

## Linguistic theories, approaches and methods

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### 1. Introduction: General aims of linguistic theorizing

According to the sociologist Kurt Lewin (1952: 169), “there is nothing more practical than a good theory”. In stark contrast to the common perception of beginners and even advanced students that linguistic theory is basically a nuisance and no more than an end in itself, this quote is in fact an ideal starting-point for the present chapter of this volume, which is designed to give a sketch of major theoretical and methodological approaches in English linguistics. Linguistic theories are no less superfluous than, for example, Newton’s theory of gravitation or Einstein’s relativity theory, as both, theories in linguistics and theories in physics, strive essentially for the same goal and serve the same purpose: to identify, formulate and explain a model of the underlying rules and principles of how things work in language or in the world, respectively, by means of observation and generalization. Just as the theory of gravitation allows us to predict that objects which are dropped will fall to the ground rather than begin to float, a good theory of the English language will allow us to predict which sentences and words speakers are likely to produce and understand and which they will not. This means that theories do not merely have enormous explanatory potential, but also massive practical implications. Being familiar with different theoretical models and the methodologies informing and supporting them as well as understanding how they are related to each other is thus an essential aspect of what it means to do linguistics.

From a bird’s eye perspective, the aims of linguistic theorizing can be summarized as follows:

- Linguistic theories in the fields of **grammar** (including **phonology**, **morphology**, **syntax**) and **lexicology** are formulated to understand the nature and structure of language(s).
- Theories in linguistic **semantics** aim at scientific accounts of the rather elusive phenomenon of how linguistic elements and structures can convey meanings.

- **Cognitive-linguistic** theories try to model what speakers know about language and how the structure of languages relates to other cognitive abilities like perception and attention allocation.
- **Psycholinguistic** theories try to model what goes on in the minds of language users during ongoing processing and how languages are acquired by children.
- Theories in linguistic **pragmatics** model how communication works and how understanding comes about.
- Theories in **variational linguistics** and **sociolinguistics** explain patterns of variation (accents, dialects, registers, etc.) and investigate parameters influencing these patterns (age, sex, social background, etc.).
- Theories in **historical linguistics** try to model why and in which ways languages change and are related to each other historically.

The account of theories and methods given in this chapter essentially follows a chronological pattern, beginning with a glimpse of approaches to the study of language prevalent in the 19th century and then concentrating on the major theories proposed in the 20th and early 21st centuries. Throughout the discussion I will make every effort to clarify how different approaches are related to each other and highlight major pathways of how linguistics in general and English linguistics in particular have developed and ramified. A survey summarizing the models discussed will be provided at the end of this contribution. As pragmatic, sociolinguistic and historical approaches are dealt with in separate chapters of this volume, they will not feature prominently here.

## 2. The pre-structuralist tradition in the 19th century

19<sup>th</sup>-century linguistics is dominated by the comparison of languages, driven to a large extent by the goal to unveil their historical developments and ‘genealogical’ relations. The period is therefore known as the **comparative-historical tradition**. A key role in the development leading up to this era is usually attributed to Sir William Jones (1746-1794), a scholar of the ancient Indian language Sanskrit, who discovered that this language shows a similarity to Greek and Latin which could hardly have come about by mere chance. While earlier students of languages had already noticed the similarity of Sanskrit words such as *mātā* ‘mother’, *dvāu* ‘two’ or *trayah* ‘three’ to the corresponding words in Ancient Greek, Latin and the modern

European languages, it was Jones who was the first to propose the correct explanation for these observations: that all three languages were descendants of a common source, known as *Proto-Indo-European*, rather than Sanskrit being the ‘mother’ of Greek and Latin.

Dominated by German philologists such as Jakob Grimm, Franz Bopp, August Friedrich Pott, August Schleicher and Hermann Paul, 19<sup>th</sup>-century linguistics is marked by the quest for laws and principles of how languages change and eventually split into mutually unintelligible new languages in long-term developments. Excellent examples of such splits are the modern Romance languages French, Italian, Spanish, Portuguese, Romanian and others, all of which are essentially descendants of dialects of spoken Latin. Some of the most famous insights gained by 19<sup>th</sup>-century linguists include the so-called *Grimm’s Law* (also known as the *First Germanic Sound Shift*), the *Second* or *High German Consonant Shift* and *Verner’s Law* – see the contribution by Kornexl for examples. The names of these laws indicate the level of language on which research focused at the time, namely sounds. In addition to phonology, 19<sup>th</sup>-century scholars were mainly interested in inflectional morphology and lexical similarities across languages.

19<sup>th</sup>-century philologists developed sophisticated data-based methods for the comparison of those languages which are documented by written records, and for the reconstruction of earlier languages. Especially the so-called **Junggrammatiker** or **Neogrammarians** (August Leskien, Karl Brugmann and others) emphasize that the laws postulated to explain sound changes have to be based on observable facts rather than philosophical speculation in order to have the same quality as laws in physics or other natural sciences – a development which follows the general trend of the time towards a ‘positivist’ philosophy and theory of science.

#### **Further reading:**

Robins (1997: Ch. 7)

Seuren (1998: Ch. 2)

### **3. Saussure and his impact**

#### **3.1 Saussure and the basic tenets of structuralism**

The comparative-historical framework and the Junggrammatiker pave the way for the first major turning-point in linguistic theorizing, which is closely associated with the Swiss linguist Ferdinand de Saussure. While Saussure is usually given credit for bringing about a sea-change in linguistics at the beginning of the 20th century, many of the ideas he is famous for were already in the air, so to speak. Saussure himself spent some time studying and researching in Leipzig with Karl Brugmann, but also in Berlin, where – under the influence of Heymann Steinthal, a pupil of Schleiermacher – he became familiar with Wilhelm von Humboldt’s ideas on the inner form of language and formed a more critical stance towards the positivist programme envisaged by the Junggrammatiker. In hindsight, there can be no doubt that Saussure deserves titles such as ‘founder of modern linguistics’ and ‘founder of structuralism’, which are often attributed to him. Saussure’s seminal ideas are compiled in the famous *Cours de linguistique générale*, a collection of his lectures in Geneva; the book was based on Saussure’s own and his students’ notes and published in 1916 by Charles Bally and Albert Sechehaye after Saussure’s death in 1913.

The most consequential ‘structuralist’ claim made by Saussure – presumably at least partly inspired by his Berlin experience – is that language is a socially shared **system of signs**. This system is considered more important than its parts and defined by the relations between its component parts. The elements in the system have no significance outside it and derive their significance exclusively from the relations to other elements. Saussure’s (1916: 165) example of hand-written letters provides perhaps the simplest way of illustrating this idea:



Figure 1: Hand-written versions of the letter <t> from Saussure (1916: 165)

The significance or value of such letters in the system, Saussure claims, is purely negative and based exclusively on differences. The same person can write <t> using any of the substantially different symbols depicted above; what counts for the value or significance of the symbol is only that it does not conflate with the one for <l>, <d> or others. <t> is not <t> by virtue of an inherent quality of the symbol representing it, but it is <t> because it is not <l>, <d> or any other member of the system (Saussure 1916: 165). When we talk about *the* letter <t>, this already refers to an abstract construct – a **type** – generalized over all physically real **tokens**, which can vary dramatically with regard to their appearance.

The same is true of the sounds in spoken language, where the phoneme /t/ may be realized in a large number of ways, in certain environments (e.g. between vowels as in *butter* or *better*) even by a glottal stop (e.g. /bʌʔə/). The essence of /t/ in the system, however, is not the way it is pronounced, but the opposition to /d/, /p/ and so on. Maybe somewhat more surprisingly, the same is even true on the level of meanings and even of whole signs, i.e. combinations of linguistic forms and meanings (see below). A very convincing way of demonstrating the idea that the meanings of words reside in the differences to other word meanings rather than in their own substance is Saussure's example of the 8.45 pm train from Geneva to Paris. Although, Saussure argues, two 8.45 trains on two different days may well have nothing in common regarding their physical substance – there may be different wagons, a different locomotive, conductor and engine driver – we still talk about one and the same train, *the 8.45* from Geneva to Paris, because the differences to other trains in the whole system, for example with regard to time of departure and itinerary, indeed remain the same, irrespective of the day of departure (Saussure 1916: 151). Rather than its physical substance or appearance, these indicators of its place in the system give the train its significance.

Another helpful analogy comes from chess: the figures in this game do not assume their significance by virtue of their shape or size but again by virtue of their place in the system of the game. As argued by Saussure, if, say, a knight goes missing, it can be replaced by any sort of object, such as a cork, and can play the role of knight as long as the two players agree on it. That such an agreement is indeed necessary recalls the issue of language being a **socially shared** system, since it shows that there must be a tacit understanding among the speakers of a speech community regarding the oppositions and differences among the signs in the system.

As an intermediate summary, we can conclude that the essence of a structuralist view of language is that signs are defined by their places in the system, which are defined in turn by the oppositions to other signs, and that therefore the system is more important than its component parts. This idea works particularly well for the explanation of the elements of closed systems, i.e. systems with a limited number of elements, such as graphemes or phonemes. With regard to the basically open-ended lexicon, it may well be less convincing at first sight but can in fact also be applied. Saussure (1916: 160) himself points out how this works: within a language all the words that express neighbouring concepts limit each other; for example, synonyms such as *think*, *believe*, *suppose* or *consider* “n’ont de valeur propre

que par leur opposition” (Saussure 1916: 160; [‘only have significance by means of their opposition’]). If one of them did not exist, its content would be divided among its competitors.

To make his thoughts on the nature of the linguistic system convincing, Saussure has to leave behind some of the central ideas of 19<sup>th</sup>-century linguistics. Firstly, he makes it clear that there is no point in studying language change and development from a **diachronic** (lit. ‘through time’) perspective only, unless the state and structure of a language at a given time, i.e. from a **synchronic** (lit. ‘same time’) perspective, is also researched.

Secondly, if linguistics is to be a science investigating the system and sub-systems of languages, the study of actually produced texts prevalent in historical-comparative philology falls short of promising to achieve this goal, since, as mentioned above, languages have their own inner structure outside or over and above actual usage. Saussure therefore suggests that the objective of linguistic investigation should not be what speakers do with language, i.e. the actual use, to which he refers as **parole**, but the structure of the system itself, i.e. **langue**. Even though Saussure emphasizes that *langue* is not an abstraction but a social fact which is shared by the members of a speech community, in order to describe this system it is necessary to abstract from variants of signs that can occur in actual usage or *parole*. Indeed, the ending *-eme* known from the terms *grapheme*, *phoneme*, *morpheme* and *lexeme* signals that linguistic phenomena at different levels are seen from the *langue* perspective, which does not concern individual tokens, but generalized types. In the system of **graphemes**, for example, the symbol <t> is an abstraction from actual realizations of the kind illustrated in Figure 1 above. Likewise the **lexeme** *drink* as an ‘abstract’ element in the lexicon on the level of *langue* is a generalization covering actually occurring forms such as *drinks*, *drinking*, *drank* and *drunk* and contextually different meanings such as ‘ingest liquids’ or ‘habitually ingest alcoholic beverages’.

Thirdly, Saussure makes a point of rejecting the anti-mentalist ideas evolving in the positivist climate of his time and stresses the fact that the system has both a social and a psychological dimension. In his well-known binary conception of linguistic signs (cf. Figure 2) in particular, he dwells on the psychological nature of both sides and the associative nature between them. Not only the **concept** or **signified** has to be regarded as a mental entity, but so does the **image acoustique** or **signifier**, which, as Saussure underlines, is not the physical sound of, say, a

word, but its mental image or representation in the mind of a speaker. It is the kind of sound image you can conjure up and ‘imagine’ when you think of the way a given word sounds, for example *star* in Figure 2.

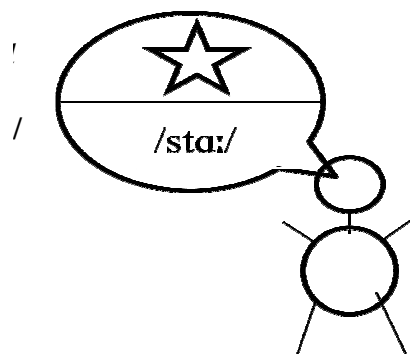


Figure 2: Adapted version of Saussure's model of the linguistic sign

Saussure's major contributions to linguistic theorizing can be summarized as follows:

- Language is a socially shared system of signs.
- In the study of language, usage (*parole*) and system (*langue*) have to be kept apart. The target of linguistics should be the generalizations made on the level of *langue* rather than the individual, physically real usage-events taking place in *parole*.
- Linguistic systems should (also) be studied from a purely synchronic perspective.
- Signs only have significance in the system by virtue of the differences (oppositions) to other signs; this gives rise to structure, which is of more fundamental importance than the individual elements of the system.
- The oppositions making up the system are tacitly agreed upon by the members of the speech community by way of convention; individual speakers have tacit knowledge about them.

### Further reading:

Harris (2003)

Prechtel (2000)

Seuren (1998: 144-157)

### 3.2 Saussure's impact

It is hard to overestimate the impact that Saussure's ideas had on the later development of linguistic theorizing. Addressing various levels of language, this section will discuss a selection of approaches which owe considerably to the insights outlined in the previous section.

As already mentioned above, the closed system of phonemes is of course a particularly attractive candidate for applications of the structuralist approach. The earliest and most systematic and consequential efforts were made by a group of Czech linguists known as the **Prague School**. Among the leading figures of this linguistic circle are Roman Jakobson and Nikolai Trubetzkoy. Taking up Saussure's distinction between *langue* and *parole*, the Prague School linguists define first of all the difference between phonology and phonetics: while phonetics describes the 'physical' qualities of actual speech, phonology is only interested in those features of sounds which are **distinctive** in the sense that they differentiate meanings (by virtue of their entering into opposition to other sounds). As a consequence, their main concern is with the distinctive features of **phonemes**, i.e. the smallest meaning-differentiating units of a language (cf. the contribution by Mair).

Saussure's ideas on how oppositions between neighbouring words give rise to their meanings inspired a range of structuralist theories in lexical semantics. The first of them is the **theory of word-fields** or **lexical fields** introduced by the German linguist Jost Trier, who published an extensive study called *Der deutsche Wortschatz im Sinnbezirk des Verstandes* (1931). By describing historical changes observable in this word-field (including nouns such as *wisheit*, *list* and *kunst* which share, with different nuances, the semantic space covered by 'wisdom', 'knowledge' but also 'capability' and 'science'), Trier is able to confirm what Saussure suggested, showing that in long-term historical developments one word occupied semantic space left open by a shift of another word. Trier concludes:

Kein ausgesprochenes Wort steht im Bewußtsein des Sprechers und Hörers so vereinzelt da, wie man aus seiner lautlichen Vereinsamung schließen könnte. Jedes ausgesprochene Wort läßt seinen Gegensinn anklingen. Und noch mehr als dies. In der Gesamtheit der beim Aussprechen eines Wortes sich empordrängenden begrifflichen Beziehungen ist die des Gegensinns nur eine und gar nicht die wichtigste. Neben und über ihr taucht eine Fülle anderer Worte auf, die dem ausgesprochenen begrifflich enger oder ferner benachbart sind. Es sind seine Begriffsverwandten. Sie bilden unter sich und mit dem ausgesprochenen Wort ein gegliedertes Ganzes, ein Gefüge, das man Wortfeld oder sprachliches Zeichenfeld nennen kann. Das Wortfeld ist zeichenhaft zugeordnet einem mehr oder weniger geschlossenen



Begriffskomplex, dessen innere Aufteilung sich im gegliederten Gefüge des Zeichenfeldes darstellt, in ihm für die Angehörigen einer Sprachgemeinschaft gegeben ist. (Trier 1931: 1)

A second structuralist approach in lexical semantics whose basic assumption can be traced back to Saussure is the **theory of sense relations** or **paradigmatic relations**, associated with such linguists as John Lyons (1977), Geoffrey Leech (1981) and Alan Cruse (1986, 2000). It was John Lyons (1963) who presented the first coherent system of sense relations. Lyons argues that the meanings of words – or more precisely in his terminology, their *senses* – are not only describable in terms of their relations to other words but are actually constituted by them. Sense relations do not *link* meanings but *give rise* to meaning in the first place as is illustrated by the following examples: the sense of the lexeme *hot* is constituted by its relations to other words, among them the polar opposition (**antonymy**) to *cold* and the (quasi-) **synonymy** to words like *burning* or *scorching*. The sense of *give* is constituted by the **converse relations** to *take* and *receive* and the (quasi-) synonymous relation to *pass*, *hand over* and many other verbs. The sense of the noun *dog* is constituted by its **hyponymic** relation to words like *animal* and *mammal*, its **hyperonymic** relation to *poodle*, *retriever* and *German shepherd* and its co-hyponymic relation to *cat*, *horse*, *mouse* and other hyponyms of its hyperonym *animal*. It should be stressed that all these relations – semantic incompatibility, synonymy, hyponymy and their more specific variants (see Figure 3 for a survey) – are internal to the linguistic system and not a description of things or classes of things in extra-linguistic reality.

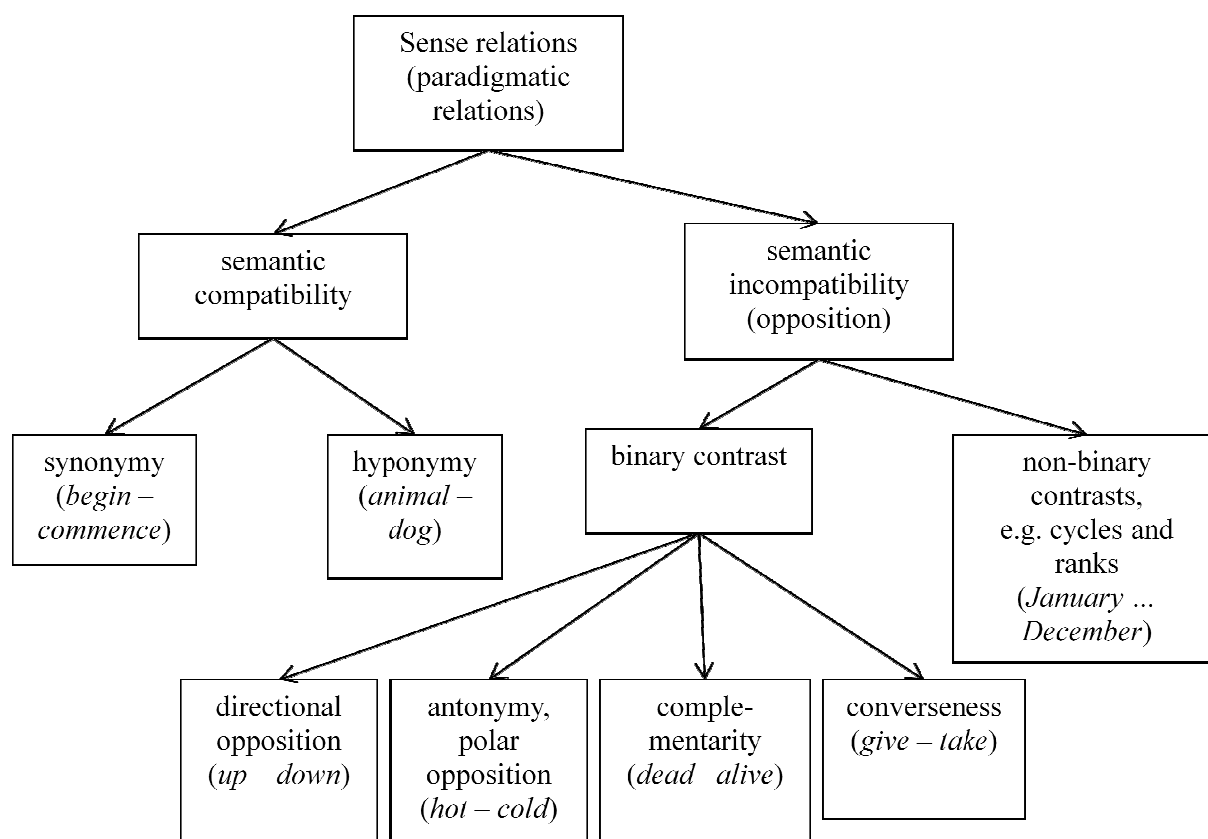


Figure 3: Survey of sense relations (based on Lyons 1977, Leech 1981, Cruse 2000)

A third structuralist approach to semantics inspired by Saussure himself and also indirectly by Prague School phonology and other structuralist approaches is **semantic-feature theory**. The basic idea behind this approach is that word meanings are constituted by sets of semantic features very much in the same way that phonemes are constituted by bundles of phonological features. Like distinctive features in phonology, distinctive semantic features can be determined using the main structuralist method, i.e. the comparison of neighbouring elements in the system. For example, just like the comparison of the phonemes /t/ and /d/ yields the phonological feature [± VOICE], a comparison of the meanings of the lexemes *man* and *woman* yields the feature [± MALE], and a comparison of *woman* and *girl* the feature [± ADULT]. It should be emphasized that, at least in theory, these comparisons take place on a purely linguistic level, and are thus indeed comparisons of meanings, rather than on the level of referents in extra-linguistic reality. We do not compare characteristics of men and women, but of the meanings of the words *man* and *woman*. A well-known illustration of this manner of determining semantic features, rendered in Figure 4, is provided by Leech (1981: 89).

	MALE	FEMALE
ADULT	<i>man</i>	<i>woman</i>
YOUNG	<i>boy</i>	<i>girl</i>
	HUMAN	

Figure 4: Analysis of semantic features (adapted from Leech 1981: 89)

It should be added that this method works quite well for fairly general features such as [ $\pm$  CONCRETE], [ $\pm$  ANIMATE], [ $\pm$  HUMAN] or [ $\pm$  MALE], which are also grammatically relevant, but seems to run into difficulties when applied to finer semantic distinctions relating to semantically more specific words distinguishing, for example, lexemes denoting different kinds of metal such as *iron*, *steel*, *copper* or *lead*. Here Leech resorts to the use of symbols like \* or † to simply indicate the fact that meanings differ, emphasizing that even more tangible features like [HUMAN] or [ANIMATE] are essentially just theoretical constructs and descriptive tools. Feature semantic descriptions for the meanings of more abstract words, e.g. *jealousy*, *boycott* or *freedom* are even more difficult to come up with.

As in the field of phonology, the aim of an analysis in terms of semantic features is to determine the list of **distinctive features**, i.e. those semantic components which are both individually **necessary** and collectively **sufficient** to delimit the class of entities which can be truthfully denoted by the lexeme. A famous example of such an analysis is the decomposition of the meaning of the lexeme *bachelor* into the features [+HUMAN], [+ADULT], [+MALE] and [-MARRIED], all of which are necessary to exclude other animate creatures, children, women as well as married men from the class denoted by the lexeme; that this set of features is indeed sufficient emerges from the fact that there are no entities other than bachelors which meet the conditions defined this set.

In summary, prominent and influential theories in the field of phonology and lexical semantics that are inspired by Saussure's legacy include

- Prague School phonology (Jakobson, Trubetzkoy)
- word-field theory (Trier, later also Coseriu, Lipka)
- the theory of sense relations (Lyons, Leech, Cruse)

- semantic-feature theory (Leech)

Concerning the **methods** dominating linguistic investigations in the wake of Saussure we can summarize that the structuralist agenda calls for a new kind of ‘comparative’ methodology, one where related or ‘neighbouring’ elements are compared to each other with the aim of isolating the oppositions relevant for the system. These comparisons are usually carried out in a largely introspective manner based on small samples of linguistic data representing more or less closed systems such as phonemes or the members of word-fields. Analyses of oppositions are supported by various logical, rather than experimental, tests, e.g. the minimal-pair test in phonology or the entailment test in semantic-feature theory. Other linguistic methods such as experiments with participants (see Section 8) or the systematic analysis of linguistic corpora (see Section 9) are not in line with structuralist thought, as they are only able to tap into the behaviour of speakers (*parole*), thus promising little insight into the structure of the system (*langue*).

**Further reading:**

Joseph, Love and Taylor (2001: 17ff.)

Cruse (2000)

Lipka (2002)

**4. American structuralism**

The period commonly referred to as American Structuralism and represented by linguists such as Leonard Bloomfield, Charles Fries, H.A. Gleason and Zellig Harris is united by an interestingly ambivalent stance towards Saussure’s ideas. On the one hand, the notion of language being a structured system is taken up enthusiastically and developed considerably further; on the other hand, the mentalist approach is fervently rejected. This negative reaction can largely be explained by the general development towards positivism in late 19<sup>th</sup>- and early 20<sup>th</sup>-century philosophy and psychology, which demanded the total rejection of “psychological pseudo-explanations”, as Bloomfield (1933: 17) called them, and a rigorous limitation to the study of objectively observable facts. A well-known catchword is the metaphor of the human mind being a *black box* not open to introspection or inspection. The behaviourist psychology behind this view, associated with names like J.B. Watson and Frederick Skinner and with the well-known tests on conditioning carried out with dogs by

Ivan Pavlov, had an enormous effect on the agenda of American structuralists. Their anti-mentalist stance was partly motivated by methodological necessities, as the first decades of the 20th century were also a time when American linguists (among them Edward Sapir and Benjamin Whorf) began to investigate indigenous American languages, such as the language of the Hopi Indians. Since the researchers themselves had no proficiency in these languages, at least not to begin with, there was little temptation to get lost in the study of fine semantic details. Observable facts and patterns on the level of linguistic form were much more rewarding starting-points for linguistic research.

One of the most well-known and far-reaching consequences of the positivist approach is the explicit reluctance to engage in the study of meaning and to use semantic considerations as arguments in linguistic description and classification. This results in an account of phonological, morphological and syntactic structures that focuses on the distribution of forms and their combinatory possibilities. Three examples of what linguistic theorizing in American Structuralism looks like will be given below: Bloomfield's method of identifying and defining phonemes; Fries's analysis and description of word classes; and Gleason's account of syntactic structures.

#### 4.1 Bloomfield (1933) on phonemes

Definitions of the notion of phoneme and applications of the minimal-pair test (cf. the contribution by Mair) typically take recourse to semantic arguments: loosely speaking, if phonemes are the smallest meaning-differentiating units of language, and if two sequences of sounds that are identical except for one sound in the same place, e.g. [dʌk] *duck* vs. [dɒk] *dock*, give rise to two different meanings, then these two sounds must have the status of phonemes. Since he rejects arguments based on semantics, Bloomfield faces the problem of how to steer clear of the issue of the differentiation of meaning while trying to define the notion of phoneme. Here is how he goes about dealing with this problem:

In order to recognize the distinctive features of forms in our own language, we need only determine which features of sound are 'different' for purposes of communication. Suppose, for instance, that we start with the word *pin*: a few experiments in saying words out loud soon reveal the following resemblances and differences:

- (1) *pin* ends with the same sound as *fin, sin, tin*, but begins differently; this kind of resemblance is familiar to us because of our tradition of using end-rime in verse;
- (2) *pin* contains the sound of *in*, but adds something at the beginning;
- (3) *pin* ends with the same sound as *man, sun, hen*, but the resemblance is smaller than in (1) and (2);
- (4) *pin* begins with the same sound as *pig, pill, pit*, but ends differently;
- (5) *pin* begins with the same sound as *pat, push, peg*, but the resemblance is smaller than in (4);
- (6) *pin* begins and ends like *pen, pan, pun*, but the middle part is different;
- (7) *pin* begins and ends differently from *dig, fish, mill*, but the middle part is the same.

In this way, we can find forms which partially resemble *pin*, by altering any one of the *three* parts of the word. We can alter first one and then a second of the three parts and still have a partial resemblance: if we alter the first part and then the second, we get a series like *pin-tin-tan*; if we alter the first part and then the third, we get a series like *pin-tin-tick*; if we alter the second part and then the third, we get a series like *pin-pan-pack*: and if we alter the three parts, no resemblance is left, as in *pin-tin-tan-tack*.

Further experiment fails to reveal any more replaceable parts in the word *pin*: we conclude that the distinctive features of this word are three indivisible units. Each of these units occurs also in other combinations, but cannot be further analyzed by partial resemblances: each of the three is *a minimum unit of distinctive sound-feature, a phoneme*. (Bloomfield 1933: 78f., emphasis original)

On the one hand, Bloomfield's lucid argumentation illustrates the extent to which it is indeed possible to avoid the use of semantic arguments. On the other hand, his idea that "features of sound are 'different' for purposes of communication", which rests on a behaviourist conception of communication restricted to the observation of visible or audible stimuli and reactions, strikes one as being somewhat elusive as long as the communicative, and hence semantic, impact of utterances is not taken into consideration.

## 4.2 Fries (1952) on word classes

A similarly ambivalent assessment seems appropriate for the second example to be discussed, Fries's attempt to define the word classes of English without any recourse to traditional meaning-based descriptions such as 'nouns tend to denote things', 'verbs tend to denote actions' or 'adjectives tend to denote qualities'. It is possible to determine the word class membership of words, Fries argues, "by the 'positions' they occupy in the utterances and the forms they have, in contrast with other positions and forms" (1952: 71f.). To pursue this idea he proposes three "minimum free utterance test frames" (1952: 75) used for an inductive

classification of words into word classes, i.e. one that starts out from the observation of linguistic data and does not depend on prior assumptions based on semantic considerations.

Frame A: The concert was good (always)

Frame B: The clerk remembered the tax (suddenly)

Frame C: The team went there. (Fries 1952: 75)

What is interesting is that Fries actually uses authentic data recorded for the purpose of linguistic analysis and description. The application of his methods works as follows: if a given word in his corpus “could be substituted for the word *concert*” in test frame A “with no change of structural meaning” (Fries 1952: 75), it is treated as a member of “Class I”. Words of Class I typically occur also in the slot occupied by *clerk* in Frame B and *team* in Frame C. Words of Class II are tested using the same procedure of substitution in the frames by checking if they are able to replace *was* in Frame A and/or *remembered* in Frame B and/or *went* in Frame C. Extending this procedure to the other slots in the test frames, Fries is able to define four major word classes corresponding roughly to the traditional parts-of-speech of nouns, verbs, adjectives and adverbs on the basis of their potential position in the test frames. This is supplemented by minor classes categorizing various types of function words, among them one class containing the single element *not*. As in the case of Bloomfield, one is struck by the rigour and elegance of the method – relying, as it does, on authentic recordings compiled in a corpus and even on judgments by informants – but also somewhat worried by the fact that the whole procedure depends on a rather ill-defined notion of “structural meaning” mentioned in the quote above.

### 4.3 Gleason (1960) on immediate constituents

Continuing to pursue this running theme we can finally look at Gleason’s approach to the analysis of syntactic structures, known as **immediate constituent analysis** or **IC analysis**. The aim of this approach is to exhaustively describe the “interrelationships” (1960: 129) between the words in utterances and thereby to accomplish a description of “the syntax of the utterance in its entirety”. In such a view, sentences consist of *constructions* which in turn consist of *constituents*; these are *immediate constituents* if the construction is directly formed by them. For example, the word *old* in the sentence *the old man who lives there has gone to*

*his son's house* is an immediate constituent of the larger construction *old man*, which in turn is an immediate constituent of the construction *the old man*, but *old* is not an **immediate** constituent of the construction *the old man*. In his analysis of immediate constituents Gleason relies mainly on the following four considerations:

- 1) the substitutability of potential immediate constituents by other, less complex constituents; for example, *his son's* can be substituted by *John's* without compromising the structure of the sentence, and the whole sequence *the old man who lives there* can be substituted by *he*;
- 2) the identification of stress and intonation patterns, so-called suprasegmentals; e.g. the pause following *who lives there* is an indicator that *lives* and *there* are more likely to be immediate constituents than *there* and the subsequent *has*.
- 3) the freedom of potential immediate constituents to occur in other constructions; for instance, if one was in doubt as to whether in the sequence *old light house*, *old* and *light* or *light* and *house* are immediate constituents, one would try to establish which of the two possibilities, *old light* or *light house*, are more likely to occur in other contexts, and presumably arrive at the conclusion that *light house* is more variable than *old light* (cf. *new light house*, *pretty light house*, *lonely light house*, etc.; Gleason 1960: 135f.)

As in the two previous examples, the aim of this procedure is to provide an account of syntactic structures that can do without subjective arguments relating to meanings and functions of constructions and constituents.

To sum up the basic characteristics of American Structuralism we can highlight the following aspects:

- **Background:** influenced by Behaviourist anti-mentalism; avoids arguments based on semantic considerations;
- **Aim:** analysis and description of structure; reduce observable variability of utterances to distinctive features, components and structures;
- **Focus:** on linguistic form (phonology, morphology, syntax), relegation of meaning;



- **Methods:** logical argumentation based on selected datasets; analysis of authentic materials; application of tests to identify systematic oppositions and interrelations, e.g. substitution tests, testing for freedom of occurrence.

The ambitions and achievements of the American structuralists, especially with regard to methodological rigour and objectivity, have had a lasting effect on linguistic theorizing in the area of grammar. The classic test machinery including the substitution test, the commutation test, the deletion test and others is still widely applied today in all kinds of syntactic frameworks. However, what caused the next major revolution in linguistics resulting in the pendulum swinging back to a mentalist ideology was the structuralists' self-imposed restriction on the analysis and description of existing linguistic output, which left behind Saussure's idea of investigating the knowledge about the structure of language shared by speakers and stored in their minds.

#### **Further Reading:**

Seuren (1998: 190-227, 468-474)

### **5. Chomsky's Generative Grammar**

The revolution referred to in the previous section took place in the late 1950s and was initiated by the American linguist Noam Chomsky. Basically, Chomsky meets structuralists and behaviourists head on in two arenas:

On the one hand, in his 1957 book *Syntactic Structures*, he argues for an approach to linguistics that does not stop at the **description** of existing sentences and utterances but aims to come up with an **explanation** of the **knowledge** required by speakers for them to be able to potentially **generate** syntactic representations of all sentences that are considered grammatical in their native language and to decide which sentences are ungrammatical. Partially in parallel to Saussure's distinction between *langue* and *parole*, Chomsky insists that it is the so-called idealized native speaker's **competence** to produce and understand sentences, i.e. his or her tacit mental capacity, which must take centre stage in linguistics rather than speakers' actual **performance**, i.e. their linguistic output. While Saussure conceives of *langue* as a somewhat static socially shared system, Chomsky emphasizes the cognitive nature of *competence* (later

termed *I-language*, short for *Internal*, and contrasted with *E-language*, short for *external*); he also stresses that *I-language* is not a static system but endows speakers with the creative capacity to produce and understand sentences they have never heard before, hence the term **generative grammar**. Chomsky is not only interested in the grammars in the mind of the idealized speaker of just one language, but also pursues the aim to offer an account of the general grammatical principles on which the structures of all natural languages rest – a notion he refers to as **Universal Grammar**.

The idea of Universal Grammar provides the link to the second blow Chomsky dealt to the behaviourist programme. This is epitomized in a long and devastating review of Skinner's book *Verbal Behavior* (Chomsky 1959), triggering what is now known as the *cognitive turn* in linguistics. With regard to first language acquisition, behaviourists essentially claimed that the use of language is simply a kind of behaviour just like any other and that the use of language itself as well as the process of acquiring language are therefore subject to the same principles as all other kinds of behaviour are, namely the positive or negative reinforcement of sequences of stimuli and responses, very much similar to the conditioning taking place in the minds of Pavlov's dogs. In stark contrast to this, Chomsky argues that it is impossible that babies and toddlers acquire language simply by imitation and reinforcement, since the models they get from what they hear around them, i.e. the caregivers' input, is too problematic, marred by all kinds of performance errors such as false starts and incomplete sentences. Known as the **poverty-of-stimulus** argument or **Plato's paradox** (Chomsky 1986), this and other observations – among them the amazing speed at which toddlers learn to speak – leads Chomsky to argue that the capacity to acquire language must, to a large extent, be innate, i.e. already available in some kind of pre-wired format when children are born. Here we come full circle to the idea of Universal Grammar: since children in different places and speech communities will of course acquire different languages, their innate language acquisition device has to strike the ideal balance between being so specific that it gives a maximum of information on what the local language will be like and being so abstract that it can account for the considerable variability of languages even in the area of syntactic structures. Hence Universal Grammar contains general principles and parameters that reflect the structural possibilities of all languages and open options to be settled by the child on the basis of the ambient language he or she is confronted with. Parameters of this type are, for example, whether the language has prepositions or postpositions, whether heads tend to follow modifiers or precede them or whether the language can drop pronouns in subject positions (as

in Italian, cf. *piove* ‘it is raining’ or *arrivo* ‘I’m coming’) or invariably requires subject slots to be filled (as in English).

With regard to the status of language as a type of human behaviour, Chomsky replaces the behaviourist notion with the idea that the linguistic faculty is fundamentally different from other cognitive abilities and indeed the one cognitive ability that distinguishes human beings from all other species. The separation of linguistic from non-linguistic cognition has the extremely far-reaching effect that the linguistic study of language is strictly separated from the psychological study of other human cognitive abilities such as perception, attention-allocation and reasoning. On top of that, Chomsky gives indisputable prominence to the syntactic component within the structure of language and argues that it is also more or less unconnected to other components, notably the lexicon and the semantic, let alone the pragmatic functions of linguistic structures. His explicit aim is to come up with a **context-free grammar**, i.e. a grammar that seeks to explain how speakers know to distinguish grammatical from ungrammatical sentences irrespective of possible contexts of usage.

Chomsky’s ideas have undergone a number of substantial revisions over the past fifty years. The stages they went through are known as the *Standard Theory* (Chomsky 1957), the *Extended Standard Theory* (1965), *Government and Binding* (Chomsky 1981), *Principles and Parameters* (Chomsky 1986) and, most recently, the *Minimalist Program* (Chomsky 1995). What has remained intact throughout this development – in addition to the theoretical background assumptions discussed above – is the idea that sentences are **derived** from phrase structures by means of certain operations. In the early models these operations are defined as quite complex **transformations** such as the passive transformation (turning active sentences in a hypothetical deep structure into passive ones in the surface structure) and the question transformation (turning declarative sentences into interrogative ones). In the Minimalist Program, however, the notions of deep structure and surface structure are abandoned, derivations start out from an array of lexical entries in the lexicon and all transformations are essentially traced back to two basic operations called *move  $\alpha$*  and *merge*.

For an illustration of how the derivation and the operations work in the Minimalist Program consider the sentence in (1) discussed by Wakabayashi (2011: 642).

(1) *Which book will the student buy?*

This sentence is seen to rest on a simple phrase structure of the kind represented in Figure 5 (adapted from Wakabayashi 2011: 642), where *Determiner Phrase* is a notion similar to the traditional *noun phrase*, and *V'* (pronounced as *V-bar*) stands for a constituent dominating V and DP, reminiscent of the traditional notion of predicate, which also subsumes verb and object.

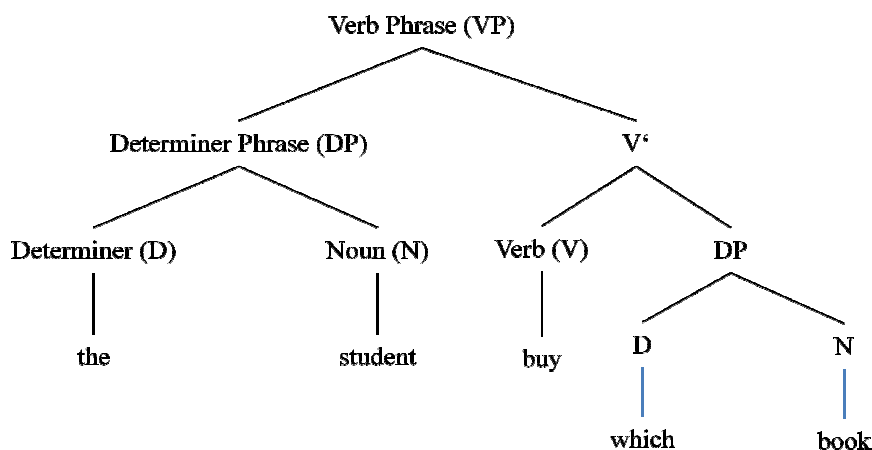


Figure 5: VP structure of the sentence *Which book will the student buy* (adapted from Wakabayashi 2011: 642)

What is represented by the tree diagram in the figure roughly translates as ‘there is a syntactic element of the type VP consisting of the two constituents DP and V’; DP consists of a Determiner and a Noun, lexically represented as *the* and *student* respectively; V’ consists of the Verb *buy* and a DP consisting of the Determiner *which* and the noun *book*.’ To derive sentence (1) from this structure, it is claimed that the following operations – rendered in a rather simplified way – take place: Tense (T), merges with the structure, creating a Tense Phrase (TP) which introduces the auxiliary *will* and causes the DP *the student* to move to the start of the sentence leaving a trace in the phrase structure (cf. step 1 in Figure 6, adapted from Wakabayashi 2011: 643); then the resulting TP (step 2) merges with a Complementizer (C) indicating essentially that the structure is a sentence (step 3); C brings along the features [+Q] and [+wh], projecting the sentence as a *wh-interrogative* and causing first the auxiliary *will* and then the *wh*-DP *which book* to move to the start of the sentence, thus generating the CP-structure represented in Figure 6 (step 4). Difficult to understand as this brief example may be, it still provides a glimpse of how the Minimalist Program accounts for syntactic structures and can serve as a backdrop for the description of other approaches to be discussed below.

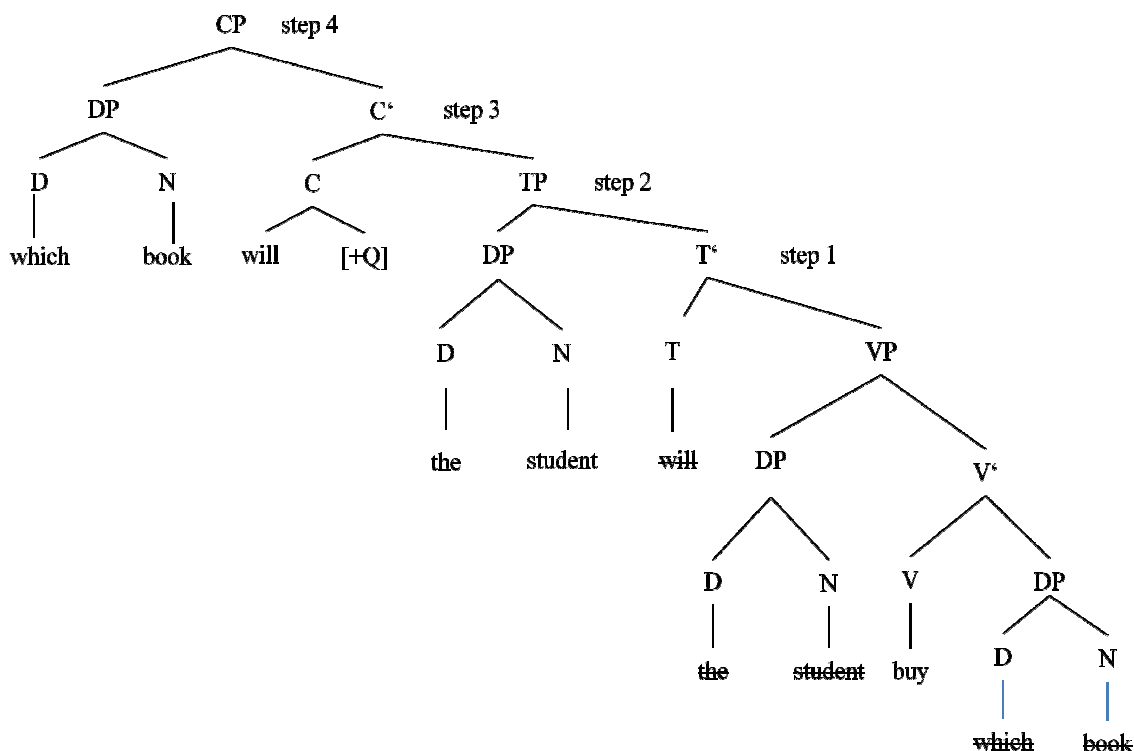


Figure 6: CP structure of the sentence *Which book will the student buy?*

The key characteristics of Chomsky's approach can be summarized at this point as follows:

- **Generativism and productivity:** the target of linguistic theorizing is the description of grammar, largely defined as the generative capacity – i.e. *competence* or *I-language* – of an idealized native speaker to produce and understand an infinite number of sentences and to judge whether sentences are grammatical or ungrammatical.
- **Derivation:** sentences are the product of derivations of more complex structures from simpler structures carried out by means of a limited number of clearly defined operations.
- **Innateness:** the acquisition of linguistic competence builds on innate knowledge about linguistic structure common to all languages and known as *Universal Grammar*.
- **Autonomy:** language is a very special human faculty; *grammar*, in the sense of 'linguistic competence', does not rely on non-linguistic cognition, and *grammar*, in the sense of 'model of linguistic competence', *must* not rely on models of non-linguistic cognition.

- **Modularity:** within grammar, the generative capacity mainly resides in the syntactic component; the lexicon is, by definition, not rule-governed and therefore of much less interest to linguistic modelling.
- **Focus on context-free structure, form and formalization:** linguistic modelling has to focus on structural and formal aspects of language rather than functional ones and strive for formalized accounts of structures; functional considerations such as ‘what is the communicative impact of a sentence?’ or ‘what are the purposes that syntactic structures serve?’ are irrelevant.

Chomsky’s effect on the development of linguistic theorizing is unrivalled, except maybe by the impact made by Saussure. As in the case of Saussure, Chomsky sparked positive as well as negative reactions, of equally intense quality. On the one hand, his models have been considered the leading linguistic theories by many researchers, especially on the American east coast and in Britain. On the other hand, in view of its fairly strict and strong-minded assumptions regarding the nature of language and the aims of linguistic theorizing, it is not surprising that Chomsky has triggered quite harsh counter-reactions, many of them from former students of his, who cast serious doubts on issues like autonomy, modularity, innateness and the focus on structure. Notable controversies arising from criticism of Chomsky’s positions include the ongoing debate between the formalist and the functionalist camps and the current dispute between two approaches which, ironically, go by the same name of *Cognitive Linguistics*: the Chomskyan autonomous generative approach, on the one hand, and a set of experientialist, usage-based, functionalist approaches, on the other hand, advocated by linguists like George Lakoff, Ronald Langacker, Leonard Talmy, Paul Hopper or Joan Bybee, some of which will be discussed in Section (7). What essentially unites all these reactions to Chomsky is a marked reluctance on the side of his opponents to accept the extent to which he downgrades the significance of functional, use-related and semantic considerations in his account of the structure of language. An early and particularly influential challenge to Chomsky was mounted by Charles Fillmore, to whose ideas I will now turn.

### **Further Reading:**

Hornstein, Nunes and Grohmann (2005)

## **6. Semantic roles: Fillmore’s ‘semanticization’ of grammar**

In a famous paper entitled “The case for case” published in 1968, Fillmore introduces a new vision of a generative grammar, known as **Case Grammar**, which essentially rests on a semantic foundation. He proposes complementing Chomsky’s form-focused hierarchical account of syntactic structure with one that regards the verb as some kind of pivot in the sentence, to which the other elements are related by virtue of representing a certain semantic role (originally referred to somewhat confusingly as *deep case*, hence the name *Case Grammar*). It may be noted in passing that the idea that the verb plays a particularly prominent role in determining the structure of a sentence is also key to a range of other syntactic approaches including **valency grammar** (cf. Herbst and Schüller 2008). These, however, place less emphasis on the semantic foundations of sentence structures and focus instead on descriptions of the number of complements required by a certain verb, their forms and the question whether these complements are obligatory (i.e. must be expressed) or optional and can thus be left out.

According to Fillmore, prominent semantic roles are the AGENT or AGENTIVE, i.e. the person carrying out an action, the INSTRUMENT, i.e. the tool used by the agent to accomplish an action, the PATIENT, i.e. a person affected by an action, and the OBJECTIVE or THEME, an object or entity affected by the action. An account of the sentence in (1) above inspired by Fillmore’s ideas would argue that the verb *buy* relates to the semantic roles of AGENT (*the student*) and THEME (*the book*). The AGENT will be mapped onto the subject slot in the sentence and the THEME in the object slot, so that a simplified version of the syntactic structure according to Fillmore would look as represented in Figure 7.

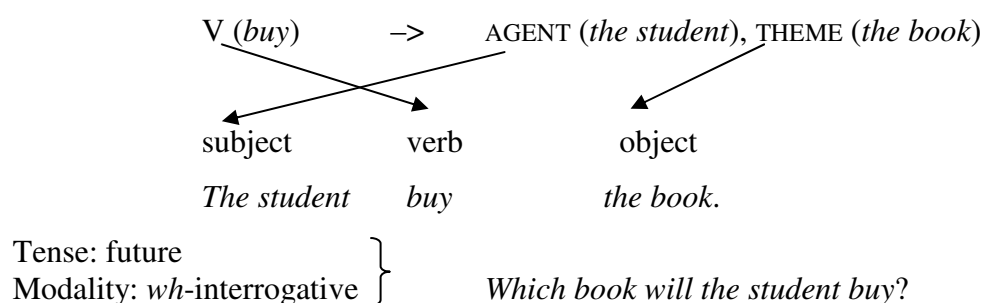


Figure 7: Case grammar account of the sentence *Which book will the student buy?*

As indicated in the figure, the fact that the sentence is a *wh*-interrogative would, just like in Chomsky’s framework, have been explained by extra operations subsumed under the labels

*tense* and *modality* (which includes a range of clause-related grammatical categories like mood, tense, aspect and negation in Fillmore's terminology).

In later contributions straddling the boundary between syntax and semantics, Fillmore (1977) extends his account and argues that basic sentence patterns across languages reflect the conceptual structures of everyday scenes in which events take place and people carry out actions and manipulate objects. The description of a buying scene as expressed in sentence (1) is seen as being based on the activation of a mental structure referred to as a **frame**, which represents general knowledge about commercial events and their recurrent characteristics, participants and props including a BUYER, a SELLER, the GOODS bought and the MONEY transferred from BUYER to SELLER in exchange for the GOODS. Depending on their mental perspective on the scene, speakers will choose verbs such as *buy*, *sell*, *pay* or *cost* and fill the slots opened up by these verbs according to the prominence of the participants in the scene. The sentence *The student bought the book*, for example, highlights the BUYER and the GOODS while backgrounding the SELLER and the MONEY (which are however also implied), whereas the sentence *the book cost ten pounds* directs the hearer's attention to the GOODS and the MONEY while reducing the BUYER and the SELLER in prominence. Ideas of this type, which rely on mental structures and processes related to world knowledge and general cognitive abilities like perception, were very influential for the formation of later cognitive-linguistic theorizing to be discussed in the next section.

### **Further Reading:**

Cook (1989: Ch. 1)

## **7. Cognitive approaches**

Approaches to linguistics labelled as *cognitive* or *cognitive-linguistic* (in contrast to the Chomskyan kind of cognitivism) share the view of language outlined at the end of the previous section, namely, that linguistic structures reflect our mental representations of the world around us. This implies that the ways they are processed are by no means specific to language but closely related to general cognitive abilities such as categorization, perception, attention-allocation and everyday reasoning on the basis of cognitive models of the world. The cognitive-linguistic position thus rejects Chomsky's autonomy postulate, the modularity



postulate and the focus on form, replacing them with a meaning-based and function-oriented perspective regarding language both as a mental mirror of the world and a means of making sense of the world. Three examples will be discussed below to illustrate further implications of such a view.

## 7.1 Prototype theory

Starting in the field of lexical semantics, it is instructive to compare the feature-semantic approach dominant in the structuralist era and still prevalent in generative grammar to the cognitive-linguistic **prototype theory of semantics**. As shown above, the aim of feature semantics is to determine those distinctive features that give rise to oppositions between neighbouring word meanings. The meaning of the lexeme *bachelor* was described above by means of the distinctive features [+HUMAN], [+ADULT], [+MALE] and [-MARRIED]. According to feature semantics, entities in the extra-linguistic world which meet these criteria can unequivocally be considered members of the category of BACHELORS and unreservedly be referred to by the word *bachelor*, while entities lacking one or more of the defining conditions are just as unambiguously outside the category. The possibility that there may be more or less typical instances of bachelors to which the word may be more or less appropriately applied – say a thirty year-old living alone as opposed to a sixty-year old sharing a house with his long-standing partner – is irrelevant for such a semantic description, since such issues relate to world-knowledge which must not play a part in a model of linguistic meaning.

A **prototype-semantic** account of the meaning of the lexeme *bachelor* explicitly takes such conceptual and encyclopaedic aspects into account and does not assume that there is a justifiable distinction between meaning proper, defined as a linguistic phenomenon, and conceptual content, considered a psychological one. The central claim of prototype semantics is that the cognitive categories which underlie word meanings are not of the discrete, hard-and-fast type envisaged by feature semantics but rather conceptually rich, internally graded and fuzzy in terms of their boundaries to neighbouring categories. To describe the meaning of *bachelor* according to this approach, it is first necessary to realize that such a concept only makes sense in the framework of a **cognitive and cultural model** of a society in which people tend to marry, to do so at a certain age and to marry a person belonging to the other sex. For example, although Tarzan and the Pope meet the conditions of being human, adult,

male and unmarried, there is not much point in referring to them as *bachelors*, since the general cultural model of marriage does not apply to them. They would be very untypical bachelors at best and the same is true of other potential ‘bachelors’ as well: What about gay men who do not want to marry a woman anyway? Or an unmarried gay man living in a long-term partnership with another gay man? Could they accurately be referred to by the word *bachelor*? While it may indeed seem that such considerations should not be relevant for a semantic account of the meanings of lexemes *qua* abstract elements in the lexicon of a language, in actual language use speakers are constantly facing the problem of categorizing entities of all sorts once they want to talk about them.

Unlike the categories in scientific classifications, the everyday cognitive categories stored in the minds of the speakers of a language do not seem to be of the either-in-or-out type – ‘an entity belongs to a category if and only if it meets **all** conditions for membership’ – but rather of the more-or-less-good-example type, meaning that an entity can be a good, less good, peripheral or borderline member of a category. That the human mind indeed seems to work with these gradient and fuzzy categories has been shown in various tests. In one type of task, called **goodness-of-example rating**, test subjects are asked to rate test items with regard to how typical they are of a certain category. In the first studies of this kind, which were carried out by the psychologist Eleanor Rosch in the 1970s, students were asked to rate items such as *car*, *truck* and *ship* but also *sledge* and *elevator* with regard to their typicality for the category VEHICLE. Not surprisingly, they rated *car* and *truck* as highly prototypical members, *ship* as somewhat less typical and *sledge* and especially *elevator* as fairly peripheral members of the category, but had no problems with seeing all five items as types of vehicles. What is particularly intriguing – and this has also given rise to criticism of this task and the way its results are interpreted – is that even for categories which are basically absolutely clear-cut and non-gradient, e.g. ODD NUMBER and EVEN NUMBER, similar results were obtained. Test participants rated *three* and *seven* as better examples of the category odd number than, say, *877*, in spite of the fact that of course, strictly speaking, all odd numbers are just that, odd numbers, with no difference in typicality. This piece of evidence suggests that we show a strong tendency to anchor cognitive categories in familiar, frequently occurring and salient members, i.e. **prototypes**, and use our cognitive representations of these prototypes to judge other, especially new entities we are confronted with.

A second method widely used in prototype semantics is a paradigm called **attribute-listing task**. Here participants are instructed to name characteristics they associate with all the things that can be denoted by a given word. For example, confronted with the word *bicycle*, many people associate attributes relating to parts of bicycles such as ‘pedals’, ‘wheels’, ‘handlebar’, ‘frame’ but also to the way they are used, e.g. ‘you ride on them’, ‘is used to go from A to B’, ‘has no engine’ or ‘self-propelled’. This is precisely the kind of encyclopaedic knowledge which is strongly associated with word meanings, or indeed constitutes word meanings. If these attributes are highly reminiscent of semantic features this is of course not by coincidence, as attributes capture semantic components of word meanings – just like semantic features do. Nevertheless, the theoretical and methodological status of attributes differs fundamentally from that of features: attributes are elicited from informants and hence to some extent intersubjectively validated, while features are determined introspectively on the basis of semantic oppositions; attributes represent associations in the minds of speakers and are hence properties of the cognitive system, whereas features are claimed to be a part of meaning and thus a purely linguistic, rather than psychological construct; attributes are conceptually rich, variable, context-dependent and subjective, while features are by definition generalizations which are stable across different contexts and speakers. While distinctive features clearly demarcate the boundaries of categories in an either-in-or-out fashion, attributes account for the gradient structure and fuzzy boundaries of categories, as different attributes carry different weights. For example, for the category BIRD, attributes like ‘lays eggs’, ‘can fly’ or ‘has feathers’ are clearly more important than ‘chirps’ or ‘has thin legs’. In attribute-listing tasks, the weight of attributes shows in the proportion of informants who name a given attribute; conceptually more important attributes are listed by more participants than less central ones. Crucially, even items which share very few of the central attributes of a category, such as penguins or ostriches for the category BIRD, can still be members of the category.

Unlike semantic features, attributes do not constitute a set of necessary and sufficient criteria for categorisation, as there may in fact not be a single attribute which is shared by all members of a category. This situation is illustrated with the category GAME by the philosopher Ludwig Wittgenstein (1953), who argues that it is impossible to suggest a single property which is common to the full range of activities that can be referred to by the word *game*, e.g. chess, bridge, ring-a-ring-a-roses, hide-and-peek, rope-skipping, tennis and soccer. Wittgenstein notes that the category GAME is still internally coherent even though it is not

united by one or several shared attributes, because its members share a pool of common characteristics: some games are of a competitive nature, while others are not; some involve physical activities, others do not; some are of strategic nature, others are not; one competitive game can also involve physical components (e.g. soccer), while another does not (e.g. chess). This way a network of partially shared attributes is created which holds the members of the category together in what is called a **family resemblance** fashion. This analogy relies on the idea that the members of a family can resemble each other to a considerable extent without necessarily all having the same colour of eyes, colour of hair, size and shape of mouth and nose etc.

In summary, Table 1 gives a systematic comparison of some of the major differences between feature semantics and prototype semantics.

	<b>Semantic-feature theory</b>	<b>Prototype theory</b>
<b>word meaning</b>	clear-cut, discrete, homogeneous	fuzzy boundaries, gradience of typicality
<b>meaning components</b>	distinctive, i.e. necessary and sufficient features	attributes, possibly distributed in family-resemblance network
<b>nature of components</b>	linguistic; the sum of features constitutes the meaning	cognitive/associative; 'what comes to people's minds'
<b>locus of meaning</b>	in language	in the mind
<b>division meaning/knowledge</b>	(in theory) clear-cut; word meaning $\neq$ concept	word meaning = concept
<b>methods</b>	introspective/logical: comparing lexemes, testing for entailments etc.	experimental, asking native speakers: goodness-of-example ratings, attribute-listing tasks
<b>labels</b>	structuralist, language-immanent	cognitive, encyclopaedic

Table 1: Comparison of semantic-feature theory and prototype theory

## 7.2 Conceptual metaphor theory

The cognitive models mentioned in the previous section also play a key role in a second highly influential cognitive-linguistic theory called **conceptual metaphor theory**, proposed by George Lakoff and Mark Johnson in their book *Metaphors we live by* (first ed. 1980). The central idea of this approach is that metaphors are not just a linguistic phenomenon, i.e. a

special way of encoding meanings, but a cognitive one. If a speaker uses an expression like *We had reached a dead-end street* when talking about a difficult situation in a love relationship, then this would be considered to reflect the speaker's way of thinking about the relationship. Many theories of metaphor would consider such conventional expressions to be more or less 'dead' metaphors that have lost their metaphorical quality and are therefore just regular meanings of the words involved. In contrast, conceptual metaphor theory argues that these highly conventionalized ways of talking about one cognitive model or domain (here LOVE) in terms of another (here JOURNEY) are particularly interesting and important because, unnoticed as they presumably go in normal discourse, they represent tacit patterns of thought shared by the members of a speech community.

Conceptual metaphors are defined as mappings from a cognitive **source domain** (JOURNEY) to a **target domain** (LOVE RELATIONSHIP), which transfer or project knowledge about the source onto the target. For this to be useful, the source domains are recruited from fields we know a lot about and are familiar with from everyday experience: our own bodies, location and movement of our bodies and objects in space, the visible physical behaviour of living beings, plants and objects and all other kinds of everyday experiences such as moving from one place to another (often labelled JOURNEY in the literature). The target domains, on the other hand, are rather more abstract, less tangible and conceptually structured fields: emotions such as love, anger or happiness; abstract ideas relating to, for example, structures and processes in society, economics, politics or notions in philosophy and religion; complex institutions such as companies or organizations. The cognitive advantage of conceptual metaphors lies in their potential to provide these abstract and elusive domains with some sort of tangible conceptual structure by means of the mapping of conceptual correspondences from the source domain to the target domain. Actual metaphorical expressions in language(s) mainly function as evidence for the existence of these mappings, especially if larger numbers of expressions can be traced back to the same metaphorical mappings.

To illustrate these ideas, Table 2 gives examples of metaphorical expressions and correspondences pointing to the existence of the conceptual metaphor A LOVE RELATIONSHIP IS A JOURNEY (cf. Lakoff and Johnson 2003: 44-45).

Conceptual metaphor: A LOVE RELATIONSHIP IS A JOURNEY	
Metaphorical expression	mapped correspondences
<i>we went through a lot together</i>	<ul style="list-style-type: none"> <li>the lovers are travellers</li> </ul>

	<ul style="list-style-type: none"> <li>• the development of the relationship is the path taken</li> <li>• problems in the relationship are obstacles in the path of the travellers</li> </ul>
<i>we found ourselves in a dead-end street</i>	<ul style="list-style-type: none"> <li>• stages in the development of the relationship are locations on the journey</li> <li>• problems in the relationship are obstacles in the path of the travellers</li> </ul>
<i>we were approaching a crossroads</i>	<ul style="list-style-type: none"> <li>• decisions in the relationship are crossroads on the journey</li> </ul>
<i>look how far we've come</i>	<ul style="list-style-type: none"> <li>• the development of the relationship is progress made in the journey</li> </ul>
<i>the relationship isn't going anywhere</i>	<ul style="list-style-type: none"> <li>• the development of the relationship is the path taken</li> <li>• purposes of the relationship are destinations of the journey</li> </ul>
<i>we've got to leave these arguments behind and look ahead now</i>	<ul style="list-style-type: none"> <li>• the development of the relationship is the path taken</li> </ul>

The examples in Table 2 illustrate that metaphorical expressions and conceptual mappings do not occur in isolation, as one-off metaphors so to speak, but form conceptual systems projecting crucial elements of the cognitive structure of the source domain onto the target domain: the travellers, the path, progress and stages of the journey as well as obstacles and crossroads are mapped onto the lovers, the development of the relationship, problems and decisions respectively. This way, the rather elusive field of a love relationship acquires an internal structure. Likewise, if we talk about TIME in terms of MONEY – to *spend* time, activities can *cost* a lot of time, people can *give* each other time or *waste* their time – the elusive notion of TIME is supplied with a more tangible conceptual structure.

Conceptual metaphor theory is a paradigm case of a **cognitive** and **experientialist** theory of language, as it relies heavily on the idea that knowledge distilled from everyday experience about concrete and tangible domains helps us to understand abstract fields of thought. Since its introduction in the early 1980s it has become a mainstay of cognitive-linguistic thinking and has been applied to a huge range of types of discourse, including the discourse of politics, religion, economics, sports and advertising. In the past years, proponents have been trying to supplement the cognitive aspects with neurological ones and have developed a neural theory of metaphor arguing that the nature and working of conceptual metaphors can be explained on the basis of what we know about the workings of the brain.

### 7.3 Construction grammar

As we have seen, Chomsky advocates a rather strict separation of the major components of grammar: the most basic division separates the **syntactic module**, which is rule-governed, from the **lexicon**, defined as the repository of all the knowledge about language that resists an account in terms of rules since it is not generalizable and predictable. Sentences are constructed online by the application of syntactic rules working with lexical items that are stored in and retrieved from the lexicon. Since it is uncontroversial that sentences carry meaning and have a phonetic form, grammar also includes a phonological module and a semantic module; these are somehow linked to the syntactic component, while the lexicon, being the store of information about phonological, semantic and syntactic properties of words, cuts across all the modules in the way represented in Figure 8 (adapted from Croft and Cruse 2004: 227). As indicated by the horizontal line in the figure, grammar and usage are strictly separated.

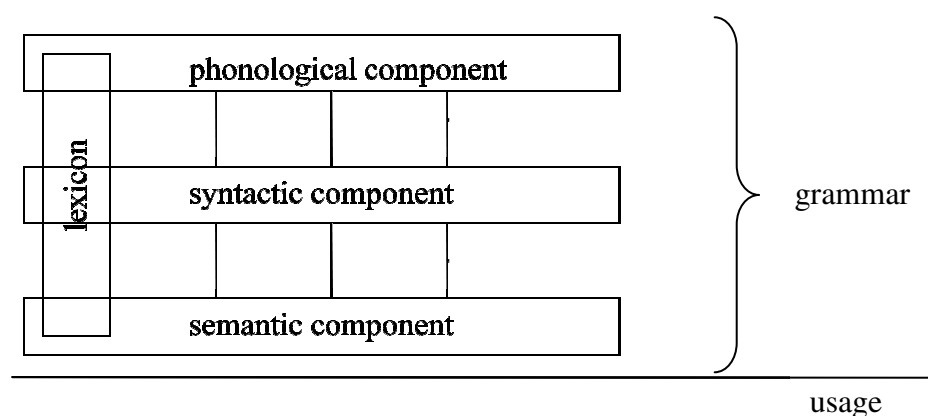


Figure 8: An idealized version of the architecture of generative grammar (adapted from Croft and Cruse 2004: 227)

This view of the architecture of grammar has been rejected by cognitive linguists who support competing models subsumed under the label **Construction Grammar**. According to this view, which is represented in Figure 9 (adapted from Croft and Cruse 2004: 256), knowledge about language is available in the form of constructions.

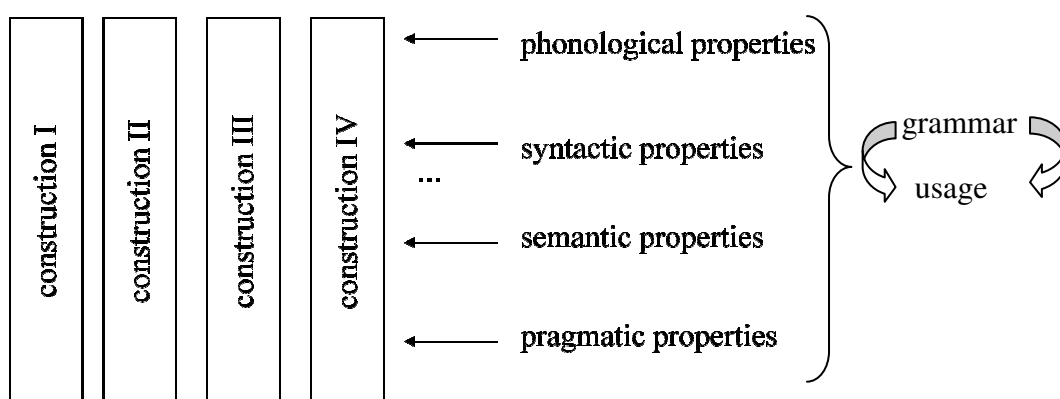


Figure 9: An idealized version of the architecture of Construction Grammar (adapted from Croft and Cruse 2004: 256)

Constructions are defined as **form-meaning pairings** and are thus essentially ‘signs’ in Saussure’s sense, except that their sizes vary considerably: words are regarded as constructions in this terminology, and so are smaller units like morphemes, and, notably, larger units such as word-formation patterns (e.g. the prefixation or compounding construction) and even clause-level syntactic patterns like the  $SVO_{indir}O_{dir}$  construction or the  $SVC_s$  construction. One of the central, and most controversial, claims of Construction Grammar illustrated in Figure 9 is that the stored knowledge about constructions includes information about their phonological, syntactic, semantic and even pragmatic properties. This idea can be illustrated best with the help of such routine formulae as *good morning* or *pleased to meet you*, which are undoubtedly not put together online by means of rules, but stored and retrieved wholesale, complete with information about the kinds of contextual circumstances of their appropriate use.

The claim that even clause-level patterns have meanings may be much less plausible at first sight. One major justification is the observation that verbs can change their meanings and syntactic properties when they are used in certain constructions. For example, the clause-level construction manifested in SVOA sentences like *The waiter pushed the glass off the table* or *The doctor threw the gloves into the bin* is usually described as having the meaning of caused-motion (cf. Goldberg 1995): an agent causes an object to move to a certain location. Now, speakers can use sentences including verbs that, strictly speaking, do not match this construction from a syntactic or a semantic point of view. The point is that, if they do so, the meaning of the construction seems to override the properties of the verb. The verbs *laugh* and *smile*, for example, are intransitive verbs and thus in principle not eligible to express a caused-motion meaning. In sentences such as *The students laughed the professor out of the room* or *The attractive lawyer smiled the reluctant witness into the witness stand*, however, both verbs



seem to acquire the meaning ‘cause someone to move to a certain place’. Since the verbs do not bring along this semantic component, the only remaining possibility is that the caused-motion meaning does indeed reside in the construction itself, i.e. in the clause pattern SVOA.

Construction grammar is a comparatively recent model of grammar, and complete accounts of how fully-fledged sentences are generated have not been proposed as yet. Trying to apply the framework to the sentence *Which book will the student buy?* (cf. (1) above), one realizes that a considerable number of constructions would have to be activated. Proceeding from more general and schematic constructions to increasingly concrete ones, the following would certainly have to be included:

- some sort of *yes-no* question construction (of the type “aux – NP – main verb – NP”), including information on its interrogative pragmatic function;
- a monotransitive argument-structure construction opening the slots of “AGENT/subject – verb – THEME/object” (filled by *the student*, *buy* and *the book* respectively)
- the *will*-future construction;
- the definite NP construction (*the student*, *the book*);
- lexical constructions representing knowledge about the form and meaning of the lexemes *student*, *buy* and *book*.

Somewhat misleading in Figure 9 is the neat arrangement of constructions. If Construction Grammar is to make sense one has to assume that constructions are stored in the form of a huge, densely-knit network where similar constructions are firmly connected and knowledge about constructions can be available on several levels of abstraction.

What has been said about Construction Grammar so far indicates that this model differs substantially from generative approaches in its theoretical background assumptions:

- Construction Grammar is an item-based and network-based model rather than a rule-based one;
- it is not derivational but works on the unique level of constructions;
- it is not modular but holistic in the sense that it unites the phonological, syntactic, semantic and even pragmatic levels of language;

- it is non-autonomous, as it includes information relating to contexts and world-knowledge.

These differences, especially the last one, have extremely far-reaching consequences (indicated by the arrows on the right-hand side in Figure 9): in Construction Grammar and other so-called **usage-based models** (as suggested, e.g., by Ronald Langacker, Paul Hopper and Joan Bybee) the use of language is no longer strictly separated from the linguistic system but seen as constituting the basis and source of a constant renewal of grammar. According to such a view, the structure of grammar is the result of patterns of usage; if certain patterns are sufficiently frequent, they will be stored as chunks and schemata (including open slots and restrictions on how to fill them) in the minds of individual speakers; in addition, the formal, semantic and pragmatic properties will be agreed upon by the members of a speech community – all of which marks and qualifies them as constructions.

### **Further Reading:**

Croft and Cruse (2004)

Fischer and Stefanowitsch (2008)

Kövecses (2010)

Ungerer and Schmid (2006)

## **8. Psycholinguistic approaches**

Psycholinguistics is the study of how language is processed by the human mind. In contrast to cognitive linguists, psycholinguists are only marginally interested in the structure of language, concentrating instead on processes taking place during ongoing language production (writing and speaking) and language comprehension (reading and listening). In addition, a traditional focus of research in psycholinguistics lies on the study of first language acquisition. A major historical source of what is now known as psycholinguistics was the cognitive turn initiated by Chomsky, who, as outlined above, came up with controversial hypotheses on the nature and structure of sentences which lent themselves to experimental investigations.

Psycholinguists strive to investigate patterns of language-related behaviour that are shared by most people, and they do this mainly by means of controlled experiments under laboratory

conditions. In addition, speech errors such as slips of the tongue as well as linguistic deficits (e.g. of patients suffering from the effects of a stroke) are studied with the aim of investigating how normal language use functions. The central fields of psycholinguistic research include

- the ways in which the forms and meanings of words are stored and retrieved from the **mental lexicon**;
- the processes taking place during written and spoken **language production**;
- the processes taking place during the **comprehension** of written and spoken discourse;
- the patterns and principles underlying **first language acquisition**.

Central controversies in psycholinguistic theorizing revolve around a number of fundamental background assumptions.

Firstly, there is the issue of **modularity**: are different aspects of language processing – e.g. the conceptualization of ideas, their lexical, grammatical and phonological encoding during speech production – taken care of by different, highly specialized modules, and if so, are these modules strictly separated or closely connected? This also touches upon the neurolinguistic question of whether the neurological substrates of these modules can be localized in certain regions of the brain. The fact that there are some stroke patients who have fluent grammar but difficulties finding the right words and some who know all the words they need but cannot assemble them in grammatical sentences is evidence for some sort of neurological specialization in the brain, since these specific deficits can be correlated with the regions in the brain that are damaged.

A second, related issue concerns the question whether these modules do their work in **parallel**, with e.g. lexical and grammatical encoding taking place simultaneously, or **sequentially**, which means that the output of one module serves as input for the next one – very much in the way an assembly line in a factory works. For example, in the highly influential model of speech production proposed by Levelt (1989), the conceptualizer provides the input for grammatical encoding, whose output is a syntactic frame filled with material from the mental lexicon. While Levelt's model is sequential in the sense just explained, it is also incremental, which means that later modules can begin to work before earlier modules have finished.

Especially in sequential models, a further question that comes up is whether information only proceeds in one direction (like in a cascade, cf. Aitchison 2011: 222ff.) or can flow both forwards and backwards in a much more interactive, network-like fashion. In models of the latter type, so-called **interactive network models**, it is often assumed that information spreads automatically from the ‘point’ of access to neighbouring parts of the network. This is demonstrated for example in simple association tasks where a cue like *salt* is more likely to produce responses like *pepper* or *soup* than, say, *pen* or *caterpillar*. Spreading activation is also considered to be a major source of speech errors in which semantically or phonologically similar words, which are supposed to be stored closely together in the network that is the mental lexicon, are inadvertently replaced (e.g. *passion* instead of *fashion*, or the classic case of *right* instead of *left*).

A large range of methods are applied by psycholinguists, including classic paradigms such as lexical-decision tasks, sentence verification tasks and sentence-completion tasks. For example, in lexical-decision tasks test participants are presented with a sequence of letters on a computer screen and asked to press one of two keys depending on whether they think the string is a word or not. Typically, participants perform much faster for frequent words than for rare ones (frequency effect) and faster for words that have big word families of morphologically similar words than for morphologically isolated ones (family-size effect). Another well-known effect is the recency effect, which is demonstrated in the fact that words heard or read shortly before the lexical-decision task are identified much faster. As predicted by spreading-activation models, this is also true of words that are semantically and/or phonologically similar to words recently heard or read. The first item, say *doctor*, then acts as a **prime** for the activation of the second item, for example *patient* or *nurse*. This robust finding can be exploited in so-called priming experiments where two stimuli are presented in a very short time to find out how strongly they are linked up in the mental lexicon.

### **Further Reading:**

Aitchison (2011)

Levelt (1989)

Sandra (2009)

## 9. Corpus-based approaches

A number of the models and approaches discussed so far are ‘corpus-based’ in a wider sense of this notion. This means that their theorizing is based on collections of authentic texts (written and spoken), so called **corpora** (from Latin *corpus* ‘body’, i.e. a body of texts). For example, being interested in ancient languages, the representatives of the historical-comparative tradition of the 19th century basically had no other choice than to proceed from the corpora of texts and documents handed down to us from these earlier periods. Some of the American structuralists, e.g. Fries (1952), also based their descriptions on collections of corpora of spoken language.

The field of linguistics known today as **corpus linguistics** is not just defined by the use of corpora but to the same extent by the reliance on computers. So present-day *corpus linguistics* basically means *computer-corpus linguistics*, although notable precursors of systematic corpora in the pre-computer era should be mentioned. As early as the 1950s, Randolph Quirk initiated the **Survey of English Usage**, which consisted of a huge number of index cards collecting samples of authentic written and spoken language. The 1960s saw a second milestone in the development of corpus linguistics, when Henry Kucera and Francis Nelson compiled the so-called **Brown Corpus** of American English, consisting of 500 texts containing about 2,000 words each (thus amounting to roughly one million words in total) stored on magnetic tapes. Kucera and Nelson made sure that the texts came from a wide range of sources (e.g. press reportage, fiction, learned texts, texts on ‘skills and hobbies’). Following this lead, a group of European scholars based at the universities of Lancaster (Geoffrey Leech and Roger Garside), Oslo (Stig Johansson) and Bergen (Knut Hofland) compiled the analogously structured and equally sized **LOB Corpus** (short for *Lancaster-Oslo-Bergen Corpus*) as a British-English counterpart to Brown. A little later, in the 1970s, Sidney Greenbaum and Jan Svartvik turned the spoken part of the Survey of English usage into a 500,000-word corpus of spoken British English known as **London-Lund Corpus**. Beginning with the 1980s, corpus sizes started to increase dramatically as a consequence of the development of more powerful computers. Three major projects should be named here: The **Bank of English** was started in the 1980s by John Sinclair in cooperation with Collins publishers. The Bank of English is an open corpus, which means that new material is poured into it continuously; as of April 2011, it contains approximately 450 million words. The **British National Corpus** (BNC) is a closed corpus amounting to 100 million words (roughly

90 million from written text and 10 million originally spoken). The material comes from a huge variety of sources and was collected in the late 1980s and early 1990s with the aim of providing a representative sample of modern English for work in lexicography, grammar and theoretical linguistics. The **International Corpus of English** (ICE) was initiated by Sidney Greenbaum in 1990 and is special in that it consists of several one-million-word corpora collecting material from a wide range of English-speaking areas in Europe (Great Britain, Ireland), Asia (India, Hong Kong, Singapore, the Philippines, etc.), Africa (East Africa, Nigeria, Ghana), the USA and the Caribbean (Jamaica, the Bahamas, Trinidad and Tobago) as well as Australia and New Zealand. Not all ICE corpora are available yet, but work is in progress. Not surprisingly, the main aim of the ICE project is to provide material for systematic comparisons of the world-wide varieties of English.

All modern computer-readable corpora are not just collections of raw text but include various kinds of annotations designed to facilitate the retrieval of very specific kinds of information. The annotation usually relates to several linguistic levels. The most common type of annotation is **part-of-speech tagging**, which marks each individual word in the corpus for its word class. Transcripts of spoken speech contained in the corpora are often annotated with regard to pauses, speaker turns, overlapping speech and other discourse-level phenomena. On the sociolinguistic level, corpus compilers try to make available as much information as possible on the producers of each stretch of language contained in the corpus, for example on speakers' gender, age, education and regional background. The type of situation in which corpus material was recorded, e.g. a council meeting, a business meeting or a parliamentary debate, is also indicated. Most corpora include tailor-made software for the retrieval and further processing of linguistic data. As a result, users of, say, the BNC can run very specific queries such as asking the retrieval software to download all instances of the sequence *why don't you* followed by a verb which were produced by 35- to 44-year-old women and compare the frequency to that of the men in the same age bracket (with the discovery that the women in the corpus use this pattern twice as often as the men do).

More illuminating than mere frequency counts of course is the actual analysis of the output of corpus queries. A basic but very powerful tool used by corpus linguists, lexicographers and grammarians for the analysis of corpus data is the so called KWIC-concordance (key word in context concordance). As illustrated in an exemplary manner in Figure 11, this is a list of all

instances found to match the search string in the corpus accompanied by a small number of words surrounding the occurrences in their actual context of usage.

what if it do n't work ?	Why don't you put	say another pad on top , more pressure , it
Eleven ten , and eleven .	Why don't you get	them ? Thirty quid 's just enough . I do
we 'll make a guess alright ?	Why don't you give	her till half past three ? Well that 's a
oh its alright oh its lovely	why don't you buy	it then , buy yourself some records its not
I have n't seen it !	Why don't you take	[unclear] . That one ! Oh I did see it
You must be exhausted ?	Why don't you go	to sleep ? [unclear] this stuff have n't I ?
Do you have to write it ? Oh ,	why don't you make	what you 've got cos you 've got a lot
Well that 's what I 'm saying ,	Well why don't you put	it on the table or on the little table ,
? Cos it 's I can . mixed up !	why don't you use	the money that Geoffrey and Jean gave you
Can I take the register. Look !	Why don't you make	, build houses with that ? Yes as long as
Oh my god ! Hey well	Why don't you sit	down and read a book for five I got minutes
	why don't you sell	them at the car boot sale ? Well I mean

Figure 11: Sample of a KWIC-concordance for the query *why don't you* from the BNC

As can be seen, concordances cannot be read like normal text, as each line is basically just a snippet, unconnected to the other lines, which come from different sources. KWIC-concordances provide a handy illustration of how certain words or expressions are used in authentic language. More importantly, they give a first glimpse of lexico-grammatical patterns found in language, which can be investigated more systematically in some corpora, e.g. the BNCweb version, using special tools for the display of **collocations** and the frequency of word combinations. As an illustration, Table 3 gives a rank list of the verbs which are most frequently found in questions beginning with *why don't you*. The percentages given in the right-hand column indicate that more than a quarter of these questions include the verbs *go*, *come* and *take* and, perhaps more surprisingly, that the first 20 verbs listed here account for a staggering proportion of almost two thirds.

1	why do n't you go	110	11.47%
2	... come	90	9.38%
3	... take	51	5.32%
4	... get	50	5.21%
5	... do	38	3.96%
6	... ask	37	3.86%
7	... have	34	3.55%
8	... try	30	3.13%
9	... tell	24	2.5%
10	... put	20	2.09%
11	... use	19	1.98%
12	... give	18	1.88%
13	... make	16	1.67%
14	... sit	15	1.56%
15	... leave	14	1.46%
16	... say	14	1.46%
17	... stay	12	1.25%

18	...	let	11	1.15%
19	...	like	11	1.15%
20	...	start	10	1.04%
				65.07%

Table 3: Rank list of most frequent verbs following *why don't you* in the BNC

In principle, the field of corpus linguistics is characterized by the aim of systematically investigating authentic linguistic material and by the application of certain methods. In this respect, it is not comparable to other linguistic disciplines relating to levels of language (such as phonology or syntax) or theoretical approaches like structuralism or generativism. However, as is often the case, the introduction of new methods and methodologies can feed back on theories and scientific ideologies. This also happened in the wake of the introduction of computer-based corpus linguistics. For one thing, the finding that authentic language comes in grammatical and lexical patterns to a surprisingly high degree – as in the case of *why don't you V* – casts doubt on the traditional idea that sentences are constructed by the application of general rules providing syntactic structures and opening slots to be filled by words. John Sinclair can be merited with having emphasized that this traditional **open-choice principle**, as he calls it, constantly competes with the so called **idiom principle**, which suggests that linguistic output relies on more or less prefabricated patterns and chunks. From a cognitive point of view, it is unlikely that speakers assemble these chunks afresh each time they need them; instead, they presumably store them as whole units and retrieve them wholesale in actual language use. The idiom principle not only accounts for genuine idioms like *bite the dust* or *roll out the red carpet* but also for less fixed recurrent **lexical bundles** (cf. Biber et al. 1999: 990ff.) such as *why don't you*, *the thing is* or *let me just*. The effects of the idiom principle, for example with regard to the predictability of the parts of lexical bundles, can be demonstrated in psycholinguistic processing experiments.

Secondly, and as a consequence of these insights, more and more evidence is becoming available that the strict separation of syntax and lexicon, with the former being defined as the rule-governed component and latter as the idiosyncratic, item-based component, does not reflect the way languages seem to work. After all, most of these patterns, chunks and schemata are indeed lexico-grammatical in the sense that they combine both types of information.



Thirdly, corpus-linguistic work has given further support to the basic assumptions behind the usage-based models briefly mentioned in section 8 above. What the results of corpus-linguistic investigations seem to show is that the way in which linguistic knowledge is stored and represented in the mind depends very much on how frequently speakers use and are confronted with certain patterns and constructions. Frequent patterns are more likely to be stored as chunk-like pieces than are rare sequences of words. On the very mundane level of the formation of past tense forms, this explains why highly frequent irregular forms like *came*, *took* or *saw* are much less likely to be replaced by the ‘wrong’ forms *\*comed*, *\*taked* and *\*seed* than those of rare verbs such as *kneel* or even *besech*. The reason is that many speakers have not stored the rare irregular forms *knelt* and *besought* and therefore apply the general rule yielding the forms *kneeled* and *beseched*. As a result, frequent irregular forms remain stable across time, while infrequent ones tend to become regular.

### **Further reading:**

Mukherjee (2009)

## **10. Summary and outlook**

Omitting the fields of psycholinguistics and corpus linguistics, Figure 10 provides a concluding survey of the major theories and approaches discussed in this chapter. The boxes label the approaches, and indicate their main research areas (e.g. phonology, syntax, etc.) and key proponents. Arrows pointing downwards indicate inspirations provided for later models by earlier ones. Upward-pointing arrows indicate counter-reactions by later approaches to the assumptions of earlier ones. Horizontal double-headed arrows indicate mutual exchanges of ideas. As pointed out at the beginning of this chapter, approaches in historical linguistics, pragmatics and discourse analysis and sociolinguistics are not included here. The figure shows that the major current approaches in the fields of grammar, semantics and lexicology are the Minimalist Program in the generative framework, a variety of cognitive-linguistic approaches and usage-based models. The general situation, from my personal point of view, is that cognitive, usage-based and other functionalist approaches are increasingly successful in providing promising alternatives to the generative model. This has had the effect that the study of the core-linguistic components of grammar and the lexicon has increasingly opened

up to and been enriched by evidence from the use-related disciplines of pragmatics and sociolinguistics as well as theories of language change.

As far as the methods favoured by the models collected in Figure 10 are concerned, one can basically group them into three classes: **experimental methods** using controlled tests under laboratory conditions, **corpus methods** relying on the analysis of authentic linguistic data collected in computer corpora, and methods relying mainly on linguists' **introspection**, often aiming to judge the grammaticality of invented examples. Of course, the choice of methods tends to be strongly influenced by theoretical and ideological background assumptions. For example, given that Chomsky has always denied the relevance of authentic output data for models of grammar, it is hardly surprising that the corpus method has also been used to oppose him. This reliance on introspection is also shared by structuralist semantic approaches. On the other hand, usage-based models, whose proponents subscribe to the view that grammar emerges from actual language use and is continuously adapted to it, are more likely to resort to authentic data. Experimental methods have dominated psycholinguists' research and played a key role in the early development of prototype theory. In the very recent past, more and more linguists, especially those interested in cognitively plausible models of language structure and use, try to produce intersubjectively validated evidence by working with corpus data, carrying out experiments or ideally by searching for converging evidence from introspection, logical argumentation, corpus analysis and experimental tests.

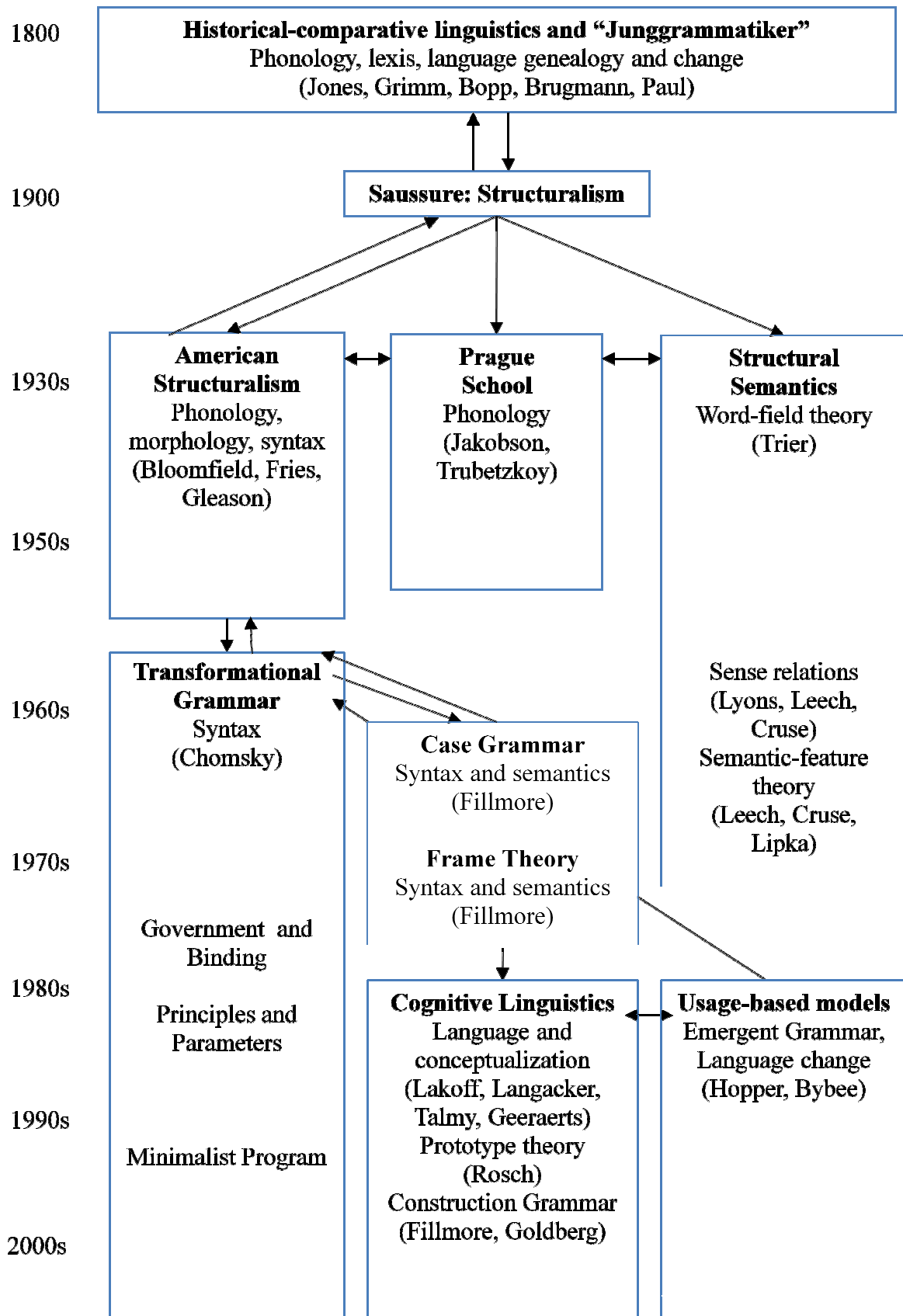


Figure 12: Survey of major linguistic theories and approaches

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