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# 6 The Design of Internet Dictionaries

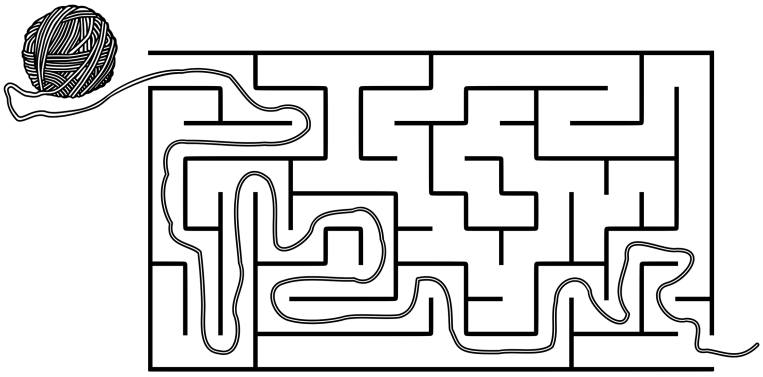

**Fig. 6.1:** Finding the best possible design solution.

*Design can be so much more than creating something pleasing to the eye. The right choice of design tools can support the essential functions of a product. In the case of dictionaries, with their overwhelming number of word entries and sometimes confusing internal article structure, good design can create a "guiding thread" through the maze of information, allowing users to orient themselves and not lose sight of their path.*

## 6.1 Introduction

This chapter will provide an overview of the essential role played by design in both the form of dictionaries and their usability and will also examine the different traditions that exist in the design of (print and electronic) dictionaries (→ Section 6.2.1). The development of dictionary design depends on the intended context in which the dictionary will be used, its potential users, and its data modelling (→ Section 6.2.2). Usage studies (→ Section 6.3) can help delve deeper into user needs concerning dictionary design. Design practice is dependent on a number of elements that are not unique to dictionaries but also on many dictionary-specific factors, for example whether the dictionary is a retrospective digitalisation project or whether the design

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takes the content of the dictionary or its intended users as its starting point (→ Section 6.4). Search functionality is what provides access to an Internet dictionary, so the design of this functionality also has to be planned carefully (→ Section 6.5). Finally, the role of established design guidelines and frameworks will be considered, including how templates are employed and how the lexicographic process should be informed by the interconnected development of content and design (→ Section 6.6).

Design is much more than mere aesthetic eye candy, added on top of the core conception of the dictionary. The design of practical everyday objects, including tools like dictionaries, involves a wide range of aims and requirements. As such, functional, economic, and aesthetic factors all need to be taken into account, and even psychological aspects, such as the emotions that users associate with the object. In this context, design means developing the best possible solution for a product so that these potentially competing requirements are combined in an effective whole.

## 6.2 General thoughts on the design of (Internet) dictionaries

### 6.2.1 Similarities and differences between print and online design

Print dictionaries are created according to the principles of graphic design, where typography plays the most important role. Some of the familiar design elements for print dictionaries have been passed down over many hundreds of years, including the alphabetical order of the headwords, which often appear in bold at the beginning of the entry; the layout of the headwords in columns (usually two per page); or the range of entries on a page indicated by column headings at the top of that page. A long-standing problem is that print space has to be used as economically as possible, leading to high text density and increased reading difficulty. For this reason, design decisions for print dictionaries mostly seek to achieve a balance between the need to optimise use of limited print space and the need to present the text in a readable manner. In the online medium, different conditions tend to apply so that different design decisions can be reached.

Website content is described in a hierarchically structured fashion using HTML (Hypertext Markup Language; → Chapter 1.2.2), which a browser converts into the desired form of presentation. In the early years of the worldwide web, HTML left it up to individual browsers to determine how particular elements, such as text, were represented, so that the design of websites left much to be desired. Nowadays, the combination of HTML and Cascading Style Sheets (CSS; → Chapter 1.2.2) gives web developers greater control over how browsers render websites as CSS provides the vocabulary for describing the presentation of a document such as fonts, colours, margins, and even animations as well as the layout for different screen sizes and for printing. Recent en-

hancements, such as web fonts and rules for complex grid layouts, mean that HTML and CSS come pretty close to print in the possible forms of visual representation that they offer. However, this wide range of possibilities also requires correct usage. As such, the demands placed on web designers' skills and the resources that need to be invested in the design of dictionaries have also increased.

In the digital medium, the new aspect of user interface or application design adds further complications to the design of the text itself, including the wide range of interactions that users have with a dictionary website. For example, Internet dictionaries contain links (the defining characteristic of hypertext; → Chapter 1.2.1 and 1.2.2) and they have a number of standardised interactive elements, such as buttons, text fields, or menus (all of which are already included in HTML to create simple input forms). Finally, JavaScript (→ Chapter 1.2.2) can be used to change the content of a website dynamically, allowing components (also known as widgets) such as tabs and menus to be added that are not (yet) included in the HTML standard. This facilitates complex interactions between users and Internet dictionaries. If implemented correctly, users do not have to learn specially how to look things up or how to navigate in an Internet dictionary. Rather, the dictionary "functions" in the same way as other websites and familiar native desktop applications.

At its best, the design of digital dictionaries draws on both traditional graphic design and user-interface design. Depending on how interactive the design for an Internet dictionary needs to be, a greater or lesser number of application design elements have to be incorporated. While dictionary text and its word entries are still at the heart of the overall design, dictionary-specific components such as headword lists, indexes, extended search functions, or data visualisations could provide the user with quicker access to relevant dictionary entries or with links to collated information otherwise scattered over many pages.

## 6.2.2 Design dependencies

In most design decisions, it is possible to distinguish between three sets of dependencies: first, regarding the context in which an Internet dictionary is used; second, regarding the data modelling chosen for the dictionary data (→ Chapter 4); and third, regarding the dictionary's users.

#### Context of use

In the case of a stand-alone dictionary, design decisions may have fewer constraints than when part of a dictionary portal or embedded within another application, such as a text editor or a language-learning platform. In such cases, the design standards of the environment in which the dictionary is embedded must be implemented first. In

the most extreme cases, the dictionary in its own right may disappear almost entirely from the user interface and is visible only, for example, in a text editor through the wavy underlining of an incorrectly spelled word and the suggestion provided for how the word should be spelled.

A dictionary intended to be used on a mobile device is subject to different constraints than a dictionary for a desktop browser. This includes not only the space available on the screen where the content is to be displayed but also a variety of control elements. While a mouse can be used in a desktop browser, interaction on mobile devices works by touching the surface of the screen with a stylus or fingers. For example, controls on mobile pages have to be designed to be large enough to allow them to be operated reliably, and some functions, such as "mouseover" effects, are absent altogether from mobile sites. While mouse clicks are the primary form of interaction for desktop browsers, mobile platforms offer a wider range of interactions, such as swiping, pinching, or zooming. Location and light conditions also have a role to play. For example, an Internet dictionary that is to be used primarily outside, on a smartphone, in bright sunlight has to use contrast differently than one that is used mostly indoors. For this reason, many websites now have two design variants – a light mode and a dark mode – and allow the user to adjust them accordingly.

### Data modelling

The structure of the dictionary content itself has a decisive effect on design. A fundamental distinction exists between textual data and structured data (→ Chapter 4). Textual data consists of continuous discursive, narrative, or argumentative text in natural language (in contrast to artificial language). In addition, this form of data may contain an internal informational structure distinguished in semantic terms (e.g. headings, quotations, references). In contrast, data structures or records can be thought of as pairs of information called keys and values: in the context of dictionaries, for example, a key called "lemma" could have the values *hand*, *run*, *diligent*, or *you*, and the "word class" key could have the values *noun*, *verb*, *adjective*, or *pronoun*. These pairs of keys and values can be assembled into groups or objects, combined into more complex structures such as lists and hierarchical trees, and stored in databases.

In XML (Extensible Markup Language; → Chapter 4.2.1), which is the most common metalanguage in lexicography, structured textual data is also referred to as "mixed content". Keys correspond to the names of elements or attributes and values to the specific values of the elements or attributes. In most cases, dictionaries can be characterised as hybrid forms of textual and structured data; in other words, data structures containing additional information (e.g. metadata) may be embedded in the text. These embedded data structures may also break down information represented as discursive text into a formal representation or model that can be interpreted by a

computer. Conversely, data structures may be supplemented by textual data, for example, in the form of detailed commentary fields.

As far as textual data are concerned, the emphasis in design rests primarily on typography and legibility. For data structures, the design often reflects the tree structure of the data in list form or in a hierarchically organised form, reminiscent of a table of contents. However, data structures can also be presented in a form similar to continuous text, for example, when entries from a list are arranged one after another in the same line separated by commas. In any case, planning the graphic display of dictionary data in the design of Internet dictionaries involves combining both principles (continuous text and structured data) in a manner appropriate to the data model as well as the context of use and the user.

### The user

Focusing on the user in the design process – in other words, user-centric or human-centric design – has its origins in industrial product design. Applied to the use of a dictionary, this means that the elements in the dictionary and its contents are organised and designed in such a way that the user is able to successfully look up what they need to while expending the minimum possible time and cognitive effort. If the user is to be the starting point for design decisions, a number of questions have to be answered. For example: who is the (typical) user? Which problems do they typically want to solve? What is the (typical) search behaviour adopted to answer the problem? We can begin to answer these kinds of questions through so-called "user stories". These are case study scenarios involving fictional users (who are conceived in as concrete and realistic a way as possible), which give designers a framework for the development process. User testing and dictionary usage studies (→ Chapter 9) can then be employed to establish how effective these scenarios and planning strategies prove to be in reality.

By contrast, many Internet dictionaries continue to adopt a content-centric approach to design: that is to say, they list their information in a more or less condensed fashion, organising it according to their internal structure (which is primarily motivated by lexicological or lexicographical principles). As such, it is left up to the user to extract the information relevant to them in a particular situation from the Internet dictionary. This is particularly the case for general monolingual or multilingual dictionaries that are not integrated into other applications. However, if a dictionary is embedded in an application and a specific context of use, as might be expected, the user and their aims should exert a strong influence on the design. Unfortunately, embedded dictionaries and those intended for specific purposes have tended to play a lesser role in academic lexicography to date.

## 6.3 Usage studies on design

Although there is now a relatively long tradition of research into the use of print and Internet dictionaries (→ Chapter 9), there are not many usage studies that deal specifically with questions of design. Research in metalexicography has not tended to concentrate on design issues for Internet dictionaries either. Exceptions include publications by Almind (2005), Debus-Gregor/Heid (2013), Oppentocht/Schutz (2003), Spohr (2008), and Swanepoel (2001), which focused on the connection between the modelling of data and its online presentation while studies by Corréard (2002), Hollós (2018), Lew (in press), and Schmitz (2016) looked, above all, at the arrangement of the lexicographical information on the screen. Other researchers, notably Dziemianko (2014, 2015, and 2016), examined the positioning of particular kinds of information or the use of colour. Finally, Michaelis/Müller-Spitzer/Wolfer (2019), Storjohann (2018), and Torner/Arias-Badia (2019) among others concerned themselves with possible new forms of data presentation.

In relation to usage, Heid/Zimmermann (2012) proposed usability testing as a method to develop the design of Internet dictionaries and Koplenig/Müller-Spitzer (2014) outlined the results from a usage study on various possibilities for presenting data. Usage studies on Internet dictionaries involving eye-tracking experiments were undertaken notably by Lew (2010), Lew et al. (2013), Lew/Tokarek (2010), Nesi/Tan (2011), and Tono (2000 and 2011) while Müller-Spitzer/Michaelis/Koplenig (2014) used this method to test a new design for a dictionary portal. Eye-tracking studies, in particular, enable a detailed assessment of whether the arrangement of information on the screen, the typographical design, and the use of colour, etc. are understood by the study participants in the way that was planned and whether they are used to orient the way they look at the screen (→ Chapter 9).

## 6.4 Design practice for Internet dictionaries

### 6.4.1 Design fundamentals

If we view Internet dictionaries more generally as a subset of websites, the design options and rules that have been developed in this field will also apply to them. For designers of Internet dictionaries, this has the crucial advantage that they can draw on a wealth of existing design practice and experience. As explained in → Section 6.2.1, web design is influenced by print and graphic design, and their traditions reach back centuries. This should not surprise us: for all that our technology and media may have changed humans' cognitive capacities when interacting with text and image cannot have changed in any fundamental way in what is, in evolutionary terms, a rela-

tively short period of time. Something that was easy or difficult to read 200 years ago will continue to be so today.

It is beyond the scope of this chapter to provide a comprehensive overview of the wide variety of design traditions and schools. However, we would like to present a selection of basic principles as they apply to Internet dictionaries, before addressing more dictionary-specific issues.

Questions about the design goals of a project cannot be answered in general terms. A specific text design or page design is intended to put the user in a particular mood and make them associate the content with a particular experience, usually an emotional one. This is the domain of UX design (user experience design), and although this aim seems to be of greater importance for marketing and product pages, it also plays a role in Internet dictionaries. For reference works, for example, an appearance that communicates "reliability" and "credibility" might be appropriate, comparable with news broadcasting. A dictionary that addresses a very specialist group of users – for example, sportspeople or computer enthusiasts – might prefer to adopt a "modern" or "fresh" look. However, conveying information quickly and simply should be a common goal of most dictionaries so that design principles such as readability, consistency, and visual hierarchy play a significant role in most dictionary design decisions.

Here, readability means the extent to which a text can be read easily and without tiring the eyes. Decisive design techniques in this context are line length, line spacing, font size, choice of font, and the contrast between the colour of the font and the background.

Consistency (and repetition) refers to the uniform design of recurring elements, reducing the cognitive effort on the part of the user, who does not have to learn the position and use of control elements of the interface time and again. The rule "less is more" also has a place here since any newly created and different element must be (re-)learnt, and understood afresh, by the user.

The principle of visual hierarchy means that every element on the page possesses a specific level of importance. If all of them were of the same importance, the user would not know where to look first. The visual hierarchy of the page should establish a structure to deliberately direct the user's attention towards particular focal points. The use of colour and scale are relevant design techniques in this context, as are animations, which are particularly effective at attracting and retaining the user's attention.

→ Figure 6.2 demonstrates how design techniques such as white space and proximity, colour, contrast, scale, alignment, shapes, and typography can be used in a dictionary text in different ways, and in combination with one another, in order to support the principles outlined above.

On websites, the traditional design elements are supplemented by elements that originated in the field of application interface design, like input masks, which facilitate the user's interaction with the computer. In user interface design, components (also known as widgets) are the basic building blocks that are used to assemble more complex structures, such as the individual views of an application or the application

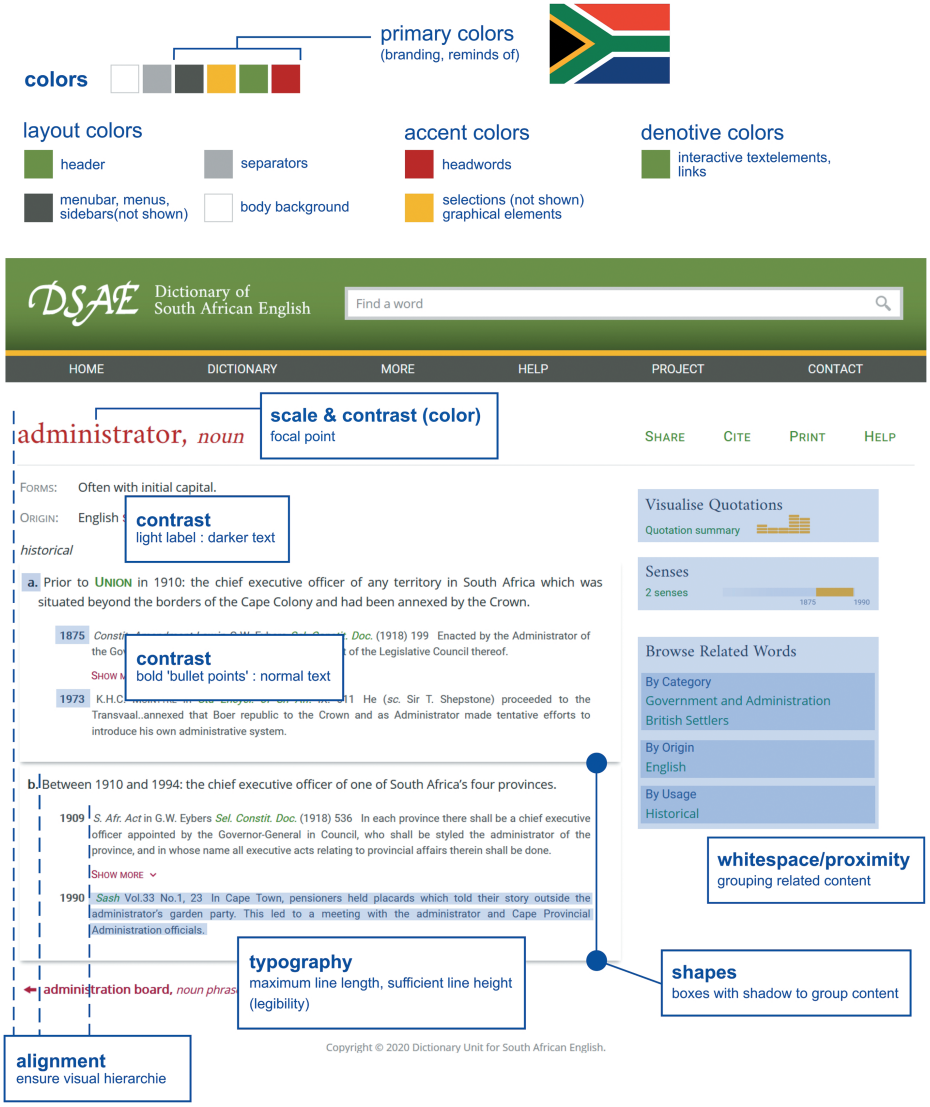


**Fig. 6.2:** Entry "administrator" in the *Dictionary of South African English*.

as a whole. Components themselves are, in turn, made up of smaller components, or design primitives (lines, shapes, text; → Fig. 6.3).

In addition, it is possible to distinguish these components according to their function. Hence, there are components:

1. for grouping and organising content, e.g. cards, lists, text sections, accordions;
2. for navigating within content, e.g. tabs, navigation drawers, navigation bars (top, side, bottom);

3. for performing tasks or giving commands, e.g. buttons, menus;
4. for user input or selections, e.g. text input fields, select boxes, check boxes;
5. for messages or responses from the application, e.g. popups, progress bars, dialogue boxes, status bars.

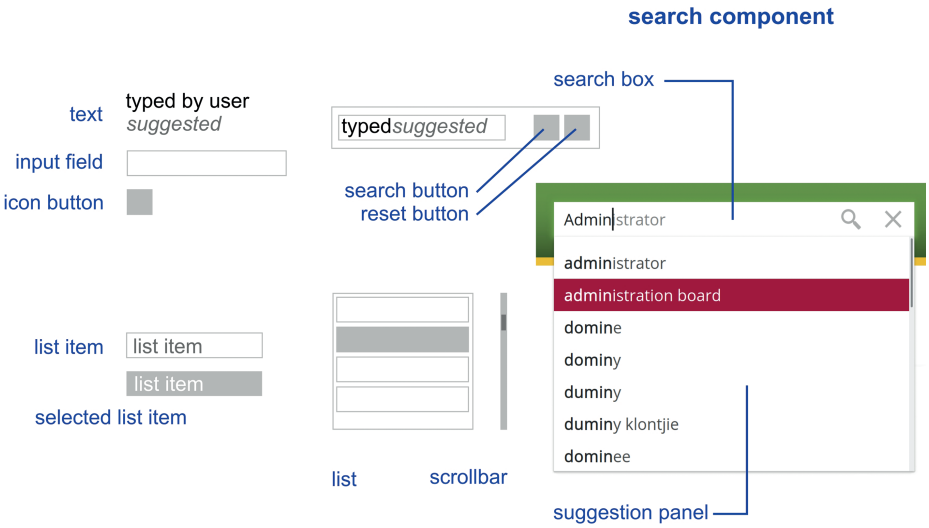


**Fig. 6.3:** Examples for design primitives in the *Dictionary of South African English*.

A particular challenge for user interface design is that these components also have to be (repeatedly) recognised as such by the user. Hence, these components tend to exist in a similar form in all operating systems (Windows, Linux, Android, iOS). However, they intentionally diverge from one another in their specific design in order to create an individual look and feel unique to the particular product. Websites, including Internet dictionaries, make use of the same techniques and are able to design their own look and feel. If the design of the user interface diverges too far from the conventions of the operating system that is most familiar to the user, however, there is a real danger that they will no longer recognise the components as interface components and will not know how to operate them.

Moreover, the implementation of the user interface design and interactive components is more demanding than that of static content. Components often possess several states, which have to be distinguished visually from one another. A button, for example, can be “normal”, “pressed”, “focused”, “active”, or “disabled”. The principles that govern the design of these states must be well thought out to ensure that they can be easily distinguished from one another and conform to product or branding guidelines as well.

Users also require direct visual feedback to show whether their action has been successful or not. For example, a button that does not change its state when the user

clicks on it means they do not know whether the computer has recognised the click or not and whether it will perform the required action. In this respect, modern user interface design (as of 2024) seeks to be as unobtrusive as possible. Instead of using text to provide lengthy status messages, an action button will change colour: for example, if the action has been successful, the button will change to green and its label to a tick; if not, it will turn red and the label will become a cross. Implementing these kinds of animated microinteractions assumes at least basic knowledge about animation techniques on the part of the dictionary designer.

Another complex area is accessibility, that is, design that ensures access without any barriers. The technical possibilities for accessible design have improved over the years as far as browsers are concerned but (as of 2024) designers often still lack knowledge and experience in implementing these recommendations and guidelines. Standardisation organisations such as *W3C* provide assistance in this area and are driving developments forward, for example with their *Web Content Accessibility Guidelines (WCAG) 2.0*. Nowadays, development tools in browsers indicate to designers whether, for instance, the contrast they have chosen between the foreground and background meets these guidelines. HTML itself allows for additional markups, which make it easier for text-to-speech programs to read an HTML page. However, planning for all of these technologies implicates a discernible increase in design effort, and it is essential that these be taken into account in the conception of an Internet dictionary (→ Chapter 3).

## 6.4.2 Specific aspects of Internet dictionary design

#### Retrospective digital dictionaries

There are considerable overlaps with the field of textual studies in the presentation of retrospective digital dictionaries, that is, print dictionaries, usually older ones that are subsequently digitalised. One common characteristic of these projects is to achieve as exact a reproduction as possible of the original text. Hence, the pagination of the print version is frequently retained to ensure that the online version can still be cited in the same way. Editorial interventions have to be marked and created in such a way that they are recognisable, and so on.

One recurring design issue pertains to the relationship between the “modern” dictionary application and the “old” dictionary pages. There is a particularly striking discontinuity in the case of image digitalisation, where the user is presented with scanned images of the original dictionary. But that discontinuity can also be intentional, as a reminder to the user that they are reading a historical source rather than a contemporary reference work.

Conversely, digital transcriptions of older print dictionaries can take the opportunity to re-evaluate the original print design, improving its clarity, for example, by in-

troducing a clearer visual hierarchy or by replacing an old-fashioned typeface such as *Fraktur* (a blackletter typescript) with a modern font in order to ensure legibility for 21st-century readers. If users come across a historical dictionary with a contemporary design, there is, of course, an increased risk that the user will confuse it with a contemporary dictionary. Unfortunately, there are limited design options available to counteract such a misunderstanding.

#### Content-centric presentation

On a very abstract level (and from a design perspective), many dictionary entries can be described as a structure in which the lexicographical information about a headword is organised in thematically related groups (→ Chapter 4); then, alongside that information, these groups may contain further subordinate groups (e.g. primary meaning and secondary meaning). In a content-centric design, the dictionary interface reflects, in a more or less one-to-one manner, this tree-like structure, nested in as many levels as necessary.

This hierarchical structure is intended to enable the user to quickly grasp the structural organisation of the entry so that they can direct their attention to the relevant block. Of course, one prerequisite for this is that the user has prior expectations as to what type of information they can find in which group and how this information can help them solve their problem. Whether these expectations of user behaviour on the part of lexicographers are realistic is the object of enquiry in user research (→ Chapter 9). → Fig. 6.2 shows the design techniques employed to translate this hierarchical lexicographical structure into a visual hierarchy.

#### User-/Human-centric design

In user-centric design, the lexicographical structure no longer stands at the centre; rather the design is oriented towards the actual task the user is undertaking or the problem to be solved. The dictionary *Paronyme – Dynamisch im Kontrast*, for example, is a dictionary that is meant to help the user deal with uncertainty about the meaning and usage of German paronyms. In many of the views in this dictionary, the design attempts to assist in the task of "comparing and contrasting". Partial meanings are presented to the user in a sortable overview; they are able to choose up to three of them, receiving the corresponding detailed views presented alongside one another in an overlay. This allows similarities and differences between the words to be compared, down to the level of individual examples of usage.

If the user's tasks and questions are placed at the centre of the design, the question arises as to why those tasks and questions should not be resolved at the point at which they arise. A logical step would be, for example, to integrate dictionaries in text

editing programs to assist in the production of texts, or in digital editions of texts to aid user comprehension. Here, dictionaries no longer appear as independent entities; rather, as far as possible, they fit seamlessly into the user's working environment in order to support them in their actual work, such as writing or reading texts. This is already standard today for very simple lexicographical questions, such as spelling or hyphenation. In these kinds of applications, the challenge for design lies more in the area of functional integration than in visual design.

### Other features of online dictionaries

In addition to entries for individual words, Internet dictionaries can provide a range of further texts, illustrations, or applications that, above all, make it easier to access information relating to the words in the dictionary (→ Chapter 5). One example is overviews of word entries that satisfy particular criteria: for example, in a dictionary of neologisms a list of words that emerged in a particular time period; in a dictionary of loanwords lists of words borrowed from a particular language; or in a general dictionary a list of all of the words derived from proper nouns, and so on. The word entries included in the lists are created as hyperlinks so that these kinds of lists not only have an informational value referring to the content of the dictionary but also provide possible points of access to that content.

Visualisations such as word clouds can also be used as navigation tools, inviting users to explore the content of the dictionary, all the more so if these are interactive visualisations. For example, if allowed by the corresponding data model, chains of loanwords from one language into a series of other languages can be represented as an interactive graph in which users can navigate. Nevertheless, such complex representations are more appropriate for illustrative purposes and to encourage exploration of dictionary content; they are not suitable for quickly looking something up.

Finally, it is possible to integrate static illustrations, videos, or audio data alongside text and visualisations. Dictionary design has to plan for these kinds of elements: for example, decisions need to be taken as to whether photographs, film, or audio clips should only be opened or started by clicking on them, whether they should be integrated into the dictionary interface or open in a new window, or whether hyperlinks should link to content hosted elsewhere. In conceptual terms, it is important, in each case, to ensure a close interconnection between the word entry and these kinds of features.

## 6.5 The design of search functions

Users of Internet dictionaries are familiar with three different search options (for more details, → Chapter 5), which they recognise from other websites: a simple search for a search term, a search by characteristics or attributes, and a full-text search. Each of these search options comes with advantages and disadvantages for the user and poses challenges for the design of an Internet dictionary.

The simplest way to search in an Internet dictionary is to enter a search term into a search field (the positioning of the search field on the page should follow the usual expectations for websites). If only one entry for the search term is found, this entry is usually shown directly on the screen. If a search generates multiple search results, the situation is different, and a list of entries is displayed on a separate page of search results.

The main purpose of a search by characteristics is to limit the number of hits returned to the user, something that is particularly common on the websites of online retailers. Shoppers in an online shop can, for example, restrict their search to blue sweaters made of cotton with long sleeves and a V-neck costing between $30 and $50. This is not easy to translate to dictionaries since, when searching for a particular word, it does not usually help to limit that search according to word class, number of syllables, inflectability, and so on. However, these kinds of "faceted searches" do exist in Internet dictionaries, allowing the dictionary to be used like a database. For instance, in the context of lexicological research, it is possible to search for examples of verbs borrowed in the 18$^{th}$ century from French into Italian, word entries in which a quotation from Jane Austen provides the first attested usage in English, or German neologisms from the 1990s that do not originate in English. In design, faceted searches frequently draw on menus and dropdown lists, among other techniques. The results of these searches are often displayed on a separate page on which the results can be further sorted or filtered before the user is able to either follow the hyperlink to an individual word entry or export or print the search results as a whole.

In a full-text search, a search term is generally searched for in the visible dictionary text, that is, in all word entries and, where applicable, also in the surrounding text, irrespective of whether the dictionary consists of textual data or structured data (→ Section 6.2.2). In terms of design, search results are displayed according to well-known models from other applications (e.g. Google) whereby a small snippet of the text is shown with the highlighted result. In cases with very high numbers of hits, the search results are distributed across several pages, so-called "pagination". A hyperlink leads from each snippet to the original dictionary entry.

## 6.6 The design process

At the end of this presentation of the design of Internet dictionaries, it is worth including some reflections on the design process. Where possible and appropriate, these should draw on well-known design frameworks and should, at least, give consideration to the use of templates. Finally, when planning a dictionary project, the design process should be integrated into the lexicographical process at an early stage in order to facilitate the development of a form of presentation that is attractive, intuitive to use, and appropriate to the subject area of the dictionary and its intended function (→ Chapter 3).

### 6.6.1 Established design frameworks

Engaging with the design guidelines and frameworks developed by the major producers of operating systems (Google/Android, Microsoft, and Apple) can bring particular benefits: as has already been mentioned in → Section 6.4.1, they convey the "native look and feel" of the surrounding operating system to which users are most accustomed. Users already have certain expectations about how the elements on their screen should behave, and applications that do not hold to those conventions can discourage them, or even cause annoyance. On top of that comes the not inconsiderable effort and complexity involved in the development of a new design system. Adopting existing designs allows designers to focus on the development of the components specific to the application.

In addition to technical documentation and tutorials on web development, corporations such as Google and Microsoft provide detailed documentation and, above all, explanations of their design guidelines, for example, Google's *Material Design*. The design systems or guidelines describe what has evolved over the years into "good practice". They contain collections of standard components and colour schemes as well as standard navigation and interaction models (for their platform). Pairs of "do's" and "don'ts" illustrations help designers avoid errors that can irritate users.

However, this consolidation of design conventions through market success does not always lead to the best possible design solution. A prominent example of this is our standard keyboard layout, which still follows that of typewriters and which is far from optimal in ergonomic terms. For this reason, user research (→ Chapter 9) and creative experiments are important in order to question and challenge existing conventions.

Alongside the more gradual general developments in design, there are also design fashions and trends, with the best known being Web 2.0 with its glossy image buttons (early 2000s). Nowadays (as of 2024), so-called "flat design" tends to dominate. However, these are more stylistic elements than design elements in the strictest sense. Nonetheless, as is the case in fashion, what was once the latest style quickly appears old fashioned, if not downright ridiculous. Since Internet dictionaries are mostly long-

term undertakings, elements that are characteristic of a particular fashion should be used with caution. Use of such elements can draw unnecessary attention to them and quickly make what is actually a well-designed and well-functioning site appear old fashioned.

### 6.6.2 Templates

There are numerous resources on the Internet that offer website templates, frequently as open source material, free for anyone to use. These can be implementations of existing design frameworks by the manufacturer or by third parties, such as Google's *Material Design*, or implementations of original designs. Many prominent websites make their own framework available, such as *Bootstrap,* a framework originating from X, formerly known as Twitter. If a framework is used in a great number of other projects, as *Bootstrap* has been, the design acquires a certain prominence and familiarity. This degree of familiarity is an advantage in terms of usability. However, it becomes more difficult to distinguish one project from another visually.

A further definite advantage of using existing frameworks is the possibility of drawing on the work of professional designers and developers. However, because designers are often oriented towards what is popular on the market, these templates tend to be conceived more for blogs, portfolios, and commercial or marketing sites rather than for the particular requirements of Internet dictionaries. Depending on the framework, extending and modifying an existing templates to the lexicographer's special needs can be expensive and can, in certain circumstances, require just as much prior knowledge as implementing one's own design from scratch.

### 6.6.3 Processes

The following lexicographical processes (→ Chapter 3) would be involved in producing an Internet dictionary according to the waterfall model. Starting with the planning and conception of the dictionary, the process would move on to the preparation and provision of the dictionary sources for the compilation of the word entries. Next the web application would be implemented, followed by the proofreading and testing of the interface. Finally, the Internet dictionary would be released or would go on sale. However, this linear process can be problematic in some circumstances: for example, problems that were not identified during the planning phase, or were dealt with inadequately, can only be resolved later in a very time- and cost-intensive way. Moreover, feedback from users that is gathered only after its release or delivery cannot be taken into consideration during the development of the dictionary.

When applied to the design of Internet dictionaries in particular, it is important to consider that the linear planning and realisation of a dictionary project results in

particular dependencies between content and presentation being identified only when it is too late and being reworked only at great cost, if at all. For example, later in the "application implementation" step, an Internet dictionary project wants to offer brief lexicographical commentaries in small pop-up windows, but their content cannot be automatically derived from information already found in the entry, so the whole project has to move back to the "compilation" step to create and edit this information. It would have been better if, instead, the data model had provided this information type from the very beginning.

For these reasons, an iterative design process should be chosen for Internet dictionaries in which developmental phases focusing on specific areas can be run on numerous occasions. In this kind of process, prototypes can be developed at an early stage, or specific elements of the application can be tested so that feedback from users can also be taken into account in early planning stages. In this way, the conception of content and design should be interconnected from the outset so that, at best, the team working on an Internet dictionary project involves not only lexicographical expertise but also expertise in IT and web design.

## 6.7 Conclusion

Whether in print or online, dictionaries comprise not only content but also the form in which this content is presented to users. For Internet dictionaries in particular, it is worth planning this presentation carefully, adopting in the process the best of both worlds, print lexicography and web design, in order to facilitate a successful user experience. To this end, specific technical and design expertise is required in order to take a wide variety of decisions in the design process in consultation with the lexicographers responsible for the content. The fact that this is being accomplished increasingly frequently nowadays demonstrates how far the design of Internet dictionaries has developed over the last few decades.

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## Images

**Fig. 6.1** copyright by authors.
**Fig. 6.2** Entry *administrator* in the *Dictionary of South African English*. https://dsae.co.za/entryentry/administrator/e00073 [last access: April 4, 2024].
**Fig. 6.3** Examples of design primitives in the website of the *Dictonary of South African English*. https://dsae.co.za/ [last access: April 4, 2024].