1 Introduction

Language is arguably the most important cultural tool that humans have ever invented. In this book, using English as our specific object of choice, we will look at the cognitive basis of language and discover how all aspects of it, from inventing new words to uttering full sentences, rest on one central cognitive unit: the construction. As we will see in this chapter, a core property of languages is that they are complex sign systems. As part of this, I will first introduce the classic definition of words as linguistic signs, that is, as arbitrary pairings of form and meaning. Next, we shall see that even morphemes or abstract syntactic patterns are best analysed as form-meaning pairings. All of these different types of signs will be captured by the notion of the *construction*. Besides, instead of a strict dichotomy of words and rules, we will treat language as a system that ranges from simple word constructions to complex syntactic constructions. Finally, we will explore the basic assumptions shared by all approaches that consider the construction the basic notion of syntactic analysis (so-called Construction Grammars) and outline how these differ from Chomskyan Mainstream Generative Grammar.

1.1 Constructions as Linguistic Signs

Speaking a language is an incredibly useful skill. If you meet someone who also speaks your language you can tell them about all the major events in your life, such as the birth of your child, last night's episode of *Doctor Who* or what kind of food you like. You can make predictions about next week's football scores or discuss last year's World Cup final. Language allows you to talk about the past or the future, fictitious people and events (think *wizards*, *unicorns* or *Quidditch*), your own feelings (*I like this book!*) or that of others (*You're really enjoying this book?*). Yet, how can we actually achieve all that? What is the secret property of languages that enables us to do all of these things?

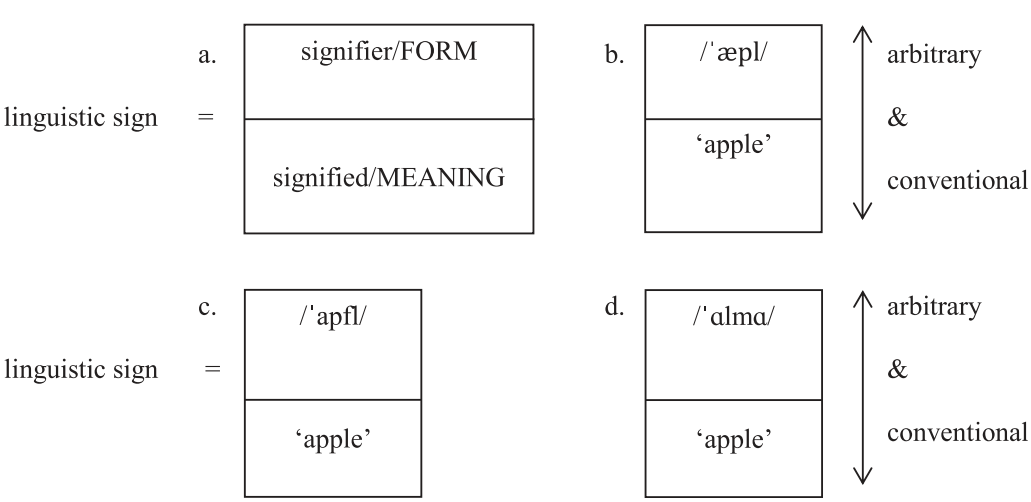
The answer that I will give in this book is that all aspects of language, from inventing new words to uttering full sentences, rest on one central cognitive process: symbolic thinking (Deacon 1997) – our ability to arbitrarily store pairings of form and meaning. As we all know, different languages have different names for the same concept. What we call *apple* in English is known as *Apfel* in German or *alma* in Hungarian. Yet, since we assume that English, German or Hungarian speakers all have similar concepts of apples, it seems necessary to distinguish two levels when we speak about words: the level of meaning

(the concept associated with a word, its 'signified' or '*signifé*', which we shall conventionally mark by single quotation marks, e.g., 'apple') and the level of form (the phonological sound side of a word, its 'signifier' or '*signifiant*', which I am going to represent via IPA transcription; details on all phonetic symbols used in this book are freely available from the IPA's website[1]). Thus, English uses the sounds /ˈæpl/ as the signifier to express a meaning that in German is linked to the signifier /ˈapfl/ and in Hungarian is associated with /ˈɑlmɑ/.

This insight that words are best analysed as parings of form and meaning goes back at least to Ferdinand de Saussure (1916), one of the most famous linguists of the twentieth century. He called this combination of form/signifier and meaning/signified '*linguistic sign*' and pointed out that it has two important characteristics: first of all, the relationship of form and meaning is arbitrary. In other words, there is no reason why an 'apple' should be called /ˈæpl/ in English, since other languages use completely different signifiers. The second property of linguistic signs immediately follows from the first: if the choice of form is completely arbitrary, then a speaker cannot guess it, she must learn it. Besides, all speakers of a speech community must subconsciously agree on the signifier of a sign. If I decide to call an apple /ˈɑlmɑ/ in English and you call it /ˈapfl/, then we would not know what the other person is saying even if we both wanted to talk about apples. The relationship between signifier and signified is thus arbitrary and therefore needs to be conventionally agreed upon in a speech community and stored in the mental lexicon of the individual speaker.

In (1.1) you can see a schematic representation of the arbitrary and conventional relationship of signifier and signified:

(1.1)



[1] See www.internationalphoneticassociation.org/IPAcharts/IPA_chart_orig/IPA_charts_E.html [last accessed 01 July 2021]. You can also find reliable information on the IPA symbols on Wikipedia: https://en.wikipedia.org/wiki/International_Phonetic_Alphabet [last accessed 01 July 2021].

Example (1.1a) gives the FORM and MEANING pole that any linguistic sign has, while examples (1.1b–c) show the analysis for *apple*, *Apfel* and *alma*, respectively. Note that 'apple' is supposed to be a shorthand notation for the complex mental concept that speakers have of apples. This mental representation of *apple* is not a simple picture of an apple. Instead, our mental prototype of an apple is going to include, amongst other things, its typical shape, colour, smell as well as other cognitive associations (e.g., that apples are considered healthy; cf. Bergen and Chang 2005, 2013; Hudson 2010: 34–7 for the complex properties of concepts). However, since mental concepts are rich and complex and difficult to capture in a few words, for the sake of convenience, I will represent these by single quotation marks throughout this book (trusting that you will always interpret them as the rich concept that they are).

As we will see, the notion of the linguistic sign is crucial to modern linguistics. It is, for example, not only relevant for the analysis of words. Take the examples in (1.2):

(1.2) a. unfair
b. untrue
c. unreal
d. unfaithful

All the words in (1.2) consist of the prefix *un-* plus an adjective and their meaning is always the opposite of that adjective (*unfair* = 'not fair', *untrue* = 'not true', etc.). As these examples show, the morpheme *un-* is a linguistic sign, but one which contains an adjective slot (ADJ) on its form level:

(1.3) FORM: $[/\text{ʌn}_1\text{-/ADJ}_2]_{\text{ADJ3}}$
⇔
MEANING: '$\text{NOT}_1\ \text{A}_2$'$_3$

Instead of the box notation of (1.1), (1.3) uses a double arrow '⇔' to signal the symbolic relationship between the two poles of a sign. This has the advantage that we can also easily present (1.3) in a horizontal format in the running text: FORM: $[/\text{ʌn}_1\text{-/ADJ}_2]_{\text{ADJ3}}$ ⇔ MEANING: '$\text{NOT}_1\ \text{A}_2$'$_3$. In the rest of the book, I will, therefore, use the format in (1.3) to represent FORM-MEANING pairs (and only draw boxes around a construction if the relationships between several constructions are illustrated in a single example).

The linguistic sign in (1.3) is also an arbitrary and conventional pairing of FORM and MEANING. In German, e.g., the etymologically related prefix *un-* has a slightly different FORM (using a different vowel /un/-ADJ) and in Hungarian it is a suffix (ADJ-*tlan* / ADJ-*tlen*) that is used to express a similar MEANING (cf. *sportszerű* 'fair' vs *sportszerűtlen* 'unfair'). On top of that, since we now have a complex sign consisting of more than one element, I use subscript numbers to keep track of the individual components across the FORM-MEANING levels (following Jackendoff's 2002 Parallel Architecture model as well as constraint-based approaches such as, for example, Boas and Sag 2012;

Kim and Michaelis 2020; Pollard and Sag 1994; see Chapter 7 for more details). You can think of these subscripts as links that, if you click them, should take you to the corresponding element on the other plane: since the /ʌn/-part of the FORM side clearly corresponds to the meaning 'NOT', both receive the subscript '1' to indicate that they are one FORM-MEANING subunit within the sign (and if you 'click' on the '1' of /ʌn$_1$-/, it will take you to 'NOT$_1$' on the MEANING pole, and vice versa). Likewise, the A_2 on the meaning level of (1.3) stands for the meaning of the ADJ_2 that is inserted in the second slot of the sign and consequently carries the subscript '2'. Finally, since the whole complex sign is used like an adjective (it can be used predicatively; cf. *That was unfair.* as well as attributively *That was an unfair question.*), its entire form is subscripted with 'ADJ_3' and symbolically linked to the meaning of the whole unit ' '$_3$. (Similarly, the *Apple*-construction above would have to be modified to include the information that *apple* is a noun in English: /ˈæpl/$_N$ ⇔ 'apple')

The FORM level in (1.3) therefore does not only include phonological information like the classic Saussurean sign but also morphosyntactic information (e.g., that the open slot has to be filled by an adjective). Yet, in order to capture the similarity of words and morphemes, we need a term that covers both types of FORM-MEANING pairings. We therefore use the term 'construction' for any arbitrary FORM-MEANING pairing that must be stored in the mental lexicon, regardless of whether it is a 'classic' Saussurean sign like *apple* or a morpheme like *un-*. 'Constructions' can thus be defined as in (1.4; for a more precise cognitive definition see Section 2.1.3):

(1.4) **Construction (first working definition)**:
a construction is an arbitrary pairing of (phonological/syntactic) FORM and MEANING that is stored in a speaker's mental lexicon

Since constructions are FORM-MEANING that are stored in the long-term memory of speakers, we need another term for the actual utterances that are the output of our minds. Spoken or written performance data that we can record and analyse empirically are, of course, the products of our minds. In Construction Grammar, we call these authentic tokens of use 'constructs'[2] and in this book we will also explore the question of how our mental constructions combine to produce complex, authentic constructs.

Constructions are not only a helpful concept for the analysis of the word and sub-word (that is, morphological) level. As we shall see in this book, all levels of

[2] Most Construction Grammar approaches use the term 'construct' in this sense (as a single token of performance that is the result of construction interaction). The only approach that does not follow this usage is Sign-Based Construction Grammar SBCG (Boas and Sag 2012; Michaelis 2010, 2013). In SBCG, 'constructs' is instead the technical name used for a special constraint (namely, a type constraint on local trees). In almost all other constructionist publications, however, people use the term as explained in the text.

syntactic analysis from the morpheme to the sentence level can be successfully described using constructions. Take the following example:

(1.5) It's both a cliche and a major regret to me,
but **I** most certainly **took my mother for granted**.[3]

Example (1.5) contains the structure *TAKE for granted*, whose meaning is not completely compositional; that is, it does not simply follow from adding up the meaning of the individual words: *I . . . took my mother for granted* does not simply mean 'I + . . . + took + my + mother + as + given'. Instead, the speaker also wants to express that she didn't value her mother enough and that she regrets this. Non-compositional items such as *TAKE for granted* are called 'idioms' and must be learnt by all speakers of English in order to use and understand them correctly. In other words, it is a construction since it is an arbitrary pairing of FORM and MEANING. So, we do not only need word- (*apple*) and sub-word-level constructions (*Un*-ADJ) but also constructions that are bigger than single words.

Note that, like the *Un*-construction above, the idiomatic *TAKE for granted* construction is not completely phonologically fixed:

(1.6) a. . . . MPs took their constituents for granted[4]

b. We took our success for granted.[5]

While some elements (*for* and *granted*) reoccur unchanged in (1.5), (1.6a) and (1.6b), others can be filled by various items. Thus, all three examples have different subjects (*I*, *MPs*, *we*) and objects (*my mother*, *their constituents*, *our success*). Now, the parts of a construction that have a fixed phonological form (i.e., [fə] and [ˈgɹɑːntɪd]) are called **substantive** elements (Croft and Cruse 2004: 255). The *Apple*-construction (1.1b), for example, only consists of one such substantive element ([ˈæpl]), while the *Un*-construction in (1.3) has a substantive element [ʌn] – which is followed by a single slot. Such slots that can be filled by various elements (cf., e.g., *fair*, *true*, *real* and *faithful* in (1.2)) are termed **schematic** elements (Croft and Cruse 2004: 255; Goldberg 2003: 220; Jackendoff 2002: 176). The *TAKE for granted idiom* has schematic subject and object slots as the examples in (1.5) and (1.6) show.

On top of that, the *TAKE for granted* construction also has one element that is partly substantive and partly schematic, namely its verb slot:

(1.7) a. . . . sometimes in life I **take** things for granted[6]

b. . . . she **takes** things for granted

c. . . . we **took** things for granted

In (1.7), like in (1.5) and (1.6), the verbal slot of the idiom is filled with the lexeme TAKE. However, in these examples the precise phonological realisation

[3] Source: www.huffingtonpost.co.uk/helen-spencer [last accessed 02 January 2021].
[4] Source: www.guardian.co.uk/politics/2011/feb/18/nick-clegg-alternative-vote-change [last accessed 02 January 2021].
[5] Source: www.digitalspy.co.uk/music/news/a365743/ [last accessed 02 January 2021].
[6] Source: http://playstoprewind.co.uk/index.php?section_id=4 [last accessed 03 March 2012].

of TAKE (its so-called word-forms) depends on factors that apply to all verbal constructions in Standard English and therefore do not have to be specified by the *TAKE for granted* construction: subject–verb agreement in English, for example, requires finite verbs (i.e., those that are specified for the grammatical features person, number and tense) in present tense sentences to agree in person and number with the subject:

(1.8) a. she sings / he kisses the bride / she gives him a kiss
b. they sing / you kiss the bride / I give him a kiss

In (1.8a) the subjects (*she*, *he*) are all [3rd person] [singular] and consequently require a finite verb form that is also marked for these grammatical features (cf. the 3rd person singular suffix *-s* in *sings*, *kisses* and *gives*). Thus, **she sing / *he kiss the bride / *she give him a kiss* would all be considered ungrammatical (in Standard English; here and below an asterisk '*' signals that a structure is ungrammatical). In contrast to this, the majority of English verbs do not show any overt agreement marker for 3rd person plural subjects (*they*) or 1st (*I* / *we*) and 2nd person (*you*) singular and plural subjects (cf. 1.8b).

We will return to the issue of subject–verb agreement in Chapter 3. Right now, it is only important to understand that it is a constraint that applies to all English sentences and one that we therefore do not necessarily need to encode in the *TAKE for granted* construction. Similarly, tense, that is whether a verb is, for example, used in the present tense (1.7b) or past tense (1.7c), is also a grammatical category that is marked on all verbs (cf. *She sang* / *He kissed the bride* / *she gave him a kiss*) and that we do not need to specify in the *TAKE for granted*-construction (see Section 5.2 for a discussion of English tense and aspect constructions).

Taking all of the above observations into account, we can now give a first constructional representation of the *TAKE for granted* idiom:

(1.9) *X TAKE Y for granted* construction
FORM: $[\text{SBJ}_1\ \text{TAKE}_3\ \text{OBJ}_2\ \text{fə}_3\ \text{ˈgɹɑːntɪd}_3]_{\text{idiom4}}$
⇔
MEANING: 'A_1 $[\text{doesn't value}]_3$ B_2'$_4$

As with the *Apple-* and *Un*-construction, substantive elements are phonologically fixed and therefore given in IPA transcription. Moreover, schematic slots are put in CAPITALS, with the SBJ and OBJ slot only being specified for their syntactic function (i.e., subject and object – don't worry if you are not yet 100 per cent sure how to identify these, we will cover this in Chapters 3, 4 and 5). In contrast to this, the verb slot has to be filled with a word-form of the lexeme TAKE. Finally, subscript numbers indicate FORM-MEANING subparts of the constructions (TAKE_3 fə_3 ˈgɹɑːntɪd_3, e.g., can be said to correspond to $[\text{doesn't value}]_3$ on the meaning side). As we will see in Section 4.3, idioms such as (1.9) are not the only type of idiom construction (they are qualitatively different from idioms like

KICK the bucket 'to die') and we will discuss how to capture the commonalities and differences of idiom constructions.

So far, we have focused on constructions that had at least one substantive element. There are, however, also completely schematic templates:

(1.10) a. Could **he shriek himself unconscious** . . .?
(BNC W_fict_prose CJJ)
b. **Firefighters cut the man free** . . .
(BNC W_newsp_other_report K55)
c. **he had** often **drunk himself silly**
(BNC W_fict_prose CDN)

Shriek is normally an intransitive verb (one that does not require an object; cf. *Leila laughed and shrieked* BNC W_fict_prose AD9), yet in (1.10a) it has two obligatory post-verbal complements (*himself* and *unconscious*) that seem to depend on each other: while *he shrieked himself unconscious* is fine, neither **he shrieked himself* nor **he shrieked unconscious* would be grammatical. *Cut* and *drink*, on the other hand, can be used transitively, that is, with an object (cf. *I cut my fingernails all the time* BNC W_fict_drama FU6 or *he drank a large whisky* BNC W_fict_poetry FAS). Yet, the use of *cut* and *drink* in (1.10b,c) is clearly different from these transitive uses: while in *I cut my fingernails*, the fingernails are actually cut, the firefighters (hopefully!) do not cut the man in (1.10b). Similarly, you can drink a whisky, but not yourself (as in (1.10c)). On top of that, all the sentences in (1.10) also give the effect that the shrieking, cutting and drinking action has on the object (it falls asleep, is set free or loose).

The examples in (1.10) seem to follow a pattern that takes a verb and describes the result that the verbal action has on an object. One way to analyse this pattern is to postulate the following abstract Resultative construction (Boas 2003, 2005a; Goldberg 1995, 2006; Goldberg and Jackendoff 2004)

(1.11) Resultative construction
FORM: $[\text{SBJ}_1\ \text{V}_2\ \text{OBJ}_3\ \text{OBL}_4]_{\text{Resultative Construction5}}$
⇔
MEANING: 'A_1 CAUSES B_3 TO BECOME C_4 BY V_2-ing'$_5$

The construction in (1.11) is completely schematic; it only consists of syntactic slots for the subject (SBJ), verb (V), object (OBJ) and result (OBL, which includes adjective phrases like the ones in (1.10)). Besides, its meaning includes parts ('CAUSES … TO BECOME') that are not associated with any element on the formal level. This part of the 'resultative' meaning is therefore an arbitrary property of the construction and another reason why one might postulate that it is a stored template. (Semantic properties such as CAUSE or BECOME are basic relations that appear in the MEANING pole of many constructions. In the following such semantic features are highlighted by SMALL CAPS; see Section 2.2.1 for details.).

An important issue concerning the Resultative construction is how the verbal arguments are incorporated into it. As mentioned above, *shriek* is an intransitive

verb that only brings a 'shrieker' to the subject slot of the construction. The object (*himself*) and oblique (*unconscious*) parts must be provided by the context. These and other issues will be explored in depth in Chapter 5, which deals with the so-called argument structure constructions, of which the Resultative construction is one type.

Finally, there are also constructions that go beyond the clause-level. Take, for example, the following football (aka soccer) chant (Bergs and Hoffmann 2018; Hoffmann 2015):

(1.12) Are you England?
Are you England?
Are you England in disguise?
Are you England in disguise?[7]

In 2009, the Northern Ireland football team rather surprisingly beat Spain 3–2 in a friendly match. During their celebrations the Northern Ireland fans did not pick a chant that mentioned Spain, but the one in (1.12) about their arch-rival England.

As you can probably guess, the chant is supposed to mock the current opponents by referring to them as one's least favourite rival team. Yet, it is not only the Northern Ireland fans that use this chant:

(1.13) Are you Villa?
Are you Villa?
Are you Villa in disguise?
Are you Villa in disguise?[8]

(1.14) Are you Andorra,
Are you Andorra,
Are you Andorra in disguise?
Are you Andorra in disguise?[9]

West Bromwich supporters use the chant in (1.13) to mock opponents (when they are not playing Aston Villa) and (1.14) is the creative outburst of an England fan that mocks the Croatian team.

The chant therefore is a widely used one and, when we take into account the pattern in (1.12)–(1.14), seems to have the following constructional template:

(1.15) *Are you* FOOTBALL TEAM *in disguise* construction
FORM:[10] /ɑː juː [FOOTBALL TEAM]$_1$
ɑː juː [FOOTBALL TEAM]$_1$

[7] Source: www.youtube.com/watch?v=HDrzfIOxh0A&feature=related [last accessed 02 January 2021].
[8] Source: https://www.fanchants.com/football-songs/west_bromwich_albion-chants/are-you-villa-in-disguise/ [last accessed 26 June 2021].
[9] Source: www.youtube.com/watch?v=5wH4B2z0fpY [last accessed 02 January 2021].
[10] An anonymous reviewer asks why (1.15) does not have a SYNTAX pole (which would have to specify agreement between *you* and *are*). Maybe some speakers have stored such a more detailed representation, but I guess for most football fans (1.15) is an idiomatic chunk that except for the slot of the FOOTBALL TEAM is not parsed. Just because we as linguists see two words here that agree, it doesn't mean that speakers actually have such complex underlying representations.

	ɑː juː [FOOTBALL TEAM]$_1$ ɪn dɪsˈgaɪz,
	ɑː juː [FOOTBALL TEAM]$_1$ ɪn dɪsˈgaɪz/$_{\text{chant2}}$
	TUNE: Bread of Heaven$_2$
⇔	
MEANING:	‘our current opponents play like X_1 and X_1 is a crap football team’$_2$

The form part has the substantive elements /ɑː juː/ and /ɪn dɪsˈgaɪz/ as well as a slot for the name of a football team that is repeated four times. Another property of the construction’s form, not shown in detail in (1.15), is that it has a fixed tune associated with it (the religious hymn ‘Cwm Rhondda’, or ‘Bread of Heaven’; Shaw 2010: 7). While not all constructions are to be sung, we will see that the linguistic equivalent of the tune, prosodic information, can also be a crucial form property of a construction. The construction’s meaning is complex and requires some social background knowledge for its interpretation. The football team that is inserted in the schematic slot cannot be the current opponent. Instead, it is a particular disliked team that is ridiculed as playing badly. On top of that, the current opponent is mocked by insinuating that they play as badly as the team mentioned in the song.

As we have seen, constructions are a useful tool for describing all linguistic levels from morphemes over words and idioms to schematic syntactic templates and football chants. This insight has led many researchers over the past thirty years to explore constructional analyses of many languages. Out of these, all approaches that subscribe to the view that constructions are the central building blocks of grammar are called **Construction Grammar**s (Bergen and Chang 2005, 2013; Boas and Sag 2012; Croft 2001, 2012; Fillmore and Kay 1993, 1995; Goldberg 1995, 2006; Kim and Michaelis 2020; Steels 2011, 2013). While there are many different Construction Grammar approaches and frameworks (see Chapter 7), all would subscribe to the definition in (1.4). On top of that, many Construction Grammar approaches claim that constructional analyses model the linguistic mental competence of speakers; that is, that constructions are what speakers draw on to produce and understand sentences. Moreover, they argue that it is a constructional account that can best explain how children can acquire this mental system. This view is, of course, in sharp contrast to the other major linguistic theory of our time, Mainstream Generative Grammar (Chomsky 1995, 2000; Radford 1997, 2004), and we will take a closer look at this controversy in Section 1.2. In this book, however, we will mainly focus on English grammar and see what a constructional analysis of English syntax looks like and what the advantages of such an approach are. Before we take a closer look at English, however, next I shall first present the core assumptions shared by Construction Grammar approaches.

As we will see in Section 2.1.2, this is particularly important to keep in mind when analysing child language data during acquisition.

1.2 Basic Assumptions of Construction Grammar Approaches

There are four assumptions that all Construction Grammar approaches share (Goldberg 2013).

1.2.1 The Lexicon-Syntax Continuum

Many grammatical theories assume a strict division between the lexicon as a repository of meaningful words and morphemes, on the one hand, and meaningless syntactic rules which combine these words into sentences, on the other hand (cf., e.g., Radford 1997, 2004 and Section 1.3 below). As we saw above, however, Construction Grammarians do not uphold this strict lexicon-syntax distinction. Instead, all levels of grammatical knowledge involve FORM-MEANING pairs, that is, constructions. The only difference between lexical constructions (such as the *Apple* construction (1.1b)) and phrasal/grammatical constructions (such as the Resultative construction (1.11)) is the degree of schematicity: while the former are fully substantive (have their phonological form filled), the latter are schematic (and thus contain slots that can be filled by various lexical constructions). Moreover, Construction Grammarians point out that the grammatical knowledge of a speaker does not only consist of these two extreme types of constructions. Instead, fully substantive and fully schematic constructions only lie at the opposite ends of a cline. In-between, we find constructions that have both substantive and schematic parts (such as the *Un*-construction (1.3) or the *X TAKE Y for granted* construction (1.9)). A central claim of the constructionist approach is therefore that 'all grammatical knowledge in the speaker's mind [is stored], in the form of . . . constructions' (Croft and Cruse 2004: 255). The full list of constructions that make up a speaker's mental grammatical knowledge is then referred to as the '*constructicon*' (in analogy to the lexicon, which in other theories only comprises words and morphemes; Fillmore 1988; Jurafsky 1992).

1.2.2 Taxonomic Network Organization and Inheritance

The constructicon is not seen as an unstructured list of constructions. Instead, all versions of Construction Grammars agree that the constructions of a language form a structured inventory, which can be represented by (taxonomic) networks (cf. Croft and Cruse 2004: 262–5).

To see how that works, consider a non-linguistic example: there are lots of conceptual categories by which we can classify humans. For example, we classify them according to their gender (whether they are male, female or non-binary), their marital status (single, married, widowed . . .) or their profession (plumber, miner, doctor . . .; many more could be added but for the sake of simplicity, I shall limit myself to those three here). If we arrange these categories together with their various options in a taxonomic network, we get something like Figure 1.1