Frames of Understanding in Text and Discourse

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Frames of Understanding in Text and Discourse. Theoretical foundations and descriptive applications
by Alexander Ziem

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Theoretical foundations and descriptive applications

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In memory of
Chuck Fillmore

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Preface

This book attempts to examine the concept of semantic frames, one of the most important concepts of Cognitive Linguistics, and place it in the overall context of linguistics and cognitive science. Whereas frames are first and foremost relevant to semantic and semiotic issues, the explanatory power of the frame model presented here extends far beyond this. It is no less relevant to issues of morphology, syntax, and general linguistic theory. Frames constitute a fundamental component of a comprehensive theory of language understanding and grammar. In addition, employing frames as a (corpus-based) instrument for investigating knowledge-building processes in society makes them applicable to empirical research on "the way we think". This has been the focal point of Fillmore's so-called "frames of understanding", an approach to semantics that Fillmore developed in the mid-1970s and early 1980s, that is, in between his well-known studies on "case grammar" and the on going FrameNet project. The concept of "frames of understanding" constitutes the starting point of this monograph.

The study presented in this book goes back to concepts that I have been developing since 2004 and that were first published in German in the monograph "Frames und sprachliches Wissen" (de Gruyter, 2008). The present book is a translation of a revised version of this publication. I am very grateful to Catherine Schwerin, who has translated the book. Indeed, this was a hard job. Thanks, Catherine, for solving even seemingly unsolvable problems!

In 2010, the Academy of Sciences ("Akademie der Wissenschaften") in Göttingen, Germany, awarded me the "Prize of the Humanities". It was this award that motivated me to present ideas originally published in the aforementioned German book to a broader scientific community. It took a couple of years until this plan could be realized with the financial help of the Fritz Thyssen Foundation, VG Wort, the Börsenverein des Deutschen Buchhandels, and the Ministry of Foreign Affairs. They awarded my German book the "Prize for supporting translations of works in the humanities" ("Preis zur Förderung der Übersetzung geisteswissenschaftlicher Werke"). Thanks for the very generous financial support!

I am also very grateful to Klaus-Uwe Panther and Linda L. Thornburg, who accepted the book for publication in the Benjamins series Human Cognitive Processing. They always provided instant support, regarding both technical and content-related issues.

It is virtually impossible to thank everybody who helped make the monograph a better publication. Nonetheless, I would like to mention explicitly Hans C. Boas, Heike Behrens, Dietrich Busse, Andreas Gardt, Ekkehard Felder, Roland Posner, Martin Reisigl, Sven Staffeldt, Ingo Warnke, Martin Wengeler, and my wife Andrea Ziem as

well as the "FrameNetters" Collin Baker, Michael Ellsworth, and Miriam R. L. Petruck. During my academic work in Berlin, Basel, Düsseldorf and Berkeley you were indispensable supporters!

Perhaps the most vital influence on the considerations presented here goes back to Chuck Fillmore. I dedicate this book to Chuck who died on 13 February 2014. At this time, I had the privilege to work as a research fellow at FrameNet, Berkeley, California. Undoubtedly, Chuck was one of the most brilliant linguists ever. And he was much more than that. He was an ingenious fellow, a supporter of ideas, an attentive listener. His sense for details, his visionary mind, his wit and humour remain unique. Chuck is the "father" of many ideas presented in this book, even though I only had the opportunity to meet him in person long after these ideas had been written up.

Alexander Ziem
Berkeley/Düsseldorf
April 2014

Introduction

> If someone said, "*It's raining frogs*", your mind would swiftly fill
> with thoughts about the origins of those frogs, about what happens
> to them when they hit the ground, about what could have caused
> that peculiar plague, and about whether or not the announcer
> had gone mad. Yet the stimulus for all of this is just three words.
> How do our minds conceive such complex scenes from such sparse cues?
> The additional details must come from memories and reasoning.
> (Minsky 1988: 244)

When we comprehend the meaning of a linguistic expression, we understand more than just this expression: we bring to mind an entire context of facts and knowledge. Understanding the example "It's raining frogs" in Marvin Minsky's quote is not too difficult, even though most of us have probably never experienced frogs falling from the sky. Even when we hear or read the sentence "It's raining frogs" for the first time, these few words are enough to give us a rather precise notion of the event described. It would require no effort to come up with innumerable further details beyond the facets of knowledge mentioned by Minsky. We can imagine how large the falling frogs are (perhaps no bigger than your hand, certainly not as small as a fly or as big as a bear), what colour they could be (brownish or green, but not blue or pink), what body parts they have, and what their skin feels like. We also know that frogs typically live in or near water, but that, should they fall from the sky, they will be subject to the law of gravity just as other entities are as well. We can also imagine how many frogs are raining down and what sort of consequences the volume of falling frogs might have – and not just for the frogs. In order to give meaning to the unusual sentence, someone might hit upon the idea of interpreting the expression *frog* or *raining* as a metaphor. A whole realm of other assumptions would then come into play.

If words such as *frogs* or *raining* or complex expressions like *It's raining frogs* evoke knowledge, this does not occur without our involvement. We, the text recipients, construct contexts in which the received expressions typically occur. To achieve this we draw on various background knowledge that we have at our disposal. The use of the word *tip*, for example, evokes a "scene" consisting of scenery (the restaurant), actors (guests, the waiter), certain props (a table, chairs, cutlery, etc.), a script (ordering food, eating, paying) and much more, because everyone knows under what circumstances and in which everyday situations tips are given. To take up an example from Karl Bühler (1934: 171–172), our everyday experience will tell us what the word *radish* means, since possible scenic contexts in which radishes prototypically occur are part of

our experience. Bühler observes that reading or hearing the word *radish* will instantly transport the recipient to the table or the garden.

This book departs from the premise that knowledge that is employed to grasp the meaning of a linguistic expression demonstrates structures that can be precisely described in linguistic terms using so-called "frames". Frames are conceptual knowledge units that linguistic expressions evoke. In other word, language users call up these frames from their memories to grasp the meaning of a linguistic expression. Accordingly, knowing what an expression means and how it is to be used means having a certain cognitive structure at one's disposal that is conventionally associated with an expression.

Linguistic frame theory can be traced back to numerous works by the American linguist Charles Fillmore. He first spoke of "frame semantics" in the mid-1970s (Fillmore 1975, 1976a, 1977b, 1977a). In these early papers, Fillmore lays the groundwork for the conception of a so-called "understanding semantics" (short: "U-semantics", Fillmore 1985). U-semantics aims at explicating all knowledge facets necessary to fully understand the meaning of a linguistic expression. Another frame concept closely related to U-semantics was realized in the FrameNet project launched in the mid-1990s at the International Computer Science Institute in Berkeley, USA.[1] In contrast to Fillmore's earlier work on frames, FrameNet's goal is to document the combinatorial potential, respectively the syntactic and semantic valences, of each word in each of its senses. The conception of U-semantics, rather than the valency-oriented approach to frames motivating the FrameNet project, constitutes the starting point of the present study.

Thanks to Fillmore's enormous endeavour, frame semantics has become an essential part of both Cognitive Linguistics and construction grammar. In recent years, frames have also increasingly gained popularity in the German-language literature through the works of Klaus-Peter Konerding (1993), Claudia Fraas (1996a), and Birte Lönneker (2003a). In this book, frame semantics is anchored in a cognitive paradigm, also taking into account the relevant German-language literature.

One of my aims is to link frame-semantic theorems directly to empirical analytical practice on the basis of Fillmore's idea that frames are both cognitive structures for organizing our experience and at the same time analytical tools that can be implemented to analyse precisely these structures.[2] Apart from regularly analysing numerous examples to illustrate the empirical relevance of the theoretical findings, I conduct a comprehensive corpus-based analysis in the final chapter. This is intended to demonstrate, by way of example, the use of this approach to the analysis of discourse and metaphor. In addition, the sample analyses serve overall to show the integrative character of the semantic approach developed here. Many linguistic phenomena, including

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1.   Cf. https://framenet.icsi.berkeley.edu/fndrupal/, accessed on 10 April 2014.

2.   Cf. Fillmore (1985: 232): "In addition to seeing frames as organizers of experience and tools for understanding, we must also see frames as tools for the description and explanation of lexical and grammatical meaning".

for instance metaphors, presuppositions, basic discourse-semantic figures, (indirect) anaphors and cataphors, along with argument patterns, language change, coherence building, aesthetic-semantic effects (demonstrated using Haruki Murakami's novel *South of the Border, West of the Sun* as an example), and much more can be addressed and explained under the auspices of frame semantics using frame-semantic tools. This has the advantage of providing a unified terminological and methodological apparatus to describe and analyse such linguistic phenomena. An additional advantage is that employing the frame-semantic categories developed here makes it always clear under what theoretical linguistic and cognitive premises the respective analyses are being conducted. These premises will be elaborated in the first two chapters.

The key premise for this entire study is the postulate of the "relevance of understanding", in short "U-relevance", following Fillmore (1985) (cf. the discussion in Section 3.3). This states that no aspect of meaning that is relevant to understanding may be excluded from the analysis simply on the basis that the methodological premises of the chosen theory settings do not allow the application of any background knowledge to be taken into account. Frame semantics is understood as a non-reductionist theory of linguistic meaning. A theory of meaning is reductionist if its methods or premises do not adequately extend to including aspects of meaning or even impede their inclusion. In keeping with this premise, the cognitive and linguistic structure of frames is precisely described and their fundamental semantic relevance is demonstrated using examples of their application.

This book is divided into seven chapters. Apart from introducing the research focus, Chapter 1 provides a brief overview of the research literature and describes the larger cognitive-theoretical context in which frames are addressed. It shows that frames play a role in widely differing cognitive science approaches; however, what is exactly understood by frames and what Frames can achieve within a particular approach varies depending on the cognitive model chosen.

Chapter 2 describes two basic positions, a modularist one and a holistic one. In the German context, authors such as Manfred Bierwisch and Monika Schwarz take up a modular semantic position. This chapter examines the extent of influence that the methodological framework exerts on the conception of frame semantics in their respective two- and three-level models. The same question applies to the discussion of holistic models, above all Ronald Langacker's Cognitive Grammar and Ray Jackendoff's Conceptual Semantics.

Chapter 3 is devoted to the holistic paradigm. This begins with the question of whether it is possible to draw a distinction between semantic and general encyclopaedic knowledge. Various distinguishing criteria are tested for their validity. The finding that there are no criteria that legitimize drawing a sharp distinction between linguistic and world knowledge (conceptual knowledge) leads me to a conceptual approach to semantics which states that linguistic signs are embedded in a "space of understanding". This means that linguistic signs are inferentially constituted by drawing upon varied background knowledge. In this context, the chapter discusses Dietrich Busse's

non-reductionist theory of meaning as well as the results of psycholinguistic inference research. These are both systematically correlated with each other.

At the basis of a conceptualist semantic model is a theory of signs and grammar proceeding from the assumption that the smallest units of language are form-meaning pairs or constructions. This "symbolic principle", as I designate it, is the subject of Chapter 4. Proceeding from considerations of construction grammar and Cognitive Grammar, the central proposition is that frames structure the content side of linguistic expressions. This chapter draws on Fillmore's frame theory as well as Jordan Zlatev's concept of "situation" and Jens Allwood's concept of "meaning potential" to precisely determine the structure of frames.

Chapter 5 takes up the central finding of the previous chapter, which is that frames represent schematic units, and anchors frames in cognitive science and schema theory. I examine to what extent frames are cognitive schemata and to what extent these concepts share common characteristics. This paves the way for the analysis of the structural constituents of frames, giving the chapter the character of an introduction to the one following.

Chapter 6 is concerned with the linguistic representational properties of frames. The claim is that frames consist of three structural constituents, namely slots, fillers, and default values. However, what linguistic form do these structural constituents take? What different linguistic variants can be distinguished from one another? How can frames, their slots, fillers, and default values be determined in texts? These questions are in the foreground.

The final chapter employs the frame theory I develop here as a tool for corpus linguistics. It examines how the conceptual structure of the metaphor LOCUST has constituted itself within the discourse of the so-called "capitalism debate". In spring 2005, the then SPD party chairman Franz Müntefering likened financial investors to "a swarm of locusts", thus triggering a public controversy. In the meantime, the expression *locust* has established itself in German as a metaphor for ruthless financial investors. Set against the background of the capitalism debate, I demonstrate which facets of knowledge are relevant for the emergence of the metaphor's meaning.

Finally, I recapitulate the most important findings of the individual chapters and conclude with a brief look at some of the perspectives this book provides for research, as well as where and in what form further studies could take up the insights shared here.

Semantic interest in frames

This chapter uses a number of examples to introduce the subject matter of this book. Then an overview of frame research demonstrates the variety of areas to which it can be applied. Particular attention is paid to the way it has been received in the German context, in particular in German linguistics. The third section highlights the larger cognitive science context in which frames are addressed.

1.1   Evidence for frames

Instead of providing technical definitions, theoretical problems, and methodological intricacies, I would like to present a few examples to introduce the subject matter, "real-life examples", so to speak.

In the *Chicago Tribune* on 2 August 2004 stood the following:

(1) A 60-year-old Japanese passenger on a flight leaving O'Hare International Airport caused a bomb scare late Sunday afternoon when a passenger saw him write the words "suicide bomb" on a piece of paper and alerted authorities, police said. United Airlines Flight 1184, scheduled to leave for Columbus, Ohio, was on the runway around 5:30 p.m. when the pilot learned of the note, turned the plane around and taxied to a nearby gate. All 120 passengers were taken off the plane. But authorities soon learned that the Japanese national, who was on the plane on business, was only writing words he didn't understand so he could look them up later with a dictionary, said O'Hare police Sgt. Philip Deerig. The man was released, police said, and allowed to re-board the flight, which left three hours late.   (*Chicago Tribune*, 2 August 2004)

What had happened? Obviously the expression *suicide bomb* had awakened certain associations in the passenger seated next to the Japanese man who had written down the unfamiliar English words. Yet, it was much more than that, since they were not just random associations, such as how heavy a *suicide bomb* might be or what it was made of or who had made it. The expression *suicide bomb* had elicited particular knowledge about the object of reference, such as what the object indicated by the expression is used for, where it is typically used, who normally uses it and for what reasons, what consequences its "use" could have, etc. The knowledge associated with the expression by the Japanese man's neighbour appears to have been based on an organizational structure. *Suicide bomb* evoked a frame that contains certain information, some more and some less relevant.

The activated frame caused a chain reaction with far-reaching consequences. It was triggered by two words, words that at the time of the occurrence were merely "empty signs" for the Japanese man, form without content. The Japanese man was not in a position to connect his vocabulary note with knowledge about bombs and suicide bombers, let alone to make a connection between *suicide bomb* and the security concerns that crystallized as a result of the events of 9/11 – perhaps it would not even have struck the attention of his neighbour prior to 9/11. In order to grasp the meaning of *suicide bomb* the Japanese man would have had to know the frame with which the expression is connected and have knowledge at his disposal that is anchored in his world experience and is prerequisite in order to understand the expression. Beyond that, he would have had to know the conventions that this knowledge normally associates with the expression *suicide bomb*.

The knowledge that language users connect with the form side of a linguistic expression is on the one hand conventionalized, but particularly because of this, it spans the language community and is diachronically variable. Both extremes are marked in Example (1): The expression *suicide bomb* does not evoke a frame in the mind of the Japanese man; it is not possible for him to construe a context that could motivate the use and understanding of the expression. By contrast, the expression *suicide bomb* activated a very differentiated frame in the flight crew, the pilot, the security staff, and the police.

Any scale of activation between these two extremes is possible. To illustrate this, compare the meaning of the word *menu* in the following joke:

(2)   A cannibal is sitting in the restaurant of a luxury cruise ship. The waiter comes along and asks, "Would you care for the menu?" The cannibal replies, "No, thanks. Just bring me the passenger list."

What distinguishes the meaning of the word *menu* from the understanding of the word *passenger list* as a menu? When the waiter uses the word *menu*, he connects it with a frame that entails a variety of communicatively relevant information. A menu is for him a "prop" in a restaurant, an aid offered by a restaurant to its guests to facilitate the ordering of food and drink. The word *menu* also obviously evokes a very similar frame in the cannibal's mind. The menu also has informational value for him, but in keeping with his expectations, the menu will list completely different meals.[3] These expectations can be gleaned from the circumstance that, in contrast to the typical guests at a restaurant, he is a cannibal. Apart from a different concept of what constitutes a "meal", the other features of what the cannibal and the waiter imagine in connection with the word *menu* differ very little from each other (the typical material form, the typical place it is found, its purpose, etc.). For the cannibal, the passenger list and the

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3.   This presupposes that cannibals exist and that they typically eat human flesh, both of which can be questioned. The joke merely activates an extremely simplistic typecasting of cannibals and makes this the subject matter of the punch line.

menu are one and the same, whereas he must explicitly request the passenger list (and not the menu) from the waiter, since his knowledge of what constitutes a meal differs from conventional knowledge.

The third example is a caricature that appeared in the *Rheinische Post* newspaper:

(3) The caricature shows a beach on which two men are sitting on deck chairs next to each other. Both of them are wearing straw hats. While one has a newspaper open in front of him, the other is holding a cocktail glass in his hand. A hotel is visible in the background. Both men are looking at each other. One of them asks, "Neckermann?" And the other replies, "Ruhrgas."

<div style="text-align: right">(Rheinische Post, 4 August 2004)</div>

As in the first example, we are dealing with only two words. In order to establish coherence out of the minimalistically reduced communication between the two men, the readers must draw on all the information at their disposal. *Neckermann* evokes knowledge of a tour operator, and in view of the situative setting in which the communication takes place as depicted in the image, it seems likely that the inquirer intends to find out which organization made the travel arrangements for the man sitting next to him. However, the answer conflicts with what would be typically expected. *Ruhrgas* evokes a frame around an electric power utility. Ruhrgas is not a company that organizes travel. At first sight, it has nothing to do with travel at all. However, awareness of current political affairs motivates a possible interpretation: in the period during which the caricature appeared in the newspaper, the investor-owned electric utility service provider E.ON Ruhrgas was facing criticism because it had targeted politicians with invitations to tourist activities in order to exert more influence over them. This information flows into the activated RUHRGAS frame. Likewise, the responding person becomes identifiable as a politician. What is more, the fact that he answers the question so matter-of-factly implies that it is common practice to finance politicians' trips. All this information (and much more) is highly contextual and can only be gleaned on the basis of background knowledge. Nonetheless, it is relevant to understanding and flows into the activated RUHRGAS frame.

The role of inferences can be illustrated with another example from advertising:

(4) *Bündnis 19. Die Lights von Lucky Strike.*
'Alliance 19. Lucky Strike Lights'

Most German readers will respond as I did: On first reading (4), the reader is misled by the phonological similarity between *Alliance 19* (*Bündnis 19*) and *Alliance 90* (*Bündnis 90*) and overlooks the semantic difference between the two expressions. *Alliance 90* evokes a frame concerning an alliance of GDR civic movements that merged with the Green Party to form what has since then been known as Alliance 90/ The Greens. It is known that "Lucky Strike" is a brand of cigarettes, whereas "Lights" is a particular product line. But what have GDR civic movements got to do with cigarettes? The fact that it is *Alliance 19* and not *Alliance 90* allows a conceptual integration of the

semantic units 'Alliance 19' and 'Lucky Strike Lights' via the indirect route of 'cigarette packet'. A packet of Lucky Strike Lights cigarettes contains 19 cigarettes, and these 19 cigarettes metaphorically constitute an "alliance".

Linguistic expressions can clearly be ascribed the function of cognitive stimuli. They prompt recipients to construct a conceptual unit. Small differences in the form side can lead to large differences in the content side (e.g. *Alliance 19* vs. *Alliance 90*). At the same time, it is easy to manipulate previously established cognitive constructs (frames), i.e. to retrospectively modify particular features. Sometimes it is necessary to make such modifications in order to understand a sentence or phrase. Consider the following example:[4]

(5)   Everyone was having such fun jumping off the tree into the swimming pool that we decided to put a little water into it.

Upon reading the main clause, we have a rather clear image of the swimming pool being referred to. The relevant information in the activated SWIMMING POOL frame does not have the character of individual, disjointed facts but appears rather as a configured unit. We would have difficulty listing the relevant characteristics of the swimming pool and would probably omit many since they are simply obvious (for instance the expected size and material characteristics of the swimming pool, the depth, and the water temperature). Nevertheless knowledge of this kind appears to have played a role when reading the main clause, since the subordinate clause forces us to semantically reinterpret the expression *swimming pool*. Clearly it was "wrong" to imagine a swimming pool full of water. Without the subordinate clause, the standard interpretation would however remain intact: the "swimming pool" would be conceptualized as a retaining basin filled with water. Clearly we ascribe predicates to the reference object (in this case, the 'swimming pool') without these predicates having to appear in the text.

By the same token, a text may contain predicates without a reference object to which these predicates would correlate. A further example from cigarette advertising illustrates this:

(6)   *Meckert nicht, hat nie Kopfschmerzen und sieht auch noch gut aus.*
      'Doesn't nag, never has a headache and even looks good'

Even cases like this present no problems to understanding. Ignoring for the moment that (6) actually appears on a billboard against the background of the Lucky Strike emblem, we are faced with the task of ascribing the three predicates *doesn't nag*, *never has a headache*, *even looks good* to a reference object that has yet to be deduced. Hence, these questions arise: Which word could take the unoccupied subject position of the sentence? Who typically never nags, typically never has a headache, and typically looks good? In contrast to what the advertisement suggests, the usually expected answer is

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4.   Cf. the extensive discussion of the example in Section 6.5.

not "Lucky Strike". Due to our communicative experience and our social knowledge, we know in fact that chauvinists typically ascribe these predicates to the perfect woman. The humour of the advertisement is created by the activation of two competing frames, those of LUCKY STRIKE and the PERFECT WOMAN, as well as by the fact that typically human attributes are ascribed to a commodity.

The issues presented in these six examples illustrate some of the characteristics that seem to affect linguistic meanings: (i) the form side of a linguistic sign constitutes the starting point of a cognitive conceptualization process for the content side of the same linguistic sign; (ii) the knowledge (in the form of predicates) that flows into the content side, although variable and highly dependent on context, is not, however, arbitrary since it must have a conventional character (*Neckermann* vs. *Ruhrgas, menu* vs. *passenger list*); (iii) default information is only relevant to the interpretation of a linguistic expression as long as contradictory data is not given (for instance, as to what constitutes the concept of a 'swimming pool' or a 'menu'); (iv) the majority of meaning-relevant knowledge is founded in the experience of language users (e.g. knowledge of suicide bombs in relation to terrorist attacks, knowledge of menus in eating conventions); (v) ultimately the conceptual meaning of a linguistic expression is the result of cognitive inferential processes such as conceptual blending, reinterpretation, and modification (perfect woman vs. Lucky Strike; the features of a swimming pool).

This book proceeds from the premise that a linguistic expression (such as *suicide bomb*, *menu*, *Ruhrgas, Bündnis 19*, *swimming pool*) evokes knowledge in the form of interrelated informational units whose structural cohesion can be explained using linguistic means. Or more precisely, the object of reference of a linguistic expression is a conceptual unit that is linguistically specified by means of predicates (in the sense of predicate logics) and can be further specified by means of predicates. Following Fillmore (and many other cognitive linguists who are rooted in the tradition of frame semantics), I call these conceptual units "frames". Frames have "slots", i.e. when conceptual objects are called up, they can be more precisely specified using various (but not arbitrary) knowledge features. Since frames in this sense constitute schematic units, then the predicative specifications of frames are called "values" or "instances". Values (or instances) "occupy", and hence specify, particular slots. Language users categorize values in particular slots of an activated frame to particularize a conceptual unit. For instance the word *swimming pool* evokes a frame within which slots like 'size', 'material qualities', 'content' and 'depth' are more precisely defined by values such as 'six-by-five metres', 'blue ceramic tiles', 'chlorinated water', and 'two metres deep'.

In this book I distinguish between two types of values. On the one hand, values can be motivated by the given text base (i.e. by linguistically realized predicates). In (5) for example, the slot 'use' is more closely defined by the value 'jump off the tree into the swimming pool'. A swimming pool may be put to many purposes, but only this particular form of use is specified. The specifications within such text-based frames are referred to as "fillers".

On the other hand, values may also be inferred, i.e. "mentally added", to understand linguistic expressions. Thus, in Example (5) we assume that the swimming pool

mentioned has particular material qualities, a particular size and a particular depth, etc. Such values added on the basis of the text are referred to as "default values".

The three structural constituents of frames – slot, filler and default values – have been used since the beginnings of frame theory (e.g. in Minsky 1975) and have also entered more recent publications (such as Coulson 2001), although at times terminological divergences are evident.[5] Regardless of the fact that it is not yet by any means clear what exactly slots, fillers, and default values are, what status they should have, how they can be identified, and which linguistic variants can be distinguished, in the next chapters I presuppose a merely rudimentary understanding of the structural constituents of frames. These questions become particularly important when frames are used in corpus linguistic investigations. For this reason, this is dealt with in more detail in Chapter 6. However, in Chapter 6 it is not necessary to have read the previous chapters, so interested readers can read about the respective explanations there at any time.

1.2   Frames in research

The next two sections concern themselves with the research literature on frames in the context of epistemological interest in cognitive semantics. First, Section 2.1 provides a brief overview of research since the mid-1970s. The focus is on presenting the essential development phases within semantics, with particular attention being devoted to Charles Fillmore, the "founder" of frame semantics. Instead of extensively discussing individual research positions, I prefer to highlight the development trends in the course of the disparate history of the frame concept and take into account the particular reception of the frame concept in the German context.[6]

In Section 2.2, I introduce – also with the same proposed brevity – alternative concepts to frames that have developed in the last 25 years in Anglo-American cognitive linguistics but have only found a very rudimentary reception in German linguistics. In particular these concern Fauconnier's theory of "mental spaces", Langacker's concept of "cognitive domain", and Lakoff's "ideal cognitive models". The aim is to determine the relation of frames to these semantic representational formats.

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5.   Thus Minsky (1975) speaks of "default assignments", whereas Coulson (2001) speaks of "default values"; cf. Section 6.5.

6.   Konerding (1993: 20–77) provides an extensive critical discussion of individual research positions.

1.2.1   The development of frame research

Initially intensive work on frames took place exclusively in the United States, chiefly at universities on the West Coast. At the end of the 1970s, when the frame concept was gradually gaining attention in linguistic semantics, its use for artificial intelligence research was already being keenly discussed (cf. for instance Bobrow and Collins 1975; Minston 1975; Metzing 1979). Neighbouring disciplines such as cognitive psychology and sociology (Goffman 1974) were also already using frames and schemata as analytical categories to describe knowledge structures that allow humans to interpret their experiential data. What was new at this time was at best the label "frame", since the basic idea behind it originated in the 1920s and 1930s: without the psychological concept of "gestalt" or the schemata concept developed by the psychologist Frederic Bartlett (1932) in his theory of remembering, these different frame-theoretical approaches in the last quarter of the 20th century would not have gained a foothold to the extent that they actually did.[7]

The term "frame" gained entry into linguistics via Fillmore's studies on verb valency, so-called "case grammar". In 1968 Fillmore's influential work *The case for case* was published, which can be considered as an important precursor to his later *Frame Semantics*. The motivation for speaking of frames in connection with verb valency lay in the observation that the syntactic function of individual sentence elements could not be comprehended solely on the basis of those elements that are realized in a sentence. The elements that are not realized have just as important a role, but are inherent in the corresponding case frame. Case frames also describe the semantic valency of words, regardless of which of the arguments "required" by the words are actually syntactically realized in the sentences. Consider (7) in this context:

(7)   He bought the house.

In (7) only two deep cases of the verb *buy* are realized, that is the agentive and the objective; however, relevant to understanding the verb are at least the deep cases instrumental (that is, the money that is used to pay) and dative (that is, the seller of the house). One of the aims of determining all the deep cases required by a verb was to gain insight into the lexico-semantic representation of the verb. On the other hand, the proposed hierarchy of the postulated deep cases was intended to serve as a tool for identifying the fundamental syntactic organizational structures of sentences.

For many years case grammar was widely received and expanded in various ways. However, it faced criticism for two open questions: At what point can it be assumed that the list of possible deep cases has been exhaustively completed? How can a hierarchy of deep cases be collated and tested? Fillmore (1971c, 1977d) had attempted to take these

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7.   On the relevance of the gestalt concept cf. Fillmore (1977a: 60), (1982a); also: Lakoff (1977); Liebert (1992: 14–27); Roos (2001: 131–138). I deal with Bartlett's Schema Theory in Sections 5.1 and 5.2.1.

points of criticism into account in his revised versions of his original case grammar, but the principle objection that there were no reliable criteria for determining the deep cases of a verb could not be refuted.

> This failure to provide a well-motivated list of case notions became a central objection to the theory… Many writers have pointed out that one can always find both reasons for recognizing ever more refined distinctions and reasons for recognizing high-level generalization, concluding that there could be no theoretically justified way of coming up with as single linear list.   (Fillmore 2003: 466)

In retrospect it was arguably this insight that the central problem could not be solved that was decisive for the development of the principles for a theory of meaning that no longer oriented itself towards the syntactic realization of arguments in the form of deep structures as was the case with case frames.

Fillmore first speaks of "frame semantics" in 1975. Without involving case frames in his considerations,[8] his focus turned to the idea that there were schemata

> …which link together as a system, which impose structure or coherence on some aspect of human experience, and which may contain elements which are simultaneously parts of other such frameworks.   (Fillmore 1975: 123)

Whereas case grammar was still rooted in the tradition of generative semantics due to its orientation towards deep structures contingent on valency, with his conception of frame semantics Fillmore increasingly distanced himself from this (cf. Fillmore 1976b: 22–23; 1982a: 112–119). Nonetheless, a general movement away from generative theories only began to form in the course of the 1980s, when Fillmore and linguists like George Lakoff, Ronald Langacker, and Leonard Talmy began to develop cognitive approaches that ran counter to these theories, which in the meantime are well known under the terms construction grammar and Cognitive Grammar.

However, Fillmore only shed his ties to generative semantics step by step. The first step was to interpret case frames semantically as linguistic tools for characterizing abstract "scenes" or "situations", "so that to understand the semantic structure of the verb it was necessary to understand the properties of such schematized scenes" (Fillmore 1982a: 115).[9] Whereas Fillmore was initially convinced that it would be sufficient to describe a schematized scene using the participant deep cases alone, in the course of his later studies he came to realize that many facets of knowledge relevant to understanding could not be accounted for in this way. Hitherto unconsidered aspects affected the conditions that had to be fulfilled to adequately understand or use a linguistic

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8.   In a footnote Fillmore writes laconically that frames stand in the tradition of his own case grammar as well as the frame concept of Minsky and Goffman (Fillmore 1975: 130).

9.   A detailed discussion of the relationship between the concepts of "deep case", "scene", "situation", and "frame" can be found in Section 4.2.3.

expression. The agenda was set by Fillmore's (1985) advocation of "U-semantics",[10] which directed its focus on the data relevant to understanding an expression without already excluding (supposedly) negligible non-linguistic knowledge at the outset. Fillmore concluded that a very broad perspective is necessary to grasp data relevant to understanding, namely "a general account of the relation between linguistic texts, the contexts in which they are instanced, and the process and products of their interpretation" (Fillmore 1985: 222). In expanding the research focus in this manner, Fillmore finally discarded his sentence-oriented case grammar. It is the conception of U-semantics that motivates the frame-semantic model I attempt to develop in the present book. A major goal is to turn Fillmore's rather "intuitive" heuristics into an analytical model that allows to apply U-semantic ideas and concepts to corpus data.

Fillmore's conception of U-semantics is unique in many respects. Importantly, its analytical scope goes beyond the scope of both Case Grammar and the Berkeley FrameNet project (Busse 2012: 92–132, Ziem 2014). Unlike the latter, frames within U-semantics address not only valence patterns but also all knowledge facets that are relevant for fully capturing the meaning of a word or phrase.

One may argue as to what extent Fillmore's concept of frame semantics was influenced by work in AI research, particularly by Minsky's (1975) recourse to frames and by Schank and Abelson's (1977) Script Theory. What is certain, however, is that Fillmore owes a great deal to Bartlett's (1932) Schema Theory, as do countless AI researchers. In addition, it is certain that Fillmore was already aware of Minsky's ideas in 1975 and at the latest from 1982 knew of Schank and Abelson's Script Theory (cf. Fillmore 1975: 124; 1982a: 137). The increasing preoccupation with frames in AI research in the mid-1970s also played such an important role for the development of frame semantics that it is worth reporting on some of its central ideas.

Apart from Minsky and Schank, a whole array of other researchers (like Benjamin Kuipers, Eugene Charniak, Patrick Hayes, Terry Winograd) were interested in the computer simulation of complex cognitive processes such as understanding texts. It soon became apparent that the ability to understand a text demanded far more knowledge than structurally oriented mainstream semantics gave linguistic expressions credit for. Distinguishing between purely linguistic knowledge (that is, knowledge of semantic features inherent to language) and general encyclopaedic knowledge proved to be a hindrance to the practical interests of AI research. The realization grew that, without considering the typical everyday knowledge that humans acquire and have learnt to use step by step during their socialization, any attempt at simulating the processes of understanding language would fail. Yet, in order to "implement" such conceptual knowledge (i.e. knowledge of situations, scripts, events, objects, etc.) on machines, it was first of all necessary to conduct some fundamental research. It was in this context that frame theory evolved as a model to represent human knowledge. I will not elaborate on the, in part, complex and technical proposals made by Minsky (1975) and

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10. The "U" stands for "understanding" and is contrasted with "T-semantics", which indicates a meaning-reductionist model oriented towards truth conditions.

Schank and Abelson (1977);[11] instead I will introduce Minsky's frame concept insofar as it is relevant to meaning-theoretical issues.

Minsky shares Fillmore's understanding of frames as standardized formations of knowledge elements that are partially variable and change quickly, but are to some extent also resistant in nature. Minsky's well-known definition is:

> When one encounters a new situation… one selects from memory a substantial structure called a *Frame*. This is a remembered framework to be adapted to fit reality by changing details as necessary. A *frame* is a data-structure for representing a stereotyped situation, like being in a certain kind of living room, or going to a child's birthday party. Attached to each frame are several kinds of information. Some of this information is about how to use the frame. Some is about what one can expect to happen next. Some is about what to do if these expectations are not confirmed.   (Minsky 1975: 212)

The fact that Minsky's frame concept is rather vague – for example neither the status nor the quality of the frame elements are defined and it remains unclear what a "situation" is and to what extent a frame adapts to this – seems to have increased its acceptance rather than hindered it. At least in later approaches within semantics, numerous characteristics of frames can be found that Minsky had already highlighted. Consider, for instance, the network structure in which, according to Minsky, every frame is embedded and which every frame constructs itself because its elements (fillers, default values) also have the status of (sub-)frames. What is also generally recognized is the finding that the elements of a frame vary according to their stability and dynamics, as well as the basic premise that frames have a holistic character and originate on the basis of recurrent experience (and change on the basis of new experience). Although many details remain open, Minsky's contribution can hardly be appreciated highly enough in terms of historical reception. Schank and Abelson (1977) also adopt Minsky's frame conditions in their more activity-oriented Script Theory. The same conditions form the basis of Charniak's (1976) attempts to model a system of frames using "painting" as an example.

Whereas studies on frames were readily received across disciplinary boarders, almost ten years passed after Fillmore's early publications on frame semantics before a larger research group formed within linguistics. The workshop Round Table Discussion on Frame/Script Semantics organized by Victor Raskin for the 13th International Linguistics Congress in Tokyo in 1983 marked a certain turning point. The resultant collection of essays published two years later (Raskin 1985) documents that frame semantics was in the process of establishing itself as an independent field of research and that there was a growing interest in engaging with the issues it addressed.

At the end of the 1980s and beginning of the 1990s, a phase of general acceptance of frame theory began. A number of both English-speaking and German-speaking linguists took up frames as an empirical analytical tool, yet the auspices under which

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11.   Konerding (1993: 24–40) provides a compact summary.

this took place differed in each context. In the Anglo-American context, frame-based studies stood in close connection with construction grammar as developed by Fillmore and others at Berkeley (Fillmore, Kay, and O'Connor 1988; Kay 1997; Kay and Fillmore 1999). In individual cases frames were associated with Ronald Langacker's (1987) Cognitive Grammar, which shared essential premises with construction grammar.[12] In this theoretical framework, frames were employed, among others, in the areas of lexicology, lexicography, syntax, and pragmatics. The following are some salient examples.

Petruck followed lexicological research aims in her work on the linguistic conceptualization of body parts in Hebrew (Petruck 1986 and 1995). Lexicographic studies were carried out by linguists such as Fillmore in collaboration with Sue Atkins, for instance on the lexeme *risk*, whose frame is characterized by two subframes CHANCE and HARM (Fillmore and Atkins 1992, 1994). Using larger text corpora, Fillmore and Atkins determined, among other things, the lexico-syntactic structures in which *risk* occurs. Such corpus linguistic analytical perspectives of frame structures were consistently and systematically continued in the large-scale FrameNet project at the International Computer Science Institute in Berkeley, USA (cf. Baker, Fillmore, and Lowe 1998). In the meantime, an immense number of publications have appeared in the context of the FrameNet project.[13]

In contrast, syntactical analyses stood in the foreground of O'Connor 1994 and Goldberg 1995. In the meantime, Goldberg's construction grammar approach to the analysis of argument structures has become highly influential. Goldberg showed that argument structures can only be understood relative to background frames. Finally, some case studies have examined the conceptual content of linguistic expressions in specific domains of knowledge. For example, Botha (1996) and Tsohatzidis (1993) used a frame-analytical perspective to respectively examine specialist terms used in cricket and selected speech acts. The mentioned studies illustrate the extensive range of frame analysis; many other studies have not been listed here.[14]

In recent years a new trend in development has become evident. Deriving from his theory of so-called "mental spaces" (Fauconnier 1985), Gilles Fauconnier, in collaboration with Mark Turner, developed a general theory of Conceptual Integration ("blending") in the late 1990s (cf. for example Fauconnier and Turner 1998a, 1999); I elaborate on the relation between frames and mental spaces in the next chapter. This is interesting from a research-historical perspective because, since the end of the 1990s, the integration of frames (of a Fillmorean character) into the theory of conceptual integration has become increasingly topical. Thus, Coulson (2001) considers frame semantics and mental space theory as complementary approaches, illustrating this using numerous linguistic phenomena such as metaphors, compounds, scalar implicatures,

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12. Cf. the explanations in Sections 1.3.2 and 4.1.1.

13. Cf. the bibliography on the official FrameNet website:
http://framenet.icsi.berkeley.edu [last accessed: 10 April 2014].

14. Cf. the (similarly selective) literature overviews in Fillmore (2006) and Petruck (1996).

and conditional clauses. Similar considerations are found, for instance, in Fauconnier and Turner 1998b and Sweetser 1999. Another effort to connect frame semantics more tightly with cognitive operations and other representational formats (not only mental spaces, but also "image schemas", cf. Watters 1996) is Baker's 1999 dissertation. In addition to conducting frame semantic analyses to determine the conceptual structure of the verb *see*, Baker also carried out lexicological studies and psycholinguistic experiments; mental spaces were also employed.

It is worth taking also the German research literature into account. Here, an integrative perspective on frames such as the one mentioned above is not found. This is partially due to the fact that the German literature ignores the embedding of frames in construction grammar and Cognitive Grammar that occurs in Anglo-American literature. As a result, one fails to find references to related concepts such as Langacker's "cognitive domains" or Fauconnier's "mental spaces". The fact that the specific needs of German research have steered engagement with frames in a biased direction is likely to be a further reason for this deficit in reception. The use of frames for strictly semantic enquiry only occurred at a very late stage. Certainly, Immo Wegner had already associated frames with questions of lexical semantics in 1979, referring in particular to Minsky (1975) and Fillmore (1975), but this article remained largely ignored. Some years later, Wegner (1984, 1985) presented two further studies in which frames were employed largely for lexicographical purposes.[15] Konerding's (1993) linguistic groundwork in frame theory stands in this tradition. None of the mentioned studies contain any further reflections from the background of construction grammar or Cognitive Grammar.

The same applies for other monographs. In their corpus-based case studies, Fraas (1996a), Lönneker (2003a), and Klein and Meßner (1999) oriented themselves towards the operationalization proposal developed by Konerding.[16] In terms of historical research, these studies have been extremely important, since they exemplify how linguistic frame analyses can be set to a great variety of purposes; however, they had no effect on cognitive theory or linguistics, because apart from employing frames empirically, they did not demonstrate the significance of the basic premises of frame theory for theories of meaning or even linguistics.

As for the range of application of frames, the German context is just as varied as the English-speaking one. It extends from the analysis of metaphors (Klein 2002a) and the already mentioned lexicographical and lexicological studies (Wegner 1984, 1985; Konerding 1993) through to argument analysis (Klein 2002b) and individual historical

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15. Frames also found passing mention at this time in van Dijk (1980: 178) and Scherner (1984: 219). Von Polenz (1985: 130ff., 156) spoke with reference to Fillmore (1968) and (1977a) of "reference frames" and "predication frames", cf. my critical remarks in Section 6.3.1.

16. A brief summary of the procedures and research aims of Fraas (1996a), Klein and Meißner (1999), and several other empirical contributions such as those of Holly (2001, 2002) and Klein (1999, 2002a, b) are found in Section 7.1.1.

semantic case studies (Blank 1999; Fraas 1996a). In addition there is Konerding's (1996) frame analysis of speech act verbs and Müller's very early (1982), but largely ignored, discourse analytical study. Suggestions were even made to include frames in the semiotics of literary texts (Müske 1991, 1992). Busse already discussed frames at the beginning of the 1990s, initially in the context of studies inspired by text linguistics (e.g. in 1991a). In his more recent studies, Busse (cf. 2005a, 2006, 2008a, 2009b) has developed the basic principles of a non-reductionist theory of meaning following Fillmore and Minsky. Since these abandon the traditional division between linguistic and conceptual knowledge, Busse (2003a) speaks of a "semantic epistemology", which is the concept also subscribed to in this book. However, it would certainly be too soon to claim that a frame-based epistemology presents a new development trend.

The fact remains that in frame research the most obvious distinction between the German and Anglo-American contexts concerns the premises under which frames are addressed. These vary from case to case in German studies, since there is no common (methodological, cognitive and/or linguistic) framework that unites the studies. The "normalizing" or even "synergizing" power of a shared paradigm (in the Kuhnian sense) is lacking. Thus, it comes to a form of "parcelling" of the individual contributions. By contrast, frame studies in the Anglo-American context follow the guidelines of conceptualist semantics (with the character of either construction grammar or Cognitive Grammar).

The lack of reception of conceptual approaches in the German context beyond frame theory itself gives me occasion to outline the most important representational formats. Cognitive Grammar and construction grammar are introduced in Section 1.3.2 and further elaborated in Chapter 4.

1.2.2 Frames and other representation formats

The definitions of frames in the literature vary considerably,[17] and while some can be seen as complementary, others have such different theoretical premises as their base that they consequently accent issues that are of no or very little relevance to a linguistic theory of meaning. In the meantime, in various disciplines such as linguistics, sociology, media studies, and AI research, the literature on frames is almost impossible to survey. The specific requirements of each discipline often give rise to varying definitions of what frames are, what they can do, and how they can be analytically employed (cf. the overviews in Fisher 1997; Konerding 1993: 23–63). In the following, with the exception of Minsky's approach, I only elaborate on the formation of linguistic theory. In order to partially account for the lack of reception of conceptual approaches in

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17. Cf. for instance Fillmore (1975); Minsky (1975); Charniak (1976: 362); van Dijk (1980: 233); Beaugrande and Dressler (1981).

German linguistics, as noted in the previous section, I will compare frames with other representational formats that have until now received little attention.

As mentioned, Fillmore understands frames as conceptual structures that both form the basis of the meaning of linguistic expressions and motivate their use. In one well-known passage he says:

> By the word 'frame' I have in mind any system of concepts related in such a way that to understand any of them you have to understand the whole structure in which it fits; when one of the things in such a structure is introduced into a text, or into a conversation, all of the others are automatically made available.
>
> (Fillmore 1982a: 111)

A frame is thus always a unity of multiplicity. Taking up an example from Fillmore (1982a: 118), understanding a word like *weekend* presupposes a background frame that encompasses concepts like "week", "day", "Saturday", "Sunday", "work", and "leisure". The word *weekend* can only be understood against the background that a (cyclically recurring) week has seven days, five of which are workdays.

Fillmore (1985: 223) stresses that such conceptual structures had already been described by researchers such as Minsky (1975), yet at times using other terminology; for instance Lakoff (1983) speaks of "cognitive model" while Langacker (1984) uses "base".[18] Are "frames" (Minsky), "cognitive models" (Lakoff), and "bases" (Langacker) equivalent to Fillmore's "frames"? If not, where is the difference?

Even within Fillmore's own work, we find conceptually different albeit related conceptions of frames (for an extensive discussion cf. Busse 2012: 23–250; Ziem 2014). First, as mentioned earlier, case frames address so called "deep cases" that describe the semantic valency of verbs, adjectives and nouns (Fillmore 1968). By presupposing a limited roster of assumingly universal semantic roles, case grammar subscribes to major assumptions of Transformational Grammar. In contrast, the conception of "frames of understanding" (Fillmore 1985) takes a much broader perspective; it focuses on any kind of knowledge that is relevant to fully understand a linguistic expression. In the following, I elaborate this idea in more detail. Second, the Berkeley FrameNet project aims at building up a lexicographic database documenting valence patterns of Lexical Units (word-meaning pairs). The research scope of FrameNet is thus also much broader than the one of Case Grammar. At the same time the valency-oriented approach in FrameNet forms only a part of the knowledge relevant for understanding an expression as targeted with "frames of understanding".

Minsky (1975) shows to what extent frames describe event structures (e.g. those of a children's birthday party), explain the function of an engine, or govern the processing of visual data (for instance of a cube or a room). Not least, Minsky demonstrates

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18. In addition, Fillmore mentions Bartlett's (1932) schema concept, his own concept of "scene" (in Fillmore 1977a), Lakoff and Johnson's (1980) Gestalt concept, and many more. It is doubtful whether frames in Fillmore's terms do in fact encompass the conceptual structures described by these terms. For the relation between the concepts of "frame" and "scene" see Section 4.2.3.

the relevance of frames for processes of understanding language (for instance for the understanding of storytelling and the conceptualization of lexical knowledge), and he even claims that frames are suitable for the representation of such abstract knowledge structures as paradigms in the Kuhnian sense.

According to Minsky, not only the understanding of language but perception in general is governed by highly complex cognitive processes that cannot be supported by the available perceptual data alone, since such a narrow data base is not sufficient, in Minsky's view, to explain why what we perceive appears meaningful to us and is integrated into our "stream of consciousness" with such apparent ease (Minsky 1988: 257). The perceived coherence occurs only after taking recourse to further mentally added informational units. Coherence is accordingly the result of a successful correlation of perceptual data with these mental informational units.

> Our idea is that each perceptual experience activates some structure that we'll call *frames* – structures we've acquired in the course of previous experience. We all remember millions of frames, each representing some stereotyped situation like meeting a certain kind of person, being in a certain kind of room, or attending a certain kind of party.   (Minsky 1988: 244)

By "frames" Minsky understands "a sort of skeleton, somewhat like an application form with many blanks or slots to be filled" (Minsky 1988: 245). Since many slots of a frame are already specified with default assumptions, frames are similar to stereotyped data structures saved in the long-term memory that govern different processes of understanding.[19] Whereas default assumptions represent the average anticipated number of knowledge features – that is, in sum they are equivalent to our stereotyped knowledge of the world – concrete experiential data are the slot fillers that cannot be implied or inferred, since they are perceptually "given".

Frames come into play anywhere where there is an overlap between perceptual and experiential units. Minsky's thesis is that this process is same whether it is a case of understanding language or visually perceiving objects. The fact that perceptual data activates frames means in both cases that it can be understood as a component of a more comprehensive knowledge structure in which "stereotypical situations" are represented.

Minsky makes this clear using a simple example. In order to understand the meaning of the word *chair*, it is first of all necessary to draw on a set of information that describes the different features we expect to be peculiar to a chair – that is, relative to our experience to date (Minsky 1988: 245). A chair has, for instance, four legs, a backrest, a horizontal seat, etc. However, these are assumptions that merely more closely define a typical chair. Should the contextually given information be more specific, these assumptions can be replaced at any time (thus, reference may

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19. *"Default assumptions fill our frames to represent what's typical.* As soon as you hear a word like 'person', 'frog', or 'chair', you assume the details of some 'typical' sort of person, frog, or chair. You do this not only with language, but with vision, too." (Minsky 1988: 245)

more specifically be to a three-legged chair). The decisive factor here is that, analo-
gous to the concept *chair*, every linguistic unit is semantically highly underspecified,
while understanding only occurs once provisionally valid assumptions override this
underspecification.

The situation is similar for visual perception of objects. In this case, frames "with
many blanks or slots to be filled" (Minsky 1988: 245) play an equally important role.
To be able to see a chair behind a table and recognize it as such, it is normally sufficient
to see its backrest above the table surface. The fact that the table is occluding the view
of the seat and legs of the chair is no obstacle. In a sense, we imagine the table as a
transparent object. Yet, the backrest could just as easily be a wooden panel attached to
the table. However nothing prompts us to make this atypical assumption, since we are
accustomed to it being otherwise.

What makes Minsky's frame theory different to Fillmore's is the aspiration to show
that frames are a general format for knowledge representation. Minsky uses frames in
particular to explain phenomena of visual perception.[20] Thus, to the best of my knowl-
edge, this has been the only elaborate attempt to date to embed frames in a general
cognitive theory. Minsky's considerations are ground-breaking, but especially for this
reason many questions remain unanswered (cf. Konerding 1993: 25): What status do
slots and default values have in visual and linguistic frames? How do they manifest
themselves phenomenally? Can Minsky's postulates support theories of remembering
and cognitive psychology? How can frames be implemented analytically?

Although Minsky's approach raises more questions than it answers, it is the fore-
runner of a methodological reorientation in cognitive science. Frames are – in the
sense of the holistic paradigm (cf. Chapter 3) – modally non-specific representational
formats, making a division between linguistic and non-linguistic knowledge prob-
lematic. In addition, contrary to Chomsky's modularistic approach to language and
cognition, another basic assumption is that basic and general cognitive abilities (such
as categorizing, schematizing, etc.) are equally valid for all modalities of perception.

Thus it can be concluded that Minsky used frames in an attempt to embrace quite
different cognitive phenomena, which are summarized in Table 1. By contrast, the
research focus of Fillmore's frame theory is limited to conceptual structures that prove
to be relevant to understanding linguistic expressions.

Unlike Minsky, Lakoff (1987: 68ff.) understands his theory of an "idealized cogni-
tive model"[21] (ICM) expressly as a contribution to linguistic semantics. However it is
clear that ICM is by no means equivalent to those conceptual structures that Fillmore
attempts to cover using frames. Like frames, ICMs are also model-like units of knowl-
edge that do not reflect segments of reality but rather represent idealized representa-
tions of recurrent experience. In this sense, Lakoff's main thesis is "that we organize

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20. Cf. Minsky (1975: 211–230; 1977: 355–364; 1988: 244–259).

21. I prefer the term "idealized cognitive model". Lakoff's (1987) theoretical concept expands
on the approach outlined in Lakoff (1983).

Table 1. Frame types in Minsky (1975)

Frame types	Examples
Perceptual	Visual (such as the image of a cube)
	Visual-deictic (such as perspectives when entering a room)
Psychological	Forms
Technological	Function of an engine
Sociological	Event types (such as birthday party, visit to restaurant)
	Habits (such as components of social events)
Historical-scientific	Paradigms (in the Kuhnian sense)

our knowledge by means of structures called *idealized cognitive models*, or ICMs, and that category structures and prototype effects are by-products of that organization" (Lakoff 1987: 68). A few lines later, however, he states:

> Each ICM is a complex structured whole, a gestalt, which uses four kinds of structuring principles:
>
>> propositional structure, as in Fillmore's frames
>> image-schematic structure, as in Langacker's cognitive grammar
>> metaphoric mappings, as described in Lakoff and Johnson
>> metonymic mappings, as described by Lakoff and Johnson
>
> Each ICM, as used, structures a mental space, as described by Fauconnier.
>
> (Lakoff 1987: 68)

With ICM, Lakoff apparently attempts to encompass quite different facets of knowledge whose relevance to theories of meaning has been proven in a variety of approaches (such as Fillmore 1982a; Fauconnier 1985; Langacker 1987; Lakoff and Johnson 1980). ICM is thus an integrative model that attempts to account for the fact that conceptual knowledge is organized through structuring principles. Frames are only one structuring principle among many. When Lakoff assigns frames the function of capturing the "propositional structure" of an ICM, he means the elements (fillers and default values) of an activated frame as well as the relation between the frame elements (Lakoff 1987: 285). Frames may be justifiably used in this manner because they have a gestalt-like character, which to some extent "dissolves" in propositional structures. Since the frame WEEKEND encompasses, for example, concepts such as "day", "Saturday", and "Sunday", propositions such as (8) and (9) can be constructed:

(8) A weekend consists of two days.

(9) A weekend consists of the days Saturday and Sunday.

It is important, however, to note that Lakoff (1987: 284) proposes four additional structuring principles for propositional structures: (i) scenes and scripts (with reference presumably to Schank and Abelson 1977), (ii) feature bundles, (iii) taxonomies, and (iv) prototypically organized radial categories. However Lakoff does not explain what

exactly is to be understood by "feature bundles" and "taxonomies" or to what extent they are integral components of ICM. Conversely, he elaborates all the more on ICM consisting of organized categories and being able to change various prototypicality effects of the category structures (cf. the overview in Evans and Green 2006: 270ff.). However, no explanation as to the relationship between frames and prototypes is given. In fact, frames are not addressed any further, so the question of the extent to which they are really relevant to ICM ultimately remains unanswered.

The fact that frames are only one of five total options to propositionally structure ICM may partially account for the marginal role that frames play in Lakoff's theory, but in addition, propositionality itself is only one structuring principle among many. So-called "image schemas" constitute a second structuring principle. Lakoff understands image schemas as very abstract structures (like, for instance, the CONTAINER schema) that evolve through experience and form the basis of conceptual structures (thus the CONTAINER schema motivates the interpretation of prepositions like *in* or *on*).[22] Two additional structuring principles concern the correspondences between conceptual structures. Thus, propositional or image schematic structures can be metaphorically transferred to other areas of experience, for instance, when mental or physical states can be conceived as being a container (as in *brimming with rage* or *to be in trouble*). Lakoff distinguishes metaphorical correspondences from metonymical ones. One of the latter occurs when part stands for whole, for instance, when a mother is stereotyped as a housewife and this stereotype stands for the whole category of "mother". Finally, Lakoff mentions "symbolic" structures. They emerge whenever linguistic elements are associated with conceptual elements (Lakoff 1987: 289). Interestingly, Evans und Green (2006: 281) see frames as the ordering structures of these conceptual elements, although according to Lakoff, frames determine the propositional structure of ICM. Apparently there is no consensus concerning the functional definition of frames in ICM, probably also due to the fact that Lakoff's explanation remains very vague in this respect. A comparison between "propositional" and "symbolic structures" suggests that they should not be separated and that both describe inherent features of linguistic signs. Propositional structures apparently correlate to syntagmatic correspondences, whereas symbolic structures correlate to paradigmatic correspondences. Whether Lakoff would agree with this definition must remain open; Lakoff himself offers no alternative explanation.

The outcomes of the previous remarks are summarized in Table 2. Overall it remains unclear to what extent frames structure ICM, in what relation frames stand to other structuring principles, and whether frames really constitute an alternative

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22. Cf. also Section 2.1. According to Lakoff, image schemas are the most important structuring principle of ICM. Lakoff (1987: 284) explains the role of image schemas as follows: "ICMs are typically quite complex structures, defined by image schemas of all the sorts… Some symbols in an ICM may be directly meaningful: the basic-level and image-schematic concepts. Other symbols are understood indirectly via their relationship to directly understood concepts. Such relationships are defined by the image schemas that structure the ICMs." Cf. also Lakoff (1987: 81).

Table 2. ICM types and their manifestations according to Lakoff (cf. 1987: 284)

ICM types	Type of structuring/Examples
Image schematic	e.g. CONTAINER
Propositional	Propositional ICM (Fillmore's "frames", Fauconnier's "mental spaces")
	Scenes, scripts
	Feature bundles
	Taxonomies
	Prototypically organized categories
Metaphorical	Projections (from a source domain onto a target domain)
Metonymic	esp. part-for-whole correspondences
Symbolic	Frames (according to Evans and Green 2006: 281)

concept to mental spaces, scenes, and scripts, as Lakoff suggests. Although Lakoff's concept of ICM aims to integrate linguistic frames (in the Fillmorean sense) into a universal model, in a similar way to Minsky's frame theory, the incorporation of so many theories and concepts appears to lead to additional terminological confusion. What are "feature bundles"? Aren't "taxonomies" simply the prototypical organization of categories? What distinguishes "scenes" from "scripts"?[23] Taylor is correct when he observes:

> The terminology in this area is confusing, partly because different terms may be used by different authors to refer to what seems to be the same construct, or the same term may be used to refer to very different constructs. Furthermore, it is not at all clear that it is possible to make clean conceptual distinctions in this area. Nevertheless, I found the term 'frame' to be a useful theoretical term, denoting the knowledge network linking multiple domains associated with a given linguistic form. We can reserve the term 'script' for the temporal sequencing and causal relations which link events and states within certain action frames. (Taylor 2003: 89)

After noting the correspondence between "frames" and "scripts" addressed by Taylor, I conclude by comparing frames with "mental spaces" and "cognitive domains".

The term "domain" is a term used in Langacker's (1987) Cognitive grammar".[24] In Langacker's theory of meaning, "cognitive domains" are assigned the same central role

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23. At one point, Lakoff (1987: 284) indicates that the expressions "scene" and "script" are synonymous. However, Sanford and Garrod (1981), who introduced both these terms, certainly distinguish between the two.

24. Langacker distinguishes between two types of "domains": "abstract" and "basic" domains. The following discussion refers only to the former. "Basic domains" are very abstract conceptual units that cannot be traced back to other conceptual units. Examples of this are TIME, SPACE, TEMPERATURE, PAIN, and many others (Langacker 1987: 147–152). Matrix frames, which I introduce in Section 6.3.2 following Konerding (1993), are in this respect the counterpart to "basic domains".

as frames are in Fillmore's theory. Yet, both Langacker and Fillmore proceed from the same premise that linguistic meanings are purely conceptual structures and that they can generally only be understood against the background of superordinate knowledge structures. Langacker uses the term "cognitive domains" to describe such knowledge structures that are relevant to understanding. Domains are conceptual units of varying degrees of abstraction. They provide the background information that makes understanding a linguistic expression possible. Without reference to domains, linguistic meaning cannot be understood – not even in a rudimentary form.

> [S]emantic units are characterized relative to cognitive *domains*… any concept or knowledge system can function as a domain for this purpose. Included as possible domains, consequently, are the conception of social relationship, of the speech situation, of the existence of various dialects, and so on.
>
> (Langacker 1987: 63; italics in bold in the original)

In this respect, domains are no different to frames. According to Fillmore (1985), analogue contextual and co-textual data along with general background knowledge and extra-linguistic factors motivate the understanding of an expression. In this respect the frame and domain concepts are equivalent. For example, the meaning of the expression *thumb* can only be understood relative to the domain or frame HAND (and in turn the expression *hand* only relative to the domain or frame ARM, etc.).

However, domains differ from frames in two respects. On the one hand, Langacker stresses much more highly than Fillmore the fact that every concept is specified with respect to several domains. These give rise to a so-called "domain matrix" (cf. Clausner and Croft 1999: 7). Thus, the concept "human", for example, is determined relative to a multitude of very different domains, such as those of ABILITY, SIZE, PHYSICAL CONSTITUTION, etc. On the other hand, Langacker is more keenly interested in the structure and organization of our conceptual system; his aim, at least according to Evans and Green (2006: 231), is to achieve a "conceptual ontology". By contrast, Fillmore strongly integrates grammatical structures (so-called "constructions") in his analysis.

Further, whereas Evans and Green (2006: 231) maintain that Fillmore takes less account of the hierarchical organization of the conceptual system than Langacker, in my view neither Langacker nor Fillmore have paid enough attention to this aspect. In the meantime, however, Langacker 1987: 68, 147ff.; 1991a: 61–64) highlights the fact that each domain presupposes at least one hierarchically higher domain. This leads to conceptual hierarchies such as (10), in which the arrow is to be read as "presupposes":

(10)   (FINGER) KNUCKLE → FINGER → HAND → ARM → BODY[25]

Nevertheless, Langacker provides no information as to what conceptual hierarchies may be used for or which empirical procedure is used to construct them. Fillmore had already recognized the relevance of conceptual hierarchies to theories of meaning prior

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25. The domain BODY in turn presupposes the basic domain (see above) SPACE.

to Langacker – in the form of what he calls "taxonomies" (cf. Fillmore 1982a: 132); similarly, however, he has not used them for analysis within frame semantics.[26]

Frames are structurally equivalent to domains in that both feature foreground and background dimensions. Langacker illustrates this distinction, which can be traced back to gestalt psychology (cf. Metzger 1923), using the example of *hypotenuse*. The conceptual pair foreground/background (or figure/ground) is reflected in Langacker's contrast between a semantic "base" and a semantic "profile". No one can understand the meaning of the word *hypotenuse* unless they know what a triangle and a right angle are (cf. Langacker 1988b: 59). Whereas these two cognitive domains constitute the base, the expression *hypotenuse* profiles a segment of the knowledge domain RIGHT TRIANGLE: it refers to the side of the triangle that lies opposite the right angle. When Fillmore (1985: 228) takes up the *hypotenuse* example, he is not so much highlighting the figure/ground distinction as the culturally specific background knowledge required for understanding. Nonetheless, Fillmore underlines the fact that activated frames give perspective to knowledge.

> Sometimes the perspective which a word assigns is not a perspective on the current scene – something that might be visible in a pictorial representation of the scene – but is that of a much larger framework. Thus, the description of someone as a HERETIC presupposes an established religion, or a religious community which has a well-defined notion of doctrinal correctness. (Fillmore 1982a: 123)

Following Langacker's profile/base distinction, the expression *heretic* profiles the property of a person against the background of knowledge of an established religion or religious community. At the very least, the domains (or frames) PERSON and RELIGION serve as bases.

In summary, it is clear that Langacker's concept of cognitive domains is compatible with Fillmore's concept in many fundamental aspects and there are even identifiable points of equivalence between the two. Differences derive in particular from the larger theoretical framework in which frames or domains are addressed. Domains are firmly anchored in Langacker's Cognitive Grammar, whereas frames are an inherent part of Fillmore's and Kay's conception of construction grammar. In view of the observed similarities between domains and frames, it is, however, surprising that Langacker equates domains with Lakoff's ICM:

> An abstract domain is essentially equivalent to what Lakoff … terms an *ICM* (for *idealized cognitive model*) and what others have variously called a *frame*, *scene*, *schema*, or even *script* (at least in some uses).
> (Langacker 1987: 150; italics in bold in the original)

After the previous analysis it should be apparent that this is hardly justifiable. Although frames and domains are similar in many respects, there are significant differences between domains and ICM as well as frames and ICM.

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26. In Section 6.3 I show that conceptual hierarchies are essential, especially to frame semantics.

Finally I turn to Fauconnier's theory of mental spaces. It is apparently unclear how mental spaces stand in relation to frames and ICM. While Lakoff (1987: 68) claims that mental spaces are structured by ICM, Fauconnier and Turner (1998a: 137) consider frames to be the structuring principle of mental spaces. The remainder of the discussion in this section places the focus on the extent to which frames and mental spaces may be seen as complementary approaches.

What are "mental spaces"? Fauconnier, who is considered the main representative of the theory of mental spaces, introduced the term "mental space" in 1985 to more strongly accentuate the cognitive process of meaning construction. Building on these considerations, Fauconnier has in the meantime developed a general theory of conceptual integration ("blending") in collaboration with Turner (Fauconnier and Turner 1998a, 2002). Mental spaces are "partial structures that proliferate when we think and talk, allowing a fine-grained partitioning of our discourse and knowledge structures" (Fauconnier 1997: 11). Thus, mental spaces differ from domains and frames in that they only evolve during the act of understanding. Mental spaces do draw on data in our long-term memory, but they are constantly changing during a conversation or while reading a text.

Therefore, while the cognitive operations that are involved in the construction of new conceptual units are fundamental to mental spaces, the conceptual structures that are drawn upon in this process relate to cognitive domains and frames. It thus seems logical to understand frames in Sweetser's use of the word as structures of mental spaces:

> Mental spaces have internal structure which includes frame … structure; one could view Fillmore's … frame as a rather schematic (partially-filled) and conventional mental space, or as a possible internal structural component of more filled-out mental spaces.   (Sweetser 1999: 135)

While frames give cognitive access to relatively stable background knowledge, mental spaces additionally contain very detailed informational units relevant to the act of understanding.

According to Fauconnier, these meaning constructions are guided by two processes: by the construction of mental spaces on the one hand and by the correlation of selected elements in the constructed mental spaces on the other. Fauconnier names this process of correlation of elements "mapping". A multitude of linguistic phenomena (like metaphor, metonymy, counterfactual references, knowledge modes) can only be explained by mapping.

Example (11) illustrates this:

(11)   If Peter were John, Peter would be rich.

Peter and *John* are the two linguistic elements in Example (11) that prompt the construction of a mental space. In counterfactual references of this type, conceptual knowledge elements from both mental spaces are correlated with each other. An array of possible propositions relevant to understanding can be derived by correlating individual elements from both mental spaces. Figure 1 uses dashed lines to depict two mappings, adopting the notation form used by Fauconnier and Turner (1998b).
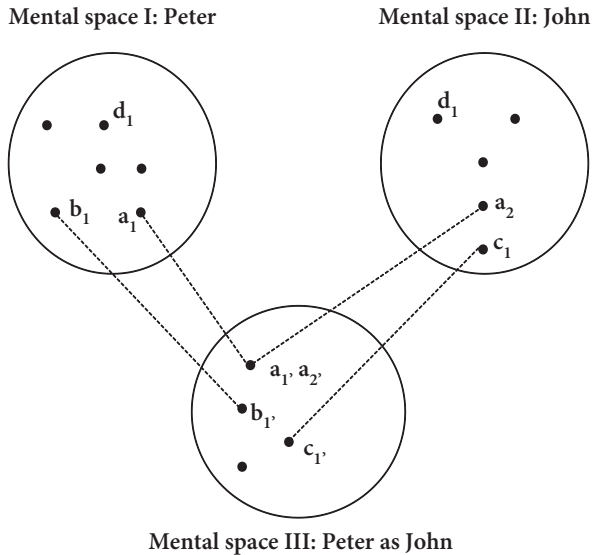
Figure 1. Conceptual integration using the example
If Peter were John, Peter would be rich

Mental space III allows the counterfactual supposition that Peter and John share the property of being wealthy. The conceptual property of John-being-wealthy (a_2 in Figure 1) is mapped from mental space II into mental space III. The conceptual property of 'Peter-not-being-wealthy' (a_1 in Figure 1) is also mapped from mental space I into mental space III and replaced by a_2.[27] Now a multitude of possible correlations of knowledge elements result from the construction of mental space III, for instance, that Peter, like John, owns a villa and plays golf every day (c_1 in Figure 1), but also some – such as b_1 – that do not belong to mental space II.[28] It would be possible, for instance, to say *If Peter were John, Peter would be rich and would have four children*, although John in reality has none. The concept 'being wealthy' would be the departure point for further inferences that would belong to mental space III but would not correlate to

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27. In order to make clear that the elements projected in mental space III occupy the same slot in mental space I and II (in this case, 'financial status') but are specified differently (in this case, 'being wealthy' vs. 'not being wealthy'), Fauconnier and Turner link these elements in the graphical representation using a solid line (in this case, between a_1 and a_2); these are missing in Figure 1. In addition, a superordinate generic space that contains common facets of knowledge of both inputs is missing.

28. This is an insight of blending theory and thus not explicit in Fauconnier (1985). Every so-called "blended space" contains new, emergent elements that are not inherent to any of the participant inputs. As Fauconnier and Turner (2002) impressively bear witness to, this also applies for a multitude of metaphors; cf. also Section 7.1.2.

mental space II. This could express that children cost a lot of money and for that reason Peter cannot "afford" four children although he would love to have some if he were rich.

Finally, there are conceptual elements that are in both mental space I and mental space II that are identical. Perhaps John and Peter both own a Harley Davidson (d_1 in Figure 1) The element d_1 is therefore not mapped into mental space III because the sentence *If Peter were John, Peter would be rich and would own a Harley Davidson* would not contain new insights. Peter already owns a Harley Davidson, so this would not change if he were as rich as John.

In contrast to Fauconnier and Turner (1998a, 2002), Fillmore (1975, 1977a) does not introduce the frame concept to mark the status of linguistically expressed knowledge (beliefs, wishes, hypothetical and counterfactual assumptions). His greater concern is that expressions with apparently less complex reference areas (like *weekend*, *write*, *poison*, *right*; cf. Fillmore 1977a, 1982a) can also only be understood in the context of schematically correlated knowledge. Both approaches can be seen as complementary to the extent that frames structure background knowledge that also flows into mental spaces (cf. Coulson 2001). In Example (11), frames concern relevant background knowledge about Peter and John.

What is more, frame theory and the theory of mental spaces are both based on the same cognitive theoretical premises. Both stress the construction character of conceptual integration processes, and for both, linguistic meanings are purely conceptual units. The difference lies in the focus. While Fillmore's frame theory concentrates on lexical meaning, mental spaces take account of the cognitive operations that guide the construal of conceptual structures.[29]

Overall it can be said that while Fillmore's frame approach is largely compatible with both Langacker's theory of cognitive domains and mental spaces, this does not apply to the same extent with Minsky's frame approach or Lakoff's ICM. The two latter approaches lack any theoretical reflection on the fact that the many and varied descriptive models which are referenced may be compatible. It also remains unclear how cognitive phenomena (cf. Table 1 and 2) should be investigated within the proposed frame/ICM concept.

Nonetheless in my view it is important to attempt to explain the different cognitive phenomena within a unified model – as Minsky and Lakoff aimed to do. Such a model could either, as Lakoff suggests, unify various representational formats (like scripts, scenes, frames, domains, mental spaces, etc.) or, in Minsky's sense of "frames", provide a general format that can encompass various cognitive phenomena (cf. Ziem 2006c). At this point of time, the development of an integrative-holistic model is still only a distant goal in linguistic research.

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29. These are, above all, mapping, blending, and compression; cf. Fauconnier and Turner (1999), (2000), (2002).

1.3   Frames in cognitive science

Whereas the previous two sections dealt with frames in the stricter sense, we now turn our attention to the universal research context of cognitive science. This section outlines the research focus of cognitive science with regard to frame-relevant enquiry. In linguistics there are a variety of distinct cognitive theoretical positions that are motivated by either a holistic or a modularist understanding of language. These positions are presented in Section 3.2. Finally, the fact that there is very little clarity in the German context as to which cognitive model frames should be embedded in is the subject of Section 3.3.

1.3.1   Cognition, representation, categorization

Although the human mind has been the object of research since antiquity, and cognitive processes such as perceiving, thinking, and speaking have also been addressed and investigated for over 2,000 years, cognitive science in the stricter sense did not develop until the 1960s. At this time more and more researchers, initially in the area of psychology, abandoned the prevailing behaviourist paradigm (cf. Neisser 1967). Only a radical break with the positivist constraints of behaviourism and its understanding of the human mind as an unfathomable "black box" could bring the specific capacities of the human mind back into view. Although the so-called "cognitive turn" initially occurred within psychology, neighbouring disciplines such as AI, linguistics, and philosophy quickly adopted an interdisciplinary interest in mental processes such as the storage, processing, and application of information.

Chomsky's early criticism of Behaviourism is commonly considered the precursor of cognitive linguistics. Chomsky demanded an explanatory linguistic theory whose goal was to investigate the mental-intellectual basis of the human language faculty (Chomsky 1965, 1975). Apart from this, at the same time other linguists were also pointing out the cognitive nature of language (cf. for instance Bransford, Barclay, and Franks 1972; Hörmann 1994).[30]

From the mid-1970s, the cognitive research paradigm established itself in other disciplines beyond the disciplinary borders of psychology and AI. In the following years, linguistic research began to be conducted along these lines. In this context, cognition denotes the set of all processes of understanding, or the processing of experience and information, irrespective of whether these are motivated by specific linguistic or other data. This broad understanding of cognition encompasses the human faculty of thinking and speaking as well as areas of psychological research on memory.

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30. Gardner (1989) provides a comprehensive historical survey, in particular of the interdisciplinary development of cognitive research.

In its broadest sense, the research focus of cognitive science is all the mental structures and processes that contribute to the formation of human knowledge without simultaneously recurring to the philosophical-epistemological distinction of true/false.

> In cognitive approaches, human cognition is seen as a system of mental structures and processes and described using models that take into account the complexity of mental activities…. cognitive models are based on the premise that cognitive processes are purposeful activities that cannot simply be described as being causal on the basis of associative mechanisms. Cognitive units and processes are to be understood as components of complex correlations and cannot be reduced to isolated, unstructured units.   (Translated from Schwarz 1992b: 12)

Cognitive processes are by no means opaque in nature and consequently not empirically unfathomable; rather they form complex structural entities with their own reality, which can be described in psychological terms. Thus, apart from psychological plausibility, theoretical consistency and empirical explanatory adequacy are also significant criteria of a cognitive science approach. Although cognitive linguistics has been interested in the neurophysiological basis of language ability from the outset, the methodology required that cognitive representations of knowledge should on principle be able to be investigated independently of their neurophysiological premises. Thus, linguistic investigation was able to employ the tried and tested, empirically supported methods of experimental psychology (cf. Danks and Glucksberg 1980).

With this empirical orientation, cognitive linguistics takes account of its fundamental epistemological conviction that knowledge representations of any form are not "mirrors of nature", as the philosopher Richard Rorty (1987) put it. This long served as an implicit epistemological premise, for instance in 18th century Empiricism.[31] Although our conceptual knowledge is substantially constructed from experiential data, this data is not given as isolated units, but rather occurs as elements embedded in more comprehensive knowledge units (semantic networks, cognitive models, schemas, domains, frames, etc.) and, in the construction of such representational knowledge structures, is subject to specific cognitive operations that aid its mental processing.

> The knowledge that living creatures construct by means of cognition is realized in the form of *mental representations*… These mental representations are *cognitive models* of the objects and events that they refer to. Cognitive models have an important function for coping with complex objects, since they reduce them to their essential properties.   (Translated from Rickheit and Strohner 1993: 15)

Cognitive models do not construe objects or events outside our own consciousness, but rather are products of abstraction that arise solely on the basis of our own active

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31. Cf. the overview in Sinha (1999); for the philosophical debate cf. Putnam (1988), Rorty (1987). The philosopher Wilfrid Sellars (1999) speaks in this context of the "myth of the given". Sensory data are not simply given, thus not a "mirror of nature", but rather always embedded in a network of epistemological convictions, that is, more or less supported assumptions about the world.

cognitive-constructive operations. They are representational values, since they do not exist outside of our consciousness. The function of cognitive representations is therefore of major importance because without representations, it is not possible to process information.

> [A conceptual representation] stands at the centre of the information processing flow, with input from perceptual modules of differing kinds, and is centrally involved in memory, speech, planning, decision-making, actions, inductive inferences and much more besides.   (Hampton and Moss 2003: 505)

Thus representations are specifically linguistic when the perceptual input is of a linguistic nature. These representations are individual in that they construct mental entities, and interindividual as far as the type of model itself is a result of a communicative practice (Harras, Herrmann, and Grabowski 1996: 13). The fact that cognitive representations are by no means independent of the prior social experiences in which they occurred and are constantly modified through them is of particular interest for frames, especially in connection with default values.

Accordingly, cognitive representations describe an epistemological relation. Although they may be motivated by perceptual data (that is, also by means of the perception of words, sentences, texts), their existence is relatively independent if this.

> Representation is, first and foremost, something that stands for something else. In other words, it is some sort of model of the thing (or things) it represents. This description implies the existence of two related but functionally separate worlds: the represented world and the representing world. The job of the representing world is to reflect some aspects of the represented world in some fashion.
>
> (Palmer 1978: 262)

Although Palmer departs from a problematic two-world ontology in that he attests an objective and thus cognitively transcendent existence to a representatum, he draws attention to an important aspect of the model-like disposition of representations.[32] His objectivist economy is not necessary in the case of language representations, since linguistic expressions are the communicative medium that in turn refers to other models as representata (cf. Jackendoff 1983: 23–40). For instance, if two people are discussing whether the death penalty is justified, they both refer to the cognitive model of what justice is (or should be). Put more generally, understanding an utterance means placing the uttered words and sentences in connection with what they might mean, and that is not a process of approximating facticity, but rather a reconstruction of what was postulated. This initially requires much less reference to an extralinguistic entity than reference to a conceptual structure (or cognitive model, frame), even if it is a case of a simple noun that is grounded in the experiential world of a language user by the definite article (as in *the Wednesday*). Taylor observes: "It is important to bear in

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32. Cf. Krämer's (2001) study on a multitude of linguistic theoretical positions carried out under the aspect of a dualist ontology.

mind, however, that the referent of a grounded nominal is not some object out there in the external world, but an entity in a mental space" (Taylor 2002: 347). In addition the meaning of such a noun can only be gleaned within an activated cognitive model. This model features specific contours. As already outlined in Section 1.2.2, it is three dimensional insofar as it distinguishes a specific profile (the denotatum) from a specific cognitive domain. Thus, on the one hand, the noun *Wednesday* profiles a day within the cognitive domain "week"; on the other hand, the definite article *the* grounds the denotatum in the experiential world of the communicator to the extent that it temporally refers to a specific Wednesday. Gilles Fauconnier (1985) introduced the term "mental space" among other things to highlight this cognitive process of referentialization, at the same time conveying the multidimensional character of the denotation domain and in particular its cognitive-representational status. This is what Taylor is referring to in the above quotation.

Meanwhile, Palmer rightly stresses that there is no representational relationship between the object represented (representatum) and the physical phenomenon it is representing (represantans). Representata are rather the result of a controlled reconstruction process with perceptual data as its possible departure point. Such cognitive processing is relatively autonomous and is subject to specific principles (like those for categorization). Hörmann particularly emphasizes this:

> Whoever perceives…, understands something. That means he understands in the physical substrate and all the way through it a meaning that goes beyond this substrate and establishes a correlation with the meaningful unit that is already available in the hearer.   (Translated from Hörmann 1994: 198)

Thus a representation is that which is cognitively produced. It comprises previously stored sediments of past experiences, or more precisely, schematic representations of a higher degree of abstraction that are already stored in the long-term memory.

However, when percepts themselves emerge from cognitive-constructive processes, to what extent do they differ from representations? Since percepts are mental entities (and not objective entities external to our consciousness), it does not make sense to compare percepts to representations. Conversely, if they are not equivalent, then not every representation is perceptually motivated. Thus, we can use our imagination to call to mind objects that have no correlates in our current world of perception. For this reason Monika Schwarz distinguishes between a so-called "internal" and "external mode". According to her, percepts are experienced in the external mode, whereas representations (as far as they are not based on perceptual data) are experienced in the internal mode.

> The total of all percepts represent the world W_p, which is experienced as a real state in external mode. The set of all units of representational cognition in the internal mode that have referents in the perceptual world constitute the mental world model W_m. This world model is experienced in its mental character as an internal state of the organism.
>
>   (Translated from Schwarz 1992a: 44; italics in bold in the original)