

# POSTPRINT

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## The lexicography of German

### Abstract

This chapter discusses the main dictionaries of the German language as it is spoken and written in Germany, and also German as it is spoken and written in Austria, Switzerland, the eastern fringes of Belgium, and South Tyrol. It also briefly describes Pennsylvania German. Corpora and other language resources used in German dictionary-making are also presented. Finally, there is a discussion of some current issues in German lexicography, as well as future prospects.

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### Introduction

German is a scientific and a cultural language with a long history. As a West Germanic language it belongs to the Indo-European family of languages and is spoken today not only in Germany, Austria, and parts of Switzerland, but also in

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Liechtenstein, Luxembourg, East Belgium, South Tyrol, and Alsace-Lorraine as well as in the form of a minority language in several other countries inside and outside of Europe. German is the language with the highest number of native speakers in continental Europe.

Besides (written and spoken) German as a standard language there are many German dialects, which are classified into High and Low German dialect groups, the difference between them being mainly that High German dialects participated in the High German consonant shift, in which, for example, /t/ was shifted to /s/ (compare Low German *Water* and High German *Wasser*). Standard German has developed from High German dialects starting in the sixteenth century (for example with Martin Luther's translation of the Scripture in 1522). Low German is closely related to Dutch.

German is written with (26) Latin letters plus <ß> ('Eszett' for [s] after diphthongs and long vowels) and the umlauts <ä>, <ö>, <ü>. Standardization of German orthography started in the late eighteenth century, and after 1871 (foundation of the German Reich) it became an official goal to develop a unified school orthography. Today, the Rat für deutsche Rechtschreibung (<http://www.rechtschreibrat.com/>) ['Council for German Orthography'] is the regulatory body for German orthography: Members from Germany, Austria, Switzerland, Liechtenstein, Bolzano/South Tyrol, and Belgium prepare rules governing the uniformity of German spelling and syllabification in all German-speaking countries. Meeting at least twice a year, the "Rat" publishes reports and gives recommendations every few years. Spelling dictionaries as well as orthographic information in all other dictionary types conform to the spelling rules and the official list of German words published by this regulatory body. The spelling rules are mandatory only for official texts and schools, though; in other writing these are not binding (most writers of German nevertheless adhere to them).

Codification of German pronunciation began in the late nineteenth century with the publication of dictionaries which record the pronunciation of German words and describe pronunciation rules. German pronunciation today is not as highly standardized as its orthography. In fact, different varieties are used in official situations, for example by news readers on the radio, and different varieties of standard German are used in Germany, Austria, the German speaking parts of Switzerland, etc. Distinctive for German pronunciation in its different varieties and dialects are (besides the very rich vowel system with 15 monophthong vowels and three diphthongs) its consonant clusters (especially in inflected forms) and initial word accent (except in loanwords which follow different rules).

German has a rich inflectional system for nouns, pronouns, articles, adjectives, and verbs. Verbs, for example, are inflected (partly by using auxiliaries) according to three persons, two numbers, six tenses, two moods, and two voices. A German specialty is the complex system of word formation (composition, derivation, abbreviation) for most parts of speech. While the formation of new derivatives is comparatively rare, noun compounds are particularly frequent. Typically, only limited numbers of these are recorded in dictionaries. New verbs are mostly formed by adding prefixes, particles, and other elements creating, among others, separable

verbs (e.g., *aufschreiben* ‘to write down’: *Ich schreibe ein Wort auf* [‘I write down a word’] – *Ich habe ein Wort aufgeschrieben* [‘I have written down a word’]). Separable verbs are usually recorded in dictionaries in the infinitive, unseparated form, while in texts they more often occur separated. Corpus tools for German have yet not mastered reliable lemmatization of separable verbs, thus making it difficult to ascertain their frequency for purposes of inclusion in a lemma list.

The history of High German is divided into four periods: Old High German (750–1050), Middle High German (1050–1350), Early New High German (1350–1650), and New High German (since 1650). Even in the earliest times, non-Germanic words were integrated into the language, starting with Latin or Greek words (*vinum* – *Wein*, *κυρικόν* – *Kirche*). Later, French words (Old French *aventure* – Middle High German *āventüre* – *Abenteuer*; French *boulevard* – *Boulevard*) started to enrich German vocabulary. Since the middle of the twentieth century, a growing number of English words have been integrated into German (*design* – *Design*). German vocabulary can be classified into native (Germanic/ Indo-European) words (*Vater* ‘father’, *Mutter* ‘mother’, *zwei* ‘two’), and fully phonetically and graphically integrated loanwords (*Ziegel* ‘brick’, from Latin *tegula*) as well as words of foreign origin, which are phonetically and graphically recognizable as loanwords (*Toilette* from French *toilette*, *Yoga* from Hindustan *yoga*). The latest borrowings are recorded in new-word dictionaries.

Dictionaries as part of the German cultural heritage started playing an important role in teaching, in translating, and in documenting and standardizing the language in its different aspects from as early as the fourteenth century. The rise of German philology in the second half of the nineteenth century and the start of scientific research into language usage and dictionary-making in German since the 1970s are also important contributors to the huge variety of dictionaries of German that we have today. Finally, the availability of electronic corpora and the possibilities of publishing on the Web have had an impact on how German dictionaries are made and used today. The potential impact for the future is even greater.

German lexicography does not stand alone, but is part of a larger European tradition of dictionary-making. Although many influences on questions of corpus compilation, lemmatization, definition, examples, guiding historical or synchronic principles, etc. from the lexicography of other European languages should not be forgotten, they can only be mentioned briefly in this paper.

## Description

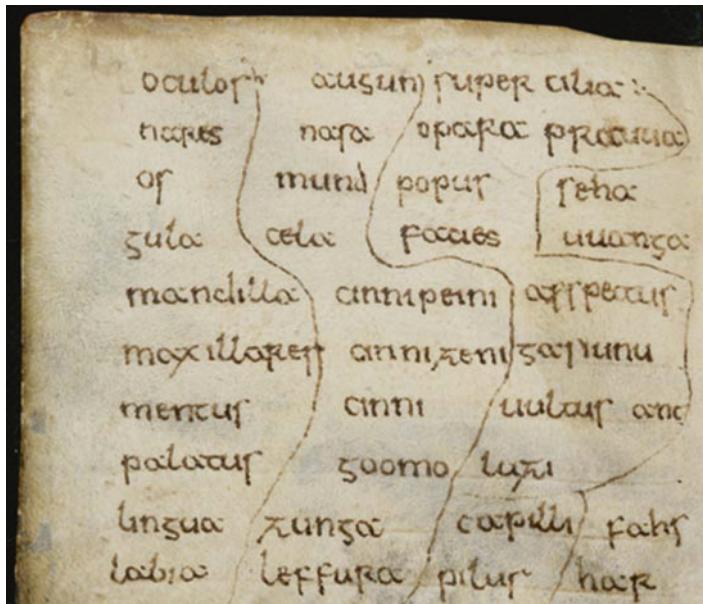
Starting with a brief look at the history of lexicography in German, in this chapter we describe some current issues in German lexicography, give information on electronic corpora of written and spoken German as well as other language resources used in German dictionary-making, and give a survey of German dictionaries.

## History of lexicography in German

The history of German lexicography has been described extensively (Grubmüller 1990; Haß-Zumkehr 2001; Henne 2001; Kühn and Püschel 1990a, b; Schaeder 1987; Stötzel 1970; Szlek 1999; Wiegand 1990). The short survey in this section is based on Schlaefer (2009, pp. 128–135), and focuses on the main development stages.

German lexicography began in the early Middle Ages. A well-known example is the *Vocabularius Sancti Galli* (c. 790), a Latin–[Old High] German glossary, in which the vocabulary is ordered in subject groups (see Fig. 1). The need to translate from Latin was the main reason for creating glossaries and organizing them in alphabetical order until the fourteenth century. In the late fourteenth century, [Middle High] German–Latin glossaries were developed (the earliest being *Vocabularium seu nomenclator* by F. Closener), such that translations in both directions were possible. In the sixteenth century, multilingual glossaries (with Greek or other languages in addition to German and Latin) were published, such as *Nomenclator Trilingvis, Graecolatinogermanicus* by N. Frischlin (1591). Since the second half of the sixteenth century, monolingual German dictionaries have been created to document German as the mother tongue, e.g. *Ein Teutscher Dictionarius* ['A German Dictionary'] by S. Roth (1571). Dictionaries of synonyms or proverbs were also published at this time. The term *Wörterbuch* came into use a little later, at the beginning of the seventeenth century.

In the seventeenth and eighteenth centuries, the idea of standardizing meaning and usage in a comprehensive dictionary and the idea of codification of orthography as well as pronunciation in specialized dictionaries became important for the development of German lexicography. K. Stieler's *Der Teutschen Sprache Stammbaum und Fortwachs oder Teutscher Sprachschatz* ['The German Language: Source and Development, or German Language Store'] with about 60,000 main entries (1691) is typical for this period, giving etymological, grammatical, semantic, and phraseological information together with notes on usage and examples. Stieler's early attempts at historical principles for lemmatization and description of headwords represent a dictionary programme (see Reichmann 1989) in which German would be established as equal in importance to Latin and Greek. J. Ch. Adelung's *Versuch eines Vollständigen Grammatisch-Kritischen Wörterbuchs der Hochdeutschen Mundart* ['Essay towards a Grammatical-Critical Dictionary of the High German Language'] with over 55,000 main entries (1774–1786) standardizes German according to the language of educated speakers in Upper Saxony. Thus, Adelung's synchronic dictionary is one of the first German dictionaries for the production of standard language of his time. In the mid-nineteenth century, a growing interest in etymology and philology led to the idea of the *Deutsches Wörterbuch* ['German Dictionary'] by Jacob and Wilhelm Grimm (1st volume Leipzig 1854), which follows historical philological principles and is based on a large number of primary sources. Because this dictionary aims at describing 'good' language, many literary authors were evaluated for the extraction of quotes. The *Deutsches Wörterbuch* (covering over 300,000 entries) has been worked on for over 100 years, from 1945



**Fig. 1** Page from *Vocabularius Sancti Galli* (913); © CESG Codices Electronici Sangallenses, [www.cesg.unifr.ch](http://www.cesg.unifr.ch)) reading oculos – augun, nares – nasa, os – mund, gula – cela, mandilla – cinnipeini, maxillares – cinnizeni, mentus – cinni, palatus – goomo, lingua – zunga, labia – leffura, super cilia – opara prauua, popus – seha, facies – uuanga, aspectus – gasiunu, uultus – antluzi, capilli – fahs, pilus – har

onward in two departments at Berlin and Göttingen (information: Akademie der Wissenschaften zu Göttingen (<http://www.uni-goettingen.de/de/118878.html>) and Berlin-Brandenburgische Akademie der Wissenschaften (<http://www.bbaw.de/forschung/dwb>)). Its first edition is digitized and online in the Trierer Wörterbuchnetz (<http://woerterbuchnetz.de/>), and a revised edition of letters A–Be and D–F has been published in seven volumes (digitized version planned), while the rest of letters B and C are still (2015) being edited at Göttingen. Another well-known general historical dictionary (Haubrichs 2013) of German is *Deutsches Wörterbuch* by Hermann Paul (1st edition 1897 [as e-book at Open Library ([https://openlibrary.org/books/OL14003791M/Deutsches\\_W%C3%BCrterbuch](https://openlibrary.org/books/OL14003791M/Deutsches_W%C3%BCrterbuch))], 10th edition 2002, also on CD-ROM with extensive search options). Its entries are highly cross-referenced to illustrate semantic and etymological relation.

In the second half of the nineteenth century, the first German period dictionaries and the first dialect dictionaries were launched as well. In 1880, K. Duden published his *Vollständiges Orthographisches Wörterbuch der deutschen Sprache* ['Comprehensive Orthographic Dictionary of the German Language'] (1st edition, Leipzig), which by 2013 had reached its 26th edition (*Duden: Die Rechtschreibung* ['Duden: Orthography'], 2013). Until 1996, when German orthography was reformed by an official council, this dictionary was the officially binding orthographic rule book for

German (e.g. in schools). *Duden: Die Rechtschreibung* and the *Deutsches Wörterbuch* are the best known German dictionaries today, and the *Deutsches Wörterbuch* is regarded by many as the one national dictionary for German.

Partly because many (multi-volume) dictionary projects which had been started between 1850 and 1900 were still being edited during the first half of the twentieth century, no new dictionary on German based on philological principles was published at that time. The *Wörterbuch der deutschen Gegenwartssprache* (WDG) ['Dictionary of the Contemporary German Language', edited by R. Klappenbach and W. Steinitz, originally published 1952–1977 in East Germany in six volumes] is the first (synchronic) dictionary of contemporary German, as meaning and usage of headwords are described without recourse to their historic development. A two-volume edition of WDG called *Handwörterbuch der deutschen Gegenwartssprache* (HDG) ['Concise Dictionary of the Contemporary German Language'] was published by G. Kempcke et al. in 1984, with a strong orientation towards the official East German language of the period.

In West Germany, *Duden – Das große Wörterbuch der deutschen Sprache* ['Duden – the Big Dictionary of the German Language'] was published in its 1st edition in six volumes (1976–1982; 2nd edition in eight volumes 1993–1995, 3rd edition in ten volumes 1999) as a record of contemporary standard German, including specialized vocabulary and nonstandard language. A one-volume edition as *Duden – Deutsches Universalwörterbuch* ['Duden – German Universal Dictionary'] (1st edition 1993) is still available in print (7th edition 2011). *Brockhaus-Wahrig. Deutsches Wörterbuch* ['Brockhaus-Wahrig. German Dictionary'] in six volumes (1980–1984, ed. G. Wahrig et al.) had a special focus on technical and scientific vocabulary but was widely criticized for lack of evidence from sources and has not been re-edited. The one-volume *Brockhaus Wahrig Deutsches Wörterbuch* was published in 1966 (ed. G. Wahrig) and more successful (available now in its 9th edition 2012, ed. R. Wahrig-Burfeind); it is well known and widely used as a concise monolingual general dictionary for learners of German as a second language. All of these dictionaries are still guided by historical principles for the order of meanings, as they arrange meanings etymologically. Only since the introduction of German learner lexicography in the late twentieth century do some dictionaries arrange meanings according to frequency or salience.

Since around 1990, the first electronic German dictionaries have been available on CD-ROM or (later) online. Examples for online dictionaries of contemporary German are Duden online (<http://www.duden.de/woerterbuch>) (over five million visitors per month; based on the data from several Duden print dictionaries plus some automatically compiled information, i.e., frequency or collocations from the Duden corpus [Rautmann 2014]), Digitales Wörterbuch der deutschen Sprache (DWDS) (<http://www.dwds.de/>) (ongoing project which provides the digitized WDG along with other resources including a digitized etymological dictionary of German [by W. Pfeifer], paradigmatic relations from GermaNet (<http://www.sfs.uni-tuebingen.de/GermaNet/index.shtml>), word profiles, and KWIC indices from various different corpora; developed and hosted at the Berlin-Brandenburgische Akademie der Wissenschaften), and elexiko – ein Online-Wörterbuch zum

Gegenwartsdeutschen (<http://www.elexiko.de/>) (ongoing project which is published in modules; entries with automatically compiled information, in some parts with full information on meaning and usage; innovative presentation of data; developed and hosted at Institut für Deutsche Sprache in Mannheim).

## **Current issues in German lexicography**

From the beginning of German lexicography, entries have been ordered either alphabetically or in subject groups. Headwords were always given in uninflected form. In the seventeenth century, the first dictionaries with nested entries were published, where derivatives and compounds are subordinated to the stem forms (uninflected). Most German dictionaries follow a strictly alphabetical order of headwords, though. German print lexicography since then has not questioned these principles of lemmatization or of ordering headwords. With the availability of both large corpora and electronic publication, this issue needed to be re-visited. Corpus data shows that uninflected forms are not always the most frequent ones. But still, in modern corpus-based German lexicography it is not the most frequent word forms that are used as headwords, but the uninflected base forms regardless of their frequency. This is due to the strong influence of a long lexicographic tradition.

In electronic dictionaries, however, the looking-up of information on a word should be possible when searching for any word form, and not only the uninflected form. A lemmatization tool working in the background will lead the user to the correct lemma. For example, in Canoo.net (<http://www.canoo.net/>) this principle is implemented, although in most German electronic dictionaries it is not (in elexiko (<http://www.elexiko.de/>), for example, a lemmatizer was used to extract a list of headword candidates from the corpus, which were then checked manually, but the lemmatizer is not implemented in the dictionary user interface). Canoo.net (<http://www.canoo.net/>) gives information on orthography, grammatical and syntactical behavior, related terms, and word formation for search words. A combination of the automatic compilation of data with lexicographic control and the completion of data was used to build this extensive online language service.

An alternative solution to help users find the relevant headword consists of separate entries for inflected forms, as in Wiktionary – Das freie Wörterbuch (<http://de.wiktionary.org/wiki/Wiktionary:Hauptseite>): for many word forms an entry called “Deklinierte Form” [‘inflected form’] is found, and is linked to the relevant headword (see Fig. 2). In many German print dictionaries, inflected forms whose alphabetical place is far away from the headword are also recorded with a reference to the headword.

While in electronic dictionaries there is not necessarily a need to show all headwords in a list, many German e-dictionaries still have an (alphabetical) list of headwords (see Fig. 3 for an example). Using morphological tools to generate and present all derivatives and compounds for a stem word has only been done recently, e.g. in elexiko (<http://www.elexiko.de/>) (Ulsamer 2013; see Fig. 3).

**Fig. 2** Entry for *Webs* in Wiktionary – Das freie Wörterbuch (<http://de.wiktionary.org/wiki/Wiktionary:Hauptseite>)

Webs

Webs (Deutsch) [Bearbeiten]

Deklinierte Form [Bearbeiten]

**Worttrennung:**  
Webs

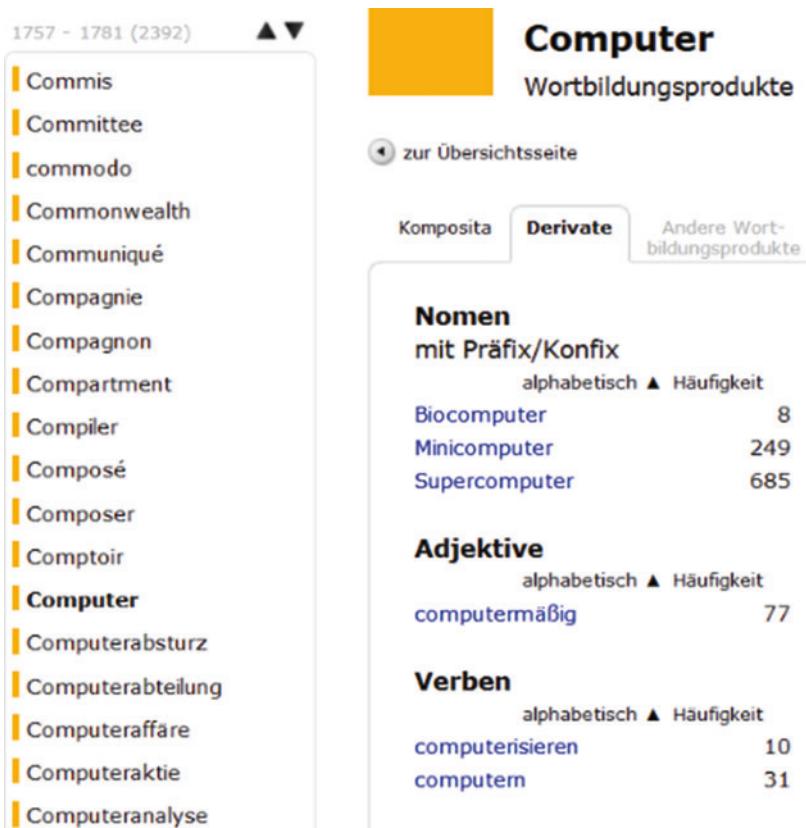
**Aussprache:**  
IPA: [vɛps]  
Hörbeispiele: —  
Reime: -eps

**Grammatische Merkmale:**

- Genitiv Singular des Substantivs Web

Other lexicographic traditions are equally strong: most German dictionaries do not use illustrations or give encyclopedic information systematically when explaining meaning. In German lexicography there is a tradition neither of encyclopedic nor of illustrated dictionaries (Klosa 2017), although there are a few pictorial dictionaries: PONS Bildwörterbuch (<http://bildwoerterbuch.pons.com/>) ['PONS Illustrated Dictionary'] is a German–English pictorial dictionary on the Web with onomasiological access to data; *Duden – Das Bildwörterbuch* ['Duden Illustrated Dictionary'] (6th edition 2005) is the best-known German pictorial dictionary in print. Some electronic dictionaries (Duden online (<http://www.duden.de/woerterbuch>) and elexiko (<http://www.elexiko.de/>)) have started to explore the possibilities offered by illustrations in combination with the paraphrase (see Kemmer 2014 for a usage study on the reception of paraphrase and illustration in dictionaries). In elexiko (<http://www.elexiko.de/>), encyclopedic information as well as citations from the corpus are given in addition to the paraphrase wherever necessary and possible. This dictionary is also the only one that uses full sentences for definitions, while print dictionaries (due to space restrictions?) and online dictionaries still employ classic definition traditions (listing synonyms and/or short explanatory phrases). German learners' dictionaries use a restricted, controlled defining vocabulary.

With the availability of large electronic corpora, German standard contemporary lexicography has improved information on collocations and phraseology (in print and electronic dictionaries). The collocations given in modern dictionaries are



**Fig. 3** Derivatives of *Computer* in elexiko (<http://www.elexiko.de/>)

typically the frequent ones in the corpus; they are selected to cover all semantic aspects. Automatically extracted collocations are sometimes also shown in word clouds. Phraseology also plays an important role as part of dictionary entries or in modern phraseological dictionaries. German dictionaries mostly still describe phraseology from the perspective of single head words, instead of lemmatizing whole phrases. Duden online (<http://www.duden.de/woerterbuch>) has started to include entries like *bis auf weiteres* ‘until further notice’ and *im Folgenden* ‘in what follows’, because users very often searched for these phrases and were not able to find them under the headwords *weiter* and *folgen* respectively (Rautmann 2014, pp. 58–62).

## Electronic corpora and other language resources for German

German is a language for which quite a number of corpora have been compiled, as well as other language tools. A search for German lexical resources, standards, tools, and services in the inventory of the Virtual Language Observatory (<http://www.vlo.de>)

[clarin.eu/content/virtual-language-observatory](http://clarin.eu/content/virtual-language-observatory)) provided by CLARIN (<http://clarin.eu/>) yields 124 results, comprising written and spoken corpora, terminological resources, lexicons, and other items. Quite a number of resources provide online information on the German lexicon (e.g., Canoo.net (<http://www.canoo.net/>) or are used for compiling modern German dictionaries (e.g., Kookkurrenzdatenbank CCDB (<http://corpora.ids-mannheim.de/ccdb/>), a databank of collocations).

## Electronic corpora

### Corpora of written German

Corpora of written German are available for different language periods. The oldest German texts (from 750 to 1050) have been collected in Deutsch Diachron Digital: Referenzkorpus Altdeutsch (<http://www.deutschdiachrondigital.de/>). Similar projects for Middle High German and Early Modern German are in progress. Each of these can in principle be used for the compilation of new dictionaries of one of the older German language periods. However, for example, for the *Althochdeutsches Wörterbuch* ['Old High German Dictionary'], a collection of 750,000 citation slips is still being used as the primary lexicographic source (Köppe 2002).

For (standard) New High German, the project Deutsches Textarchiv (<http://www.deutschestextarchiv.de/>) collects a corpus of texts representative of specific text types and disciplines from around 1600 to 1900. Searches for word usage in the seventeenth and eighteenth century are possible, whether it be in fine literature, in scientific texts, or functional writing. Yet there is no German dictionary that records and describes New High German between the end of the Early Modern High German period around 1600 and the beginning of contemporary German around 1945 (see Schlaefner 2009, pp. 116–117).

For (standard) German in the twentieth (and the first decade of the twenty-first) century, DWDS-Kernkorpus ([http://www.dwds.de/ressourcen/korpora/#part\\_1](http://www.dwds.de/ressourcen/korpora/#part_1)) offers a well-balanced corpus with 120 million tokens in almost 80,000 texts annotated according to TEI guidelines. This corpus is being used for lexicographic purposes for Digitales Wörterbuch der Deutschen Sprache (DWDS) (<http://www.dwds.de/>). Deutsches Referenzkorpus DeReKo (<http://www.ids-mannheim.de/kl/projekte/korpora.html>) is the largest collection of contemporary (standard) German texts for the purpose of linguistic research. It contains over 25 billion words (as of 15th September 2014) in texts from the middle of the twentieth century until today. The corpus tool COSMAS II (<https://cosmas2.ids-mannheim.de/cosmas2-web/>) can be used to compile virtual corpora for specific purposes. The dictionary project elexiko (<http://www.elexiko.de/>), for example, uses a virtual corpus of DeReKo (<http://www.ids-mannheim.de/kl/projekte/korpora.html>) texts as its primary source.

For the detection of the latest developments in the German language (and their recording in dictionaries), corpora with data from Internet chats, blogs, Twitter messages, etc. are required. Dortmunder Chat-Korpus (<http://www.chatkorpus.tu-dortmund.de/>) offers a collection of log files of 140,000 chats with approximately 1.06 million word forms from official or private contexts stored as XML documents. In DECOLW2012 (<http://hpsg.fu-berlin.de/cow/?action=corpora&lang=de-DE#top>)

(German Corpus from the Web) there are almost 10 billion tokens from German web sites including blogs, etc. As far as we know, no German dictionary project has yet systematically included data from blogs or chats in the dictionary sources, although this data would allow us to discover word usage in internet-based communication with its typical features of written orality.

### **Corpora of spoken German**

Most corpora of spoken German document specific German dialects, but some offer data on spoken colloquial, supra-regional German: the corpus Deutsch heute ([http://www.ids-mannheim.de/prag/AusVar/Deutsch\\_heute.html](http://www.ids-mannheim.de/prag/AusVar/Deutsch_heute.html)) was compiled between 2006 and 2009 to record varieties of “standard” spoken German, the corpus Deutsche Umgangssprache: Pfeffer-Korpus ([http://agd.ids-mannheim.de/download/korpus/Korpus\\_PF\\_extern.pdf](http://agd.ids-mannheim.de/download/korpus/Korpus_PF_extern.pdf)) has recordings of colloquial German from 1961. Corpora of spoken German offer corpus texts as transcripts and/or audio files which can be evaluated in a lexicographical context for describing semantic or grammatical features of lexemes specific for spoken language. This has not yet been done systematically in German lexicography: information on spoken language in existing German dictionaries is derived from direct quotes in written texts or from transcribed speech, e.g., news broadcasts.

### **Lexicographic corpora**

Modern dictionaries of contemporary German from publishing houses as well as from academic institutions are primarily based on electronic text corpora. Both Duden (<http://www.duden.de/hilfe>) and Wahrig ([http://brockhaus.de/newsletter\\_brockhaus/wort-woerterbuch.php](http://brockhaus.de/newsletter_brockhaus/wort-woerterbuch.php)) (publishing houses) have compiled large corpora for use in compiling dictionaries with data from newspapers, fine literature, etc. from all German-speaking countries. This data is mainly used for detecting new words or new usage of lexemes or as a source of examples. Corpus query tools also allow us to find collocates or to detect multi-word units.

In elexiko (<http://www.elexiko.de/>), exploring the corpus with sophisticated statistical tools is the first step towards a corpus-driven description of meaning and usage of the headwords (see Storjohann 2010 for a description of exploring colligational patterns in a corpus and their lexicographic documentation). Information on co-occurrences for headwords rendered by the corpus query tool COSMAS II (<http://www.ids-mannheim.de/cosmas2/>) (incorporating the tool Kookkurrenzanalyse (<http://www.ids-mannheim.de/kl/projekte/methoden/ka.html>)) is not grouped according to specific syntactic behavior but gives clusters of co-occurring words with a similar collocational behavior in a hierarchical structure. In addition, the corpus tools “Similar Collocations Profiles” and “Modelling Semantic Proximity” are used to detect and describe paradigmatic relations in the dictionary entries. “DeWaC German Web Corpus” of 1.6 billion tokens with part-of-speech tagging is provided in Sketch Engine (<http://www.sketchengine.co.uk/documentation/wiki/Corpora/DeWaC>). However, German word sketches for user corpora are still in preparation, so (as far as we know) no German dictionary project at the present time uses

Sketch Engine in its lexicographical process (a comparable feature are the “word profiles” in DWDS (<http://www.dwds.de/>)).

While electronic corpora play a major role in providing source material for a number of German dictionary projects, other dictionaries are still based (more or less exclusively) on extensive collections of citations, for example dialect dictionaries. A combination of using a slip collection as a primary source and exploring the possibilities provided by Google Books (<http://books.google.de/>) is being used for the compilation of the revised edition of *Deutsches Fremdwörterbuch* (DFWB) [‘Dictionary of loanwords in German’] (Brückner 2012).

### **Other language resources**

Besides corpora, several other language resources for German can be used by lexicographers when compiling a dictionary. Some of these offer information directly to online users as well. Both Projekt Deutscher Wortschatz (<http://wortschatz.uni-leipzig.de/>) and Die Wortwarte (<http://www.wortwarte.de/>) present the results of statistical analyses for words based on large corpora collecting data mainly from German online newspapers. While Deutscher Wortschatz (<http://wortschatz.uni-leipzig.de/>) gives information on frequency, grammar, paradigmatic relations, collocations, corpus examples, and domain for each search word, Wortwarte (<http://www.wortwarte.de/>) focuses on the detection of new words. These are provided on a daily basis and are manually chosen from a large number of automatically compiled candidates.

GermaNet (<http://www.sfs.uni-tuebingen.de/GermaNet/index.shtml>) (a lexical-semantic net grouping German lexical units that express the same concept into synsets and defining semantic relations between these synsets) is being used in a lexicographical context, for example, in DWDS (<http://www.dwds.de/>) which offers a panel with paradigmatic relations for a headword exploring GermaNet (<http://www.sfs.uni-tuebingen.de/GermaNet/index.shtml>) (see Fig. 4).

### **Surveys of German dictionaries**

The contemporary German dictionary landscape is huge and diverse. For surveys of German dictionaries from the Middle Ages to the nineteenth century, see Grubmüller 1990; Haß-Zumkehr 2001; Henne 2001; Kühn and Püschel 1990a, b; Schaeder 1987; Stötzel 1970; Szlek 1999; Wiegand 1990. A survey of contemporary German lexicography is provided in Wiegand (1990), and Mann (2013). Wiegand (2006, 2012), and (2014) provides an extensive bibliography of German lexicography and dictionary research; the last volume of this bibliography with indices is announced for November 2015. Information on German online dictionaries is to be found at OBELEX<sup>dict</sup> (<http://www.owid.de/obelex/dict>), an online bibliography of electronic lexicography. German dictionaries and dictionary portals are also examined in Engelberg and Lemnitzer (2009, pp. 24–81) and Schlaefer (2009, pp. 107–122).

The screenshot shows a window titled 'GermaNet' with a tab labeled 'Synonymgruppen für Web'. Below the tab, there are three sections of text: 'Synonymgruppe: WWW, Web, World Wide Web', 'Oberbegriffe: Computernetz, Computernetzwerk, Hypertext-System, Hypertextsystem, Network, Netz, Netzwerk', and 'Unterbegriffe: Semantic Web, Semantisches Web'.

**Fig. 4** Paradigmatic information on *Web* from GermaNet (<http://www.sfs.uni-tuebingen.de/GermaNet/index.shtml>) as shown in DWDS (<http://www.dwds.de/>)

## Specialized dictionaries

In addition to mainstream international dictionaries of German, a number of specialized dictionaries should be mentioned.

### Dictionaries for Austria, Switzerland, and other German-speaking communities

While general dictionaries of standard German all aim at covering German in every country or community where the language is used, some dictionaries are specialized accounts of vocabulary in particular regions. The largest of these are the Austrian and Swiss language areas, but in Belgium, South Tyrol, and even in the U.S. there are large German-speaking communities as well. The *Variantenwörterbuch des Deutschen (Österreich, Schweiz, Deutschland, Liechtenstein, Luxemburg, Ostbelgien und Südtirol)* ['Dictionary of German Variants'] by U. Ammon et al. (2004) describes this national and regional variance in the German lexicon. A second, revised edition of this dictionary (VWB<sup>2</sup> (<http://www.variantenwoerterbuch.net/home.html>)) is in progress (Dürscheid and Sutter 2014, pp. 48–50).

There is as yet no general dictionary of the Austrian standard variety of German. The *Wörterbuch der bairischen Mundarten in Österreich* (WBÖ) records Bavarian dialect words in Austria (letters A– E published in four volumes; Österreichische Akademie der Wissenschaften (<http://www.oeaw.ac.at/icltd/dinamlex-archiv/WBOE.html>)). German in South Tyrol is covered in WBÖ.

The largest and best known dictionary of Swiss German is the *Schweizerisches Idiotikon. Wörterbuch der schweizerdeutschen Sprache* ['Swiss Idiotikon: Dictionary of the Swiss German Language'] (information: Schweizerische Akademie der Geistes- und Sozialwissenschaften (<http://www.idiotikon.ch/>)). In this ongoing project the letters A–X are published in 16 volumes as well as digitized and online ([http://www.idiotikon.ch/index.php?option=com\\_wrapper&view=wrapper&Itemid=195](http://www.idiotikon.ch/index.php?option=com_wrapper&view=wrapper&Itemid=195)). The *Idiotikon* is a general dictionary of the standard Swiss variety of German (with historical perspective) as well as a dialect dictionary for the larger Swiss language area.

The German of East Belgium is covered in the *Rheinisches Wörterbuch* (nine volumes; digitized and available online in the Trierer Wörterbuchnetz (<http://www.woerterbuchnetz.de/>)).

Pennsylvania German is covered in a few print and online dictionaries, e.g. Wikipedia English/Pennsylvania German/High German dictionary ([http://pdc.wikipedia.org/wiki/English/Pennsylvania\\_German/High\\_German\\_dictionary](http://pdc.wikipedia.org/wiki/English/Pennsylvania_German/High_German_dictionary)) (user-generated content in a trilingual dictionary with English and standard German translations).

### **Low German and dialect dictionaries**

A large group of Low German dialects (e.g. Holsteinisch, Ostfriesisch) is often referred to under the collective term “Niederdeutsch” or “Plattdeutsch” (Old Saxon being the earliest stage of Niederdeutsch). The status of Niederdeutsch as a separate language alongside standard German is extensively discussed by speakers and linguists, without any definitive conclusion. Today, it is mostly used (by fewer and fewer speakers) in spoken language and less and less in official documents. *Plattdeutsches Wörterbuch* [‘Low German Dictionary’] by J. Sass (7th edition 2013) covers Niederdeutsch in toto. Low German dialects (as well as dialects from the High German dialect groups) are covered individually in a large number of (completed or still ongoing) historical dialect dictionaries.

In addition, the *Deutscher Wortatlas* [‘German Word Atlas’] (by W. Mitzka and L. E. Schmitt in 22 volumes. Gießen: Wilhelm Schmitz Verlag 1956–1980), *Deutscher Sprachatlas* [‘German Language Atlas’] (website REDE – Regionalsprache.de (<http://www.regionalsprache.de/>)), and the online project *Atlas zur Aussprache des deutschen Gebrauchsstandards (AADG)* (<http://prowiki.ids-mannheim.de/bin/view/AADG/>) [‘Atlas on the pronunciation of everyday German’] provide maps of German dialects.

### **Period dictionaries**

In a period dictionary (Reichmann 1999) the lexicon of a specific historical time is described synchronically. The period in German from c. 700–1640 is covered in the following dictionaries:

- *Althochdeutsches Wörterbuch* [‘Old High German Dictionary’]: ongoing; A–L published in five volumes. Information: Sächsische Akademie der Wissenschaften zu Leipzig (<http://www.saw-leipzig.de/forschung/projekte/althochdeutsches-woerterbuch>).
- *Frühneuhochdeutsches Wörterbuch* [‘Early New High German Dictionary’], ongoing; several volumes published, but not in alphabetical order; digitized online version planned; information: Akademie der Wissenschaften zu Göttingen (<http://adw-goe.de/forschung/forschungsprojekte-akademienprogramm/fruehneuhochdeutsches-woerterbuch/>).
- *(Neues) Mittelhochdeutsches Wörterbuch* [‘(New) Middle High German Dictionary’], Academies of Göttingen and Mainz (at Trier), ongoing; A–E published in one volume and online (<http://www.mhdwb-online.de/>). Information: Akademie

der Wissenschaften und der Literatur, Mainz (<http://www.adwmainz.de/projekte/mittelhochdeutsches-woerterbuch/informationen.html>), and Akademie der Wissenschaften zu Göttingen) (<http://www.uni-goettingen.de/de/sh/92908.html>).

- *Mittelhochdeutsches Wörterbuch* ['Middle High German Dictionary'] by G. F. Benecke et al.; *Mittelhochdeutsches Handwörterbuch* ['Concise Middle High German Dictionary'] by M. Lexer; *Findebuch zum mittelhochdeutschen Wortschatz* ['Book for Middle High German vocabulary'] by K. Gärtner et al.: both (completed) dictionaries that started in the nineteenth century, complemented by *Findebuch* in 1992; digitized, extensively hyperlinked and online in Trierer Wörterbuchnetz (<http://www.woerterbuchnetz.de/>).

### **Foreign and new word dictionaries**

German lexicography is well known for the dictionary type 'Fremdwörterbuch', which records loanwords in German. Some cover loans from all languages and describe them diachronically (e.g., *Deutsches Fremdwörterbuch* [DFWB] ['German Loan Word Dictionary'] by H. Schulz and O. Basler; revised edition ongoing; A–G published in seven volumes; digitized online version of first and revised edition planned; information: Institut für Deutsche Sprache Mannheim) (<http://www.ids-mannheim.de/lexik/fremdwort.htm>). Others concentrate on words from English (e.g., *Anglizismen-Wörterbuch* ['Dictionary of Anglicisms'] by B. Carstensen et al. 1993).

Very recent loanwords are usually considered as 'Neologismen' [new words] and are described in special dictionaries, e. g. *Neologismenwörterbücher* ['Dictionaries of Neologisms'] (1990–1999, 2000–2010, 2011–today; new words since 2011, ongoing; online (<http://www.owid.de/wb/neo/start.html>)) and 1990–1990 published in one volume (Herberg et al. 2004), 2000–2010 published in two volumes (Steffens and al-Wadi 2013); information: Institut für Deutsche Sprache Mannheim) (<http://www.ids-mannheim.de/lexik/lexikalischeinnovationen.html>). However, not all new words in German are loanwords from other languages (mainly English).

### **Phraseological and collocation dictionaries**

Phraseology and collocations are not only examined in general dictionaries but also in specialized publications. While *Wörter und Wendungen* ['Words and Phrases'] by E. Agricola (1st edition 1962, 14th and last edition 1992, Dudenverlag) records collocations, phraseologisms, and idioms, newer dictionaries only look at one of these types. All recent collocations dictionaries are corpus-based and all of them are online:

- Projekt Deutscher Wortschatz (<http://wortschatz.uni-leipzig.de/>) ['German Vocabulary Project']: a collection of collocations that form the basis of *Wörterbuch der Kollokationen im Deutschen* ['Dictionary of Collocations in German'] by U. Quasthoff (2010).
- Feste Wortverbindungen (<http://www.owid.de/wb/uwv/start.html>): ['Fixed Word Combinations']: also additional longer studies on specific, fixed, multi-word expressions; information: Institut für Deutsche Sprache Mannheim (<http://wvonline.ids-mannheim.de/>).

<b>Computer m</b>			
<b>ADJECTIVE/ADVERBIEIN</b>	<b>mobil • tragbar • stationär</b>	<b>angeschlossen • zentral</b>	
<b>VERBEN</b>			
anschalten anschließen • anschalten • einschalten • starten	benutzen benutzen • einsetzen • nutzen	optimieren einbauen • installieren • konfiguriert • programmieren • vernetzen	
abspielen abspielen • laufen	laufen arbeiten • berechnen • laufen • rechnen • steuern • verarbeiten	liefern erzeugen • liefern	
sitzen arbeiten • hocken • sitzen		spielen hacken • spielen	
schreiben schreiben • tippen	eingeben eingeben • füttern • speichern	absturzen hängen • abstürzen	
ausschalten herunterfahren • ausschalten		verstehen	
<b>NOMEN</b>			
Arbeit • Umgang • Einsatz	Betriebssystem • Internetzugang	Geschwindigkeit • Netzwerk	
<b>ZUSAMMENSEZUNGEN</b>			
Bordcomputer	Computerbranche • Computertechnologie • Computertechnik • Computerhersteller	Computerexpertin/Computerexperte • Computerfreak • Computernutzer_in	

**Fig. 5** Collocations for *Computer* in Kollokationenwörterbuch (<http://colloc.germa.unibas.ch/web/suche/>)

- Kollokationenwörterbuch (<http://colloc.germa.unibas.ch/web/suche/>). ['Collocation Dictionary']: this dictionary groups collocations by part of speech (see Fig. 5) and is the basis for *Feste Wortverbindungen des Deutschen: Kollokationen-Wörterbuch für den Alltag* ['German Multi-Word Combination: Collocation Dictionary for Everyday'] by A. Häcki-Buhofer (2014); information: Schweizerische Akademie der Geistes- und Sozialwissenschaften (<http://colloc.germa.unibas.ch/web/projekt/>).
- Sprichwörterbuch (<http://www.owid.de/wb/sprw/start.html>) ['Idiom Dictionary']: part of the multi-lingual project SprichWort (<http://www.sprichwort-plattform.org/>). Eine Internetplattform für das Sprachenlernen (2008-2010) (<http://www.sprichwort-plattform.org/>) ['Idioms. Internet Platform for Language Learning']; information: Institut für Deutsche Sprache Mannheim (<http://www.ids-mannheim.de/lexik/uww.html>).

## Future prospects

German lexicography is, as shown by the dictionaries and projects described here, traditional as well as innovative. The majority of scientific dictionaries are still published in print, but many projects are now published in an electronic medium as well. Today, e-lexicography for German is mostly Internet lexicography. Publishers such as Duden record increasing sales of dictionary apps, and DWDS (<http://dwds.de>)

[www.dwds.de/](http://www.dwds.de/)) already provides a mobile version for small screens. Lexicographic data on German is also being included in language technology like automatic translation tools.

As shown above, synchronic principles are not applied widely in German lexicography, e.g. when ordering senses. This is to some extent due to the fact that quite a number of long-term dictionary projects following diachronic principles are still running. But in modern lexicography corpus evidence should be taken into account more exhaustively, which becomes especially evident when we look at phraseology. Neither phraseological dictionaries of German nor phraseological information in general German dictionaries reflect as yet the fact that words occur in texts as part of fixed, multi-word units.

While we know a lot about German dictionaries, we do not necessarily know whether they are actually used and by whom or in which situation. Many of the publications presented here address a rather selective circle of users (e.g., philological experts), while others address the general public. It seems that these diverse user groups will become even more diversified in the future. It will therefore be important for German lexicography to employ usage studies to learn more about potential users of (print or electronic) dictionaries (see Müller-Spitzer 2014 for usage studies of the use of online dictionaries in general).

User adaptivity of electronic dictionaries is also a means to address more than one user group in more than one usage situation without the necessity to develop different lexicographic databases. User-adaptive German dictionaries have only been realized rudimentarily so far (DWDS (<http://www.dwds.de/>), for example, allows the user to adapt the dictionary view in panels to his/her needs). The same applies to multi-media dictionaries and the use of innovative visualization of lexicographic data. There are also no context-sensitive German dictionaries yet.

When contrasting this negative statement with the long list of German dictionaries above being financed by public means or by publishing houses, this situation is maybe a little less surprising. In times of dying dictionary publishing houses (Brockhaus-Wahrig publishing house, for example, no longer exists as of December 2013) or down-sizing dictionary publishing houses (the editorial team of Duden publishing house has only had three members since 2013, while previously up to 20 editors were employed) and a shortage of public funding for academic projects (the duration of several of the dictionary projects mentioned above was shortened by the funding bodies), new developments take longer than desired. Lexicographers as well as dictionary users have to take care that such a long-standing dictionary tradition as that of German is not endangered further. User-friendly, innovative, corpus-based (print or electronic) dictionaries of high quality as well as lexical information systems on the Web and lexicographical data in all kinds of electronic tools need to be developed. A combination of user-generated content with content from an editorial team is also worth considering in this context.

## References

- Brückner, D. (2012). Google Bücher aus dem Blickwinkel des Lexikographen. *Trefwoord, tijdschrift voor lexicografie*. Retrieved from [www.fryske-akademy.nl/?id=1917](http://www.fryske-akademy.nl/?id=1917)
- Dürscheid, C., & Sutter, P. (2014). Grammatische Helvetismen im Wörterbuch. *Zeitschrift für angewandte Linguistik*, 60(1), 37–65.
- Engelberg, S., & Lemnitzer, L. (2009). *Lexikographie und Wörterbuchbenutzung* (4th ed.). Tübingen: Stauffenburg.
- Grubmüller, K. (1990). Die deutsche Lexikographie von den Anfängen bis zum Beginn des 17. Jahrhundert. In F. J. Hausmann, O. Reichmann, H. E. Wiegand, & L. Zgusta (Eds.), *Wörterbücher. Ein internationales Handbuch zur Lexikographie* (Vol. 2, pp. 2037–2049). Berlin/New York: de Gruyter.
- Haß-Zumkehr, U. (2001). *Deutsche Wörterbücher – Brennpunkt von Sprach- und Kulturgeschichte*. Berlin/New York: de Gruyter.
- Haubrichs, W. (2013). German I: Historical and etymological lexicography. In R. H. Gouws, U. Heid, W. Schweickard, & H. E. Wiegand (Eds.), *Dictionaries. An International Encyclopedia of Lexicography. Supplement Volume: Recent Developments with Focus on Electronic and Computational Lexicography* (pp. 732–741). Berlin/Boston: de Gruyter.
- Henne, H. (Ed.). (2001). *Deutsche Wörterbücher des 17. und 18. Jahrhunderts. Einführung und Bibliographie* (2nd ed.). Hildesheim: Olms.
- Kemmer, K. (2014). Rezeption der Illustration, jedoch Vernachlässigung der Paraphrase? In C. Müller-Spitzer (Ed.), *Using Online Dictionaries* (pp. 251–278). Berlin/Boston: de Gruyter.
- Klosa, A. (2017). Illustrations in dictionaries; encyclopaedic and cultural information in dictionaries. In P. Durkin (Ed.), *The Oxford Handbook of Lexicography*. Oxford: Oxford University Press.
- Köppe, I. (2002). *Das althochdeutsche Wörterbuch: Konzeption – Materialkorpus – Bedeutungswörterbuch und Kulturgeschichte*. Retrieved from <http://www.saw-leipzig.de/forschung/projekte/althochdeutsches-woerterbuch/publikationen/ingeborg-koepppe-2002>
- Kühn, P., & Püschel, U. (1990a). Die deutsche Lexikographie vom 17. Jahrhundert bis zu den Brüdern Grimm ausschließlich. In F. J. Hausmann, O. Reichmann, H. E. Wiegand, & L. Zgusta (Eds.), *Wörterbücher. Ein internationales Handbuch zur Lexikographie* (Vol. 2, pp. 2049–2077). Berlin/New York: de Gruyter.
- Kühn, P., & Püschel, U. (1990b). Die deutsche Lexikographie von den Brüdern Grimm bis Trübner. In F. J. Hausmann, O. Reichmann, H. E. Wiegand, & L. Zgusta (Eds.), *Wörterbücher. Ein internationales Handbuch zur Lexikographie* (Vol. 2, pp. 2078–2100). Berlin/New York: de Gruyter.
- Mann, M. (2013). German II: Synchronic lexicography. In R. H. Gouws, U. Heid, W. Schweickard, & H. E. Wiegand (Eds.), *Dictionaries. An International Encyclopedia of Lexicography. Supplement Volume: Recent Developments with Focus on Electronic and Computational Lexicography* (pp. 742–816). Berlin/Boston: de Gruyter.
- Müller-Spitzer, C. (Ed.). (2014). *Using Online Dictionaries*. Berlin/Boston: de Gruyter.
- Rautmann, K. (2014). *Duden online* und seine Nutzer. In A. Abel & A. Klosa (Eds.), *Der Nutzerbeitrag im Wörterbuchprozess* (pp. 49–62). Mannheim: Institut für Deutsche Sprache. <http://pub.ids-mannheim.de/laufend/opal/pdf/opal2014-4.pdf>
- Reichmann, O. (1989). Geschichte lexikographischer Programme in Deutschland. In F. J. Hausmann, O. Reichmann, H. E. Wiegand, & L. Zgusta (Eds.), *Wörterbücher. Ein internationales Handbuch zur Lexikographie* (Vol. 1, pp. 230–246). Berlin/New York: de Gruyter.
- Reichmann, O. (1999). Das Sprachstadienwörterbuch I: Deutsch. In F. J. Hausmann, O. Reichmann, H. E. Wiegand, & L. Zgusta (Eds.), *Wörterbücher. Ein internationales Handbuch zur Lexikographie* (Vol. 2, pp. 1416–1429). Berlin/New York: de Gruyter.
- Schaeder, B. (1987). *Germanistische Lexikographie*. Tübingen: Niemeyer.

- Schlaefer, M. (2009). *Lexikologie und Lexikographie. Eine Einführung am Beispiel deutscher Wörterbücher* (2nd ed.). Berlin: Erich Schmidt.
- Storjohann, P. (2010). Colligational patterns in a corpus and their lexicographic documentation. In M. Mahlberg, V. González-Díaz, & C. Smith (Eds.), *Proceedings of the Corpus Linguistics Conference 2009 in Liverpool*. <http://ucrel.lancs.ac.uk/publications/CL2009/>
- Stötzel, G. (1970). Das Abbild des Wortschatzes. Zur lexikographischen Methode in Deutschland von 1617–1967. *Poetica. Zeitschrift für Sprach- und Literaturwissenschaft*, 3, 1–23.
- Szlek, S. P. (1999). *Zur deutschen Lexikographie bis Jacob Grimm. Wörterbuchprogramme, Wörterbücher und Wörterbuchkritik*. Bern et al.: Peter Lang.
- Ulsamer, S. (2013). Chancen und Probleme bei der automatischen Ermittlung von Wortbildungssprodukten für *elexiko* und bei ihrer Präsentation. In A. Klosa (Ed.), *Wortbildung im elektronischen Wörterbuch* (pp. 235–254). Tübingen: Narr.
- Wiegand, H. E. (1990). Die deutsche Lexikographie der Gegenwart. In F. J. Hausmann, O. Reichmann, H. E. Wiegand, & L. Zgusta (Eds.), *Wörterbücher. Ein internationales Handbuch zur Lexikographie* (Vol. 2, pp. 2100–2246). Berlin/New York: de Gruyter.
- Wiegand, H. E. (2006). *Internationale Bibliographie zur germanistischen Lexikographie und Wörterbuchforschung* (Vols. 1: A–H & 2: I–R). Berlin/New York: de Gruyter.
- Wiegand, H. E. (2012). *Internationale Bibliographie zur germanistischen Lexikographie und Wörterbuchforschung* (Vol. 3: S–Z). Berlin/New York: de Gruyter.
- Wiegand, H. E. (2014). *Internationale Bibliographie zur germanistischen Lexikographie und Wörterbuchforschung* (Vol. 4: Nachträge). Berlin/New York: de Gruyter.

## Dictionaries

### Print

- Adelung, J. Ch. (1774–1786). *Versuch eines Vollständigen Grammatisch-Kritischen Wörterbuchs der Hochdeutschen Mundart*. Leipzig: Breitkopf.
- Agricola, E. (1992). *Wörter und Wendungen* (2nd ed.). Mannheim et al.: Bibliographisches Institut.
- Althochdeutsches Wörterbuch*. (1952–today). Founded by E. Karg-Gasterstädt & T. Frings. Ed. by Sächsische Akademie der Wissenschaften zu Leipzig. Berlin/New York: de Gruyter.
- Ammon, U., et al. (2004). *Variantenwörterbuch des Deutschen (Österreich, Schweiz, Deutschland, Liechtenstein, Luxemburg, Ostbelgien und Südtirol)*. Berlin/New York: de Gruyter.
- Brockhaus-Wahrig Deutsches Wörterbuch*. (1980–1984). Ed. G. Wahrig et al. Wiesbaden/Stuttgart: F. A. Brockhaus/Deutsche Verlags-Anstalt.
- Brockhaus Wahrig Deutsches Wörterbuch*. (2012). 9th ed. by R. Wahrig-Burfeind. Gütersloh: Wissenmedia.
- Carstensen, B., et al. (1993–1996). *Anglizismen-Wörterbuch. Der Einfluss des Englischen auf den deutschen Wortschatz nach 1945*. Berlin/New York: de Gruyter.
- Closener, F. *Vocabularium seu nomenclator*. Not preserved. See Gerber, Harry, “Closener, Fritzsche” in: Neue Deutsche Biographie 3 (1957), p. 294 f. [Online: <http://www.deutsche-biographie.de/ppn118669567.html>].
- [DFWB]. *Deutsches Fremdwörterbuch*. (1995–today). New edition founded by H. Schulz, continued by O. Basler, ed. by Institut für Deutsche Sprache. Berlin/New York: de Gruyter.
- Duden, K. (1881). *Vollständiges Orthographisches Wörterbuch der deutschen Sprache*. Leipzig: Bibliographisches Institut.
- Duden – *Das Bildwörterbuch*. (2005). 6th revised edition by Dudenredaktion. Mannheim: Bibliographisches Institut.

- Duden – Das große Wörterbuch der deutschen Sprache.* (1999). 3rd revised edition by Dudenredaktion. Mannheim/Leipzig/Berlin: Dudenverlag.
- Duden – Deutsche Universalwörterbuch.* 7th revised edition by Dudenredaktion. Mannheim: Bibliographisches Institut.
- Duden – Die deutsche Rechtschreibung.* (2013). 26th edition by Dudenredaktion. Berlin: Bibliographisches Institut.
- Frischlin, N. (1591). *Nomenclator Trilinguis, Graecolatinogermanicus.* Frankfurt/M: Spies.
- Frühneuhochdeutsches Wörterbuch.* (1989–today). Founded by R. R. Anderson et al. Ed. by U. Goebel, A. Löbenstein-Reichmann & O. Reichmann. Berlin/New York: de Gruyter.
- Gärtner, K., et al. (1992). *Findebuch zum mittelhochdeutschen Wortschatz.* Stuttgart: S. Hirzel.
- Grimm, J., & Grimm, W. (1854–1961). *Deutsches Wörterbuch.* Leipzig: S. Hirzel.
- Häckl-Buhofer, A. (Ed.). (2014). *Feste Wortverbindungen des Deutschen: Kollokationen-Wörterbuch für den Alltag.* Tübingen: Francke.
- [HDG]. *Handwörterbuch der deutschen Gegenwartssprache.* (1984). Ed. by G. Kempcke et al. Berlin: Akademie-Verlag.
- Herberg, D., et al. (2004). *Neuer Wortschatz. Neologismen der 90er Jahre im Deutschen.* Berlin/New York: de Gruyter.
- Lexer, M. (1872–1878). *Mittelhochdeutsches Handwörterbuch.* Leipzig: S. Hirzel.
- Mittelhochdeutsches Wörterbuch.* (1854–1866). On the basis of material from G. F. Benecke ed. by W. Müller & F. Zarncke. Leipzig: S. Hirzel.
- Mittelhochdeutsches Wörterbuch.* (2006–today). Ed. by K. Gärtner, K. Grubmüller & K. Stackmann. Stuttgart: S. Hirzel.
- Mitzka, W., & Schmitt, L. E. (1956–1980). *Deutscher Wortatlas.* Gießen: Wilhelm Schmitz.
- Paul, H. (2002). *Deutsches Wörterbuch.* 10th, revised edition by H. Henne, H. Kämper & G. Objartel. Tübingen: Max Niemeyer.
- Quasthoff, U. (2010). *Wörterbuch der Kollokationen im Deutschen.* Berlin/New York: de Gruyter.
- Rheinisches Wörterbuch.* (1928–1971). Ed. by J. Müller, from volume VII by K. Meisen et al. Bonn: Fritz Klopp & Berlin: Erika Klopp.
- Roth, S. (1571). *Ein Teutscher Dictionarius.* Augsburg: Michael Manger.
- Sass, J. (2013). *Plattdeutsches Wörterbuch.* 7th edition by H. Thies & H. Kahl. Nürnberg: Wachholz.
- Schweizerisches Idiotikon. Wörterbuch der schweizerdeutschen Sprache.* (1881–today). Ed. by F. Staub & L. Tobler, later by A. Bachmann u. a. Frauenfeld/Basel: Huber Frauenfeld/Schwabe.
- Steffens, D., & al-Wadi, D. (2013). *Neuer Wortschatz. Neologismen im Deutschen 2001–2010.* Mannheim: Institut für Deutsche Sprache.
- Stieler, K. (1691). *Der Teutschen Sprache Stammbaum und Fortwachs oder Teutscher Sprachschatz.* Nürnberg: Johann Hofmanns.
- Vocabularius Sancti Galli* (ca. 790). Stiftsbibliothek St. Gallen, Cod. Sang. 913.
- [WBÖ]. *Wörterbuch der bairischen Mundarten in Österreich.* (1963–today). Ed. by Institut für Österreichische Dialekt- und Namenkunde. Wien: Verlag der Österreichischen Akademie der Wissenschaften.
- [WDG]. *Wörterbuch der deutschen Gegenwartssprache.* (1952–1977). Ed. by R. Klappenbach & W. Steinitz. Berlin: Akademie-Verlag.

## Electronic

- [AADG]. *Atlas zur Aussprache des deutschen Gebrauchsstandards.* Ed. by St. Kleiner & R. Knöbl. <http://prowiki.ids-mannheim.de/bin/view/AADG/WebHome>
- Canoo.net. *Deutsche Wörterbücher und Grammatik.* Ed. by Canoo Engineering AG. <http://canoo.net>
- Deutscher Wortschatz.* Ed. by NLP group at Leipzig University. <http://wortschatz.uni-leipzig.de/>

[DWDS]. *Digitales Wörterbuch der deutschen Sprache*. Ed. by Berlin-Brandenburgische Akademie der Wissenschaften. <http://www.dwds.de/>

*Duden online*. Ed. by Dudenredaktion. <http://www.duden.de/>

*elexiko – ein Online-Wörterbuch zum Gegenwartsdeutschen*. Ed. by Institut für Deutsche Sprache. <http://www.elexiko.de>

*Feste Wortverbindungen*. Ed. by Institut für Deutsche Sprache. <http://www.owid.de/wb/uwv/start.html>

*GermaNet*. Ed. by E. Hinrichs et al. at Tübingen University. <http://www.sfs.uni-tuebingen.de/GermaNet/>

*Kollokationenwörterbuch*. Ed. by A. Häckl-Buhofer et al. <http://colloc.germa.unibas.ch/web/woerterbuch/>

*PONS Bildwörterbuch*. Hosted by QA International. <http://bildworterbuch.com/>

*Sprichwörterbuch*. Ed. by Institut für Deutsche Sprache. <http://www.owid.de/wb/sprw/start.html>

*REDE – Regionalsprache.de*. Ed. by Forschungszentrum Deutscher Sprachatlas. <http://www.regionalsprache.de/>

*Trierer Wörterbuchnetz*. Ed. by Trier Center for Digital Humanities. <http://woerterbuchnetz.de/>

*Wikipedia English/Pennsylvania German/High German dictionary*. [https://pdc.wikipedia.org/wiki/English/Pennsylvania\\_German/High\\_German\\_dictionary](https://pdc.wikipedia.org/wiki/English/Pennsylvania_German/High_German_dictionary)

*Wiktionary – das freie Wörterbuch*. Hosted by Wikimedia Foundation Inc. <https://de.wiktionary.org/wiki/Wiktionary:Hauptseite>

*Wortwarte. Wörter von heute und morgen*. Ed. by L. Lemnitzer. <http://www.wortwarte.de/>

## Corpora and Language Tools

*DECOW2012*. Compiled by German Grammar Group at Freie Universität Berlin. <http://corporafromtheweb.org/decow12/>

*DeReKo – Deutsches Referenzkorpus*. Compiled by Institut für Deutsche Sprache Mannheim. <http://www.ids-mannheim.de/kl/projekte/korpora.html>

*Deutsch Diachron Digital: Referenzkorpus Altdeutsch*. Compiled by Project “Referenzkorpus Altdeutsch” at Universities Jena, Frankfurt/M. & Humboldt University Berlin. <http://www.deutschdiachrondigital.de/>

*Deutsch heute*. Compiled by Institut für Deutsche Sprache Mannheim. [http://www.ids-mannheim.de/prag/AusVar/Deutsch\\_heute/](http://www.ids-mannheim.de/prag/AusVar/Deutsch_heute/)

*Deutsche Umgangssprache: Pfeffer-Korpus*. Provided by Institut für Deutsche Sprache Mannheim. [http://agd.ids-mannheim.de/PE\\_extern.shtml](http://agd.ids-mannheim.de/PE_extern.shtml)

*Deutsches Textarchiv*. Compiled by Berlin-Brandenburgische Akademie der Wissenschaften. <http://www.deutschestextarchiv.de/>

*Dortmunder Chat-Korpus*. Compiled by Technische Universität Dortmund. <http://www.chatkorpus.tu-dortmund.de/>

*DWDS-Kernkorpus*. Compiled by Berlin-Brandenburgische Akademie der Wissenschaften. <http://www.dwds.de/ressourcen/kernkorpus/>

*Kookkurrenzanalyse*. Developed at Institut für Deutsche Sprache Mannheim. © Cyril Belica 1995. <http://www.ids-mannheim.de/kl/projekte/methoden/ka.html>

*Sketch Engine*. Developed by Lexical Computing Ltd. Brighton. <http://www.sketchengine.co.uk/>