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Syllable and Word Languages

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Javier Caro Reina and Renata Szczepaniak

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From *Christel* to *Christina*, from *Klaus* to *Nico*: A diachronic study of German first names (1945–2010) and their shift towards the syllable language type

Abstract: German underwent a typological change from a syllable language in Old High German towards a word language today (Szczepaniak 2007). Proper names followed this development until the last century (cf. *Christel, Gertrud, Klaus, Wolfgang*). Some of the most popular German first names from 2010, however, such as *Mia, Lea, Leon, Noah*, show completely different structures compared to common nouns. In sharp contrast to common nouns, first names dispose of CV-structures, full vowels in unstressed syllables and different accent positions. Thus, there must have been a deep-rooted onomastic change. The most frequent baby names of 1945 were still in harmony with the usual word structures. This article shows that the decrease of transgenerational transmission of first names led to a departure fom native phonological structures. The following factors are analyzed: the number of syllables; accent position; and the number of consonant clusters, hiatuses, schwa and unstressed full vowels. It will be demonstrated that the phonological distance between first names (particularly female names) and common nouns has increased over time and that there is an increasing tendency for names to contain syllable language structures. Thus, a typological difference developed between these two nominal classes. The reason behind this change can be found in the individualizing function of proper names and social individualization over time.

1 German proper names and their changing structures

In most phonological studies, proper names are excluded or simply forgotten, possibly due to their exceptional status: Proper names fulfill special functions, the most important of which is to identify solely one person or object without semantic content. Proper names also diverge with respect to their formal properties: If we consider first names, company and product names and others, they clearly differ from the usual structures of common nouns. They are often longer, they have different accent patterns and frequently full vowels in unstressed syllables. Thus, they do not use lexical material, nor do they even correspond to native patterns; rather they seek to incorporate deviant structures. This can be

best observed with names that are invented (product names, company names) or borrowed from other languages (first names).

Therefore, it can be suggested that if we are free to create new words, we do not make use of traditional material. However, we could, for instance, use word-formation. This was the case in earlier times when companies were named *Drogerie- und Farbwarenhandlung Gehe & Comp. (1835)*, *Haarmanns Vanillinfabrik* and *Norddeutsche Affinerie*. Today, the names of these companies are *Celesio, Symrise* and *Aurubis*. Older dishwashing detergents were called *Spüli* (< *spülen* 'to wash'); today they are named *Sunil, Elina Clean* and *Palmolive*. In the past, children were named *Sieglinde, Gertrud, Herbert* and *Wolfgang,* but there have not been any Germanic first names among the top twenty name lists since the nineteen-seventies. Today, children are called *Mia, Lina, Lilly* (girls) and *Noah, Luca, Leon* (boys).

In the following article, it is hypothesized that if people are indeed free to create new words, they look for the greatest difference to the common vocabulary. If the common vocabulary belongs to the word language type, it is expected that syllable language structures will be produced.

Evidence for this hypothesis is provided by Ronneberger-Sibold (1993, 1995), who examined product names and word shortenings (acronyms, clippings, truncations, abbreviations) such as *Kita* 'daycare center' and *Ersti* 'first-term student' (instead of *Kindertagesstätte* and *Erstsemester*). She found that German short words diverge from common nouns with respect to the properties listed in Table 1. The features of short words clearly tend to be more syllable-language-like: There are predominantly CV syllables, i.e. open syllables, there is no discrepancy between stressed and unstressed vowels and the most frequent vowels use the whole oral cavity (*o, i, a* – instead of *e, i, a* with common nouns). Common nouns, in contrast, belong to word language structures: They prefer closed syllables; they have developed a binary vowel system with separate inventories, which is why schwa is the most typical and frequent unstressed vowel; and the most frequent full (stressed) vowels do not contain rounded vowels.

Table 1: Phonological differences between shortened and unshortened common nouns (according to Ronneberger-Sibold 1993: 424)

	Short words (clippings)	**Common nouns**
1.	preference for open syllables	preference for closed syllables
2.	closed syllables occur word-initially	closed syllables occur word-finally
3.	(almost) no [ə]	[ə] most frequent vowel
4.	most frequent vowels: *o – i – a*	most frequent stressed vowels: *e – i – a*

Fahlbusch (2010, 2011) studied the development of more than 450 names (including 291 renamings) of the 160 most important stock-listed German companies over a period of 160 years. While in earlier times these names usually contained the family names of the company owners or information about the product, they gradually began avoiding these features by getting more opaque and more imaginative, e.g. *Manufactur-, Confections- und Tuchgeschäft C. Karstadt > ARCANDOR AG* (see Figure 1).
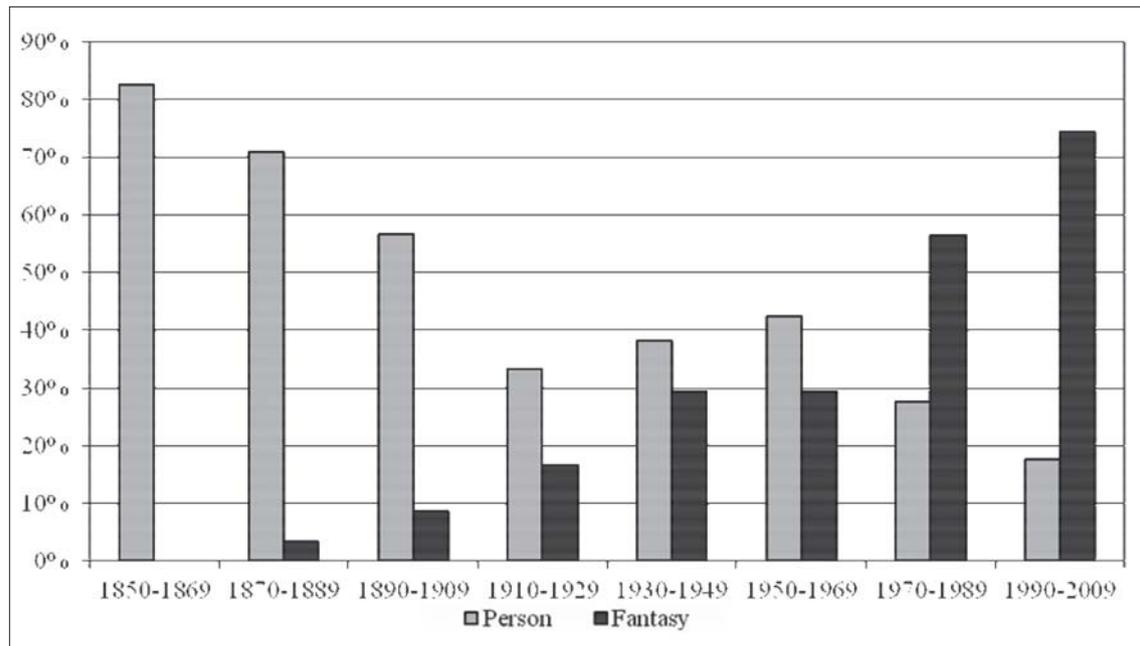
Figure 1: Percentage of anthroponomastic (company owners' names) and invented components (fantasy) in German company names 1850–2009 (Fahlbusch 2011: 57)

Furthermore, they lost lexical transparency (Figure 2): *Drogerie- und Farbwarenhandlung Gehe & Comp.* later became *Celesio AG*, and *Morphosys Gesellschaft für Proteinoptimierung GmbH* simply became *MorphoSys AG*.
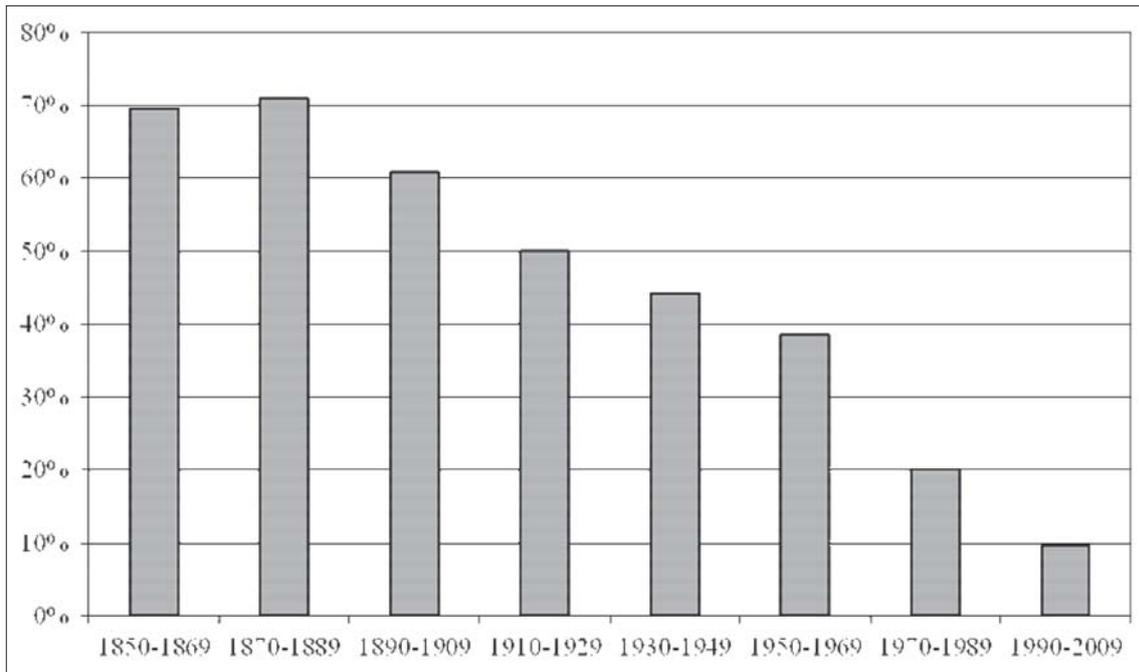
Figure 2: Percentage of fully transparent company names 1850–2009 (Fahlbusch 2011: 71)

As a third finding, the proportion of loaned elements increased: *Haarmanns Vanillinfabrik* became *Symrise AG*. *Mechanische Werkstätten Harkort & Co.* became *Demag Cranes AG*.
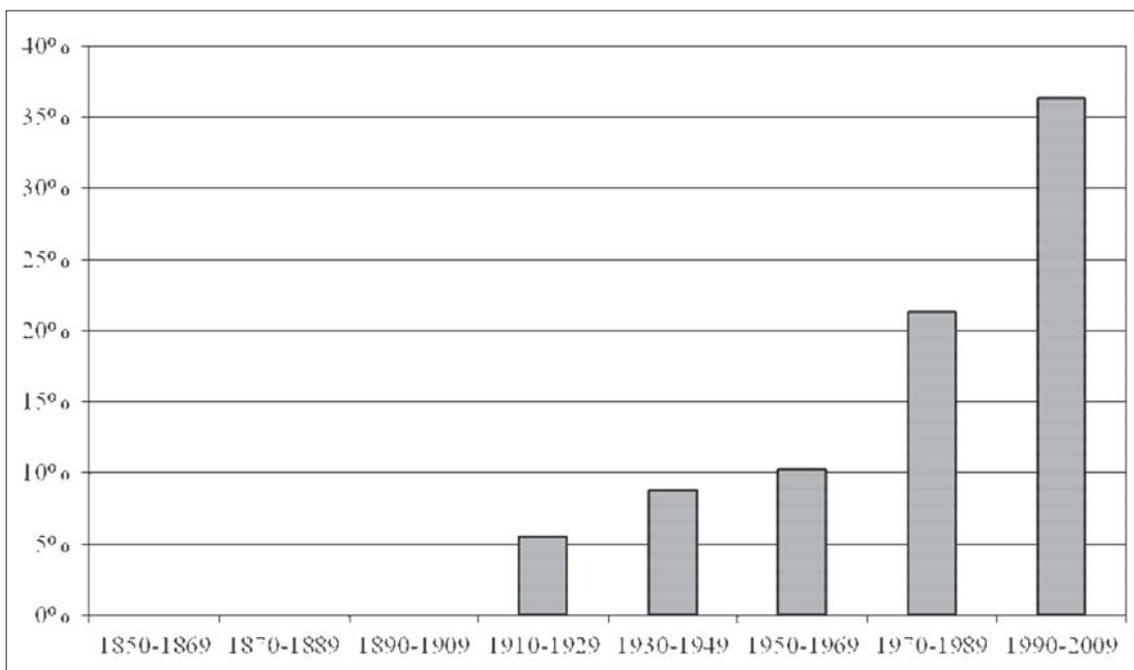
Figure 3: Percentage of foreign company names 1850–2009 (Fahlbusch 2011: 64)

Even in writing, company names contained an increasing number of graphical anomalies, e.g. <C.A.T.oil GmbH> with unorthographical punctuation between letters or <HeidelbergCement> with capital writing within the word. Many of these changes were unlawful and later legalized.

It can be concluded that the distance between the common vocabulary and company names increased over time with regard to lexical, phonological and graphical features.

2 German first names and their historical development

The question arises whether personal names also follow these diverging tendencies. We now turn to first (or given) names in Germany. In the following section, we concentrate on the 40 most frequent ones.

As a basis of comparison, I took the 40 most frequently occurring common nouns of spoken language (most of the frequency dictionaries are based on written language which were therefore excluded). Ruoff (1990) (*Häufigkeitswörterbuch gesprochener Sprache*) is the most well-known frequency dictionary of spoken language; it is based on interviews with Southwest German speakers from the 1970s. Most of the informants told about their lives as farmers and their experience in the Second World War which explains why *Krieg* 'war' constitutes the tenth most frequent noun. However, clear dialect words occur such as *Bub* 'boy' and *Mädlein* 'girl' which makes the corpus less representative. Furthermore, plural forms were not counted separately, but listed as singular (base) forms. This corpus does not reflect the real occurrences of common nouns. Another corpus, the so-called Pfeffer corpus (Pfeffer and Lohnes 1984), shows that the plural *Kinder* 'children' occurs more often than the singular *Kind* 'child'; the same applies to *Dinge(n), Sachen* 'things', *Menschen* 'people' and other nouns. Although proper names usually occur only in the singular, they should be compared with common nouns as they typically appear in spoken language. Therefore, the Pfeffer corpus was taken as a basis (Table 2, right side).

Table 2: Frequency list of the 40 most frequent common nouns according to Ruoff (1990) and Pfeffer and Lohnes (1984)

Ruoff (1990) (not considered)			Pfeffer and Lohnes (1984) (considered)		
Position 1–14	15–28	29–40	Position 1–14	15–28	29–40
Jahr 'year'	*Holz* 'wood'	*Stück* 'piece'	*Zeit* 'time'	*Hause* '(go/be) home'	*Tage* 'days'
Tag 'day'	*Ding* 'thing'	*Bruder* 'brother'	*Beispiel* 'example'	*Teil* 'part'	*Schüler* 'pupil'
Leute 'people'	*Winter* 'winter'	*Kuh* 'cow'	*Schule* 'school'	*Beruf* 'job'	*Uhr* 'clock'
Vater 'father'	*Maschine* 'machine'	*Landwirtschaft* 'agriculture'	*Kinder* 'children'	*Mann* 'man'	*Winter* 'winter'
Zeit 'time'	*Hand* 'hand'	*Mädlein* 'girl'	*Jahr* 'year'	*Frau* 'woman'	*Dinge* 'things'
Haus 'house'	*Woche* 'week'	*Sommer* 'summer'	*Stadt* 'city'	*Menschen* 'men'	*Leben* 'life'
Mann 'man'	*Frau* 'woman'	*Morgen* 'morning'	*Leute* 'people'	*Vater* 'father'	*Sprache* 'language'
Wald 'forest'	*Vieh* 'cattle'	*Feld* 'field'	*Jahre* 'years'	*Sport* 'sport'	*Geld* 'money'
Kind 'child'	*Mark* 'd-mark'	*Teil* 'part'	*Jahren* 'years (dat.)'	*Familie* 'family'	*Wetter* 'weather'
Krieg 'war'	*Stunde* 'hour'	*Abend* 'evening'	*Herr* 'mister'	*Lehrer* 'teacher'	*Frage* 'question'
Bauer 'peasant'	*Arbeit* 'work'	*Bub* 'boy'	*Arbeit* 'work'	*Sommer* 'summer'	*Mädchen* 'girl'
Geschäft 'shop'	*Hof* 'farm'	*Stall* 'stall'	*Haus* 'house'	*Mutter* 'mother'	*Art* 'sort'
Sache 'thing'	*Geld* 'money'		*Tag* 'day'	*Eltern* 'parents'	
Mutter 'mother'	*Schule* 'school'		*Dingen* 'things (dat.)'	*Sachen* 'things'	

The Pfeffer corpus represents colloquial spoken language from 1961. It is based on audio recordings of nearly 80 hours of mono- and dialogues in 57 German, Austrian and Swiss towns (185 women, 218 men). The dark-colored cells in Table 2 show the overlapping vocabulary of both frequency lists: This constitutes more than half of the words, so the differences are not too considerable. This confirms that we have a realistic representation of the top nouns.

In this study, the top 40 given names list includes the top 20 girls' and boys' names. The time span from 1945 to 2010 was divided into 14 five-year subperiods which resulted in a total of 560 single names. As we are concentrating only on the top 20 girls' and boys' names, this is just the tip of the iceberg.

Table 3 shows the 40 most frequent first names of 1945, 1975 and 2005. These three time segments do not share any common names except one: *Michael* (bold) in 1945 and 1975. Thus, a complete onomastic replacement has taken place. Even more, it becomes obvious that the phonological type of names changed dramatically, which will be shown in section 3.

Table 3: Frequency list of the 40 most frequent first names of 1945, 1975 and 2005

	1945		1975		2005	
	girls	**boys**	**girls**	**boys**	**girls**	**boys**
1	Renate	Hans	Sandra	Christian	Leonie	Lukas
2	Monika	Peter	Stefanie	Markus	Hanna	Leon
3	Karin	Klaus	Nicole	**Michael**	Anna	Luka
4	Ursula	Wolfgang	Kathrin	Stefan	Lea(h)	Finn
5	Brigitte	Jürgen	Tanja	Andreas	Lena	Niklas
6	Bärbel	Uwe	Anja	Thomas	Laura	Jonas
7	Elke	Bernd	Ivonne	Alexander	Emilie	Tim
8	Ingrid	Karl	Julia	Sven	Lara	L(o)uis
9	Helga	Horst	Claudia	Thorsten	Sophie	Jan
10	Christa	Dieter	Melanie	Jan	Marie	Paul
11	Gisela	Günther	Katja	Matthias	Julia	Felix
12	Hannelore	Heinz	Nadine	Frank	Sarah	Jannick
13	Jutta	Rainer	Silke	Martin	Lilli	Julian
14	Barbara	**Michael**	Andrea	Jens	Emma	Max
15	Heike	Manfred	Sonja	Sebastian	Lina	Philipp
16	Christel	Rolf	Susanne	Marco	Johanna	Maximilian
17	Marion	Gerhard	Bettina	Oliver	Ne(e)le	Ben
18	Erika	Werner	Daniela	Andre/é	Alina	Moritz
19	Angelika	Gerd	Sabine	Mark	Luisa	Nico
20	Anke	Helmut	Alexandra	Daniel	Sophia	Tom

First, the question of how many children have one of the most frequent names should be clarified. This depends on the period of time. It is well established that over time people have made use of an increasingly ample inventory of names, i.e. naming has become more individual (Debus 1977; Seibicke 1991, 2008; Gerhards 2003: 101–125). It is estimated that in the nineteen-seventies, each of the most frequent male names covered 5–6% of all newborn boys and each of the most frequent female names 3–4% of the girls. Today, the most frequent name covers only about 1% with regard to both sexes (girls: 0.95%, boys: 1.04%), the tenth most common female name 0.66% and male name 0.76% (according to www.beliebte-vornamen.de). This directly corresponds to social individualization (according to Gerhards 2003: 101–125).

In order to understand the following developments, some remarks on the history of name-giving in Germany are necessary. It was not until the nine-

teenth century that people had the freedom to name their children anything they wanted. In former times, a strict transmission of first names was the only practice. This means that a child's name was already determined before it was born. In most cases children were named after their parents or grandparents, godparents, saints, monarchs, etc. The English term for this transmission of names is the German loan word *nachbenennung*. The practice of *nachbenennung* was used for many centuries. Due to this long tradition of onomastic recycling, the name inventory became smaller and smaller – which eventually led to the emergence of family names. Thus, the diversity of first names was very restricted. Sometimes, more than 20% of a population was called *Johannes* or *Margarete* (Kunze 2003). In those times, there was no such thing as "fashionable" names because people did not have much choice regarding the names of their children. This custom of *nachbenennung* is also called bound naming. Since the nineteenth century, bound naming gradually gave way to free naming. At the same time, the motivation for choosing a name changed. Today, the most dominant factor in naming is euphony. Since 1900, at the latest since 1945, naming is considered to be free.

This process of decreasing *nachbenennung* is shown in Figure 4, taken from Gerhards (2003). On the basis of 100 spot tests of two baptism registers from 1890 to 1994, he found that until the nineteen-sixties, the rate of *nachbenennung* after the parents ranged between 20% and 30%. Since 1970, the rate has gone quickly down to almost zero today.
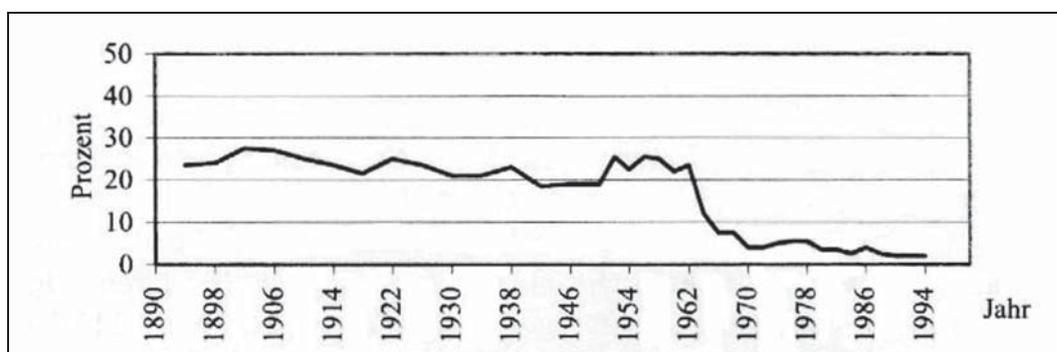
Figure 4: Transgenerational transmission (*nachbenennung*) of first names in Germany 1890–1994 (Gerhards 2003: 91)

Today, *nachbenennung* occurs very seldom and depends on several social and regional factors. Firstly, more boys than girls are subject to this custom which can be explained by the "son and heir" principle. Secondly, *nachbenennung* is practiced more often in the South than in the North of Germany. Thirdly, it is an upper-class phenomenon and, fourthly, it occurs more frequently in Catholic than Protestant areas. Fifthly, if a child has one or more middle names, which

generally happens more often in the South than in the North, *nachbenennung* moves to the second (or third) name, cf. *Leonie <u>Maria</u>, Leon <u>Peter</u>* (Simon 1991; Kunze 2003: 55). Figure 4 only refers to the first given names.

Figure 5 is taken from Debus' (1985) investigation of *nachbenennung* after parents, grandparents, other relatives, and godparents in Kiel from 1957 to 1966.
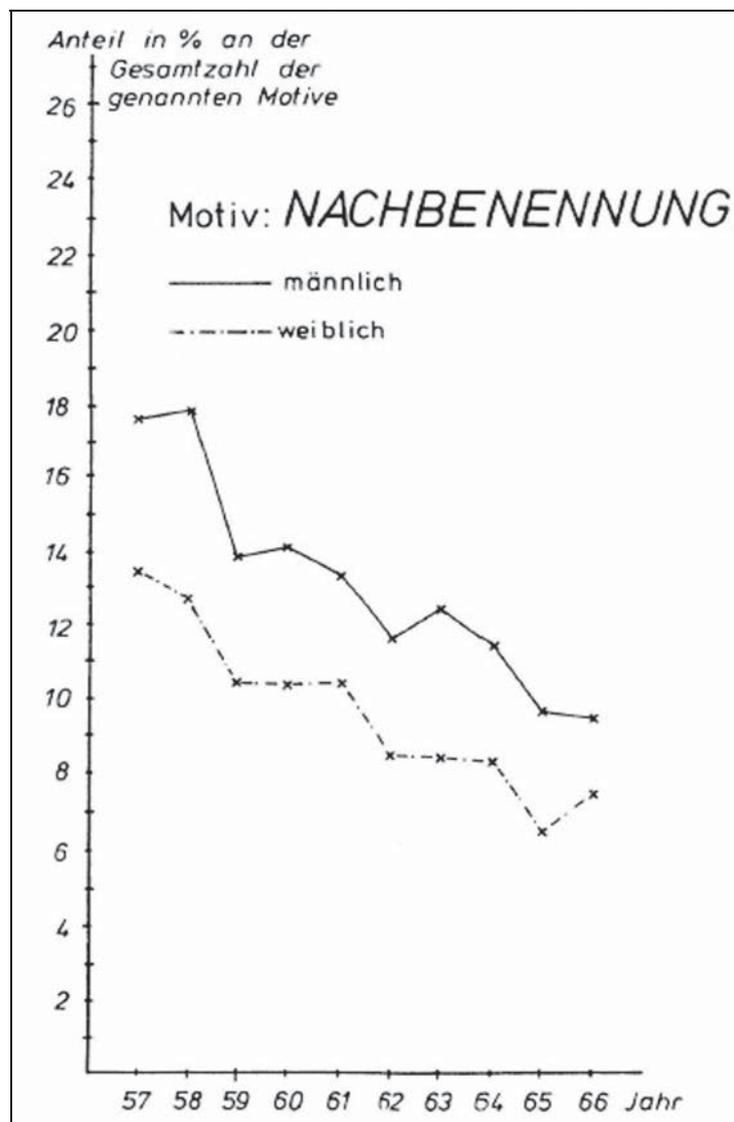
Figure 5: *Nachbenennung* in Kiel from 1957 to 1966 (Debus 1985)

His study is based on interviews about parents' naming motives. Although he investigated only a short period (10 years), the downward trend is very obvious. Furthermore, Debus differentiated according to sex, with the clear result that boys were more frequently named after relatives and godparents than girls. Simon's (1989, 1991) onomastic studies of Westphalia paint a similar picture.

Now the question arises whether the decrease of *nachbenennung* is reflected in the structure of the personal names. Was this change in tradition followed by a change in name types? As we saw in the beginning, people do not reproduce the usual linguistic structures (which in German correspond to a word language type) if they are allowed to create (or to borrow) new words. The new structures clearly contain more syllable language features.

The prototypical phonological word in German comprises one foot and one to two syllables, e.g. *Tag* 'day', *Haus* 'house', *Mutter* 'mother', *Leute* 'people' (Eisenberg 1991, 2006; Hall 1999; Wiese 2000; Szczepaniak 2007). Inflected words clearly tend to be disyllabic: *Tage* 'days', *Häuser* 'houses'. They constitute trochees with a final reduced syllable which contains schwa ([ə] or [ɐ]) (Figure 6). Proper names, however, diverge in many respects from these structures. This is demonstrated in Figure 7 which analyzes a typical German girl name, *Michaela*. This word, in contrast, contains two feet, the second one even being the stronger one (the full stress is on the third syllable of the whole phonological word). Furthermore, there is no reduced syllable (no schwa). Usually, first names have simpler syllable structures (CV) which is also the case here.
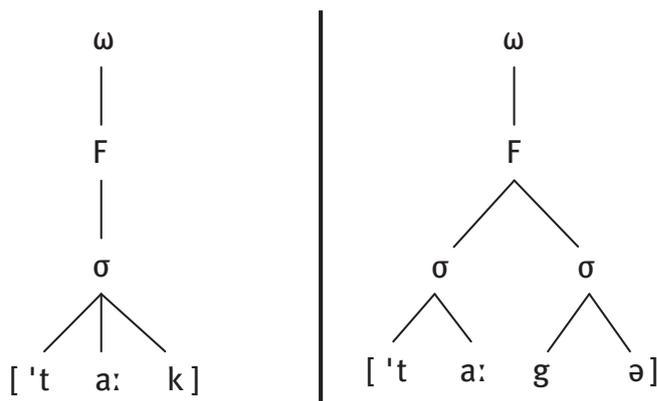
Figure 6: The phonological structure of *Tag* 'day' and *Tage* 'days'
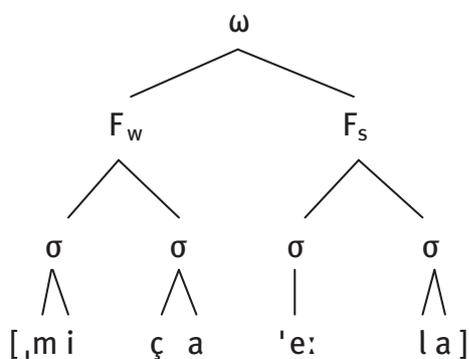
Figure 7: The phonological structure of *Michaela* [ˌmiçaˈeːla]

Proper names such as *Elke, Christel* or *Peter* as well as monosyllabic names such as *Klaus* and *Heinz* fully correspond to the common phonological word. Today, they are completely out of fashion – but not, as one might assume, because they were overused in previous generations and are now considered old-fashioned. It will be argued that it is their phonological word quality which disqualifies them as first names: First names by and by become more linguistically distant to common nouns. Today it can be observed that some old-fashioned names are coming back in style, such as *Emma, Emilia, Laura, Anna*. This, however, is not only due to a revival of old traditions. Rather, it is their onomastic quality which is making them popular again. Other old-fashioned names such as *Wilhelm* and *Friedrich* or *Gertrud* and *Sieglinde* are not coming back in style. This will be discussed in the next section.

3 Linguistic comparison of first names and common nouns since 1945

As mentioned above, our analysis is based on the top 20 girls' and boys' names from 1945 to 2010 (in five-year subperiods). In a first step, all proper names and common nouns were transcribed using IPA. Then, the average number of syllables was calculated, followed by the most common sounds, and so on. The transcription method is a compromise between a phonological and a phonetic transcription. In German, every [r] in final position (*Peter*) and before a consonant (*Werner*) is vocalized and thus counted as schwa [ɐ]. Prevocalic [r] and [r] after a consonant were counted as a voiceless fricative [χ], as in *Marion* or *Christina*. Two adjacent vowels belonging to different syllables were counted as hiatuses: *Marion, Florian, Fabian, Michael*. Some Germans pronounce a glottal stop in *Michael* [ˈmiça̩ʔeːl]. This was not considered here.

In the following section, the changes of several onomastic features compared to common nouns will be presented. With respect to the common nouns, no change over the past 65 years is assumed as the elementary vocabulary should stay more or less the same over time (see Table 2, which obviously contains elementary everyday vocabulary such as 'child', 'day', 'time', 'year', 'house'). Therefore, only a simple (straight) line was inserted in the following figures which is contrasted with the rapidly changing onomastic structures from 1945 to 2010.

3.1 Number of syllables

The average common noun consists of 1.7 syllables as calculated from the 40 most frequent items.

Table 4: Number of syllables of the 40 most frequent common nouns (Pfeffer corpus)

Number of syllables	Tokens	Average
1	13	
2	26	1.7
3	1	

If we compare this average with first names, we get the following result (Figure 8): Proper names are clearly always longer than common nouns. In 1945, they started with 2.1 syllables. In the seventies, they suddenly became much longer, even up to 2.6 syllables. Interestingly, they have been getting shorter again since 1985. Today (2010), they have reached the same value as 1945. All in all, first names are clearly longer than common nouns.
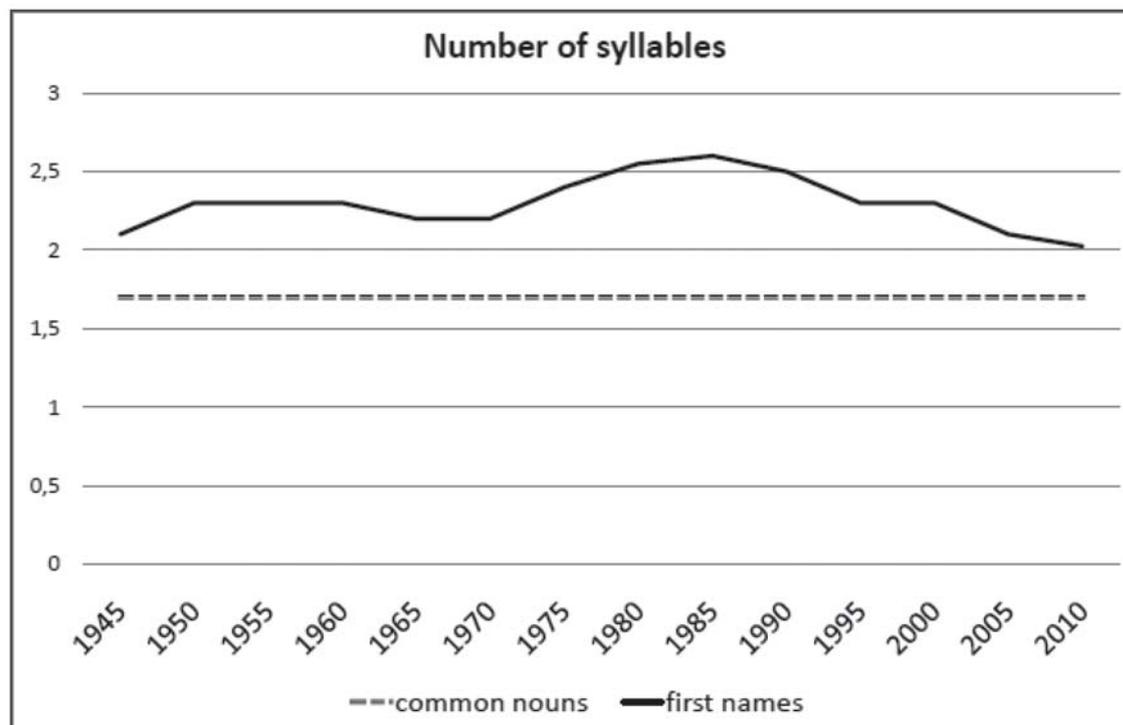
Figure 8: The number of syllables in first names and common nouns

If we consider the sexes separately, clear differences can be found (Figure 9): Boys' names started out having the same number of syllables as common nouns, whereas girls' names were already considerably longer than common nouns in 1945. After the sixties, they converged with the male names by getting shorter, whereas, at the same time, male names became longer so that both adopted a rather similar length. Since 1970, a clear androgynous development in length can be observed. It should be kept in mind that this strongly corresponds to the end of bound naming. As the "son and heir" principle did not apply to girls (they usually married into another family), their names clearly already diverged more from the common noun structures than male names in 1945.
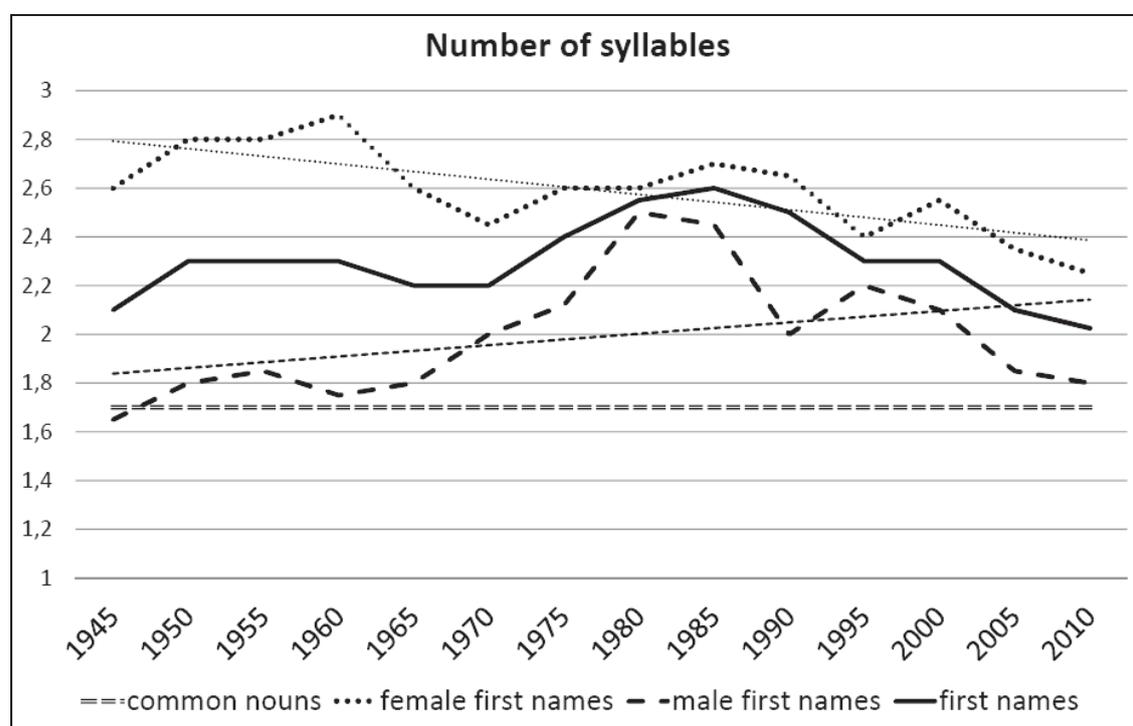
Figure 9: The number of syllables in girls' and boys' names

3.2 Accent positions

The most radical differences, both between common nouns and names and between female and male names, can be stated with respect to the accent positions (Figures 10–12).
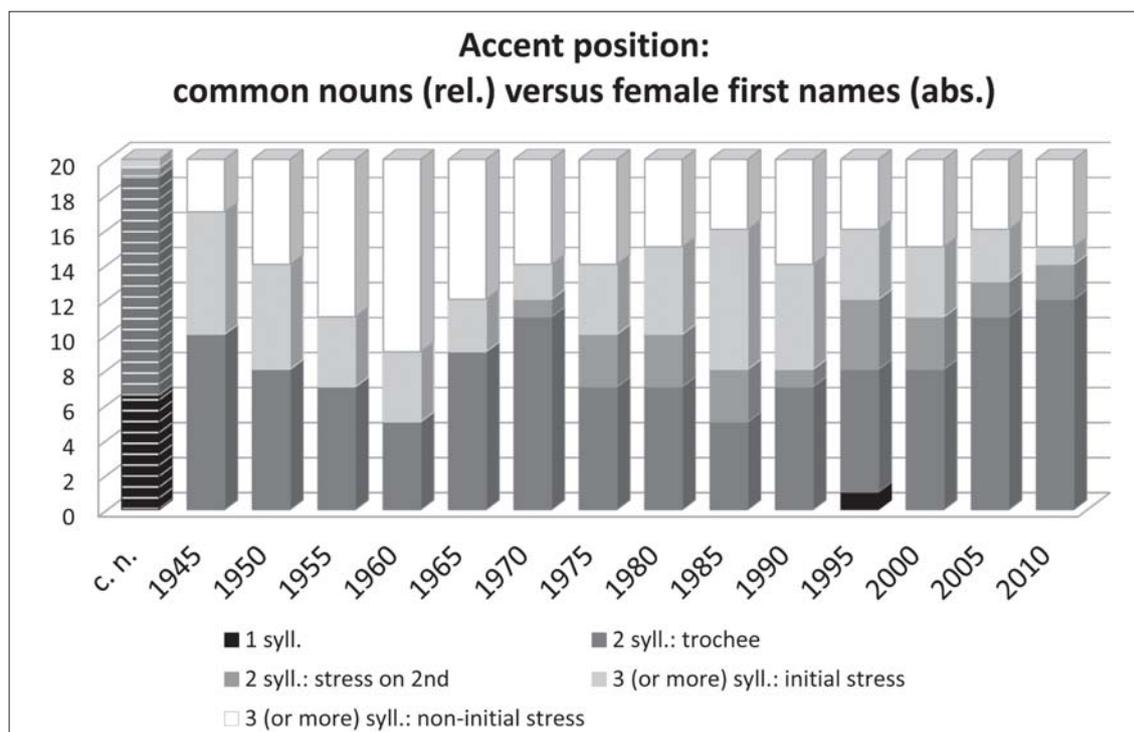
Figure 10: Differences in length and accent positions of common nouns (left column) and female first names

Figure 10 illustrates the different features of female names. The far-left striped column shows the values for the common nouns: One third are monosyllabic, and the rest are almost entirely disyllabic with initial stress. In contrast, there are almost no monosyllabic female names at all, except one, *Kim,* in 1995. Most of the female names are di- and trisyllabic. The disyllabic names mostly have initial stress (dark grey). Prototypical examples are *Elke* (with schwa) in former times and *Lea* currently (without schwa but with a hiatus). We will later return to these phonological differences. Since the nineteen-seventies, there have also been final stressed disyllabic names such as *Nadine* [naˈdiːn] and *Yvonne* [iˈvɔn]. This type does not appear at all in the most popular names for boys. The typical female name is trisyllabic with initial stress (*Monika*, light grey) or non-initial stress (white, as in *Brigitte*). There have been many changes during these sixty-five years; at the moment, the disyllabic names are coming back in style. In every period, the distance to the common nouns is considerable.

The male names (Figure 11), however, are closer to the common nouns (striped left column). We find many monosyllabic names (*Heinz, Karl, Horst, Klaus*, black) as well as trochaic disyllabic names, such as *Peter* (in former times, with schwa) and *Leon* (today, without schwa but with a hiatus). As we already know, the boys' names have become longer since the nineteen-seventies (trisyllabic names are colored in white and light grey); here, we can observe a growing distance
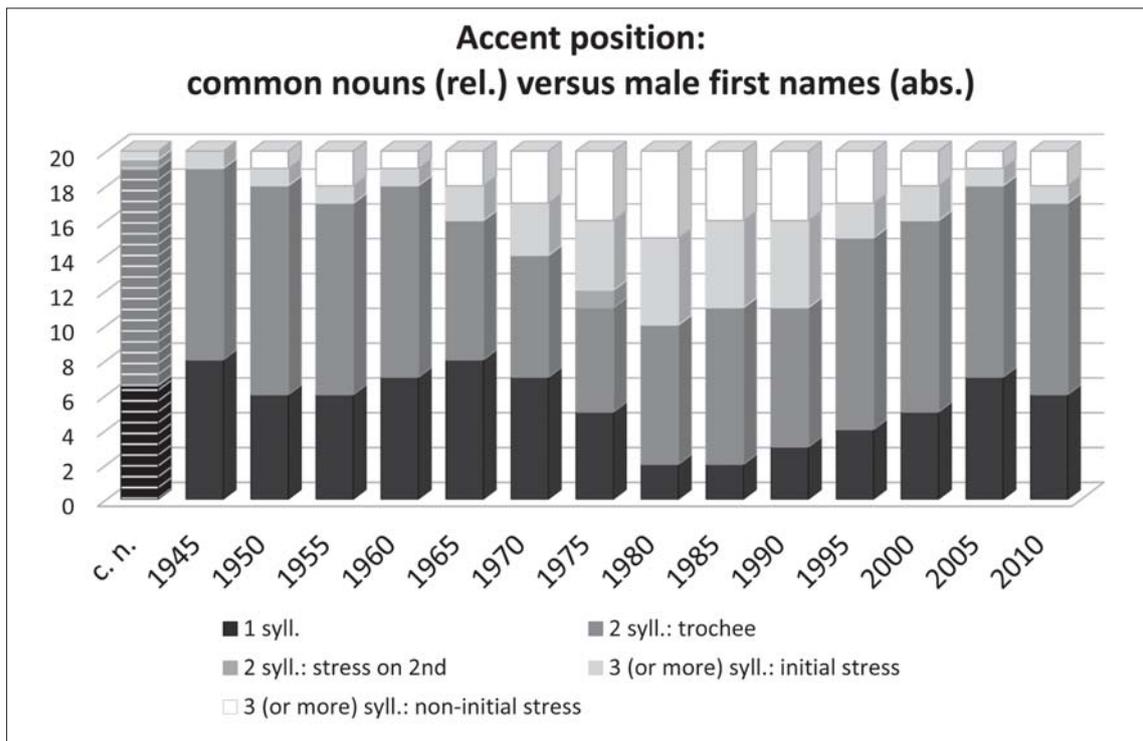
Figure 11: Differences in length and accent positions of common nouns and male first names
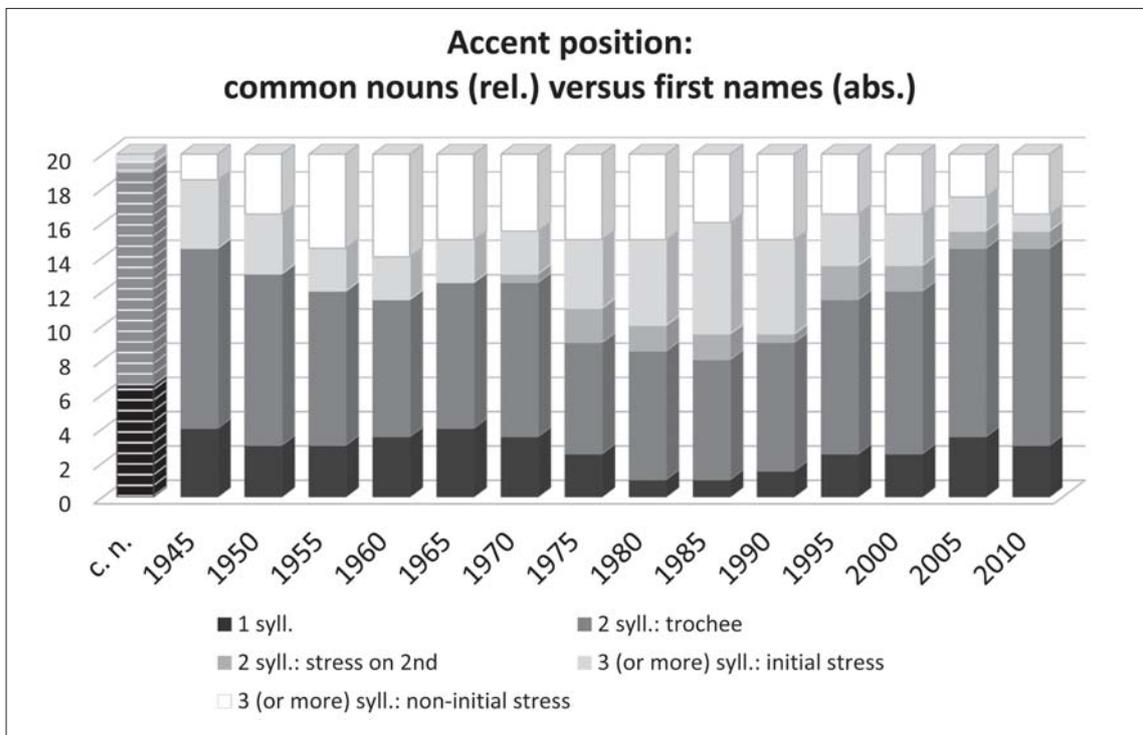
Figure 12: Differences in accent positions of common nouns and first names

to the common noun structures. Until the nineteen-seventies, male names were more tightly bound to intrafamilial transmission. The girls were already mostly unbound from these traditions, which can be seen in Figure 5. Furthermore, non-initial stress seems to be a feature of female names. Due to this function, the overall onomastic picture in Figure 12 is not very significant. However, some changes can be observed over the sixty-year time span.

To sum up, in the beginning of the studied time period, female names already had rather different accent positions and syllable numbers compared to common nouns, whereas boys' names commenced with nearly the same structures of common nouns and later dissociated over time.

3.3 Consonant clusters

To count the amount of consonant clusters, a very simple method was used: Every combination of two consonants – irrespective of its position in the syllable structure – was counted as a cluster, except the combination of [r] + consonant (*Gerhard*), as [r] is vocalized in this position. Combinations of three consonants (which are very rare) were counted as two clusters, as in *Heinz* [haɪnts]: [nt] + [ts]. The consonantal structure of the most frequent common nouns is rather simple; in sum, there are 14 clusters within the 40 top common nouns (Figure 13). The first names, however, started with higher values, but then reduced their complexity considerably. Today they are even less complex than common nouns. This radical change towards CV structures started in the late nineteen-seventies. At the same time, there were dramatic changes on the vocalic level, which is the topic of section 3.6. Regarding consonant clusters, there are large gender-related differences: The boys' names started with more consonant clusters and still contain more, whereas the girls' names use more CV structures (Figure 14).

Since 2005, the top female names have been completely free of clusters, whereas in 2010 five of the top male names still contained clusters (*Maximilian, Max, Felix, Niclas, Moritz*). To get an impression of this deep-rooted change, some examples of the top 20 names of 1945 and 2010 are juxtaposed:
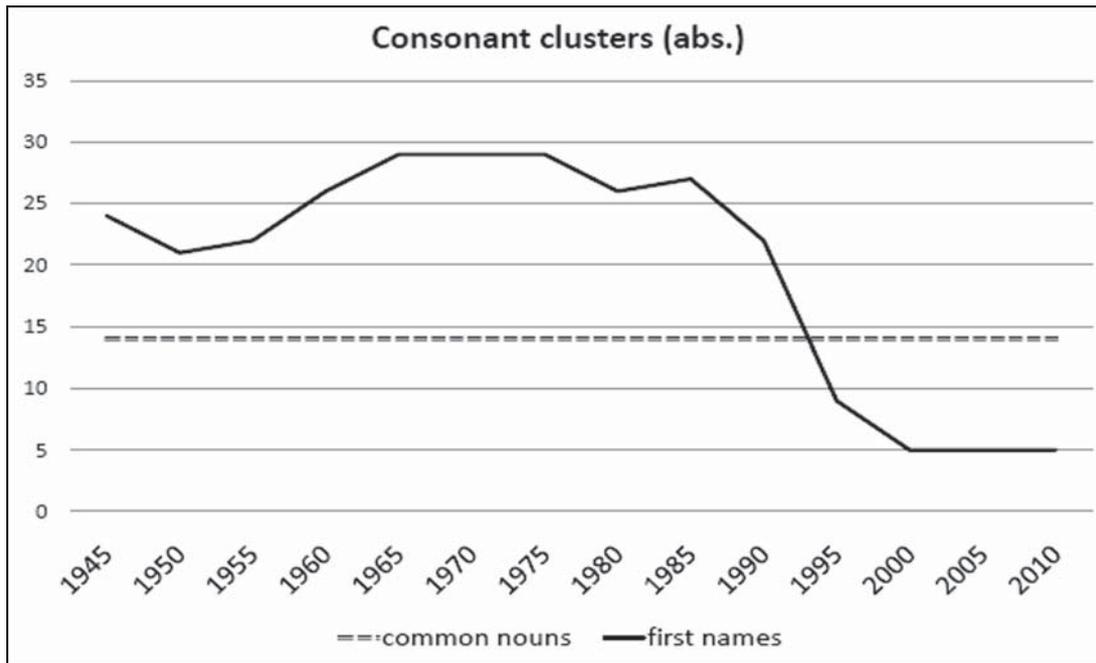
**Figure 13:** The development of consonant clusters in first names
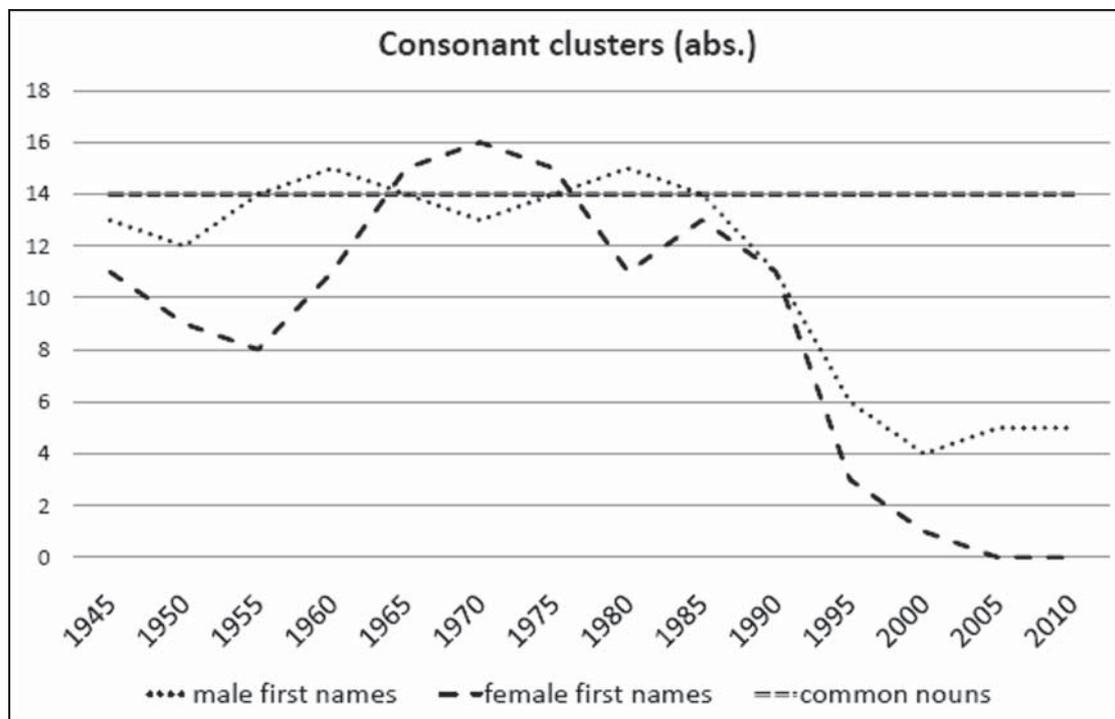
Figure 14: Sex-related differences in the development of consonant clusters in first names

Male names

1945: Ha<u>ns</u>, Hor<u>st</u>, Hei<u>nz</u> [nts], ⟶ 2010: Leon, Ben, Finn, Luis, Tim,
       <u>Kl</u>aus, Ro<u>lf</u>, Ber<u>nd</u>,   Jan, Ma[ks], Elias, Noah,
       Wo<u>lfg</u>ang, Ma<u>nfr</u>ed ...   Julian, Jonas, Luca ...

Female names

1945: <u>Chr</u>ista, E<u>lk</u>e, I<u>ngr</u>id, ⟶ 2010: Mia, Hanna, Lena, Lea,
       A<u>nk</u>e; <u>Br</u>igitte, <u>Chr</u>istel   Leonie, Lina, Lilly, Laura,
       He<u>lg</u>a, A<u>ng</u>elika ...   Lara, Emma, Maja ...

Few consonant clusters mean that there are many CV structures. Again, it becomes obvious that the first names started with native structures and later incorporated more syllable language features. The relatively low amount of clusters in common nouns can be explained by the absence of compounds. In contrast, names such as *Wolfgang* and *Manfred* consist of compounds which go back to word formation in Old High German or even earlier times. The high amount of onomastic consonant clusters in the nineteen-sixties and -seventies is caused by rather long names such as *Stefan/Stefanie, Kathrin, Claudia, Alexandra/Alexander, Andrea/Andreas* and *Sebastian*. Figures 13 and 14 only contain the absolute number of clusters and not their share relative to the number of syllables.

3.4 Hiatuses

Hiatuses of two full vowels are rather seldom for common nouns. Native hiatuses always consist of a stressed diphthong *au* [au], *ei* [ai] and *eu/äu* [ɔi] + schwa [ə] or [ɐ]: *Bauer* 'farmer', *Reiher* 'egret', *teuer* 'expensive'. Other hiatuses always belong to foreign words (*Linguistik, Theater, Theologie*). In our sample of the top 40 of common nouns, there is only one example, the loan word *Familie* [faˈmiː.li.ə], where the hiatus [i.ə] occurs in unstressed position (in fast speech, it is contracted to [jə]). The first names – here, both sexes behave similarly – start with the same values as common nouns, but they increase their number of hiatuses dramatically, again in the seventies (Figure 15).
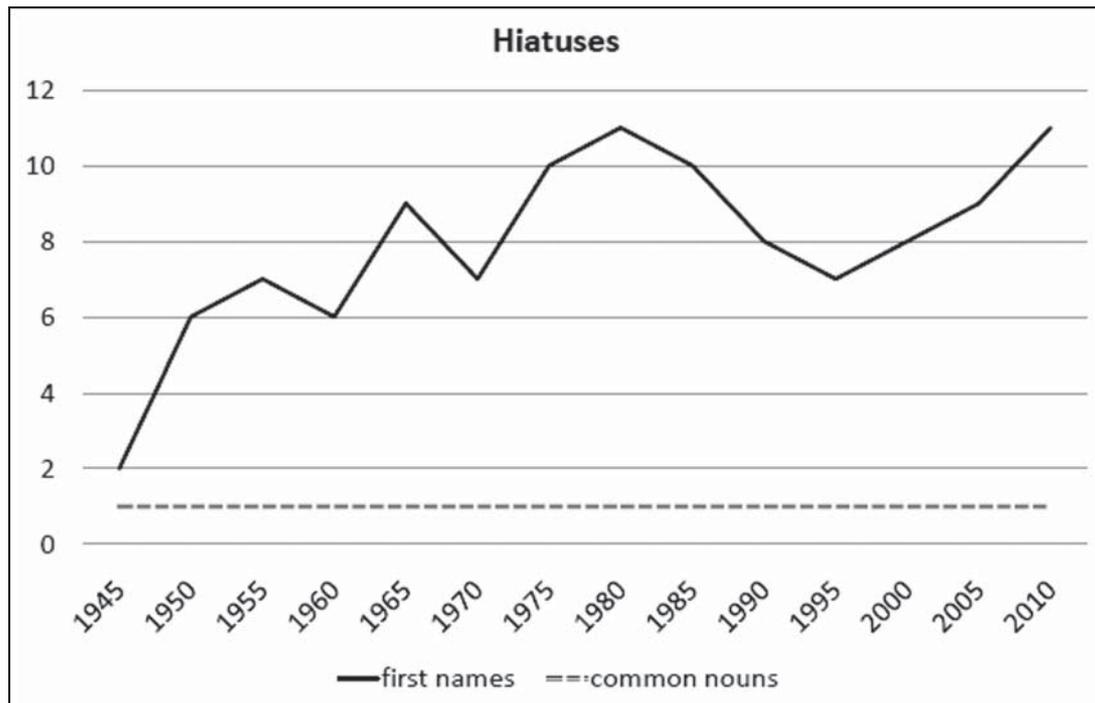
Figure 15: The development of hiatuses in first names from 1945 to 2010

A closer look at the accent position reveals interesting changes: The hiatuses move from unstressed to stressed syllables, from the background to the foreground, or, in linguistic terms, they become more salient. This is not visible in Figure 15. Therefore, some examples are provided in Figure 16.

	unstressed hiatuses ⟶	stressed hiatuses
1945	*'Marion*	–
	'Michael	–
1980	*'Julia, 'Claudia*	*Dani'ela*
	'Christian, Se'bastian,	*Ma'tthias, An'dreas,*
	'Michael, 'Daniel, 'Florian	*To'bias*
2010	*– (?E'milie? / 'Emil[iː])*	*'Mia, 'Lea, 'Leonie, So'fia, Lu'isa*
	Maxi'milian, 'Julian	*'Leon, 'Luis, E'lias, 'Noah*
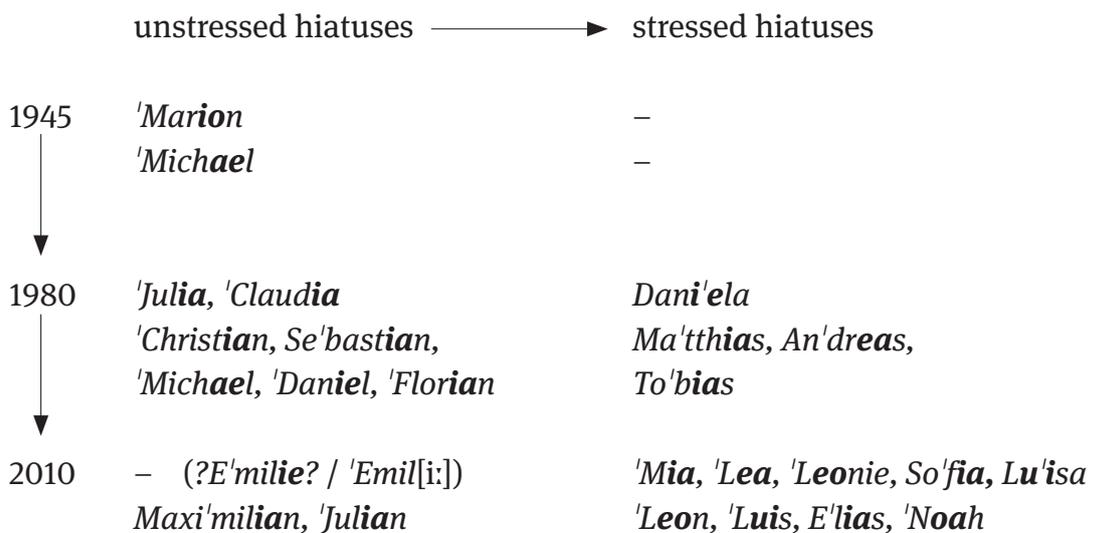
Figure 16: Increase of hiatuses and their transition into stressed positions

First of all, there are no native hiatuses as there are no schwas involved. The only exception is *Emilie* which, together with *Emily*, was ranked ninth in 2010. It is very likely that both are pronounced with initial stress and final [iː] but the older German pronunciation *E'mil*[iə] cannot be excluded. However, this is rather improbable. The fact that both writings share the same position indicates that there is only a graphical and not a phonological difference. Thus, every onomastic hiatus consists of two full vowels. In 1945, they were few (solely two out of 40 names) and occurred exclusively in unstressed position. In 1980, they increased in number and also spread into the stressed position. Today (2010), most of the hiatuses are stressed (mostly on the first vowel and thus without a glottal stop in between) and not accompanied by further syllables: The current first names nearly exclusively contain one hiatus (*Mia, Lea, Noah*).

Concerning the question of syllable versus word language typology, on the one hand hiatuses do not improve the syllabic quality because they cause a less preferred syllable contact. On the other hand, hiatuses provide more similar syllables, i.e. they diminish the discrepancy in sonority between the syllables within a word. Contrary to the German word language type, they violate the principle of highest sonority in the stressed syllable since they produce similar sonority degrees on both syllables. Thus, this onomastic development towards stressed hiatuses with full vowels is not only a departure from native structures – it is a development towards syllable language structures. As German is a highly developed word language, nearly all onomastic changes result in more syllable language structures. Therefore, Germans use the onomastic inventories of syllable languages when they are looking for euphonic names.

3.5 Final schwa

A complementary picture to the increase of hiatuses is provided by the development of final schwa: Here, a dramatic downfall to zero can be observed over time (Figure 17). Again, a glance at the behavior of both sexes is revealing (Figure 18). As usual, the boys' names started with more common noun structures (trochees, second syllable with schwa, see *Peter, Jürgen, Uwe, Dieter, Günther, Rainer, Werner*), whereas the girls' names started with lower values, i.e. they had fewer names with common noun structures (*Anke, Elke, Renate, Brigitte, Bärbel, Christel*). However, it must be pointed out that in Figure 18 the number of schwas is related to the total number of unstressed vowels. Boys' names quickly reduced their schwas after 1965 and replaced them, as we will see in section 3.7, with full vowels. Here, the male names underwent a "feminization". Since the seventies

again, both sexes have converged and further reduced this vowel, which is the most frequent vowel in common nouns.
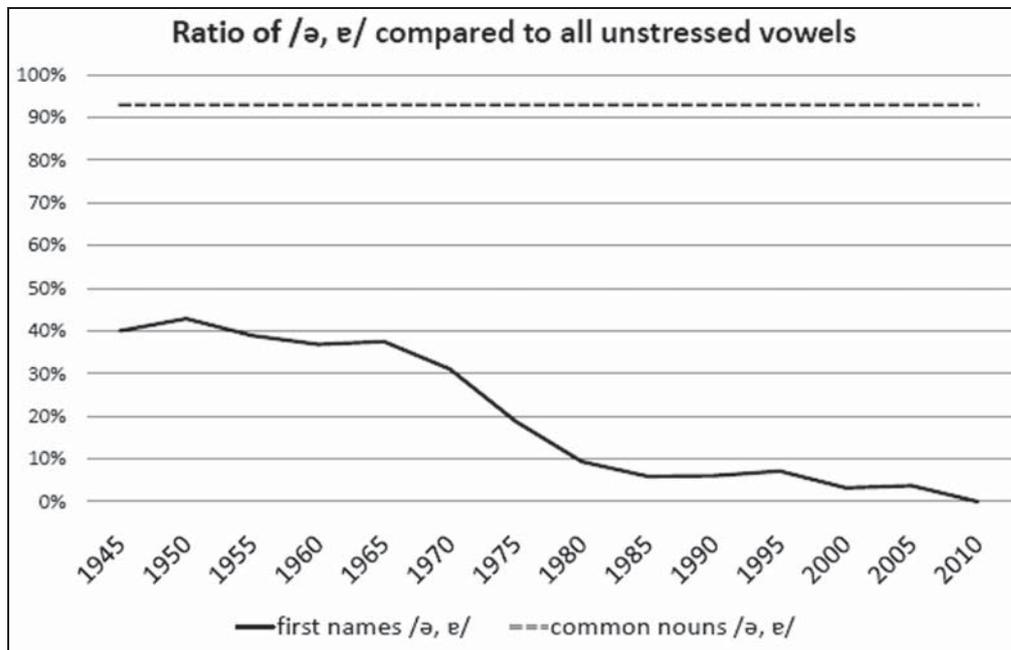
**Figure 17:** The ratio of schwa compared to all unstressed vowels
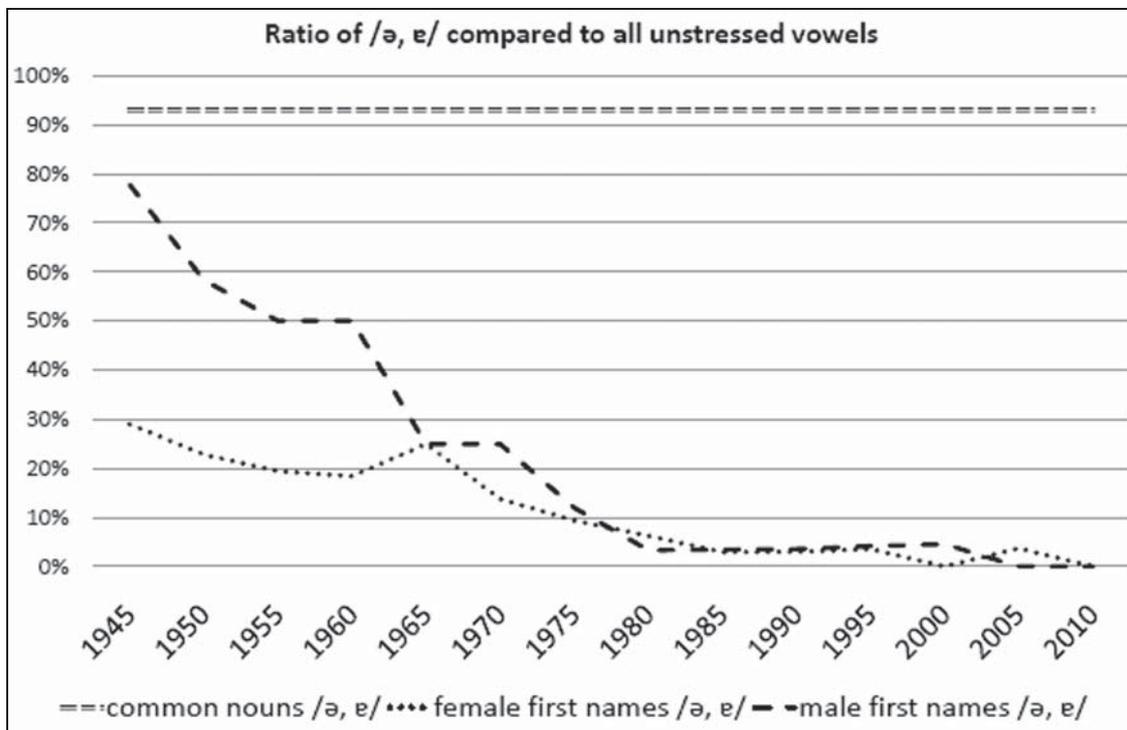
Figure 18: The ratio of schwa compared to all unstressed vowels in common nouns and in male and female names

The onomastic loss of schwa clearly supports the trend towards syllable language features, which usually includes a symmetric vowel inventory occurring in every syllable, be it stressed or unstressed. Good examples are Italian and Spanish where nearly every vowel can appear in every syllable (Szczepaniak 2009). This was similar in Old High German. In Middle High German at the latest, two vowel inventories developed: 23 stressed vowels opposed to one unstressed, schwa [ə] (Szczepaniak 2007: 188); later, a second central vowel [ɐ] came along. All in all, this still applies for New High German with 18 stressed vowels and two central vowels. Not surprisingly, [ə] is the most frequent vowel in German nouns. This extreme vocalic discrepancy is overridden in first names (as well as in other names and in short words): In 1945, schwa was still included in many first names. Step by step, it became less common – until there were none in the top names of 2010. Both sexes show a similar decrease.

3.6 Full vowels in unstressed positions

Knowing that the average number of syllables in names never falls below 2 (Figure 8), we get a lot of unstressed vowels. Since 1980, they only very rarely consist of schwa. This leads to the question of which vowels are replacing them. Figure 19 shows the ratio of full vowels in unstressed positions.
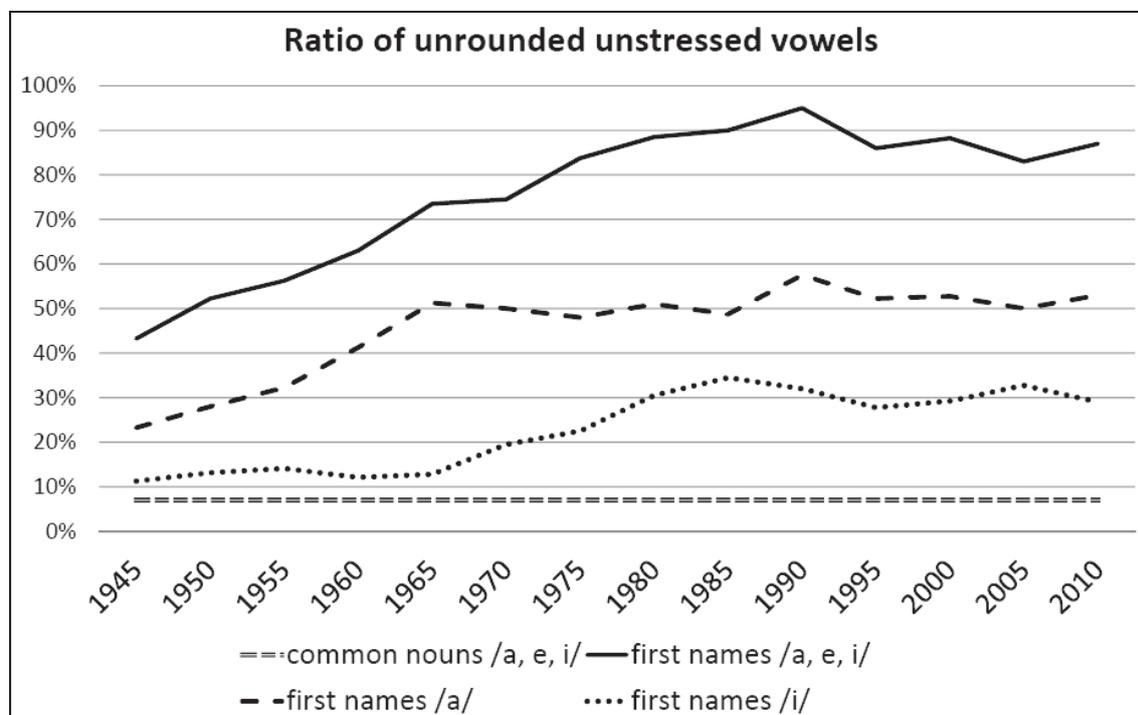
Figure 19: Unrounded unstressed vowels in common nouns and first names

Complementary to Figure 18 (development of schwa), there is a high increase in unrounded unstressed vowels in Figure 19, above all [a] and [i]. Today, 82% of all unstressed vowels consist of these two vowels. Generally there are only few rounded vowels, even more in female than in male names. Most important is the fact that final *-a* is a very strong sex indicator for female names. In recent years, the male names have converged even with respect to this important feature (cf. *No<u>ah</u>, Luc<u>a</u>,* furthermore *Jon<u>as</u>, Eli<u>as</u>*).

4 Conclusion

Most of the contemporary discrepancies between common nouns and first names correspond to the differences between word versus syllable languages. Even the high amount of stressed and unstressed hiatuses, which blur the syllable contact instead of producing clear CV structures, support syllable language features because they create more similar syllable nuclei with regard to sonority degrees. Thus, first names make use of completely different hiatuses which – in contrast to the native ones – never contain schwa and which also can occur in unstressed position (*ˈMich<u>ael</u>*). By this means, they clearly distinguish themselves from the common nouns by disobeying the sequence of full and reduced syllables or, in other words, the alternation of high and low sonority degrees.

The other onomastic peculiarities fully conform to syllable languages (see Figure 20). Thus, German separates the two functionally diverging noun classes of common nouns versus proper names by typological means. This does not mean that the German language as a whole is moving in this direction: Proper names stand in many respects outside the language system. They are often not bound to the native vocabulary, so it is not astonishing that they use different means. Even in writing, proper names strongly diverge from common nouns. They are not even subject to the same orthographic rules.

As Figure 20 shows, female names diverge more than male names from native structures, even in the beginning of the studied time period in 1945. Gender differences seem to be not only of high social relevance, they also have to be coded unambiguously on the name as it is even regulated by law in Germany. Both sexes have converged over time with respect to some features (e.g. the average number of syllables, full unstressed vowels, loss of schwa, high amount of hiatuses), but with respect to others, they have clearly diverged: Monosyllabic names are overwhelmingly male (*Ben, Finn*), iambic names are female (*Naˈdine, Yˈvonne*), there are more open final syllables and less consonant clusters in female names. This complex of gender up- and downgrading between 1945 and 2009 was investigated by Nübling (2009a, b) with the result that girls' and boys' names have never been as similar

Word language type
Features of common nouns in German:
• lexical (initial) stress
• monopedal words
• monosyllabics and trochees
• reduced syllables (schwa)
• strengthened word edges (clusters)
• alternation of full + reduced vowels

Syllable language type
 Features of contemporary first names:
• different stress patterns
• polypedal words
• polysyllabic words (up to 5 syllables)
• full unstressed vowels (no schwa)
• CV structures (no clusters)
• full vowels in every syllable

male names 1945   2010

Klaus   *Nico*
Norbert   *Noah*

female names 1945   2010

'Christel   *Chris'tina*
Barbara   *Leonie*
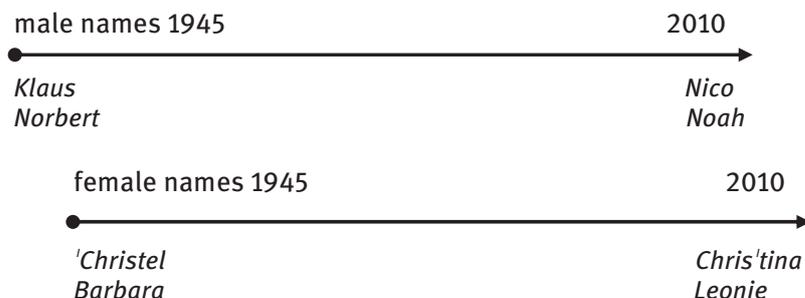
Figure 20: Overview of the most important developments

as they are today, i.e. they became rather androgynous over time. In these studies, more linguistic aspects were considered, e.g. the overall amount of sonority. This fact of convergence can be explained by the feminist movement since the sixties and the equal treatment of both sexes starting in the seventies and eighties.

Here, we only state that male names use more native structures than the female ones. This can best be explained by social gender differences which ascribe men the role of son and heir in contrast to women who traditionally left their family after marriage. This led to the persistent tradition of male *nachbenennung* within the family. This tight connection is demonstrated in Figure 21 which reveals a parallel between the social practice of *nachbenennung* (holding for both sexes) and one linguistic development, the loss of schwa in first names. The seventies can be identified as a turning point.

a) Decrease of *nachbenennung* (1946–1994) b) Decrease of schwa (1945–2010)
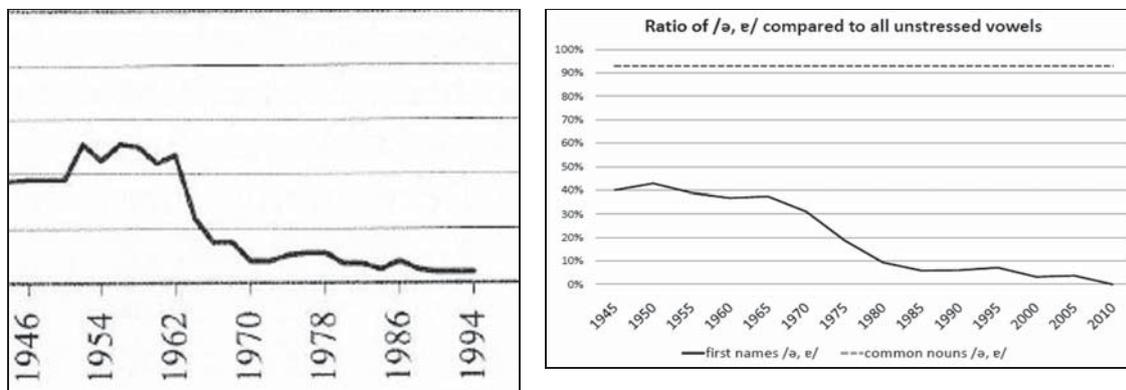
Figure 21: Parallel developments of social and linguistic changes

Looking back to Figure 20, it must be pointed out that only special syllable language features have entered German first names, for example different accent positions which are not determined lexically and which diverge from the rather strict trochaic stress pattern of German. The same holds for the length of the pword (1–2 syllables) which is often ignored in first names. Conversely, foreign syllable language features such as geminates and weak or tonal accents will probably never enter German first names. Assuming that a name like *Anna* was loaned from Italian, the geminate would be replaced by an ambisyllabic short [n]. Most of the syllabic properties of German first names consist of purely phonotactical reorderings and simplifications (CV structures, full vowels in unstressed syllables) and in the exceedance of the pword length. Qualitatively new features or even phonological processes (like nasals or other non-native sounds, vowel epenthesis, vowel harmony) will never penetrate the onomastic system. The sound inventory was not enlarged, but rather the combination of the sounds. Thus, foreign names do not primarily fulfill syllable language requirements; they first of all have to contrast with the native system. This task is best performed by typologically divergent structures.

Summing up, the typological change of first names directly corresponds to the non-linguistic decline of *nachbenennnung*. First names clearly reflect social changes. The decline of *nachbenennnung* led to the dissociation of common nouns and first names. Possibly, the real reason why we choose so many foreign names could be that they provide us with a pool of diverging structures. We are probably less interested in imitating or adopting foreign cultures than in escaping our native word language structures in order to mark a special, perhaps the most important, class of words: proper names.

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