orders, their rules of formation, and discursive regularities in order to shed light on the demographic ontology of the present. Subsequently, these depth structures will be related to preliminary results of a discourse analysis of 2900 press articles from leading German newspapers and journals covering the period from 2000 to 2012. In conclusion, first contours of a recently emerging post-alarmist discourse will be outlined.

Keywords: Demographic change, demography, population, Michel Foucault, discourse analysis, governmentality, games of truth, ontology of the present, epistemology.

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1. Introduction

Alarmist "demodystopias", or as Andreu Domingo[1] refers to them "prospects of demographic hell" (Domingo 2008), depicted in press articles are pervasive. Here is a short illustrative selection of quite "normal" headlines[2] which provide a compact insight into this article's main concern:

- "Germany 2014: Humans go, Wolves come" (Süddeutsche 2004-08-18),
- "Land without people" (Die Zeit 20/2001),
- "The aged republic" (Die Zeit 02/2003)
- "The last German – on the way to the elderly republic" (Spiegel 2004-05-01)
- "In twelve generations we Germans will become extinct" (BILD 2006-03-15)
- "German population is shrinking and aging dramatically" (Spiegel 2006-11-07)
- "Continuously fewer Germans" (Süddeutsche 2010-02-24)
- "Shrinking and becoming senile" (taz, 2011-10-27).
- "Demographic change – where villages die out in Germany" (Welt Online, 2011-11-28)
- "Deserted landscapes in Eastern Germany" (Focus Online, 2011-11-31)
- "Aging society: zero growth erodes social systems" (Financial Times Germany, 2011-12-29).

Demographic change, typically understood as aging of the population (Schimany 2003) with respect to its subsequent shrinking (Kaufmann 2005) has become a commonplace in German[3] social-scientific as well as mass-media discourses since the turn of the millennium. It would exceed the boundaries of this article to list the overwhelming amount of publications dealing with the topic. Nevertheless, the Google Ngram Viewer can help in creating a first impression about the general quantitative tendency in the German language Google books corpus, which consists of 657,991 digitized volumes published within the period of 1998-2008 (Lin et al. 2012, 170). A massive increase in usage frequencies of the phrase can be observed in Google's corpus since 2004,

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[1] The Spanish demographer Domingo (2008, 725) defines the term as "Dystopias that are brought about by demographic change or that make population matters a salient concern", but uses it in the different context of fictional literature of the past centuries.

[2] Translated by author; The first example based on "research" by the think tank Berlin Institute for Population and Development is most likely falsified by reality (as long as nothing unforeseen and severe will happen in the remaining time).

[3] The focus on Germany is not an arbitrary choice, but rather a result of the author's research experience and background. A comparative analysis would have been also interesting, but at the expense of depth and complexity, as the only existing comparative analysis in the field (Georgiadis 2011) shows.

while an initial increase of the slope can already be noticed around the turn of the millennium. In 2008, the frequencies are approximately 4.5 times higher compared to 2000. The nearly exponential trajectory of the curve illustrates the permanently growing relevance of the topic, at least in the considerably large corpus of Google books.

Figure 1: Cumulated NGrams of the Google Books Corpus for Term "Demographic Change" (Including Old/New Orthography and Different Flexions)
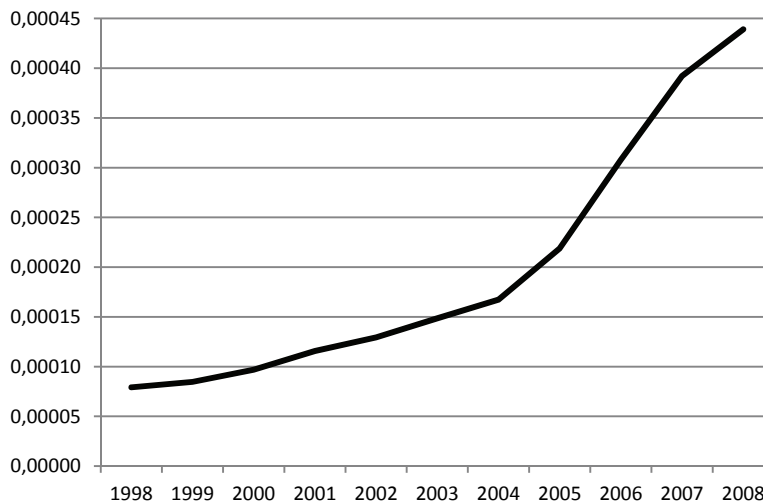
Source: own calculation based on NGram Viewer results <books.google.com/ngrams>.

Discourses of demographic change have become very powerful in the last years, especially in Germany, as well as other western countries with declining fertility rates. Although according to Teitelbaum and Winter (1985, 1) the "fear of population decline" ebbed and flowed over the past century "depending both upon demographic realities and perceptions of the links between population change and economic, social, and political power", the specific discourses of the present deserve specific attention on the part of discourse researchers, especially given a strong political thrust of the topic. In contrast to the sheer amount of existing social-scientific literature dealing with demographic change and its causes or consequences, there exists a relatively small amount of literature with a critical focus on different aspects of the topic[4]. Even fewer publications ap-

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[4] e.g. Graefe 2013, Schwentker and Vaupel 2011, Bourcarde 2011, Lessenich and Rothermund 2011, Bogedan et al. 2008, Auth 2007, Barlösius 2007, Hondrich 2007, Berger and Kahlert 2006, Kistler 2006, Oberndörfer 2005, Bingler and Bosbach 2004, Butterwegge 2002.

proach the topic from perspective of or in relation to Foucaultian discourse analysis (Foucault 1972, 2010, 2011; Diaz-Bone 2011, 2010, 2008, 2006).[5]

A complex synthesis which links a demographically informed genealogy of "future-knowledge" (Hartmann and Vogel 2010) in the German population with the quantitatively exploding discourse since the turn of the millennium is still missing. Besides the forthcoming final monograph of a complex study on the transformation of the social perception of aging (Denninger et al. 2014),[6] which explicitly focuses on discourses closely related to the project presented in this article, there is still a broad research gap to be filled. This article, based on a research project[7] that begun in 2009, provides a summary of selected core arguments and results in order to outline the direction of the project and to react argumentatively on the contemporary discursive dynamics. In writing this article at the beginning of 2014, there is a need to point to some changes happened since the start of the project. On the one hand, leading demographers, who also in the past held moderate positions, publish more and more articles that critically reflect upon public or/and political impact of demographic measures and models (e.g. Schwentker and Vaupel 2011; Sobotka and Lutz 2011). On the other hand, the empirics of the population and future-knowledge based on it are challenged by the controversially discussed national census of 2011 and a small population growth as a consequence of a huge migration surplus in the last years (Federal Statistical Office 2014). Nevertheless, it still appears that the hegemony of alarmist articles in the mass-media discourse has not sufficiently changed.[8]

Hence, the main intention of this article is to give a critical overview of crucial aspects of contemporary demographic change discourses. For this purpose, it is first necessary to examine the conditions of the existence of the demographic statement-system (discourse[9]) and, therefore, to pursue Foucault's

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[5] Lessenich 2013, Van Dyk et al. 2013, Graefe and Lessenich 2012, Denninger et al. 2012, 2010; Bryant, 2011, Etzemüller 2011, 2008, 2007; Hummel 2000, Ottersbach 1997, Katz 1992.

[6] The following papers have already been published and give insight into the variously facetted project: Lessenich 2013, Van Dyk et al. 2013, Graefe 2013, Graefe and Lessenich 2012, Denninger et al. 2012, 2010; Lessenich and Rothermund 2011, Graefe et al. 2011, Van Dyk and Lessenich 2009. Furthermore, a cross-national follow-up project titled "Aging as future" is already running since 2012.

[7] Working title: "Demographic Change as Dystopia. A critical analysis of demographic discourses and politics of truth in the German science and public of the beginning 21st century"; the project will be finished in 2014 at the a.r.t.e.s. Research School of the Faculty of Arts and Humanities of the University of Cologne

[8] Currently, the time horizon of the analysis of the mass-media discourse of the project ends in December 2011. 2012, 2013, and 2014 will be included in the dissertation publication in order to proof that the tendency has not noticeably changed.

[9] According to Foucault (1972, 117), discourse is understood as "a group of statements in so far as they belong to the same discursive formation". In contrast to the majority of existing receptions of Foucault and approaches of discourse analysis based on a different under-

(1972, 27) classical archeological question in a slightly modified way: "how is it that one particular [system of] statement[s] appeared rather than another?" Its underlying rules of formation will be presented and discussed critically in chapter 2, whereas chapter 3 will focus on the regularities of the mass-media discourse that have been identified in a relatively large corpus. Due to the empirical focus of the article and space restrictions, there is no intention to describe the theoretical underpinnings of the project in their full length. Instead, a rather brief description should help to locate it in the variety of approaches that utilize the term "discourse". In other words, it is an individual adaption of Foucaultian discourse analysis to the topic of research from the perspective of his late works (2011, 2010), which center on the analysis of orders of truth (respectively: systems of thought) as interrelation of Foucault's three classical dimensions of interest:

> What is involved, rather, is the analysis of complex relations between three distinct elements none of which can be reduced to or absorbed by the others, but whose relations are constitutive of each other. These three elements are: forms of knowledge (savoirs), studied in terms of their specific modes of veridiction; relations of power, not studied as an emanation of a substantial and invasive power, but in the procedures by which people's conduct is governed; and finally the modes of formation of the subject through practices of self. It seems to me that by carrying out this triple theoretical shift […] we can study the relations between truth, power, and subject without ever reducing each of them to the others (2011, 9).

Frédéric Gros summarizes this perspective as:

> never studying discourses of truth without at the same time describing their effect on the government of self and others; never analyzing structures of power without at the same time showing the knowledge and forms of subjectivation they rely on; never identifying modes of subjectivation without including their political extensions and the relations they have to the truth (Gros in Foucault 2011, 346).

Although the entire complexity of this framework will not fully appear in this article due to its particular scope, this perspective embodies the specific direction of discursive research interest. It has already been outlined[10] as "Alethurgic Discourse Analysis" (Messerschmidt 2011) and is regarding its primarily epistemological research interest and focus on depth structures close to the reception of Rainer Diaz-Bone (2011, 2010, 2008, 2006).

Stephen Katz stated already over 20 years ago that "popular and professional discourses which currently accentuate the demographic features of aging populations are characterized by their alarmism" and therefore named this

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standing, the term is understood here as irreducible to language and speech. Consequently, a "deeper" level of orders of thought and knowledge is at stake here, not sentences, propositions, signs, or speech-acts (Foucault 1972: 49-87).

[10] The detailed conception will be described in the final publication of the project.

phenomenon "alarmist demography" (Katz 1992, 204). He embedded such alarmism into larger narratives, especially regarding the elderly sub-population and its collective dependency, where popular media and think tanks "depict the elderly emptying the coffers of the welfare state and creating a tax burden beyond the means of the labor force to support" so that apparently "the growing aging population is threatening to create an economic crisis with profound consequences for healthcare systems, social security programs, industrial and intergenerational relations" (Katz 1992, 203-4). Katz also pointed out (1992, 214) that, by following Foucault, "we can say that the institutional differentiation of the elderly population is part of the general biopolitical division of the population in Western society" and in consequence, "the alarmist and largely negative image of the elderly and their historical construction as a fixed population developed in tandem". What he could clearly oversee in the past, without giving more detailed explanation, will be relocated in a bigger picture of the present for this article. This will allow retracing discursive rules and regularities in both discursive arenas of science (chapter 2) and mass media (chapter 3). Chapter 2 describes the fabrication of demographic future-knowledge starting with preliminary remarks and the current state of the art (2.1), followed by a critical reconstruction of the population projections by the German Federal Statistical Office (2.2) and of demographic concepts, measures, and data (2.3). Chapter 3 focuses on the discourse analysis of a German press corpus from 2000-2011, with a description of its collection (3.1), the code system, and preliminary results (3.2). Finally, the relation between misunderstandings or "garbled demography" (Teitelbaum 2004) and "demographization" (Barlösius 2007) will be discussed in the conclusion, in order to outline first contours of a recently emerging post-alarmist discourse.

2. The Fabrication of Demographic Future-Knowledge

Before claiming any assumptions about the demographic future, it is necessary to know the present. And already there, the problems begin. Despite all the ruptures, there is a constant regularity of demographic thought: the concept of population in its dynamics. Defining a population is always an inclusion and parallel exclusion of people, closely tied to the concept of national state and especially in Germany often understood in the problematic concept of "Volk", in implicit or even explicit form (cf. Etzemüller 2007, 145). Meanwhile, even a minority of German demographers demonstrated the constructivist character of the concept of "population" (Mackensen et al. 2009). A population is constructed, insofar as that it depends on borders that have been drawn in relation to the historical development of national states (cf. Etzemüller 2008, 203). A Foucaultian reception of discourse analysis focusing on systems of thought ("episteme") questions the realism of such demographic "realities". For this

purpose, a reflection of its type and degree of social construction (Hacking 2000) is very helpful. A deeper examination of the related ontology of the present by way of a discourse analysis is a different proposal than an analytic of truth (cf. Foucault 2010). This differentiation is compatible with the epistemological position that Ian Hacking (2002) described as "dialectical realism". It accommodates the specific character of demographic (future) constructs as discursive games of truth intertwined with power relations without falling into the trap of epistemic relativism. "Reflexive methodology", which Tomas Marttila (2013, 12) presented convincingly as a key element for further methodological elaboration of governmentality research, also provides a methodological foundation for the specific Foucaultian discourse analysis developed for this project. Furthermore, Alain Desrosières discussed the problem of the tension between realism and conventionalism[11] specifically regarding quality criteria of official statistics and concluded that the differentiation based on compromise solutions relying on structuralist[12] thought can help to "understand the often obscure debates and controversies triggered by statistical arguments, both in the public arena and in the social sciences" (Desrosières 2009, 321). With respect to the central demographic concept of "population", such a debate would only become obscure if a consequent reflection upon the boundaries of this construction is neglected. Especially with regard to international migration, the distinction between country citizens and the "others" is obvious. The problems start not only with the numerical data base when counting undocumented immigrants through estimation. This separation is still visible (and very questionable) when demographic models exclude the children of immigrants who hold national citizenship and assume two separated sub-populations (Bohk 2012, 178). The demographic key concept of a population is neither neutral, nor natural.

2.1 Preliminary Remarks on the Current State of Art

Currently, there are only two monographs dealing with the German "population discourse" which exist (Hummel 2000; Etzemüller 2007). Both conceptualize it as being a substantially monolithic discourse, which can be genealogically retraced to the emergence of demography in the late 18th century. There is no doubt that both publications contribute to a better understanding of the history

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[11] The "Économie des Conventions" has recently been a special focus in HSR 37 (2012) 4, edited by Rainer Diaz-Bone and Robert Salais.

[12] "Several compromise solutions are available to ease this tension. They rely on the principle of separating the signifier (the measurement) and the signified (the object to be measured), while linking them by means of varied correspondence terms" (Desrosières 2009, 321). Desrosières already raised the problem more than ten years before in his monograph "The politics of large numbers" (1998, 1) because: "it is difficult to think simultaneously that the objects being measured really do exist, and that this is only a convention".

of present demographic discourses. Contemporary discourses of demographic change, however, require more thorough attention. The sociologist Diana Hummel (2000, 15) identified demography as a genuine "political science" and pointed out that "population" was clearly already a political concept beginning with the emergence of the study of demography, which aimed at political regulations based on explanation and prognostics of population dynamics. Although a longer genealogy which began with the emergence of demography in the late 18th century can help in understanding the present discourse, Hummel's approach to analyze one monolithic population discourse throughout over two centuries is unable to acknowledge variation in depth-structures of the discourse: Such a big picture ignores many ruptures of the discourse which become especially visible in a smaller period of time. Additionally, her detailed and demographically informed analysis ends exactly at the point when discourses of demographic change spread intensively into the German public via the mass-media. Consequently, the analysis presented in this paper covers the years 2000 to 2011. Furthermore, the late works of Michel Foucault (2007, 2008, 2010, 2011) were not published when Hummel wrote her monograph. These lectures provide a more complex perspective on the relations of knowledge, power, and subject; Hummel could not foresee both of these developments. Therefore my project can be seen as complementary, empirically specialized, and theoretically actualized. The historian Thomas Etzemüller examined "the apocalyptical population discourse of the 20th century" (2007) in a cross-national, but selective way and without explaining in depth his discourse analytical framework. Although his book reveals interesting insights, it can only provide additional impulses in order to achieve a deeper understanding of the discourses of the beginning of the 21st century.

In a summary article, he stated that "the discourse works only through its visualization, because demographic processes as such are invisible" (Etzemüller 2008, 210). Although visualization is a crucial element of demographic discourses, he seems to overemphasize it at this point. Demographic processes are primarily visible through numbers, which demographers produce, calculate, and interpret. Their scientific discourse is not at all homogenous, but to a certain extent consensual phenomenon, which needs transportation into public discourses through the mass-media. As this paper will later describe, both discursive arenas are intertwined in an epistemologically questionable way, which systematically (re-)produces "garbled demography" (Teitelbaum 2004), but is not only based on misunderstandings. Visualization plays a crucial role at this point: Although demographic discourses cannot be reduced entirely to visualization, graphs produce in a certain sense stronger statements, compared to tables or sentences. This is caused by what Eva Barlösius called in her critique on "demographization of the social" a "symbolic surplus", characterized by graphs that evoke one specific interpretation regarding the consequences (2007, 17; cf. 2010, 232). Population pyramids, not "invented" but popularized

by Friedrich Burgdörfer in 1932 (Etzemüller 2007, 85), and still used for descriptions of the changing age structure of a population, already contain a strongly normative framework of the interpretation. The visual scheme from a "pyramid" to an "urn" is indeed a classic regularity of "apocalyptic" population discourses and is settled in an "ideal" total fertility rate (TFR) of 2.1 children per woman, the so-called replacement fertility which leads to a stationary population. Implicitly included interpretation is often, however, not as obvious as in this case.

Before focusing on the production of demographic future-knowledge, it is important to briefly comment on the status of this project regarding the linguistic turn[13]: In contrast to Etzemüller, who stated (2011, 101) that his "paper is not about demography but the speaking about demographical processes", this paper is about demography as well as the speaking about demographical processes. From the theoretical perspective which has been briefly characterized in the introduction, there is no good reason why a critique of demographic reasoning and underlying categories should not aim toward a more reflected reasoning with better categories. Of course, those new categories can be criticized later by others for different reasons, because scientific knowledge is always as provisional as discursive. Nevertheless, this was not intended by Etzemüller's historically oriented works, whereas this paper has a strong epistemological focus on the demographic ontology of the present. This ontology seems to become more and more challenged by critique, which is in few cases uttered internally and more often externally by scholars of other disciplines.

2.2 The Population Projections by the German Federal Statistical Office

At the beginning of 2014, Germany's Federal Statistical Office (Destatis) published a press release titled "Increase in the population expected again for 2013" referring to the strong migration surplus as a cause (Federal Statistical Office 2014). In fact, the German total population has been continuously rising since 2011, which was the year of trend reversal since 2002 according to Destatis (Federal Statistical Office 2011). Destatis' recent population projection conducted before the trend reversal towards population growth stated: "Germany's population has declined since 2003. This decline will continue and even accelerate" (Federal Statistical Office 2009, 12). This statement, clearly in tension with the introduction of the press release where Destatis "does not claim to forecast future developments until 2060" (Federal Statistical Office 2009, 9), has been doubtlessly falsified by reality for meanwhile three years

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[13] Rorty 1967; Although Etzemüller is not very explicit about the details of his theoretical background, it seems that his reception of Foucault differs regarding the (ir-)reducibility of discourse to language and speech-acts (cf. Messerschmidt 2011).

(cf. Schwentker 2014) and it is not the first time that a population projection has failed (cf. Etzemüller 2007, 146). Nevertheless, it could turn out in the long run that the projection results and real developments converge again by 2060, as five decades constitute a long period of time. Therefore, demographers as well as Destatis emphasize the "long-term and sustained nature of the processes of population dynamics" (Federal Statistical Office 2009, 5). This might be true retrospectively, but to what extent the demographic projections are uncertain is a question to be discussed more deeply.

If we look at the recent press release of Destatis, which presents the future of the German population over the next 50 years, there are many interesting details to be discovered. The sub-title of the German version – "coordinated pre-calculation of the population"[14] – is in noticeable tension with the deterministic population projections by Destatis (see fig. 2). In contrast to a probabilistic projection by the Vienna Institute of Demography (VID, see fig. 3), which is also scenario based but includes uncertainty in the visualization, the main difference on the level of statements becomes visible:

Figure 2: German Population 1950-2060 by Destatis (deterministic projection)

Population figures from 1950 to 2060
From 2009 results of the 12th coordinated population projection

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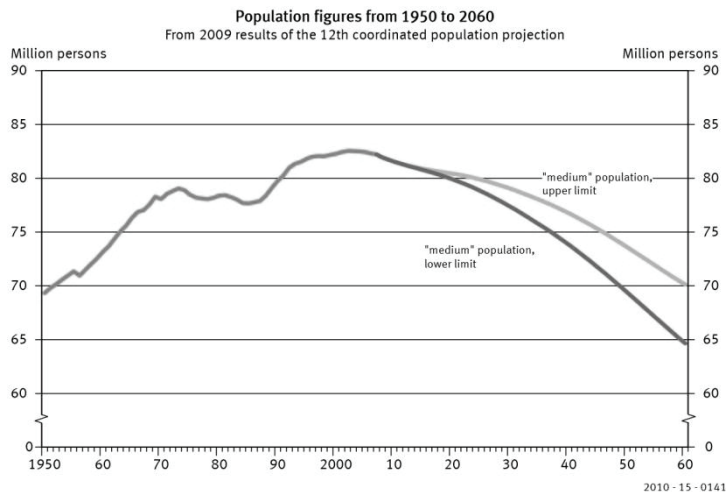
[14] Translated by author.

Figure 3: German Population 2005-2050 by VID (probabilistic projection)
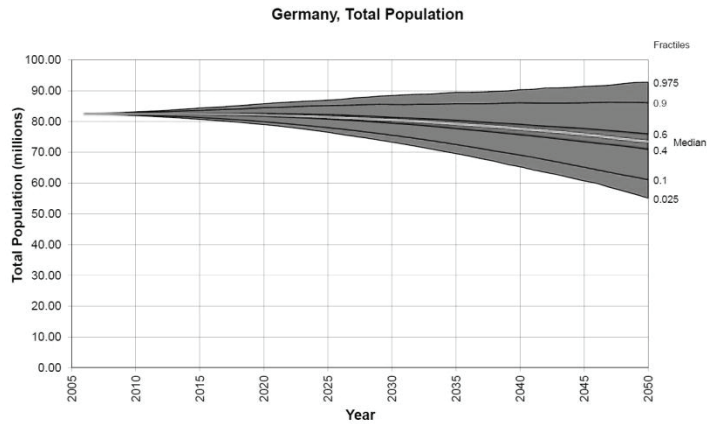
Figures 2, 3: deterministic population projection (Source: Federal Statistical Office 2009) vs. probabilistic pendant (Source: Scherbov et al. 2008)

The graph from Destatis only shows the outcome of two "medium" scenarios that clearly indicate a decline, whereas the VID projection shows a possible range of outcomes under the given premises of the scenario with different probabilities. In absolute numbers, there is no significant difference between the results of Destatis' upper limit scenario and the median of the VID projection[15]. However, the graph from Destatis lacks information that the graph of the VID provides and has modified scales of the axes[16] with the consequence of a more dramatic (visual) decline. If we assume that journalists who mostly do not have the necessary statistic or even demographic background knowledge for a critical interpretation – and often lack time in order to read the entire press release including the few cautious statements about interpretation – it is obvious which of both graphs contains a "newsworthy" statement. If we treat each graph of both shown population projections as discourses, namely "group[s] of statements that belong to a single system of formation" (Foucault 1972, 107), the task will be to analyze each one's system of formation. Although both graphs are very similar also with regard to their premises, the conclusions to which the graphs allude differ fundamentally. In order to understand why, it is necessary to reconstruct the crucial parts of episteme they both share and that make them different. Both projections refer to the same measures and produce,

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[15] According to Destatis (Federal Statistical Office 2009, 46), the population in 2050 would amount 73,608 for the upper limit (respectively 69.412 million lower limit) compared to 73.44 million for the median of the VID projection (Scherbov et al. 2008, 40).

[16] X-axis: period enlarged backwards before start of projection, y-axis: rupture between 0 and 60; consequently, the graph visually declines stronger than without those modifications.

at least numerically[17] in tables, a quite similar range of results, but strongly differ regarding the consideration of uncertainty, especially in the visualization. In other words, a population projection can only be as good as its underlying assumptions regarding the future development of the three determinants, i.e. fertility, mortality, and migration. Destatis uses 12 different scenarios combined with 3 additional "model-calculations". The majority is excluded in the graph of fig. 1 and only presented regarding underlying assumptions in tables of the appendix without results or visualization (2009, 36-41). The results of these scenarios can only be downloaded separately as Excel sheet. If we compare the assumptions with the past trajectories of the indicators, all scenarios share a very artificial static character, so as to the difference between a scenario and a "model-calculation" seems to become vanished.

The total fertility rate (TFR, see fig. 4) has obviously declined since the 1960s in both parts of Germany. Although the declining trend is well explained for the past, the expert opinions for the scenario design are confronted with Hume's problem of induction (a.k.a. "Russell's inductivist turkey"): why should the trend go on? Demographers would protest here and point to the low chance for another phenomenon comparable to the "pill-gap". Still, the three constant scenarios that Destatis' experts offer are epistemologically questionable, especially regarding limitations of the TFR (see chapter 2.3 of this paper). It becomes even more problematic if we look at net migration (see fig. 5). The only two options that Destatis' projections include are either 100,000 or 200,000 persons per year. But already by 2011 these boundaries were noticeably exceeded (Federal Statistical Office 2012) and in 2012 net migration was nearly twice as high as the higher scenario with 394,900 (Federal Statistical Office 2013). This might be hardly a surprising occurrence of a "black swan" (Taleb 2007). It could partially be a consequence of one, if we would interpret the 2008 financial crisis that way. But regardless of possible causes, the past trajectory of the graph shows what every demographer knows: migration is an almost unpredictable result of the fact that people "make history", which is highly dependent on political decisions. The question whether the underestimation of net migration is related to the fact that Herwig Birg – who frequently uttered his pro-natalist and anti-immigration position in naturalized form (2007, 2005, 2001; see chapter 3 of this paper) – holds the first place of Destatis' list of experts for its scenario assumptions (Federal Statistical Office 2009, 10) shares the epistemological status of the projections regarding their long-term results: mere speculation.

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[17] According to the separate Excel sheet, Destatis' minimum amounts 64,365 million in 2050 (Model calculation with zero net-migration), whereas the maximum amounts 82,580 million (Model calculation with TFR=2.1), compared to range from 61,08 to 86,098 million for the 80% prediction interval of the VID projection.

Figure 4: Destatis' assumptions for Total Fertility Rate to 2060

Trends in the total fertility rate until 2060
From 2009 assumptions of the 12th coordinated population projection

Children per woman / Children per woman

- former GDR/new Länder
- Germany
- former territory of the Federal Republic
- 1.6 children per woman
- 1.4 children per woman
- 1.2 children per woman

2010 - 15 - 0148
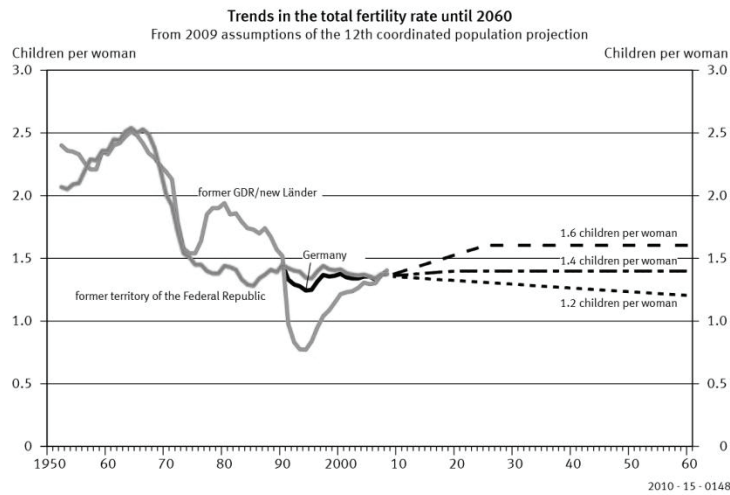
Figure 5: Destatis' assumptions for Net Migration to 2060

Development of net migration across Germany's borders [1] until 2060
From 2009 assumptions of the 12th coordinated population projection

Thousand persons / Thousand persons

1) Until 1990 former territory of the Federal Republic of Germany.

2010 - 15 - 0150
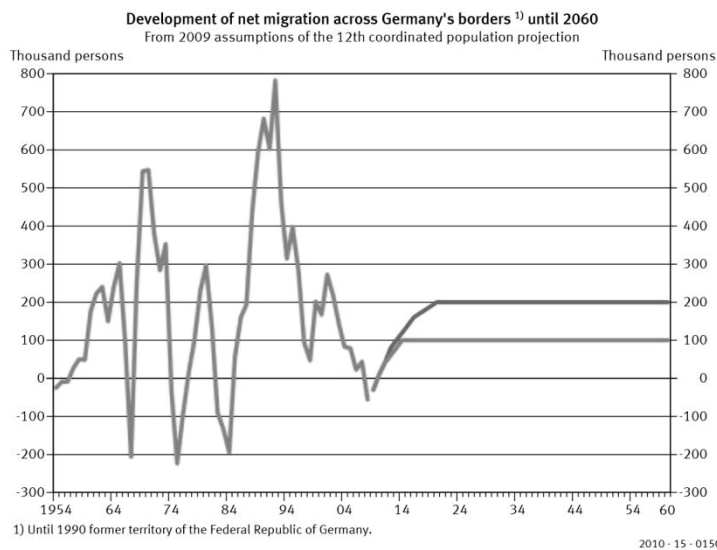
Figures 4, 5: past development and Destatis' scenario assumptions for total fertility rate and net migration (Source: Federal Statistical Office 2009).

2.3   Problems of Concepts, Measures, and Data

We have seen that the outcome of a population projection is highly dependent on underlying assumptions of fertility, mortality, and migration. Among those, only mortality trends seem to be relatively certain, although even those could be negatively changed by a "black swan", as, for instance, in the case of an epidemic of multi-resistant viruses, which we hopefully will not experience. Regarding the total fertility rate (TFR, or more exactly "period TFR", abbreviated PTFR), the problem is much more complex than induction. Recently, two leading demographers, namely Tomáš Sobotka and Wolfgang Lutz, emphasized that the PTFR, which

> has become the ubiquitous fertility indicator of choice since the 1960s […] is commonly labeled as the 'mean number of children per woman' by many demographers and statistical offices and, in consequence, also by journalists and politicians (Sobotka and Lutz 2011, 638).

It may not be surprising that Destatis notes the same on the y-axis of the diagram. Moreover, the conventional PTFR used by Destatis is distorted by tempo-effects (Bongaarts and Feeney 1998) due to the birth timing and the simple fact that it does not reflect future births of female cohorts that have not yet ended their reproductive phase. There are approaches to estimate a tempo-adjusted TFR, which try to compensate for the noticeable underestimation (see fig. 6), but the "real" cohort TFR (CTFR) is available only for past cohorts. Estimates for a tempo-adjusted TFR have also been calculated by VID demographers for years; for example in 2008, it amounts to 1.69 (VID 2012), what is compared to the conventional TFR of around 1.4 a noticeable difference, especially when referred to the context of population projections. Unfortunately, there is not yet any projection using tempo-adjusted TFR estimates.

Sobotka and Lutz (2011, 638) criticize that

> [i]n the public discourse relatively few references are made to cohort fertility as the adequate measure of fertility or to other indicators of period fertility that may better reflect changes in fertility trends. Likewise, little reference is made to trends in the absolute number of births, which after all directly determine the future size and age structure of the population. Although all demographers should be aware of the serious problems associated with calling the period TFR the 'mean number of children per woman', a notion that only makes sense from a cohort perspective, there is hardly any public discussion about this.

Figure 6: Total Fertility Rate in Western and Eastern Germany According to the Conventional TFR and the Tempo-Adjusted TFR, 1950-2010
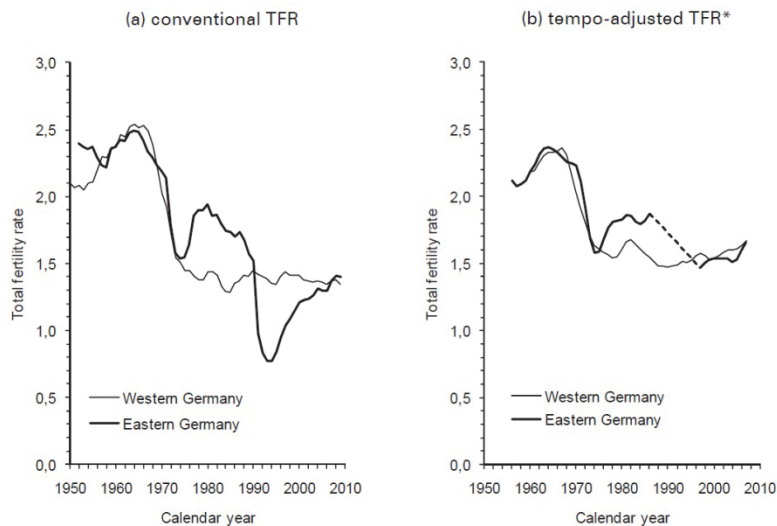
Source: Luy and Pötzsch 2010, 622.

This critical diagnosis could have spread through the mass-media, but (not) surprisingly, the echo in the press was minimal. Unfortunately, the previously discussed critique that Sobotka and Lutz express in condensed precision seems to be too technical to evoke a scandal. Nevertheless, both conclude that

> there is a strong case for stopping the use of the period TFR as a one-fits-all fertility indicator which is currently a common practice. While demographers are increasingly aware of the pitfalls associated with the period TFR, their continuous reliance on this measure fuels large misperceptions of fertility levels and dynamics among policy makers, the media and the general public. As a minimum reporting standard, demographers who still choose to use the period TFR should stop referring to it as the "mean number of children per woman", which it evidently is not. The choice of the most appropriate indicator must depend on the question asked. (Sobotka and Lutz 2011, 655-6)

From a scientific point of view, this conclusion seems almost trivial, but the complexity of demographic measures seems to be a strong obstacle for mediation of this problem to journalists.

After the critical examination of the used methods and indicators, there are two other crucial problems with the "rationality" of population projections. On the one hand, the data base for Germany is not as reliable as non-experts would expect. In fact, the data has been interpolated since the last census (1981 for East- and 87 for West-Germany) and therefore distorted, especially due to the reunification process. Although there was recently a new census in 2011, its

results are still controversially being discussed regarding methodical deficits, and have thus not yet been used for any official population projection. On the other hand, age as a demographic key measure needs to be reflected upon. The same could be said about the dependency ratio, which is an age-based construction of high importance when it comes to the consequences of demographic change. Again, the problem of the related discourse is the unreflected naturalization of the used categories:

> Using chronological age, we are lead implicitly to think that people of the same age in different years would behave similarly, but because of life expectancy increases there are aspects of behavior where this might not be the case. For example, a 45 year old in 2050 might well behave in many ways like a 35 year old in 2000 if they had the same remaining life expectancy. It is precisely because many behaviors depend on the number of years left to live that it is important to supplement the usual backwardlooking definition of age with a forward-looking one (Sanderson and Scherbov 2007, 28).

This striking argument by Warren C. Sanderson and Sergei Scherbov basically aims at the quality of age measures and leads to far-reaching consequences:

> The aging of populations and of people have different dynamics. Surviving people must grow one year older each year. Populations, on the other hand, do not necessarily grow one year older each year. Populations can grow more than one year older, less than one year older or even grow younger with the passage of time. When age is measured as a two dimensional variable our descriptions of population aging grow more complex. With two ages to consider, populations can simultaneously grow younger according to one measure and older according to the other (Sanderson and Scherbov 2007, 29).

To illustrate this effect, let us take a look at another demographic measure, which is based on age: The conventional dependency ratio is the ratio of the "dependent" sub-population, typically calculated as the number of people aged 65+, divided by the number of people of working age, 15 or 20 to 64. Sanderson and Scherbov criticize (2010, 1287): "When using indicators that assume fixed chronological ages, it is implicitly assumed that there will be no progress in important factors such as remaining life expectancies and in disability rates". Consequently, they present a prospective version (POADR) using a forward-looking age measure which would reduce the projected increase in 2050 already by one third, whereas a dependency ratio that refers to a disability adjusted aging measure leads to a reduction by more than two thirds (see table 1). If we combine these alternative possibilities with all the uncertainties and limitations discussed, the "drama" of demographic change loses its alleged justification and becomes much less dramatic.

Table 1: Different Types of Dependency Ratios by Sanderson and Scherbov (2010); Own Calculations Regarding Increase

OADR (Old-age dependency ratio)			
	2005-10	2025-30	2045-50
Germany	0,33	0,48	0,63
increase		0,15	0,30
%		45,45	90,91
POADR (Prospective OADR)			
	2005-10	2025-30	2045-50
Germany	0,21	0,25	0,34
increase		0,04	0,13
%		19,05	61,90
ADDR (Adult disability dependency ratio)			
	2005-10	2025-30	2045-50
Germany	0,12	0,13	0,15
increase		0,01	0,03
%		8,33	25,00

To summarize, a diagnosis by Konietzka and Geisler (2008, 167), who already noticed over five years ago how unreflected the contemporary debate uses demographic measures and how frequently alleged objective data are used, which do not hold an exact empirical observation, is still valid: "Already the description of central parameter of demographic change can cause unexpected problems, either because of an insufficient available data base or because the interpretation of demographic parameter requires in many cases more premises than it may appear"[18]. As we have seen, central concepts of the demographic "formal core" (Hummel 2000) like population, age and other measures are misinterpreted as "objective" facts by some demographers and the majority of journalists. This is the main cause for at least reductionist but often even false mediation of demographic knowledge into the public discourse: "garbled demography" (Teitelbaum 2004). Nevertheless, the construction of population projections, especially by Destatis but also in general, has illustrated that the tendency of demographization is inherent from the beginning. Subsequently, both elements will be explained based on the analysis of the press corpus and selected results.

3. Demographic Change in the German Press from 2000-2011

Good demographers try to avoid horror scenarios, stated James W. Vaupel, founding director of the Max Planck Institute of Demography (MPIDR) when

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[18] Translated by author.

he was interviewed by Björn Schwentker for "Die Zeit", a journalist with profound demographic knowledge, which is a rare combination, (2006-03-17). Half a year later, Vaupel also stated in the weekly magazine "Der Spiegel" (2006-10-24) that "[t]here is too much angst in Germany and not enough hope." Nevertheless, the majority of newspaper articles have at least a negative tendency – and many horror scenarios can be found in the media as well as a variety of scientific books dealing with the topic. How come? Teitelbaum explains the oversimplification and problematic reductions of complexity as being a result of "fundamental cultural differences between demographers and journalists, and an equally large divergence in the incentive structures faced by professionals in these two domains" (2004, 317). Besides the misinterpretation of projections as forecasts, he criticizes the attraction of journalists toward long projection intervals, keeping in mind the uncertainty of projections over time. Consequently, demographers aiming for public impact tend to produce simplified press releases or summaries findings, fully aware of the journalistic expectations:

> In part the fault may lie […] in demographic reports, as when 'projections' and 'forecasts' are confused with each other, or when the future tense form 'will' is used rather than the conditional 'would' in describing the quantitative outputs […]. (Teitelbaum 2004, 325)

According to Michael S. Teitelbaum, the other sources of fault may be found in the PR staff's motivation to catch busy journalists' attention and journalistic misinterpretation of hypothetical demographic scenarios, which politicians and activists (mis-)use as recommendations if they match their interests. Although this description of one element which narrows the discourse is convincing regarding the scandalizing functional logics of the press and media, the problem of demographic power/knowledge seems to be more complex, as the last paragraph illustrated and this one will show based on the mass-media discourse.

3.1 Description of Corpus Generation

The press corpus for the analysis of the public discourse has been constructed using online archives of the leading newspapers and magazines in combination with LexisNexis.[19] It consists of 2900 articles covering the period of twelve years between 2000 and 2011,[20] a period in which the number of articles increases permanently except for 2007-8 (see fig. 7):

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[19] <http://www.lexisnexis.com>.
[20] The period of 2012-2014 will be included in the final publication of the project.

Figure 7: Overview of Articles over Time: 2000-2011
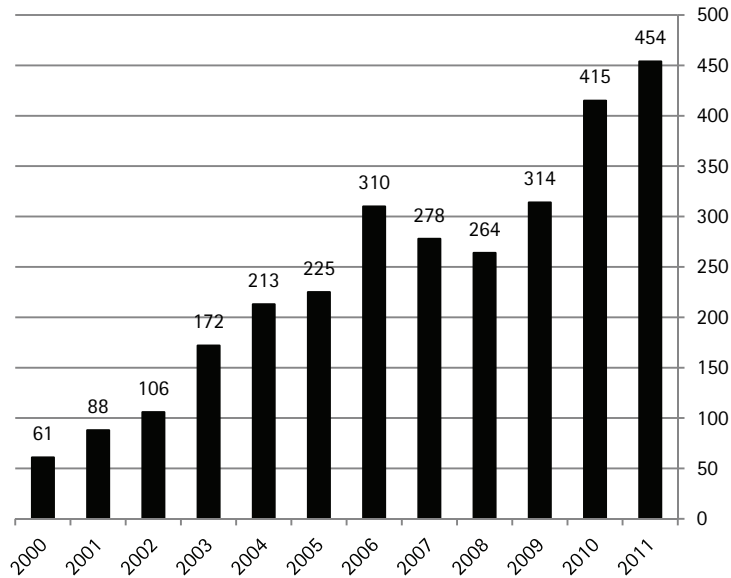
Although completeness of a corpus is illusionary and practically unrealistic, the selection of sources was intended to be as complete as possible. Therefore, the increasing number of articles can be interpreted as a tendency of the discourse and not only of the corpus related to the publications included. The following selection criteria have been used in order to decide upon the inclusion or exclusion of publications: (1) digital availability over the entire period,[21] (2) presence of the entire political spectrum, and (3) providing of specific argumentation regarding demographic change. In the first step, a variety of other newspapers and journals were downloaded, but according to those criteria not included in the final sample. Although this is certainly a bias generated by the conditions of available data, the effect on the explanatory power of the results might be relatively small since all major publications are present. The excluded local newspapers often only reproduce the articles of the supraregional press due to shared ownership and editorial staff, sometimes even identically. For similar reasons, the initial idea to also include newswires into the corpus has been discarded. On the one hand, those are often used with only slight modifications due to tendencies toward staff reduction. On the other hand, it was impossible to handle the size of a corpus enlarged by newswires, which also

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[21] The only exception is the leading tabloid "BILD", included from 2006 onwards because of its relevance (see fig. 7, which shows that the strong increase of BILD articles started in 2008).

were not completely available. Another possible bias is the combination of search keywords and categories, which has been tested in manifold combinations before downloading the articles in order to obtain as many articles as possible matching the criteria. Quantity matters for the corpus construction only to minimize the risk to exclude important elements. The analysis itself focuses on the qualitative aspects, although the quantification of code frequencies as a result of the annotation process in MaxQDA is also used. In this mixed-methods research design, numbers are only used to describe internal relations of the discursive regularities. Such regularities are in fact practices of scientists, journalists, politicians, and other experts which affect the discourses and are affected by it. Generalizing such relations to whatever larger discursive entity in other boundaries would be methodically pointless and far away from the research interest of the project that focuses on specific regimes of truth. The resulting corpus consists of the following elements in the timeframe of analysis (see fig. 8):

Figure 8: Corpus Dynamics over Time for Different Publications
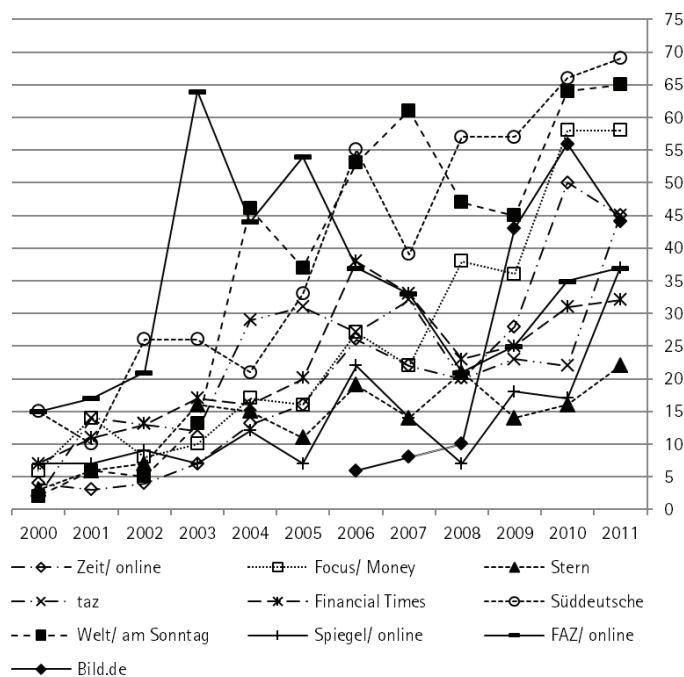
The graph clearly indicates that the "Frankfurter Allgemeine Zeitung" (FAZ) can be seen as "avant-garde" of the public discourse in 2003. This can be explained by the huge presence of Prof. Herwig Birg, who published his opinion

there frequently, and of course, the high interest of one of the editors, Frank Schirrmacher. His demographic dystopia "The Methusalem Complot" was published one year later. This bestseller had a huge public impact and was translated into 14 languages. "Die Welt" reacted immediately after the FAZ. Later on, all other magazines and newspapers follow the freshly set agenda regardless of their political tendency. Surprisingly, the largest German tabloid "BILD" entered the discourse relatively late. However, this delayed start is compensated by a massive charge in alarmism: The first article included in the corpus from 2006 is interestingly based on a long-term population projection and titled "In 12 generation we Germans will become extinct" (see fig. 9).

Figure 9: Code System and Document Structure in MaxQDA with BILD Article, Titled "In 12 generation we Germans will become extinct" Based on a Questionable Population Projection by Prof. Herwig Birg
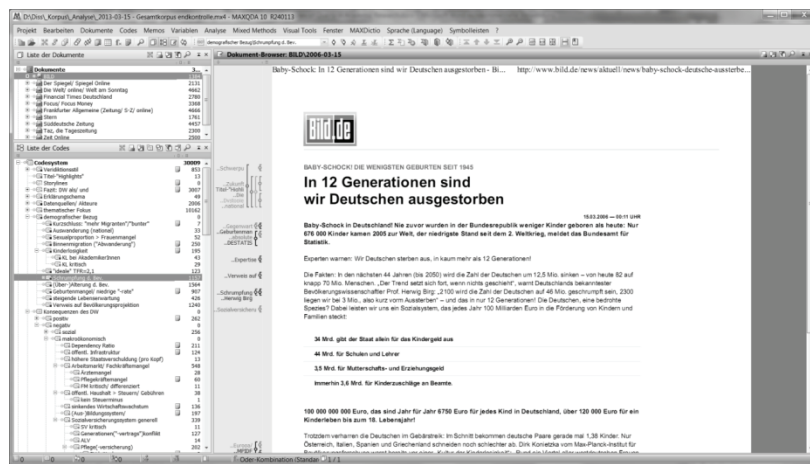
3.2   Code System and Selected Results

As partially visible in the screenshot (fig. 9), the code system which has been generated inductively[22] during the process of coding is relatively complex. Its structure is divided into three main parts: relation to demographic knowledge regarding content and data sources, consequences of demographic change, and

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[22] In order to be precise, inductively must be put in quotation marks: this "induction" is only insofar inductive, that it is based on certain categories of interest which have been deducted before according to the research question. Letting the discourse "speak" without any pre-assumptions is impossible. Instead, discourse analysis has to develop an appropriate research design according to theoretical background, topic, and research question(s). (cf. Foucault 1972) Due to space limits, those methodological aspects can only be touched here and will be taken into account more detailed in the final publication of the project.

reaction strategies or consequences of its consequences. Additionally, other necessary categories for a cartography of the discourse have been annotated, such as time horizon (present/ future), local reference (from municipal up to global level), mode of veridiction (only two forms: expert and prophet), and various other specific regularities of statements, including also their more or less absurd expressions. Due to the limited text length, it is only possible to present the main elements of the code system related to the typical strands of argumentation here. The subsequent graph (see fig. 10) is a visualization of the most frequent codes in the three main parts. It reduces the complexity of 282 codes with currently 30009 frequencies in 2900 documents to a reasonable amount. The distinction of input and output is only used for orientation and should not be understood as any kind of causal model. In fact, the storyline of the visualized chain of argumentation varies strongly: only a minority of mostly longer articles presents the full storyline (Hajer 2005), whereas the majority addresses parts or sometimes only one part of it. Nevertheless, the aspect of repetition is important here. On the one hand, even small descriptive press releases, e.g. by Destatis, contribute quantitatively to the perception, that the discourse is important and set it permanently on the agenda of the press. On the other hand, after years of increasing news coverage at a time when demographic change has become a commonplace, only small elements of the argumentation line are able to evoke the entire discourse for the reader. For instance, if a diagnosis presented in the article is that there is a lack of birth there is not much imagination needed to relate it to the alleged insecurity of the pension system. A noticeable number of articles even draw conclusions which embody "demographization of the social" to nearly extreme extents: demographic change is claimed to be responsible for nearly everything from lack of public toilets (Der Spiegel, 2009-07-01) to the loss of church members or candidates for an army career, which are frequently presented as results of demographic change already nowadays, and not only in the future. At least to informed readers, such mono-causal articles could appear as absurd claims, which could be explained in many different ways addressing social change instead of demographic change. Nevertheless, the absurdity of those peaks of demographization turned out to be systematic in the analysis.[23]

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[23] The final publication will include this code category in all detail.

Figure 10: MAXMaps Visualization of Selected Code System Elements and
Argumentation Structure

Main categories of code system/ argumentation

Input

population projections (1240)   Destatis/ Statistical Offices of the Länder (489)

(over-)aging (1564)   shrinking (1157)   Bertelsmann(93)

MPIDR (78)

low fertility (907)   DIW (82)   Prognos (55)

Herwig Birg (130)

growing life expectancy (426)   data sources/ agents   Berlin-Institute (120)

demographic knowledge

consequences

negative (3498)*   positive (262)

micro-economic (319)

social (256)

economic growth (136)   macro-economic (2923)*   "generation conflict" (127)

national debt (13)   social insurances (1540)

tax revenues (38)   nursing insurance (202)

education system (197)   health insurance (269)

public infrastructure (124)

problematic dependency ratio (211)

Output

labor market (636)   pension system (589)

strategies

education/ "lifelong learning" (304)   private insurances (227)

less age discrimination (209)   longer working life (304)

higher female employment rate (128)   (controlled) immigration (296)

(different) family policy (162)

* code frequencies in cumulated categories exceed N=2900 articles
because of multiple codes per article

When demographers mention demographic change, the meaning is quite simple
and clear as we have seen above. In contrast, it becomes more widespread and
blurred when journalists deal with the topic (see. fig. 11): 54% of the articles
refer to population (over-)aging and 40% to its shrinking. Besides the two
major strands, the texts address the following components of the topic: fertility
decline (31%), growing life expectancy (15%), internal migration (9%), child-
lessness (8%), replacement fertility (4%), sex-ratio (2%), and emigration (1%).
Again, although this distribution tells us nothing about the variety of combina-
tions in the text, the elements are rarely presented as a coherent storyline in the
way demographers would do it. Instead, there is a variety of terms signifying
each of these concepts. It seems to be enough to mention the process without
any further explanation (15%) or simply one element in order to evoke an
association with the entire narrative. This goes hand in hand with the fact that

around two-thirds of all articles refer to the future, whereas the other third suggests that demographic change already affects the present. Some articles even state both, and it is this intersection which shows the rationality of the heterogeneous relations to demographic knowledge: present processes of internal migration or the current development of indicators that affect demographic change in future are already included in order to dramatize (16% of all articles describe the topic as a dramatic or drastic process). Nevertheless, nearly half of the articles refer to population projections or mention their results, what shows, despite the problem of "garbled demography", how strong the impact of this method is.

Figure 11: Components of Population Dynamics Referenced to Demographic Change

References to Demographic Knowledge

Component	Value
emigration	33
sex ratio	52
"ideal" TFR=2,1	123
childlessness	238
internal migration	250
growing life-expectancy	426
low fertility	907
shrinking population	1157
reference to population projection	1240
(over-)ageing population	1564
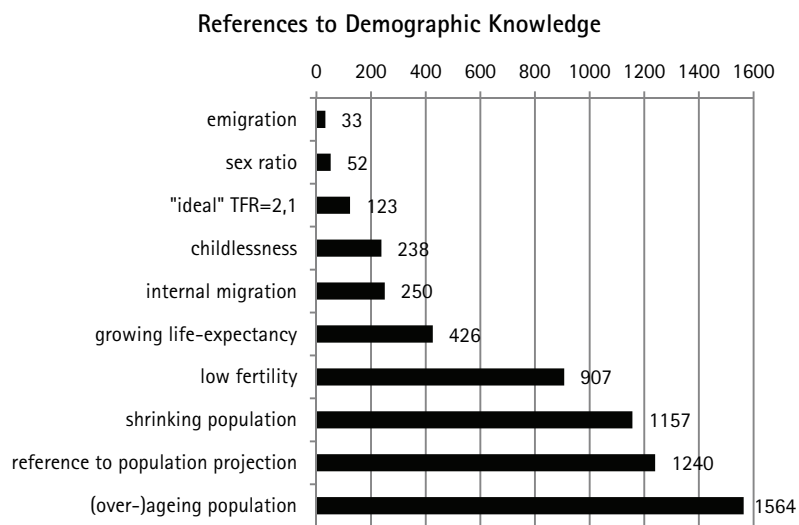
Figure 12: (Data) Sources or "Experts" Mentioned in Press Articles

	Value
governmental	
BBR Bundesamt f. Bauwesen u....	33
BIB Federal Institute for Population...	30
Federal Statistical Office (Destatis)	393
DIW German Institute for Economic...	82
Eurostat	34
HWWI/HWWA	33
IAB Institute for Employment Research	54
	56
IFW Kiel Institue for the world economy	16
IWH Halle Institute for economic research	10
Max Planck Institute for Demographic...	78
MEA Munich Center for the Economics of...	27
OECD	72
RWI	13
Statistical Offices of the Länder (Federal...	96
UN	99
Vienna Institute of Demography (VID)	9
WZB Berlin Social Science Center	3
ZEW Centre for European Economic...	13
think tanks/ lobby organisations/ private institutes	
BDI Federation of German Industry	10
	120
Bertelsmann Foundation	93
Cologne Institute for Economic Research	66
Deutsche Stiftung Weltbevölkerung	14
Empirica	16
Initiative Neue Soziale Marktwirtschaft	6
McKinsey	30
Prognos	55
Robert Bosch Foundation	21
individuals/ groups	
Enquete-commission "demographic...	8
Rürup-commission	24
Axel Börsch-Supan	43
Bernd Raffelhüschen	34
Bert Rürup	57
Frank Schirrmacher	43
Hans-Olaf Henkel	14
Hans-Werner Sinn	32
Herwig Birg	130
Meinhard Miegel	39

Another code category has been developed in order to take into account possible data sources, i.e. "experts"[24] or institutes referenced in the article (see fig. 12). The German Federal Statistical Office (Destatis) is the data source most frequently used, from 3 up to 10 times more than any other public or private research institute. At this point, the corpus clearly indicates the hegemonial position of Destatis in formatting the discourse, not including implicit reference that might be even higher. Not surprisingly, only 9 of 2900 press articles refer to the VID as a data source without presenting their population projection graph, whereas 394 refer to Destatis and often present the declining curves. Regarding think tanks and lobby organizations such as the Berlin Institute for Population and Development, which regularly produces scientifically questionable projections with a high impact on the public, has the leading position, closely followed by the powerful Bertelsmann foundation. On the level of individuals, Herwig Birg, Germany's former leading demographic "expert" with strong apocalyptical tendency in his publications in science (2007, 2005, 2001) and media, is at the center of attention. He has successfully put much effort into framing the discourse according to his opinion and raising its (and his) public and political importance. In conclusion, the internal power relations regarding influences on the public discourse with such strong "vectors" of at least not neutral sources already allows to predict, that the overall tendency of the public discourse is also everything else than an objective description of demographic scenarios under specific assumptions. Instead, already at the stage of data sources for the press we are confronted with a more or less stable coalition of interests that profit from naturalization and dramatization of demographic future-knowledge.

Doubtlessly, this can lead to even more confusion, for example when an article identifies internal migration processes as consequences of demographic change. In fact, this identification camouflages regional disparities caused by a variety of political and economic decisions as an effect of an "inevitable/ irreversible" (n=137) demographic "megatrend" (n=26). This is problematic insofar as that the hidden rigorous market logic of municipal concurrence invokes the conclusion that structurally weak areas should better be given up. At the end of this tale, Germans, East-Germans, Hessians, or artisans will extinct (n=24). Or, alternatively, "wolves replace the human" (n=19) in many parts of eastern Germany and the de-industrialized Ruhr area, as the think tank Berlin Institute of Population and Development tries to prove with scientifically questionable maps and indices. The untold part of such discourses which promote some sort of social darwinism of the regions is obvious: political influence is not considered at all because there is "no alternative" (n=47) to the abandoning of such regions in the next decades. This example also embodies a general

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[24] The figure of the expert is highly dominant in the mass-media discourse (n=640) and embodies one of the four modes of veridiction outlined by Foucault (2011, 9).

pattern: Demographic change and population dynamics are more presented as premises than results of political action. The latter has moved us toward the topic of consequences of demographic change, which appears to be addressed in very one-dimensional alarmist ways (see fig. 13).

The rationality of this structure is obvious when we remember the related argumentation scheme (see fig. 10) and look at the most frequent codes: Even the most frequent positive code occurs only in less than 5% of the articles. The interest served by the so-called "silver economy" lends itself more to private than public interests, whereas the reduction of unemployment, which is only addressed by 2% of the articles, plays a more ambivalent role with regard to the cost of labor. Nevertheless, the main scheme of private use and socialized costs becomes implicitly visible in the few positive consequences. It becomes more clearly visible in the majority of the negative consequences. In general, the dependency ratio is the key element here, although the explicit coding frequency is relatively low (7%): The most frequent codes are predominantly macro-economic, and either focused on the labor market (n=636, 22%) or on the social insurances (cumulated n=1540), mostly the pension system (n=589, 20%). Again, not much imagination is needed when thinking about the corresponding interests, especially taking into account the code distribution for think tanks and lobby organizations (see fig. 12). The picture becomes more complete when compared to the reaction strategies to the alleged "inevitable" consequences (see fig. 14).

Besides more or less funny products like care-robots, which critical minds could already interpret as symptom of a present social pathology, the focus lies again on labor market issues and the social insurance system, which is an interesting new market if the imperative of privatization is followed. To what extent those codes embody a specific form of contemporary demographic governmentality under the paradigms of activation (Lessenich 2008), entrepreneurship of the self (Bröckling 2007), or numerocracy (Angermüller 2010) will be let open to the interpretation of the reader.[25]

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[25] Again, the limited space of this article makes it impossible to discuss a potentially controversial interpretation of the results regarding governmentality. Furthermore, Denninger et al. (2014) which was not yet published when this article was written seems to promise a fruitful source for that issue. Therefore, the final publication of this project will include a detailed discussion of it.

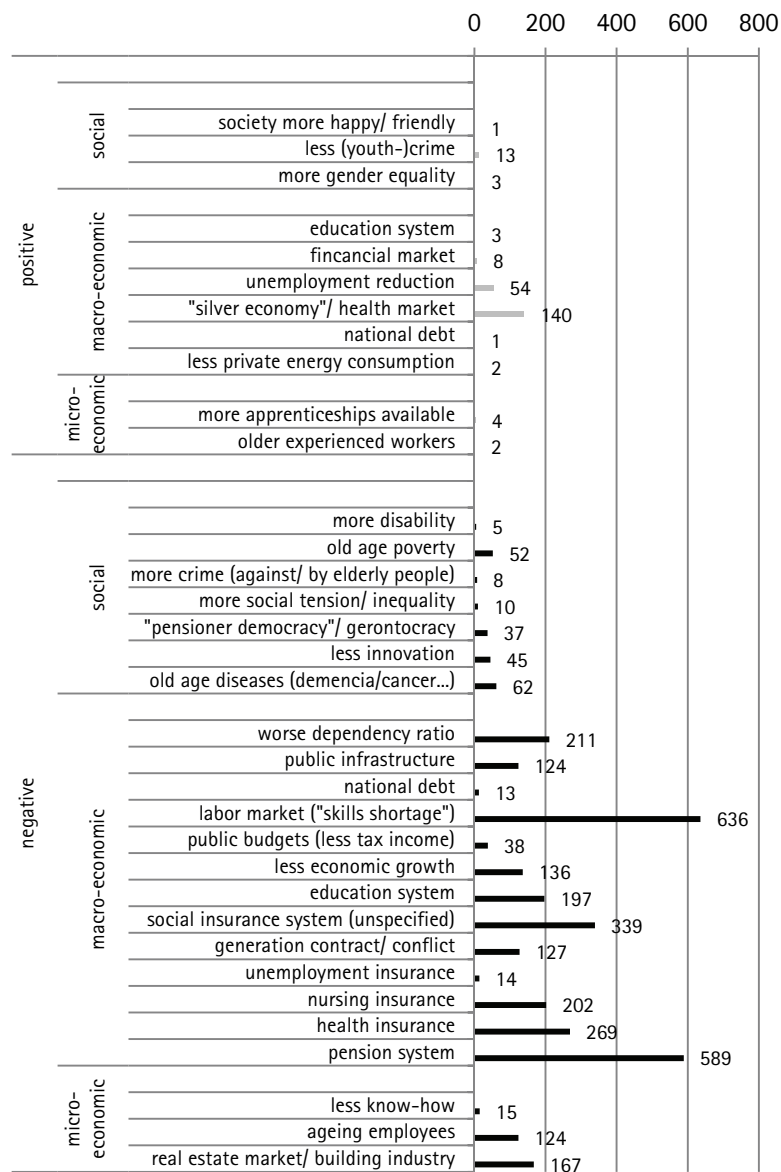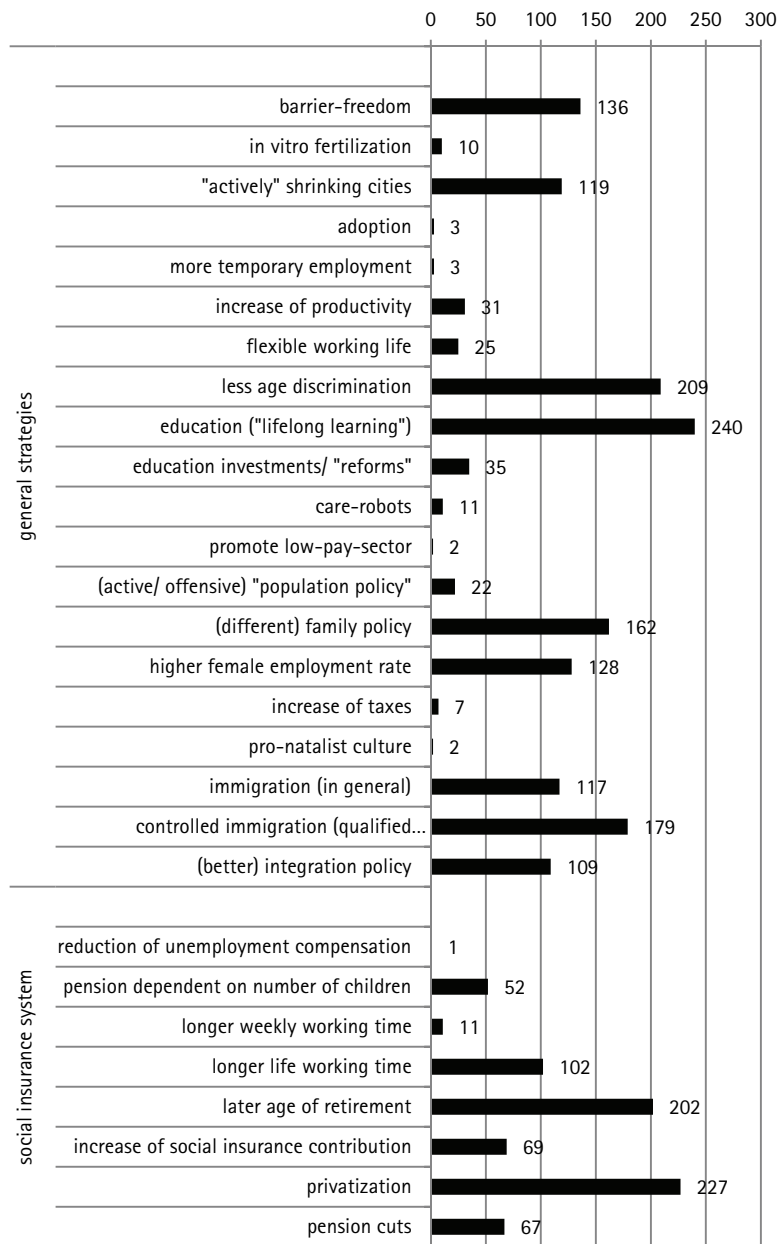**Figure 13**: (Alleged) Consequences of Demographic Change

| | | | | 0 | 200 | 400 | 600 | 800 |

positive

social
- society more happy/ friendly — 1
- less (youth-)crime — 13
- more gender equality — 3

macro-economic
- education system — 3
- fincancial market — 8
- unemployment reduction — 54
- "silver economy"/ health market — 140
- national debt — 1
- less private energy consumption — 2

micro-economic
- more apprenticeships available — 4
- older experienced workers — 2

negative

social
- more disability — 5
- old age poverty — 52
- more crime (against/ by elderly people) — 8
- more social tension/ inequality — 10
- "pensioner democracy"/ gerontocracy — 37
- less innovation — 45
- old age diseases (demencia/cancer...) — 62

macro-economic
- worse dependency ratio — 211
- public infrastructure — 124
- national debt — 13
- labor market ("skills shortage") — 636
- public budgets (less tax income) — 38
- less economic growth — 136
- education system — 197
- social insurance system (unspecified) — 339
- generation contract/ conflict — 127
- unemployment insurance — 14
- nursing insurance — 202
- health insurance — 269
- pension system — 589

micro-economic
- less know-how — 15
- ageing employees — 124
- real estate market/ building industry — 167

Figure 14: Reaction Strategies to Consequences of Demographic Change

general strategies

Strategy	Value
barrier-freedom	136
in vitro fertilization	10
"actively" shrinking cities	119
adoption	3
more temporary employment	3
increase of productivity	31
flexible working life	25
less age discrimination	209
education ("lifelong learning")	240
education investments/ "reforms"	35
care-robots	11
promote low-pay-sector	2
(active/ offensive) "population policy"	22
(different) family policy	162
higher female employment rate	128
increase of taxes	7
pro-natalist culture	2
immigration (in general)	117
controlled immigration (qualified...	179
(better) integration policy	109

social insurance system

Strategy	Value
reduction of unemployment compensation	1
pension dependent on number of children	52
longer weekly working time	11
longer life working time	102
later age of retirement	202
increase of social insurance contribution	69
privatization	227
pension cuts	67

4.   Conclusion

The question posed by the title of this article implies a choice. Nevertheless, strong reductionist tendencies in Germany's leading population projections that serve alarmist purposes (see chapter 2) and the strongly biased discourse of the mass media (see chapter 3) lead us to a more differentiated answer: Given the premise that "garbled demography" as such is insufficient to describe the distortion of discourses of demographic change, both phenomena coexist in a closely intertwined way. As was described in chapter 2, there is clear indication of a process of demographization already from the beginning of the generation of demographic future-knowledge. This process is inherent in central concepts (age), measures (TFR), methods (deterministic model), and assumptions (fertility, net migration) used for the calculation. It embodies another, more specified and rather detailed discursive "matrix" of demographic change, which can be interpreted as complementary to the long-run historical one that Etzemüller (2007, 41) pointed out for "the population discourse" of the 20th century. Nevertheless, there is an indication that speaking of "the" discourse lacks complexity from an epistemological perspective. The assumption of one such discursive entity may be fruitful for historical description, but needs to be more differentiated, if particular orders of knowledge and specific systems of thought are in the focus of interest. Consequently, this matrix cannot be separated from phenomena of "garbling": the mass media's functional logics is centered on attention and, therefore, has an inherent preference for alarmism and dramatization.

The comparison of the population projections of Destatis (deterministic) and the VID (probabilistic), where the main difference is not numerical but presented as the visual statement, exemplifies the implicit link between the scientific discourse and its "echo" in the press. The mass media discourse is clearly not only the response but also a structural precondition for the scientific discourse: Contemporary population projections by Destatis serve the media's need for scandals. The various elements of the discursive "matrix" that indicate a declining and aging population have been used to construct an allegedly "inevitable development" (Federal Statistical Office in Bosbach 2004, 2) in the past. More recently, the aim has been formulated more weakly as "effects of demographic trends that can be identified from today's perspective" (Federal Statistical Office 2009, 5), but the discursive scheme behind stays identical, just as the deterministic method and total population graphs that visually overestimate the decline and underestimate uncertainty. Let us assume Destatis' graph would look more similar to the probabilistic pendant of the VID. Then, given the structure of the mass media discourse described in chapter 3, the quantity of press articles would reduce drastically, but the quality of the discussion could probably rise.

To summarize, the main intention of this article is not to condemn demographic research as such, or to underestimate the importance of the work of the German Federal Statistical Office. Nevertheless, the need for a systematic and synthetic critique of the ongoing demographization processes is increasingly uttered implicitly (e.g. Sobotka and Lutz 2011) or even explicitly: Björn Schwentker, a critical data journalist, and James W. Vaupel, founding director of the Max-Planck-Institute for Demographic Research, already argued more than two years ago for "a new culture of [demographic] change" (Schwentker and Vaupel 2011). Instead of alarmism, Schwentker and Vaupel criticize the standpoint which sees Demographic change as a fundamental social problem and refer to it as one of the biggest misunderstandings of the present. It is caused by "a public debate, in which facts of Demographic change are often misunderstood and misinterpreted negatively, even apocalyptically" (Schwentker and Vaupel 2011, 3). [26] More recently, Schwentker published six theses on truth regarding demographic change, which inspire to think further:

1) "It not true that demographic change is a problem. (Nevertheless, there are problems.)
2) It is true that demographic change is natural and good.
3) It is not about truth, but about prevailing of interests.
4) The debate is not orientated towards (e.g. scientific) truth, but towards questionable norms.
5) There are frequently wrong conclusions because of wrong interpretation of demographic data.
6) The truth is often not identifiable, because necessary data does not exist." (Schwentker 2013). [27]

Unfortunately, a new culture of demographic change which reacts upon those theses has not yet been established, taking aside a growing minority of critical articles in science and media that more and more prove the tendency of breaking up the consensus of the demographic formal core, what Riley and McCarty (2003) already diagnosed ten years ago. During the reconstruction of discursive regularities and ruptures we have seen that the question "how the related discourse becomes 'true' " is closely intertwined with power relations, partially stemming from the structure and production imperatives of the mass-media, partially form specific political interests. From the beginning, the "formal core" shaped demographic knowledge into a direction which allows political instrumentalization. The "triple shift" of power, knowledge, and subject is therefore a promising strategy to examine the prevailing dominance of this reductionist

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[26] Translated by author
[27] Translated by author; The term truth can sometimes evoke serious misunderstandings especially in discourse research, in general here is nothing to criticize from a Foucaultian perspective, at least as long as the differentiation and relation of "games of truth" and "analytic of truth" described in the beginning of chapter 2 is kept in mind.

formalism of a "political science" (Hummel 2000). The hegemony of the "formal core" is evident. Hence, the first discursive programming leads to internal neglecting of the social construction aspects in the scientific discourse. It goes hand in hand with a second, which is based on the political charge of the discipline itself and a third, which is based on the functional logics of the mass-media. Therefore, a generalizing answer "why and how demographers adapt their knowledge in more or less reductionist or dramatized way" would be too short-cut.

However, it is obvious that the media's greed for scandals invokes a specific modification of demographic knowledge, if intended to cause huge medial impact. Cautious und uncertain scientific knowledge does not attract much attention. Researchers in general, and especially demographers in particular, need this attention in order to become visible – at least since the public discourse sphere has opened itself up for their mostly dramatic topic. Consequently, at the intersection of the three different levels, a meaning reductionist apparatus which affects researchers' practice and leads to a distortion of demographic future-knowledge emerges, which is then multiplied in the process of the mediation of scientific discourses into the public. Due to the high degree of technicality in the scientific discourse on demographic change, certain gaps of reflection may be brought forward if researchers tend to naturalize the categories they use. Over ten years ago, Hummel (2000, 326) therefore came to the destructive conclusion that demography would probably need to put its own scientific status into question. Although there are shared premises of critique due to a different theoretical and empirical scope, which allows for the possibility of more differentiation, this article concludes differently. The intention is clearly not to end with a generalized judgment about a multifaceted discipline, which consists of a pluralism of different discourses, sometimes with clear ruptures between each other, and sometimes more as a continuous scale between different positions. Instead, the preliminary conclusion shares the same provisional status that characterizes every type of scientific knowledge. Nevertheless, the reasons given in order to elaborate on the arising post-alarmist demographic discourse a little bit further have been presented in order to promote internal and external reflections on demographic change. Although this article showed a growing tendency of critical self-reflection by demographers, this is still not typical for the majority of this highly fragmented interdisciplinary discipline, which is often also practiced by economists who might lack reference to sociological or/and philosophical insights. However, it would again be too short-cut to make only demographic researchers responsible for the shape of the discourse. Critical journalism, unfortunately declining since the emergence of the challenge for the traditional press brought by internet media, is a necessary element. "Data journalism" (Schwentker 2013) is another one aimed to avoid unreflected reproduction of alleged "objective" research results. Finally, research institutes which are part of the scientific community

could perhaps think of ways of more interventionist and active public relations, if demography wants to prevent the hegemony of questionable "studies" by think-tanks and "experts" which camouflage particular political interests and shape the medial discourse in the way of the recent past.

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