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## List of Abbreviations

AG = artificial grammar

CL = Cognitive linguistics

CLT = communicative language teaching

CUB = Cognitive and usage-based

CxG = construction grammar

EFL = English as a foreign language

GJT = grammaticality judgement test

L1 = first language

L2 = second language

L1A = first language acquisition

SLA = second language acquisition

SLL = second language learning

TEFL = teaching English as a foreign language

TESL = teaching English as a second language

UG = universal grammar

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# 1. Introduction

Students of English who are enrolled in the teacher's programme often find themselves in the situation where they learn about the latest, most interesting and fascinating findings in linguistics, but fail to find ways of translating these findings into the reality of L2 classroom instruction. In the last few decades, the emergence of the Cognitive branch in linguistics has led to a paradigm shift in the study of language. Previously established theories about grammar, language acquisition, and the way language is represented in the human mind were rejected, abandoned, and overhauled.

While concepts from Cognitive linguistics (henceforth CL) have been adopted in research on second language acquisition (henceforth SLA) and publications on L2 pedagogy, many of the theories in CL are still evolving. The aim of this thesis is to provide a snapshot of these ever-evolving hypotheses and an overview of how they relate to current issues of language learning and teaching. Due to the scope and breadth of the Cognitive enterprise, it is necessary to emphasise some aspects over others. In the case of this thesis, the main theoretical frameworks that were considered include usage-based theory (cf. Bybee & Beckner 2010), construction grammar theory (cf. Hoffmann & Trousdale 2013), and, to some extent, cognitive grammar (Langacker 1987, 2006). All these theories are primarily descriptions of language per se; however, they also lend themselves to research on L1 and L2 acquisition. Therefore, concepts from usage-based theory and construction grammar will consistently be revisited throughout this thesis.

Overall, the thesis is structured into four main parts, i.e. chapters two to five. In chapter two, CL will be presented as an approach that has its roots in the functional paradigm, and is strongly characterised by a clear dissociation from generative theories, which dominated the linguistics discourse for much of the second half of the 20<sup>th</sup> century. It is also by means of dissociation from generative linguistics that the fundamental tenets and principles of CL will be elaborated on. In this context, the characteristics of usage-based theory and construction grammar theory will be presented. Chapter three will then establish a connection between the Cognitive principles and theories of first language acquisition (L1A). Again, hypotheses from the generative paradigm will be juxtaposed with the Cognitive approach, and empirical research on early child language acquisition will be presented that reinforces a usage-based and constructionist view of L1A (cf. Tomasello 2000; Tomasello et al. 2003). Chapter four will then provide an extensive discussion of the



issue of explicit and implicit knowledge, which will investigate in how far the process of L1A is comparable to SLA. This discussion will be informed by research in neuroscience and neurolinguistics, and will then elaborate on how transfer between the explicit and implicit knowledge domains may influence the learning of a second language. In chapter five, the main findings and hypotheses from the previous chapters will then be merged in order to present a comprehensible overview of potential implementations of Cognitive and usage-based (CUB) linguistics in instructed SLA. Based on the findings in chapters three and four, the discussion will focus on implicit and explicit forms of L2 learning, and the ways in which principles from CL, such as usage-based theory and construction grammar theory can contribute to greater efficacy in SLA. Particular attention will be paid to the role of L2 input in implicit learning and to rule-based approaches to grammar teaching and learning. The latter will be critically examined, as the rule-based grammar in L2 instruction may fail to convey the complexity and diversity of the target language. Furthermore, chapter five will also address the issues of error correction and cross-linguistic transfer between an L1 and an L2. The role of cross-linguistic influence in L2 learning will then be exemplified in the last sections of chapter five, in which Geoff Parkes' (2003) collection of errors made by German speaking learners of English will be used to demonstrate potential applications of CUB approaches to SLA.

Despite addressing a variety of concepts in CL, this thesis can only provide a glimpse rather than an ample overview of what an L2 classroom practice informed by theories from CL may look like. However, especially with regard to recent findings on the potential benefits of L2 input for younger learners of EFL (e.g. Dahl 2015) and on alternatives to rule-based grammar teaching (cf. Holme 2010), which will be discussed in detail in chapter five, this thesis may be a useful resource and provide a framework for practical implementation. Hopefully, it can help building the bridge between the domain of linguistic research and L2 teaching that is so often needed.

Originally, I approached this topic with the ambition of designing a Cognitive and usage-based syllabus for learners of EFL/ESL. However, the diversity and constant change in Cognitive approaches to L2 pedagogy as well as the scope of theory quickly led me to the realisation that this was a task that would go beyond the constraints of this paper. Nonetheless, with an eye toward future research, this thesis may, to some extent, contribute to the designing of an EFL/ESL syllabus informed by Cognitive theories. However, such an endeavour will require more empirical research on the efficacy of optimised input and usage-

based approaches to grammar teaching. Ultimately, an approach that is based on principles in CL and hence oriented towards inductive learning processes and the exploration of the meaningfulness of grammar in explicit learning will require a paradigm shift in TEFL/TESL practices. After all, a system that already prescribes testing at low proficiency levels (and at a young age) favours a rule-based approach in which certain grammatical features are learned unit by unit with the goal of reproduction under test conditions. Hence, a more long-term oriented understanding of SLA is necessary for a CUB syllabus to be implemented, the benefits of which, however, may be worthwhile.

## 2. Functional and Cognitive linguistics, and the generative paradigm

Cognitive linguistics<sup>1</sup> has become an umbrella term that accommodates a broad range of theoretical approaches, some of which will lay the groundwork for this thesis' discussion of CUB approaches to SLA. For the sake of clarification, the Cognitive paradigm will thus first be outlined with regard to other fundamental theories in linguistics, before such a discussion can ensue. The following sections provide an analysis of the relationship between functional linguistics and CL as well as a brief discussion about the conceptional proximity of the two theoretical paradigms. Furthermore, both functional and Cognitive linguistics will be presented as counter movements to Chomskyan generative linguistics. By elaborating on the differences between generative and Cognitive linguistics in their respective approaches to, and views of language, the principles and tenets of CL are further outlined in order to lay the foundations for a discussion about the relevance of Cognitive theories with regard to issues in SLA.

### 2.1 A typological discussion of functional and Cognitive linguistics

The conceptional closeness of the functional as well as of the Cognitive approach to linguistics is the result of an academic discourse, which has frequently employed both terms

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<sup>1</sup> Cognitive linguistics (or CL) with capitalised letters functions as an umbrella term for the various concepts and theories that will be discussed and applied throughout this thesis, and which adhere to the principles and tenets discussed in the introductory section of this paper, whereas uncapitalised *cognitive linguistics* describes all approaches in which language is studied as a mental phenomenon. Formalist approaches such as generative grammar are thus also considered to be part of cognitive linguistics.

as consonant and compatible theoretical frameworks. In fact, the emergence of CL around the end of the 1980s was largely characterised by a close association with functional linguistics on the one hand, and an explicit rejection of Chomskyan generative theories on the other hand.

Evidence of the close affiliation of CL with the functional approach can be found in many of the first articles, monographs, and anthologies published under the Cognitive paradigm, and especially in publications from what Jan Nuyts has labelled the “‘European branch’ of Cognitive linguistics” (Nuyts 2007: 546). In his editorial statement published in the first issue of ‘Cognitive linguistics’, for instance, Dirk Geeraerts highlights the **functional** dimension of language in the relationship between the human being and the world by essentially considering it “an instrument for organizing, processing, and conveying information” (Geeraerts 1990: 1). As Geeraerts’ editorial statement can be considered a Cognitivist manifesto, the interdependency between functionalist and Cognitive linguistics appears to have been existing from the very outset of CL as an independent branch of linguistics.

However, it is important not to perceive the principles of functionalism and cognitivism as synonymous and hence interchangeable terms for the same thing. Nuyts (2007) emphasises the fact that CL should be considered an approach influenced by and situated within the wider field of functional linguistics. As CL reaffirms numerous principles associated with functional linguistics, this brings into question whether the former is therefore an extension of the latter. In an attempt to clearly define the boundaries of both concepts, Nuyts arrives at the conclusion that despite historical reasons for a distinction<sup>2</sup>, there are no incommensurable differences in theory or methodology that would make a paradigmatic distinction between the basic principles of functionalism and cognitivism a requirement. Instead of understanding this as a demarcation problem, the two fields should be viewed as complementary to each other; the differences in emphasis can contribute to a broader understanding of language (Nuyts 2007).

While it is hard to find a clear differentiation between functionalist and Cognitive approaches, the notion that both mark a fundamental departure from the generative and

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<sup>2</sup> Nuyts refers to the distinction between what may be considered the Californian branch of Cognitive linguistics, which evolved at the University of California and Berkeley, mainly as a reaction to generativism, and the European branch, which is associated with having stronger functionalist tendencies. Again, it is imperative to emphasise that even this attempt at a socio-historical distinction is a far cry from drawing a clear line, as individual research under both these branches incorporates a wide array of approaches and methodological concepts from various domains.

formalist tradition is widely accepted. In fact, much of the early research undertaken under the paradigm of CL used dissociation from Chomskyan linguistics and rejection of its theories as a pillar on which new principles and hypotheses could be established. Nonetheless, to fully understand the foundational principles of CL, it is necessary to point out the common ground shared by both approaches as well as where the branches diverge and grow further apart.

The following section will therefore provide an overview of a variety of substantial differences between the generative approach to linguistics and CL. Based on this contrastive analysis, the subsequent chapters will then provide a more detailed discussion of the foundational tenets, principles, and commitments of Cognitive linguistics. As the subsequent chapters will show, these theories had a significant impact on matters of first and second language acquisition.

## 2.2 CL and Chomskyan generative grammar

While the notion that much of the early work in CL was undertaken as the result of a refutation of Chomskyan formal linguistics may be true, many commonalities in both approaches have long been neglected for the sake of a clear boundary. It is, however, important to be aware of the common ground that functional, Cognitive linguistics and formal, Chomskyan linguistics share in order to fully understand the differences between the two schools. First and foremost, both paradigms can be considered forms of cognitive linguistics as they treat language as a mental, and hence cognitive phenomenon. In both approaches, language provides a “constitutive, mediating role in the epistemological relationship between subject and object” (Geeraerts & Cuyckens 2007: 6).

The difference between functionalist, Cognitive linguistics and its formal counterpart essentially lies in the degree of emphasis that is assigned to the role and influence of the subject in this relationship: Under the generativist paradigm, language is considered an autonomous inventory of possible syntactic structures governed by rules and constraints which make up “a formal system or level of representation” (Langacker 2006: 29). The focus here is on language as the object, and the ability of the human subject to learn and acquire a language with all its formal constraints (e.g. by assuming language-specific genetic endowment). In contrast to that, CL focuses on the subject and how experience, thought, and conceptualisations of the world are externalised through language. Language thus has a

window function giving insight into cognitive processes, and is assumed “to reflect certain fundamental properties and design features of the human mind” (Evans & Green 2006: 5). To put it in the words of Geeraerts and Cuyckens (2007: 6): “Whereas generative grammar is interested in knowledge *of* the language, Cognitive linguistics is so to speak interested in knowledge *through* the language” [original emphasis].

At first inspection, the difference between a Cognitive, functionalist approach to language and its formal counterpart appears to be marginal. However, the difference in emphasis has led to ground-breaking research yielding striking results and contributing to a fundamentally better understanding of language in a variety of different domains. These include, for instance, Cognitive approaches to grammar, most notably Langacker’s cognitive grammar (Langacker 1987, 2006), and usage-based, constructionist and emergentist approaches to grammar as postulated by e.g. Goldberg (1995) and Croft (2001, 2007).

Before the various domains of CL can be analysed and evaluated in terms of a theoretical framework and potential applicability to the field of instructed SLA, it is necessary to further elaborate on the principles and tenets that are fundamental to the Cognitive paradigm. In the first section 2.3.1., the role of semantics in CL will be outlined and it will be investigated in what ways language reflects other properties inherent to human cognition (i.e. embodiment), such as the relation between the human body and its environment with regard to time and space. In this context, two foundational principles of CL, i.e. the **generalisation commitment** and the **cognitive commitment** will be discussed and applied. In section 2.3.2., the dynamic nature of linguistic meaning will be presented as a further principle in Cognitive theories. In this context, the diachronic change in meaning of the word *computer* that occurred over the matter of a few decades will demonstrate how this aspect of CL is manifest in language. Section 2.3.3. will then discuss the assumption that language is essentially shaped by the ways in which it is used. Such usage-based theories will further play a crucial part in subsequent chapters, when issues of language acquisition and the role of grammar in SLA will be discussed. This section will therefore also present Cognitive and usage-based (CUB) approaches to grammar, which have been subsumed under the term **construction grammar**.

## 2.3 Principles and tenets in CL

As mentioned above, CL emphasises the role of the subject in the epistemic relationship between subject and world. The Cognitive approach investigates language through the lens of human cognition under the assumption that language reflects cognitive processes, as well as features of the human mind and physiological experience in interaction with the world. Language is thus the medium through which human interaction with the world can be investigated. It reflects a structured inventory of world knowledge and “of **meaningful categories** that help us deal with new experiences and store information about old ones” (Geeraerts & Cuyckens 2007: 5) [my emphasis]. This approach consequently assigns a central role to semantics, which is not the case under the generative paradigm that perceives language “primarily in formal terms: as a collection of formal, syntactic structures and rules” (Geeraerts 2006: 3). In the following subsection, the semantic dimension of language will be discussed in further detail, and evidence of the Cognitive assumption about the role of the subject will be provided.

### 2.3.1 The centrality of meaning, its perspectival nature, and the commitments of CL

The Cognitive approach to semantics is characterised by the notion that language ought to reflect its **perspectival nature**. This assumption is based on the hypothesis that the subject becomes a vantage point in the epistemic relationship between the subject and the world (Geeraerts 2006: 4; Geeraerts & Cuyckens 2007: 5). A central claim of CL is thus the hypothesis that language is embodied. The world is not objectively reflected in a language detached from the human mind, since the process of making sense of the world and conveying it to others in an intelligible, meaningful way is shaped and influenced by all aspects of our cognition. Hence, the generative assumption that language is an autonomous cognitive faculty cannot be upheld. This requires a new approach that investigates language as an aspect of human cognition that is not fundamentally different from other cognitive abilities (Croft & Cruse 2004: 1). The notion that language reflects domain-general cognitive processes has subsequently become a central characteristic of the Cognitive approach, which is subsumed under the term **cognitive commitment** (Lakoff 1990: 40; Evans & Green 2006: 40).

The cognitive commitment conveys the notion that linguistic principles should reflect general assumptions about cognition from domains other than linguistics, such as

philosophy, psychology and neuroscience. These include a variety of issues that are related to aspects of conceptualisation and categorisation, such as embodiment, schematicity, Gestalt psychology, attention, force dynamics and spatial semantics just to name a few. Language according to CL is therefore not just objectively and autonomously mirroring the world as it is; it imposes a structure on it through the categorising processes inherent to all forms of human cognition (Geeraerts & Cuyckens 2007: 5). In adherence with the cognitive commitment, research under the paradigm of CL consequently has to refrain from treating language in isolation. It needs to investigate language use as a reflection of fundamental cognitive properties rather than formal, language-specific criteria. The implication that aspects of human cognition are reflected in language has further prompted the **generalisation commitment** (Lakoff 1990: 40; Evans & Green 2006: 28), which refers to the notion that these cognitive features should be retraceable across different languages, for instance, by investigating language universals (Evans & Green 2006: 28).

The underlying assumption of the Cognitive approach to language universals is that humans share basic experiences such as the relation between the human body and the perceptible space it inhabits which then result in shared conceptualisations. The ways in which human beings ultimately use grammar and vocabulary to externalise their spatial, physical experience might be entirely different. However, if traces of conceptual, rather than formal similarity are found across languages that do not share the same linguistic background, the Cognitive hypothesis is supported.

The quest for common principles that hold true across human languages is not a new methodological invention of CL. It was also an integral part of Chomskyan methodology. The Cognitivist understanding of principle features holding true across languages, however, should not be understood as a continuation of Chomskyan universal grammar (henceforth UG) (Chomsky 1976). Language universals in the generative paradigm were supposed to support the hypothesis of genetic endowment in the form of a language faculty (cf. Pinker & Jackendoff 2005) by verifying the existence of a common underlying structure. The aim was thus to find a universally applicable formula, which could generate an infinite number of well-formed sentences in any language known to mankind. Such a highly formal understanding of linguistic universals is refuted by Cognitivists (cf. Geeraerts 2006).

Instead of looking for underlying formal principles, CL is interested in conceptual commonalities across languages, which reflect general properties of human cognition as well as the perspectival nature of language. The Cognitivist notion of universal conceptual

principles in language is, for instance, manifested in how we structure highly abstract concepts by means of much more tangible, experiential categories. Evans and Green (2006: 65) argue that the ability and tendency to structure introspective experience in conceptualisations deriving from primary sensory experience is an essential property of the conceptualising capacity of the human mind. The following example illustrating this hypothesis is a slightly modified sentence taken from Talmy (2006: 95), which was originally intended to demonstrate different forms of plexity and boundedness<sup>3</sup>. However, in the current context it is used to illustrate how a seemingly abstract concept such as the passing of time can be structured in spatial categories:

(1) The beacon flashed 5 times in a row every ten minutes for three hours.

The expression *in a row* provides a spatial conceptualisation for the linear and sequential order of the beacon flashing over the passing of time. If we were to visualise this pattern graphically, it might look something like this: [ ... ( | | | | ) ... ( | | | | ) ... etc.] with the square brackets marking the time frame of three hours within which the light flashes five times in a row in ten minute intervals. Early research in neuroscience has shown that while time is not a physically tangible and objective entity, it is nevertheless a real sensory experience as we structure the passing of time by means of what is referred to as “perceptual moments” (Evans & Green 2006: 75-76). Moreover, this research has found evidence that by providing a visual stimulus, such as the flashing of light in certain intervals, the passing of time is perceived in apparent motion. Considering the cognitive commitment, it can thus be argued that the conceptualisation of time as motion in space is evidence of language reflecting more general aspects of human cognition.

As the example above illustrates, speakers of English tend to use spatial imagery to make the concept of time more readily accessible. With regard to the generalisation commitment and the notion that such conceptualisations stem from the same cognitive experience one might, therefore, assume that TIME will be frequently realised by implementing on it the more tangible concept of SPACE and motion in space, which most of us can access by means of visual perception, and indeed: research has shown that conceptualisations of TIME by means of motion are found across languages worldwide (Evans & Green 2006: 79). One has to look no further than to how German speakers use prepositions like *vor* (spatial: *in front of*; temporal: *pre-, before*) and *über* (spatial: *over*,

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<sup>3</sup> For a more detailed description of plexity and boundedness cf. Talmy (1988: 165-206).



*above*; temporal: *after*) in compound nouns such as *Vormittag* (*morning*, i.e. before noon) and *Übermorgen* (*the day after tomorrow*). While *vor* can be used in spatial foregrounding, meaning *in front of*, the spatial use of *über* refers to an entity X located *above* the point of reference. In the analysis of errors made by German speaking learners of English in chapter 6, the conceptualisation of time as motion in space will be revisited with regard to the wrong use of the prepositions *with* and *in* instead of *at*. The implication is that learners can benefit from CUB approaches to SLA that explicate how meaning is grounded in perceptual experience.

While the discussion of example (1) provides an insight into how non-linguistic aspects of cognition influence and shape conceptualisations in language, it also reflects the Cognitive approach in a more general way: Linguistic meaning is not analysed detached from the human mind, it is embodied in human experience (Evans & Green 2006: 46), and hence ought to be examined by referring to other domains of cognition as well as the respective established fields of research on human cognition. An understanding of how conceptualisations are influenced by human cognition as well as an analysis of how linguistic realisations of these conceptualisations might correspond or differ to one another across different languages can provide valuable input to a fruitful discussion about the process of language acquisition as chapters 3 and 5 will illustrate. However, to lay the foundations for any investigation into the matter of how human beings acquire a language it is first necessary to understand what it actually means to **know** a language from a Cognitivist point of view. The first part of the following section 2.3.2. will therefore briefly address the issue of language competence.

### 2.3.2 The dynamic nature and semiological function of language

The first step to investigating linguistic competence<sup>4</sup> is to understand what language **is** and what it **does**. There is a consensus among linguists under the Cognitive paradigm that language primarily fulfils a symbolic or semiological function<sup>5</sup> (e.g. Evans & Green 2006: 6; Dirven & Verspoor 2004: 5; Langacker 1999: 14). Language allows us to externalise our

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<sup>4</sup> Here the term competence is not to be understood in the Chomskyan sense, in which competence is separated from performance (language use). Furthermore, a discussion of competence or knowledge of a language in a Cognitivist framework necessarily adheres to the assumption that language also reflects general, non-linguistic cognitive properties. It is not to be viewed as an entity detached from the human mind.

<sup>5</sup> Rigid interpretations of connectionist models, which refute the notion of language as symbolic representation, are the exception that proves the rule (cf. Mitchell, Marsden & Myles 2013: 126).

thoughts and ideas by encoding them into meaningful symbols which in turn can be accessed and interpreted by others (Evans & Green 2006: 6). Geeraerts and Cuyckens (2007: 5) have referred to this categorising function as the “encyclopedic nature of linguistic meaning”. Essentially, knowledge of a language is thus the ability to find and use the accurate symbolic representations available in a language for the mental conceptualisations that need to be externalised.

This semiological-functional notion of language can contribute to a better understanding of language proficiency and of the process of attainment in acquisition. Depending on a speaker’s knowledge of a language, for instance, the use of symbolic representations might be highly sophisticated and elaborate, or so crude and limited that he or she is reduced to gesturing and miming to communicate meaning. The degree of **conceptual fluency** (cf. Knop & Rycker 2008), i.e. the ability to move effortlessly between more schematic or superordinate categorisations such as *move* and highly specific or subordinate categories such as *run* or *sprint* is, in this regard, a crucial determinant in assessing a speaker’s competence. Irrespective of the degree of elaborateness in use, however, language can never enable us to encode every single thought in its entire complexity. It merely gives us the “rudimentary instructions to the conceptual system to access or create rich and elaborate ideas” (Evans & Green 2006: 8). Thus, language is dynamic and open to change because it can never fully reflect the intricacies of human thought. It therefore also needs to adapt to new concepts that human beings encounter when they engage and interact with an ever-changing world.

As the dynamic nature of linguistic meaning is a central tenet of CL, a diachronic perspective on language is indispensable to a better understanding of what Joan Bybee refers to as “the forces that create grammar” (Bybee 2007b: 945). In his book ‘Explaining Language Change’, for example, William Croft (2000) argues that it is the limitedness of language in its function of externalising complex thoughts that is the root of diachronic change. In order to achieve intelligibility in interaction, human beings have to use language in such a way that the recipient is able to access the respective conceptualisations. This presupposes a shared, **conventional** inventory of symbols. However, as Croft (2000: 105) points out, “there cannot be a word or phrase to describe every experience that people wish to communicate”.

As human beings attempt to convey thoughts and experiences as accurately as possible, new and prior **nonconventional** ways of language use are introduced in pragmatic

contexts that render the novel utterance meaningful and intelligible (Croft 2000). Successful use of a nonconventional item can consequently undergo propagation and continuous replication until it is considered a conventionalised item or structure (Evans & Green 2006: 123). This process of conventionalisation is reflected on many levels, running the gamut from suffixes to the coinage of new lexical items, and to changes on the phrase level. Examples of the latter are e.g. phrases or words which have become conventionalised as function words or phrases, such as *be going to*,<sup>6</sup> or compound noun structures in newspaper headlines which presuppose both contextual knowledge<sup>7</sup>, and the reader's use of "nonconventional coordination devices" to infer the meaning (Croft 2000: 103).

The following example is a headline to a newspaper article, which has been used by Croft (2000: 103) to illustrate how a rather rudimentary linguistic structure can provide access to rich and multifaceted conceptualisations due to conventionalisation. In this specific instance, it is presumed that the reader has prior knowledge about the case in question in order to comprehend the message:

## (2) Blood money setback for Saudi nurses

A reader who, at the time, had not been familiar with the fact that the nurses in question were of British nationality, but deployed in Saudi Arabia, might have inferred an entirely different meaning from the attributive adjective *Saudi* in the NP *Saudi nurses*. This demonstrates, how far we can diverge from what is generally considered conventional use, and yet still retain intelligibility within a discourse community. A further, and arguably more tangible instance of a similar process is presented in the following anecdotal account of my first conscious encounter with the original semantic meaning of the word *computer*.

During the time that I spent working on this chapter, I encountered a rather striking example of the dynamic nature of language by coincidence. Watching the movie 'Hidden Figures', I was amused by the fact that the groups of women running the calculations for NASA during the race for the first man in space were referred to as *computers*. It was not until the part of the film in which the IBM data processing system is introduced, thus threatening to render the jobs of female computers at NASA dispensable that I realised the significant semantic transition that the word *computer* has undergone since the 1960's, i.e. from human being to machine. In fact, being part of the generation labelled digital natives and as a native speaker of German, in which the English loan word exclusively refers to the

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<sup>6</sup> This process has been termed *grammaticalization* (cf. Hopper & Traugott 1993).

<sup>7</sup> Croft refers to this as *joint salience* (Croft 2000: 100).

electronic device for data processing, I perceived the word *computer* in reference to human beings as entirely unconventional. The mental concept that I had accessed clashed with the visual representation on screen. Thus, besides making for a good lesson in first-hand etymology, this example does not only reflect the dynamic nature of linguistic meaning and its potential for diachronic change; it also provides a glimpse into the matter of how language can be a shaper of thought and create expectations towards reality (Evans & Green 2006: 98-101).<sup>8</sup>

As the notion of a reciprocal interrelation between cognition and language is a central tenet of CL, the result of the externalisation of our thoughts and conceptualisations, i.e. actual language use, is therefore the primary object of investigation. This usage-based approach to investigating language further holds strong implications for a new understanding of the role of grammar by highlighting its discursive functions rather than regarding it as a restrictive set of formal rules, which allow us to generate an infinite number of well-formed sentences.

### 2.3.3 The usage-based nature of language

In the following, the role of usage-based theories in CL will be outlined as well as the respective approaches to grammar that these theories brought about, and which are subsumed under the term **construction grammar** as applied by Goldberg (1995), and Croft (e.g. 2007).

The usage-based dimension of CL was first highlighted in Langacker's 'Foundations of cognitive grammar' (1987), and has since become an integral part of the methodology in CL. It is also in this aspect that the Cognitive, functionalist approach differs most significantly from formalist traditions such as generative grammar: Generativists strongly emphasise the notion of competence, i.e. an implicit, underlying knowledge of the language and its syntactic principles, while largely overlooking issues of performance, viz. actual language use (cf. Chomsky 1978: 9-10). In contrast to that, usage-based theory is based on the notion that "knowledge of language is knowledge of how language is used" (Evans & Green 2006: 108).

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<sup>8</sup> While the issues of linguistic determinism and linguistic relativity are important research topics in CL and in research on SLA, they will not be dealt with extensively in this text. For an analysis of the relationship between language and thought with regard to SLA, I recommend consulting David Zambal's MA thesis on this issue (Zambal 2013), which was submitted at the English department of the University of Vienna, and provides an excellent overview of the topic.

While the shift of focus from competence towards performance certainly was a direct consequence of the refutation of Chomskyan generative grammar, it was also the result of rapid technological advance, which allowed for the storage of and quick access to vast amounts of linguistic data in the form of electronic corpora (Bybee & Beckner 2010: 828). The advent of these large electronic corpora in the late 1980s and early 1990s triggered a significant increase in empirical usage and text-based research in linguistics. Hence, while most prior theories focussed on introspection rather than on documented discourse, the availability of vast bodies of language data in corpus linguistics made it possible to gain a comprehensive insight into issues of performance. The paradigm shift from competence-oriented generative linguistics to output and performance-oriented usage-based approaches was thus also a matter of methodological progress.

Nonetheless, criticism of the generative dismissal of the role of performance and language output remains the core principal in the usage-based approach. A central claim in Bybee and Beckner's (2010) account of usage-based theory, for instance, is their argument against the generative notion that language structure exists autonomously and uninfluenced by language use. Instead, they propose a renewed understanding of grammar as **emerging** from usage patterns and domain-general (i.e. not language-specific) cognitive processes:

Usage-based theory postulates that the units and structure of language emerge out of specific communicative events [...], and strives to avoid relying on innate knowledge [...]. A usage-based model thus takes [...] the view that language is an extension of other cognitive domains (Bybee and Beckner 2010: 829).

If the structural regularities of a language are the result of how it is used in interaction, a grammar should consequently be the description of such patterns based on documented communicative events (e.g. compiled in corpora). Such an approach is reflected in construction grammar theory, which will be discussed in section 2.3.4.

Before embarking on a more detailed discussion of the concepts of construction grammar, it is necessary to elaborate on the role of frequency in the emergence of structural regularities in a language. The assumption that frequency in usage moulds language further overlaps with Cognitive approaches to L1A. In section 3.2., this aspect will be dealt with more extensively, when generative and Cognitive approaches to L1A will be compared and evaluated. However, in the context of the following discussion about the influence of frequency in usage-based theories, the issue of language acquisition will also be broached,

when the role of long-term memory and the impact of individual instances (i.e. **tokens**) and pattern-schemas (**types**) in usage will be investigated.

#### *2.3.3.1 The role of long-term memory and token/type frequency in the emergence of grammar*

As reflected in Bybee and Beckner's statement quoted above (Bybee & Beckner 2010: 829), a crucial aspect in the refutation of generative grammar is the fact that usage-based theory approaches language under the assumption that it does not obtain an exceptional, or domain-specific position, but rather that language is a reflection and manifestation of more general aspects of cognition (cf. Evans & Green 2006: 137; or pp. 40-44 for the cognitive commitment). These include, for instance, domain-general skills like pattern-detection and associative, or predictive learning, i.e. when inferences about future usage of linguistic items can be made based on probability of co-occurrence (Bybee & Beckner 2010: 830). All these processes are considered to play a vital role in L1 acquisition (cf. Tomasello et al. 2003) and will be revisited in section 3.2. of chapter 3 as well as in the discussion of Cognitive approaches to second language acquisition in chapter five.

Key components of the usage-based approach in this context are a potent long-term memory, the impact and storage of individual **tokens** (i.e. specific instances of language) in long-term memory, and their frequency of occurrence. Bybee and Beckner (2010: 833) consequently argue against the generative notion of a limited memory capacity, which requires a subconscious knowledge of abstract organising principles to generate new utterances (i.e. the UG). Instead, they postulate a non-reductive and non-minimalist notion of a rich memory system in which each token is stored in cognitive representation, either reinforcing an already existing pattern to which it is mapped, or establishing a new exemplar of a potential new pattern. From a Cognitive point of view, language thus makes use of what is already there, whereas generativist approaches presuppose the existence of an innate, language-specific mental capacity.

A central claim of the Cognitive approach is thus that grammatical representation in the human mind is affected by usage, and in particular by the storage of individual tokens and their frequency of occurrence (Evans & Green 2006: 118). Structural principles of language emerge from patterns in language use, which become entrenched in memory and allow for more abstract schematisations, i.e. **types**. For instance, entrenchment of a large number of instances of regular past simple tokens such as *believed*, *viewed*, *turned*, *regarded*

etc. gives rise to the type VERB+-*ed* of which each token is a direct representation. This approach represents an exemplar-based view of construction grammar, in which “generalisations co-exist among item-based constructions” (Kidd, Lieven & Tomasello 2010: 139). A new token, which cannot be linked to an established type-pattern is thereby low in productivity (i.e. there are no new applications of the token structure in a different context) as it is difficult to infer any generalisations from it, whereas a pattern that is rich in tokens generally allows for higher productivity (Evans & Green: 2006: 119). As the subsequent sections will show in more detail, tokens do not only occur on the word- and morpheme level, they can also be stored as whole chunks, or constructions with an inherent meaning, thus giving rise to a grammar of constructions.

The assumption that individual tokens and long-term memory play a vital role in language processing has been confirmed by Cognitive research on child language acquisition (cf. Tomasello 2000; Tomasello et al. 2003; Kidd, Lieven & Tomasello 2010). A variety of studies in the field have shown that early child language is largely organised around individual tokens to which the infants had been exposed (cf. Tomasello et al. 2003; see also section 3.2. for a more detailed analysis of this issue). As children gradually store more and more tokens, patterns are established and abstractions are made on the type-level, which ultimately leads to productivity in usage, or what might be considered grammatical competence (Abbot-Smith & Tomasello 2006, 2010).

In short, usage-based theory offers a different approach to grammar than formal or generative linguistics by essentially understanding it as the patterns and structures that emerge from language use, rather than attributing to it a set of underlying abstract principles that govern all language use. The role of a powerful long-term memory as well as the impact of specific instances of language use are vital components in this regard, as they give rise to generalisations on the type level. Usage-based theory can thus be considered a bottom-up approach (structure is inferred from language use), whereas the generative notion of a UG implies a top-down process (underlying syntactic rules govern language use) (Langacker 1988: 131), the latter of which is, after all, perfectly illustrated by the use of tree diagrams in syntactic analysis.

A usage-based approach that postulates that grammar emerges from language use instead of being an abstract set of rules further has a significant impact on how grammar relates to the lexicon. Various approaches in usage-based theory and construction grammar theory, for instance, have argued against notions of a boundary between lexicon and syntax

(e.g. formal syntactical approaches as in Chomsky 1981), and instead suggest a lexicon-syntax continuum (cf. Langacker 2007, Boas 2010).

#### 2.3.3.2 *Grammar as an extension of the lexicon: conventionalised constructions as form-meaning pairings*

As the previous section has shown, grammar in the usage-based sense is the result of conventionalised patterns which emerge from language use. Such constructions are therefore not the result of merely filling in the blanks with lexemes and morphemes in accordance with underlying structural principles; they are the product of meaningful interaction. As instances of language use are entrenched in our memory, we do not only store individual words as form-meaning pairs; we also store longer strings of words, or chunks in a similar way (cf. Diessel 2011: 836). Based on this, usage-based theory argues that grammar and lexicon ought to be understood as “a continuum [...] of symbolic structures” rather than as separate entities, of which the lexicon holds the form-meaning mappings (i.e. lexemes) and grammar the morpho-syntactic rules for stringing them together (Langacker 2007: 427).<sup>9</sup> Constructions are thus thought to have an inherent meaning as well.

Consider, for instance, the idiom *the early bird catches the worm*. While it is possible to process this string of words individually by analysing the literal (or lexical) form-meaning pairings within the structure, it will most likely not lead to the inference of the conventionalised meaning of the idiom. Furthermore, if one were to substitute, for instance, the second definite article before *worm* with an indefinite article and the adjective *early* with *young*, the resulting sequence of words would a) be far lower in frequency of occurrence, and b) lose the extended metaphorical meaning of the original idiom. Therefore, the whole sequence of words needs to be stored verbatim as a multiword unit, as the conventionalised meaning is inherent to the structure as a whole, and not to the individual lexemes.

While idioms are striking examples of how conventionalised chunks of language can be stored as tokens, Bybee and Beckner (2010) argue that the storage of multiword units goes beyond the case of metaphorical meaning in idioms, and also involves collocations:

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<sup>9</sup> More radical approaches to grammar, such as O’Grady’s ‘Emergentist Approach to Syntax’ (2010) go as far as to negate the existence of a grammar based on the absolute refutation of underlying syntactical rules. However, I will endorse the view that grammar is to be understood as an extension of the lexicon which is syntactically productive as proposed in e.g. Langacker’s ‘Cognitive Grammar’ (2007), in the usage-based theory as postulated by Bybee and Beckner (2010), and in Croft’s (2007) account of construction grammar.



Thus for instance, while *pull strings* as in *he pulled strings to get that job* has a metaphorical meaning, the phrases *for some reason* or *dark night* are transparently compositional in form and meaning and yet represent the conventional way of expressing certain notions. Knowledge about the conventionality of all these sequences must be represented somehow in the grammar, since fluent speakers do not produce (or accept) the full range of utterances permitted by combinatoric syntactic rules. (Compare the non-conventionalized and rather awkward *by some reason*, *for some cause*, and *black night*). (Bybee & Beckner 2010: 835-836)

Although Bybee and Beckner's examples of idioms and collocations as multiword units with an inherent meaning offer a convincing argument for the notion of a usage-based grammar of meaningful constructions, they provide relatively little insight into syntactic productivity.<sup>10</sup> 'Frozen' idioms, such as *by and large*, for instance, are stored as verbatim tokens with no generalisations or abstractions (cf. Sag et al. 2002). In order to understand grammar from a usage-based standpoint, it is thus crucial to look at conventionalised constructions, which have an inherent meaning, but are syntactically productive. Accordingly, Bybee and Beckner (2010: 842-843) define their understanding of grammar as follows:

We regard any conventionalized string of words or morphemes as a construction, but our focus for an understanding of syntactic productivity is on strings that include at least one schematic position – a position in which more than one word or morpheme may appear. What we regard as the grammar of a language is a collection of constructions, organized into networks by the same criteria that words are – by their formal and semantic similarity. (Bybee & Beckner 2010: 842-843)

Besides offering a relatively broad definition of the term 'construction', Bybee and Beckner's understanding of usage-based grammar reflects the notion of a lexicon-syntax continuum. This is, however, by no means an isolated position in linguistics. In his review of Bybee's 2010 publication *Language, usage and cognition*, Holger Diessel highlights the proximity between the usage-based approach and construction grammar (henceforth CxG), emphasising the fact that "usage-based linguists have drawn so frequently on concepts of construction grammar that the two approaches are often presented as a unified theory" (Diessel 2011: 830). When I will now proceed to elaborate on CUB approaches to grammar, I will do so by drawing on research undertaken in the field of CxG theory. It should, however,

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<sup>10</sup> For research on morpho-syntactic and syntactic productivity in idioms cf. Fazly, Cook, and Stevenson (2009).

be emphasised that this is by no means a departure from usage-based theory, but rather an extension of the hypotheses discussed in the paragraphs above.

The following section will provide an overview of the constructionist approach as well as examples of type-constructions, i.e. the conventionalised strings of words and morphemes that have schematic positions and hence allow for productivity in usage (cf. Bybee & Beckner 2010: 842-843, as quoted above). In this context, the constructionist approach to grammar will be illustrated by Adele Goldberg's analysis of ditransitive constructions (cf. Goldberg 1992, 1995, 2013).

#### 2.3.4 Cognitive approaches to grammar: construction grammar

As mentioned above, usage-based and constructionist approaches to grammar are, by and large, congruent in their basic principles. Like usage-based theory, CxG essentially rebuts the generativist notion of a clear separation between a predefined set of syntactic or grammatical categories and the lexicon. Instead, it views grammar as emerging from patterns of use.

Much like usage-based theory, the constructionist approach has led to exhaustive research, most of which was primarily aimed at subverting formalist hypotheses about grammar. Unfortunately, the scope of research undertaken under the paradigm of CxG is far too extensive to be covered in more detail here.<sup>11</sup> Nonetheless, this section should provide a glimpse into the basic principles of CxG, i. a. by discussing Adele Goldberg's account of the ditransitive (Goldberg 1992). This brief account of the constructionist approach will serve as a point of reference for a more detailed discussion of potential implementations of CxG in L1A (cf. chapter 3) and SLA (cf. chapter 5).

In accordance with the Cognitive hypothesis that all aspects of language are meaningful and in congruence with usage-based theory, grammar from a constructionist point of view no longer ought to be perceived as a set of formal rules, but rather as an extension of the form-meaning mappings in the lexicon. Following Langacker (1987) and Goldberg (1995), for instance, Diessel (2013: 349) argues that “[if] grammar consists of constructions, there is no principled difference between words and grammatical assemblies”. Hence, the notion of a clear separation of lexicon and syntax is abandoned in favour of a

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<sup>11</sup> For a more comprehensive overview of the topic, I recommend consulting ‘The Oxford Handbook of Construction Grammar’ edited by Thomas Hoffmann and Graeme Trousdale (2013), specifically the introductory chapter as well as Adele Goldberg's contribution in the volume.

“lexicon-syntax continuum” in the sense that constructions are thought to be inherently meaningful and thus also form-meaning pairs, similar to lexemes (Hoffmann & Trousdale 2013: 1).

With the construction obtaining such a prominent position, it is imperative to outline the parameters of description. Goldberg (2006: 5), for instance, defines a construction as follows:

Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency.

Goldberg’s definition<sup>12</sup> consequently accommodates those constructions, which allow for high morpho-syntactic productivity (e.g. the ditransitive construction) and are therefore less predictable in their respective token structure as well as constructions which are highly specified in their token occurrence, such as idioms, if they occur in statistically relevant numbers. Under this assumption, language can thus be viewed as “a continuum of successively more abstract constructions, from words to fully-fixed expressions to variable idioms to partially filled constructions to abstract constructions” (Stefanowitsch & Gries 2003: 212).

An overview of what such a lexicon-syntax continuum can essentially look like the list provided in table 1 taken from Goldberg (2013: 17), who argues that constructions can vary in terms of complexity and abstraction, ranging from highly specific constructions such as idioms like *kick the bucket* which do not allow for much productivity, to more abstract and open constructions such as ditransitive or passive constructions.

As discussed in the previous section on the usage-based nature of language and grammar, the level of abstraction as represented in the left column of the table is acquired by means of exposure to and production of actual realisations (tokens) of the respective constructions (types) in language use. Depending on the frequency of occurrence in a corpus, these instances can be either more, or less representative/prototypical of the construction. A ditransitive construction with *give*, for instance, is more readily associated with the notion

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<sup>12</sup> Goldberg’s definition is rather general and accommodates a variety of different approaches to CxG, which may ultimately differ in their parameters of description. Hence, the spectrum of different approaches to CxG is broad; they are, however, well-documented in part 2 of Hoffmann & Trousdale’s ‘Handbook of Construction Grammar’ (Hoffmann & Trousdale 2013).

of transfer than it is with *bake* (creation with the intention of transfer) in the predicate position. Nonetheless, the form-meaning mapping of transfer also extends to the example in which *bake* is used.

Table 1. A lexicon-syntax continuum according to Goldberg (2013):

Construction	Examples
Word	<i>Iran, another, banana</i>
Word (partially filled)	<i>pre-N, V-ing</i>
Idiom (filled)	<i>Going great guns, give the devil his due</i>
Idiom (partially filled)	<i>Jog &lt;someone's&gt; memory, &lt;someone's&gt; for the asking</i>
Idiom (minimally filled) <i>The Xer the Yer</i>	<i>The more you think about it, the less you understand</i>
Ditransitive construction: Subj V Obj1 Obj2 (unfilled)	<i>He gave her a fish taco; He baked her a muffin</i>
Passive: Subj aux VPpp (PPby) (unfilled)	<i>The armadillo was hit by a car</i>

A closer inspection of the ditransitive construction illustrates some of the advantages and limitations of Goldberg's schematisation of various constructions as reflected in table 1. First of all, a significant advantage of Goldberg's CxG is that it can account for the integration of novel verbs as in the following examples (3) and (4) as well as for a sentence like (5) in which a prototypical intransitive verb like *sneeze* is used in a ditransitive construction (Evans & Green 2006: 670).

(3) John texted Jane the details.

(4) John e-mailed her the invitation letter.

(5) John sneezed the tissue across the table

However, as Goldberg (1992: 38-39) demonstrates, the ditransitive construction does not allow for entirely free production, even though the verbs in the examples provided are, from a lexical point of view, semantically close:

(6) a. Joe told Mary a story.

b. \*Joe whispered Mary a story.

- (7) a. Joe baked Mary a cake.  
b. \*Joe iced Mary a cake.

This paradox clearly shows that there is more to grammatical constructions than just their formal properties. Gropen et al. (1989, referred to in Goldberg 1992: 39-40) attempted to rectify this problem by narrowing down the group of verbs that could be used in a ditransitive construction based on their semantic properties. They consequently compiled a list of lexical entries for verbs that qualify for the ditransitive construction. These entries range from categorisations, such as “verbs that inherently signify acts of giving, e.g., *give*, *pass*, [...] *serve*, and *feed*” to “verbs of instantaneous causation of ballistic motion, e.g., *throw*, *toss*, *flip*, [...]” (Gropen et al. 1989, quoted in Goldberg 1992: 39). Overall, Gropen et al. compiled a list of nine different semantic classes, each comprising a multitude of verbs. However, despite their specificity in terms of semantic description some of these categorisations were later deemed unfeasible in Goldberg’s re-evaluation (Goldberg 1992: 40).

What Goldberg’s discussion of the ditransitive illustrates, is that constructions, which are schematised as unfilled, are susceptible to constraints (e.g. on the verb level) that require a further, and arguably more complex description of the lexicon. Boas (2010: 57) has therefore claimed that in such an approach, a separation of the lexicon and grammar is still maintained, although implicitly:

The review of Goldberg’s constructional approach shows that there are at least two distinct categories of linguistic information that interact with each other, namely lexical entries and argument structure constructions. This suggests a *de facto* separation between syntax and the lexicon, despite her claim that “the lexicon is not neatly differentiated from the rest of grammar” [...]. The interaction between lexical entries and constructions can be problematic if the constraints governing the fusion of the two are not sufficient to rule out unacceptable examples.

To overcome this problem, Boas proposes a departure from constructions that impose constraints on the lexicon and suggests a “more detailed analysis of such meaning structures [which] allows us to arrive at verb-specific constructions that provide a greater level of detail than Goldberg’s lexical entries” (Boas 2010: 60). Such an approach can thus account for the shortcomings of Goldberg’s (1992) and Gropen’s (1989) lexical entries; however, in rejecting broader generalisations, it does so at the cost of increased complexity in description (Boas 2010: 61).

An alternative to Goldberg's and Boas' approaches from a methodological point of view is the data-based approach to the analysis of **collostructions** as proposed by Stefanowitsch and Gries (2003). Similar to corpus-based analyses of collocations, in this approach, the interaction of lexemes and constructions is investigated by checking specific construction schemas (such as the one proposed by Goldberg, cf. table 1) against corpus data. A significant merit of such an approach is that it no longer has to rely on introspective judgments, which often do not draw on authentic or natural examples (Gries 2013: 96). A corpus-based analysis of collostructions can therefore reveal instances in which the construction coerces a different reading of a verb as in *John sneezed the tissue across the table* (Stefanowitsch & Gries 2003: 213) with greater efficacy and accuracy as well as instances of previously unattested verb uses which had been ruled out based on introspective judgement, but nevertheless occurred in corpus analysis (Stefanowitsch 2011).

While research on constructions and patterns in usage has certainly offered new insights into how language is structured, it is rather difficult to imagine how an approach such as the analysis of the ditransitive construction by Gropen et al (1989), Goldberg (1992), and especially by Boas (2010), could be implemented in second language learning<sup>13</sup>. After all, the usage-based and constructionist approach is largely based on the idea that a grammar needs to account for why certain constructions are conventionalised in the way they are, yet the reasons for which specific instances of constructions qualify as acceptable or unacceptable appear to be highly complex, or even arbitrary at times. Nonetheless, the relevance of constructionist approaches to grammar in matters of L1A and SLA has been attested (cf. Diessel 2013; Ellis 2013), and in the respective chapters three and five, which deal with L1A and SLA respectively, the concepts of CxG will be revisited.

To sum up, in a usage-based approach, constructions are considered the building blocks of language. Depending on the frequency of occurrence of these form-meaning patterns in language use, they can be either more, or less prototypical/conventional, and depending on their schematic flexibility, they can be either high or low in productivity. This assumption has crucial implications for issues of language acquisition: If we acquire a language by building a network of constructions, this surely must be reflected in the process of child language acquisition. Indeed, research undertaken in CL (e.g. Lieven et al. 2003; Tomasello

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<sup>13</sup> This is even more true for a radical view of construction grammar as proposed by Croft (2001), who explicitly breaks with all prior approaches to syntactic analysis, and challenges all prior forms of metalanguage in that regard.

2000, 2007; Tomasello et al. 2003) has brought forward compelling evidence, which suggests that early child language is largely organised around specific tokens with no signs of productivity until the age of around two and a half to three years (cf. section 3.2. for a more detailed account of Cognitive research on, and approaches to child language acquisition). The assumption that child language acquisition reflects the process of building a network of constructions is therefore a comprehensible one.

In the following chapter, the fundamental principles of CL will serve as the theoretical groundwork for a discussion of the issue of L1A. It is especially in this domain that Cognitivists have found compelling evidence against formalist and generativist hypotheses. Furthermore, any discussion regarding a theoretical approach to issues of SLA requires an analysis of the respective theory's stance on L1A. Many of the principles of the Cognitive approach to L1A which are established in the following chapter will thus be revisited in chapter five, which seeks to merge CL and SLA.

### 3. Cognitive approaches to first language acquisition

The following sections will primarily discuss aspects in which Cognitive approaches to language acquisition differ from their formalist counterparts. The crucial aspect in this discussion is the difference in the understanding of how human beings acquire grammatical competence in their L1. The assumption is that if we understand how these processes work in L1A, inferences can be made about L2 grammar acquisition. In the first section, the poverty-of-stimulus hypothesis and its implications for UG theory will be presented as an integral part of generative linguistics and generative approaches to L1A. In section 3.2., the generative approach will be confronted with a CUB approach to language acquisition, which refutes the poverty-of-stimulus hypothesis based on empirical studies and the notion that language acquisition is a domain-general process. The subsequent sections will then zero in on the issue of grammar acquisition: In section 3.3., the linking problem will be presented as an example of how a formalist, generative grammar fails to offer a comprehensible framework for an understanding of grammar acquisition. In section 3.4., I will therefore propose a departure from a formalist approach to grammar acquisition, and consequently provide an analysis of CUB approaches to L1A and their implications for the process of SLA, which will then be discussed in chapter five.

### 3.1 The generative approach to L1A

In the previous section on the usage-based nature of language, the generative stance on the relationship between linguistic competence and performance has already been discussed, and it has been established that the generative approach is characterised by a clear focus on competence while at the same time it pays little attention to instances of language use, i.e. performance. The Chomskyan idea of a UG (e.g. Chomsky 1981) and the concomitant primacy of competence over performance was largely based on the **poverty-of-stimulus hypothesis**, which sought to explain the process of child language acquisition from a generativist point of view (Chomsky 1959; cf. Tomasello et al. 2003: 2). The generativist view on this is that humans must be equipped with an innate and language-specific predisposition that subconsciously organises and structures the language input to which children are exposed. While the generativist claim is that this organising function must be accredited to a UG (i.e. a language-specific mental faculty), Cognitivists argue that the structuring processes are domain-general (i.e. not language-specific) (Evans & Green 2006: 141-142). In the following, the generativist poverty-of-stimulus hypothesis and the resulting concept of an innate UG will be discussed in more detail in order to provide a basis for the subsequent discussion of CUB approaches to L1A.

The poverty-of-stimulus hypothesis is the result of Chomskyan criticism of behaviourist and empiricist learning theories, which consider language acquisition as being no different to other learning processes. The hypothesis rests on the assumption that individual utterances to which children are exposed during the process of language acquisition are insufficient to explain the learning of highly abstract and arbitrary principles of grammar. In his ground-breaking publication ‘Aspects of the Theory of Syntax’, Chomsky (1965) outlines the generative approach to child language acquisition in rejection of linguistic empiricism (cf. Stich 1977) <sup>14</sup> as follows:

In particular, such [i.e. empiricist] speculations have not provided any way to account for or even to express the fundamental fact about the normal use of language, namely the speaker’s ability to produce and understand instantly new sentences that are not similar to those previously heard in any physically defined sense or in terms of any notion of frames or classes of elements, nor associated with those previously heard by conditioning, nor obtainable from them by any

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<sup>14</sup> According to Stich (1977: 284), empiricist and behaviourist learning theories “characteristically attribute to the mind an innate learning mechanism which is relatively simple, imposes relatively little structure on the output of the learning process, and is neither species nor task specific”. Therefore, the process of learning a language would not presuppose an innate language-specific predisposition.



sort of “generalization” known to psychology or philosophy. (Chomsky 1965: 57-58)

Chomsky’s argument that the human ability to apply formal syntactic rules to form new and previously unheard sentences could not be explained by any of the established learning theories at the time had a significant impact on research on language acquisition. He argues that this phenomenon cannot be explained by inductive processing of input data, mainly due to the paucity of linguistic information that children are exposed to. Instead, generative linguistics suggests that this paradox can only be overcome if humans have a genetic predisposition in the form of an innate language faculty. As Chomsky (1965: 58) argues, this predisposition, which is also referred to as the language acquisition device, facilitates the acquisition process unconsciously:

It seems plain that language acquisition is based on the child’s discovery of what from a formal point of view is a deep and abstract theory – a generative grammar of his language – many of the concepts and principles of which are only remotely related to experience by long and intricate chains of unconscious quasi-inferential steps.

Considering the significance and the impact of Chomsky’s theories on the generativist paradigm, it comes as little surprise that the generative approach to language acquisition has henceforth been bound to the fundamental assumption that “it is not possible to explain language acquisition from the PLD [i.e. primary linguistic data] by means of domain-general learning procedures” (Clark & Lappin 2011: 25). Thus, the hypothesis that humans must be endowed with a language-specific innate faculty was established.

As is usually the case with theories about language acquisition, the innateness hypothesis and generative approaches to child language acquisition also influenced the field of second language acquisition research. In the case of generativism, this culminated in learning theories, which argued for a completely natural L2 acquisition along the lines of the L1A process that ought to be free from all forms of explicit instruction. These manifestations of the generative approach to language acquisition will be critically examined in chapters four and five, which deal with the issue of SLA more extensively. Before doing so, the following section will introduce the Cognitive stance on L1A, which will deconstruct both the generative innateness claim and the poverty-of-stimulus hypothesis by refuting the notion that child language reflects adult-like grammatical complexity.

### 3.2 Understanding early child language from a Cognitive point of view

While it has certainly provided a reasonable explanation of the process of child language acquisition within the generative framework, the poverty-of-stimulus hypothesis has drawn criticism from functional and Cognitive linguistics. Backed by empirical research on child language acquisition, Tomasello (2000) has brought forward numerous plausible claims for why the poverty-of-stimulus and the innateness hypotheses are not adequate answers to the question of how children reach near adult-like proficiency in a relatively short time. Primarily, Tomasello's criticism targets two shortcomings of the generative approach: He argues that the Chomskyan approach underestimates the powerful learning mechanisms that children have at their disposal (Tomasello et al. 2003: 3; Tomasello 2000: 229-231), while at the same time it overestimates the degree of complexity of grammatical structures in child language (Tomasello 2000: 211). The long-held belief that children just "cannot get from here to there" which is the root of the poverty-of-stimulus hypothesis was thus the result of mapping notions of adult complexity onto child language (Tomasello 2000: 235).

Various systematic studies on L1A, however, have demonstrated that there is no evidence of children showing signs of adult-like competence regarding the use of grammatical structures at the early stage of child language acquisition (2-3 years). Grammatical competence in this context refers to the notion that children are able to apply abstract rules about language in new contexts. In fact, most studies investigating child language use based on documented input and output (Tomasello 1992; Lieven, Pine & Baldwin 1997; Pizzuto & Caselli 1992) as well as experiments based on the introduction of novel verbs (Tomasello, Akhtar, Dodson & Rekau 1997; Akhtar & Tomasello 1997) have shown that L1 use during the early stages of acquisition is highly constrained by the input to which a child is exposed.

For instance, Tomasello (2007: 1101) has found that prior to the age of around 2,5 to 3 years, the extent to which children apply generalisations or rules to create previously unheard-of constructions is extremely low. This clearly goes against the notion that the human mind is equipped with an innate UG, which is geared towards abstracting the underlying rule system from any language to which a child is exposed. Instead of reflecting an abstract linguistic competence, early child language appears to be item-based and imitative learning based on adult language use, in which utterances are organised around individual verbs with nominal slots (Tomasello 2000: 213). Most utterances at that stage are

thus usage-driven reproductions or imitations of previously processed input with no signs of a UG at work.

It is, however, important not to reduce this item-based and imitative learning process to mere mimicking in a basic behaviourist sense, as “the learner understands the *purpose* or *function* of the behaviour she is reproducing” [my emphasis] (Tomasello 2000: 238). Thus, the process of learning a language is a process of cultural learning in which the focus is on the communicative function in interaction between human beings. By identifying patterns in usage, and by inferring the semantic and pragmatic meaning of an utterance in the context of its usage, children first reproduce this behaviour in similar contexts until they reach a cognitive threshold around the age of 3.5 years from where on they start to develop abstract knowledge about their language and productively apply that knowledge to create novel utterances (Tomasello 2000: 216).

Early child language is therefore mainly the result of purposeful imitative learning in which linguistic forms are connected to the pragmatic contexts in which they appear. It is thus a process of storing form-meaning mappings (Evans & Green 2006: 6). The Cognitive approach dispenses with the assumption that early child language already reflects the abstract rule system that adults use when they create new utterances.

In the following section, another problematic aspect of the generative approach to L1A, i.e. the **linking problem**, will be discussed, and general differences in the approach to L1A between generative linguistics and CL will be further elaborated on. Finally, the main misconceptions that resulted in the shortcomings of generative approaches to L1A will be analysed, and the Cognitive approach will be presented to provide an alternative, and arguably more reasonable account of how human beings acquire their mother tongue.

### 3.3 The linking problem and further misconceptions about L1A in generative linguistics

The poverty-of-stimulus hypothesis (cf. section 3.1.) is not the only focal point of Cognitive criticism of generative approaches to L1A. A further aspect of the generative paradigm which has been deemed fallible by Cognitivists can be traced back to an extensive cross-linguistic study that was undertaken by Dan Slobin (1997) over the period of a decade: Setting out to collect linguistic evidence in support the generative hypothesis of an underlying structure inherent to all languages, Slobin had to reconsider his position as he

arrived at the conclusion that the vast array of variation across languages simply could not be contained by a predetermined UG (cf. Tomasello 2007: 1099). This revised understanding of language universals had a severe impact on the innateness hypothesis, as it suggested that there was little support for the notion that a child's innate UG could be activated by and linked to any language she is exposed to.

The result of this discrepancy is thus what Pinker identified as the **linking problem** (Pinker 1984, referred to in Tomasello 2000: 232); i.e. the issue of how children link their UG competence to the specific language they are exposed to in the process of acquisition. To illustrate the UG fallacy in this regard, Tomasello (2000: 232) analyses the concept of 'subject of a sentence' in various languages. Along the lines of Slobin's investigation of linguistic variation, he argues that the subject concept is realised in so many different ways across languages that there simply cannot be an underlying innate structuring faculty that links up a linguistic instance with the predetermined concept of subject of the sentence (233). Furthermore, Tomasello criticises the lack of evidence in accounting for how a static innate UG could keep up with language change over time (Tomasello 2000: 233).<sup>15</sup>

While the linking problem might pose a highly significant challenge to generative theories, this discrepancy has largely been overlooked in generative linguistics, with Pinker's efforts being an exception to the rule (Tomasello 2000: 234). Under these premises, it appears that the poverty-of-stimulus hypothesis as well as the innateness hypothesis are flawed theories. However, I will argue that they should be considered the inevitable manifestations of a deeper, underlying set of misconceptions about language.

The root of these misconceptions stems from the increased level of abstraction that generative linguistics requires for its theoretical approach, and which at the same time contributes to the notion that language and particularly grammar are highly complex (Taylor 2007). Set out to define a universally applicable grammar of formal syntactic rules in an effort to get to the core of language competence, the generative approach removed itself further from issues of actual language use and reached levels of abstractness that were bound

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<sup>15</sup> To account for a UG that is consistent with linguistic change over time, Lightfoot (2013) has proposed a more flexible view of competing internal languages which respond to external input adaptively. These internal languages are still based on the same pre-existing, and language-specific genetic disposition (the I-language capacity). Lightfoot (2013: 262) argues that the internal language "grows in children in response to the E-language [external language] that they encounter, the source of the cues, and becomes part of their biology". In this model, an adaptive internal language in children that reacts to changes in the external language (for instance due to contact with another language) is the driving factor in diachronic change. However, while it offers a possible explanation, Lightfoot's adaptive model clearly reflects the ever-increasing level of abstractness that is required to maintain the notion of a UG in light of the linguistic evidence that is available.

to infer the notion that a language-specific genetic predisposition is a requirement for acquisition (cf. Tomasello 2000: 229). After all, generative linguistics defines grammaticality very broadly “in terms of whether [an] expression can be generated by the formal rules of grammar” (Taylor 2007: 572). Such a far-reaching and inclusive definition consequently leads to high levels of abstraction, since it is supposed to encompass the underlying organising principles that allow for the vast array of highly complex and sophisticated utterances known to mankind. Whether all the well-formed sentences that can be generated in accordance with the syntactic principles of UG are likely to occur in a corpus, for instance, or are considered acceptable by native speaker standards is, however, of secondary interest (Taylor 2007: 572).

More importantly, an approach such as this completely ignores the pragmatic and contextual clues that, from a Cognitivist point of view at least, play a vital role in the process of language acquisition (Tomasello et al. 2003: 21-28). Therefore, the poverty-of-stimulus hypothesis can arguably be considered a consequent conclusion to an approach that is based on a highly abstract notion of grammar and a disregard for how language is actually used.

At this point, it is important to remember that while both generative and Cognitive linguistics deal with language as a cognitive phenomenon, the former does not treat language as a part of human cognition reflecting more general cognitive principles (cf. the cognitive commitment; Lakoff 1990: 40). While CL draws on other research domains that investigate features of the human mind to make assumptions about language use, generative linguistics did not come into being as a result of “independently known facts about the mind” (Taylor 2007: 573). In fact, it “imposed conditions on the structure of a more general theory of cognition” (Taylor 2007: 573).

The theory of generative grammar requires a compatible theory of cognition that fits its linguistic principles. The prime example of these research dynamics is the poverty-of-stimulus hypothesis leading to the assumption that human beings are endowed with an innate language faculty. This in turn stems from the highly abstract notion of an underlying UG. In generative linguistics, assumptions about grammar and particularly about syntactic rules consequently led to assumptions about human cognition, and not the other way around.

In the following section, the Cognitive notion of grammar as a primarily semantic feature of language will provide a different view of the complexity of language, and therefore of the processes involved in L1A, and grammar acquisition respectively.

### 3.4 Implications of the CUB approach to L1 acquisition

In the following section, the usage-based and functional dimension of language, and of grammar in particular, will be further elaborated as the discussion of generative and Cognitive approaches to L1A is concluded. In this context, I will propose a departure from formalist theories of L1A. Furthermore, the concept of CxG (cf. section 2.3.4.) will be revisited as it has strong implications for CUB approaches to both L1A and SLA, and particularly to grammar acquisition.

As mentioned in section 2.2., which highlighted fundamental differences between CL and Chomskyan generative grammar, Cognitivists attempt to understand language and grammar as a reflection of, and through human cognition (Taylor 2007: 573). Just like language in general, grammar, from a Cognitivist point of view, is functional in that it fulfils symbolic and interactive/communicative functions in the process of externalising thought (Langacker 2007: 422). Instead of understanding grammar as a formal set of rules, which requires an innate processing system, Cognitive linguistics offers a different approach, which rectifies the linking problem (cf. Tomasello 2000). All assumptions made about child language acquisition in this context are based on basic, non-linguistic, cognitive skills that have been shown to be manifest in child behaviour. These include pattern-finding, cultural learning through role reversal imitation, and intention reading (Tomasello et al. 2003: 21-28). Tomasello et al. (2003: 283) break down the main difference between generative linguistics and CUB linguistics as follows:

[The] grammatical dimension of language does not derive from a specific biological adaptation, but rather from historical and ontogenetic processes. When humans use symbols to communicate with one another, stringing them together into sequences, patterns of use emerge and are grammaticized into constructions. New generations of children inherit these linguistic constructions in the sense that they are exposed to utterances that instantiate them, from which they themselves must (re-)construct the abstract grammatical dimensions of the language they are learning. They do this using biologically inherited cognitive skills falling under the general headings of intention-reading and pattern-finding.

By connecting the cognitive processes of pattern-finding and intention-reading, children eventually start to acquire the form-meaning mappings that ultimately constitute our knowledge of a language (Evans & Green 2006: 138). Compared to prior approaches to language analysis, the Cognitive understanding of grammar and particularly of grammatical

constructions as meaningful symbols that are used in and triggered by certain contexts marks a paradigm shift in research on language acquisition. In its understanding of how children acquire grammatical competence by means of domain-general cognitive processes, the CUB approach to L1A thus appears to be the more effective model – and this is to a large extent due to the role of CxG theory.

As discussed in section 2.3.4., CxG offers a different perspective of the relationship between grammar and the lexicon insofar as it argues for an extension of form-meaning mappings from the word level (lexemes) to whole chunks of language, i.e. constructions (cf. e.g. Langacker 1987; Goldberg 1995; Croft 2007). For clarification, a clear and concise overview of the basic principles of construction grammar is provided by N. Ellis (2010a: 27):

[Language] is constituted by a structured inventory of constructions as conventionalized form-meaning pairings used for communicative purposes. Usage leads to these becoming entrenched as grammatical knowledge in the speaker's mind. Constructions are of different levels of complexity and abstraction; they can comprise concrete and particular items (as in words and idioms), more abstract classes of items (as in word classes and abstract grammatical constructions), or complex combinations of concrete and abstract pieces of language (as mixed constructions). The acquisition of constructions is input-driven and depends upon the learner's experience of these form-function relations. It develops following the same cognitive principles as the learning of other categories, schema and prototypes [...] Creative linguistic competence emerges from the collaboration of the memories of all of the utterances in a learner's entire history of language use and the frequency-biased abstraction of regularities within them.

As prior sections in this chapter on L1 acquisition have illustrated, the storage of individual tokens in long-term memory plays a crucial part and is particularly reflected in how early child language is structured (i.e. item-based, cf. Tomasello 2000; Tomasello et al. 2003). It has also been established that around the age of three, children start to infer abstract generalisations from patterns and use them productively. In Ellis' concise account of the basic tenets of CxG (as quoted above), he refers to the abstraction of regularities as a frequency-biased process, in which constructional schematisations arise from high token and type frequency in usage. Again, I will refer to a quote from N. Ellis (2002a: 144), in which he explains the acquisition of grammar as follows:

the acquisition of grammar is the piecemeal learning of many thousands of constructions and the frequency-biased abstraction of regularities within them. Language learning is the associative learning of representations that reflect the probabilities of occurrence of form-function mappings. Frequency is thus a key determinant of acquisition because “rules” of language, at all levels of analysis (from phonology, through syntax, to discourse), are structural regularities that emerge from learners’ lifetime analysis of the distributional characteristics of the language input. Learners have to *figure* language out. [original emphasis]

The Cognitive consensus in this regard is that this sophisticated process of analysing the statistical probabilities of the occurrence of words and constructions is a domain-general feature of human cognition. Based on prior research (Hasher & Chromiak 1977; Posner & Snyder 1975), N. Ellis (2002a) argues that the processing of frequency occurs implicitly, as it is an underlying mechanism that operates without intention and with minimal effort. Therefore, we can attend to other aspects of interaction, such as the pragmatic meaning or the illocutionary force that can be inferred from an utterance, while at the same time we “acquire knowledge of the frequencies of the elements of language and their mappings” (N. Ellis 2002a: 146).

N. Ellis’ position as reflected in the quotes above is notable insofar as his statements were not made about L1A, but primarily about the acquisition of an L2. Ellis thus conveys the notion that SLA, and particularly the acquisition of L2 grammar, is first and foremost an implicit learning process, and hence similar to L1A. However, this assumption is strongly contested in SLA research: Despite Ellis’ mentioning of the importance of noticing and explicit instruction in language acquisition (N. Ellis 2002a: 145), his statements were met with considerable criticism, most of which voiced concern over the supposedly neglected role of explicit learning in Ellis’ account of CxG in L2 acquisition.<sup>16</sup> As the comparability of the processes of L1A and SLA are a pivotal point in any discussion of SLA theories, Chapter four will address this issue extensively.

To sum up, in this chapter, it has been demonstrated that a CUB approach can offer a more comprehensible insight into L1A than formalist or generative approaches, which rely on the existence of a UG. Especially CxG theory can provide valuable information about the processes that ultimately lead to grammatical competence. As constructionist and usage-based approaches are congruent with other domain-general processes that are manifest

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<sup>16</sup> This prompted Ellis to explicitly address the criticism in the same issue of ‘Studies In Second Language Acquisition’ (Ellis 2002b).



during child language acquisition, the integration of these approaches in L1A theory appears to be the most appropriate way of tackling the issue of grammar acquisition. The implications of the CUB understanding of L1A for processes in SLA as well as potential implementations of such an approach will be investigated in the second half of this paper. Before that, however, it is necessary to investigate whether L1A and SLA are comparable processes and therefore susceptible to the same principles.

## 4. Comparing L1A and SLA

In the discussion of N. Ellis' understanding of the role of CxG in language acquisition at the end of the previous chapter, the issue of explicit and implicit learning processes in SLA has already been brought up. It is a pivotal point in the discussion about whether SLA is organised along the lines of L1A, and research dealing with this matter abounds (cf. e.g. N. Ellis 1993, 2005, 2010b; Paradis 1994; DeKeyser 1995, 2003; R. Ellis 2009; and for a more recent overview, Rebuschat 2015). A large portion of this chapter will therefore be dedicated to analysing the role of the explicit and implicit knowledge domains with regard to language acquisition, and SLA in particular. Firstly, the issue of measuring implicit and explicit knowledge will be discussed. Specifically, this involves measuring a person's level of awareness and automaticity in response to certain language-related tasks. Furthermore, research in the domains of neuroscience and neurolinguistics will be presented as evidence of a differentiation between the knowledge domains and between the processes of L1A and SLA. The subsequent sections will then discuss how different notions of the knowledge domains and their interrelationship have affected L2 pedagogy. In this context, Stephen Krashen's natural input hypothesis and his assumption of a rigid separation of explicit and implicit knowledge will be critically evaluated. This will then be followed by an analysis of different theories of how the knowledge domains interact, subsumed under the respective interface positions. Ultimately, I will endorse Han and Finneran's (2014) argument for a more flexible view of the interface positions in SLA.

As chapter two has illustrated, a fundamental principle of CL is the idea that knowledge of a language is essentially the ability to have command over a rich inventory of meaningful symbols which enable a speaker to communicate their thoughts and experiences in interaction with the world (Evans & Green 2006: 5-21). In chapter 3, it was then established that the process toward attainment of this knowledge in L1A relies on the implicit

and subconscious organisation and categorisation of form-meaning mappings in a language. This process is based on high exposure and according to the inductive tallying, patterning, and structuring processes inherent to human cognition (cf. Tomasello et al. 2003; Tomasello 2000, 2007). The process of SLA, however, poses a variety of challenges, which make it difficult to simply consider it a carbon copy of L1A, and to which the hypotheses and theories of CL are thought to provide new insights and, ideally, adequate answers. These challenges range from the issue of cross-linguistic influence (clashing form-meaning mappings in the mother tongue and the target language) to the problem of lacking target language stimuli, especially in the foreign language classroom where exposure to and production of the L2 is often limited to a handful of sessions per week.

A crucial aspect of SLA theory is thus the debate about whether the acquisition of any non-native language ought to follow along the lines of L1A, i.e. a primarily implicit form of acquisition in which the learner acquires a language inductively through frequent exposure to comprehensible input in the target language, or whether the learning of a second language requires a conscious attention to the language, e.g. by using meta-language when attending to form. The issue of whether corrective feedback can be an enhancement to the process of SLA as well as the relevance of form-focused instruction emerge as an inevitable consequence of this debate, and will therefore also be addressed in the course of this thesis. First and foremost, however, an analysis of the fundamental differences between L1A and SLA is required.

Most theoretical frameworks that deal with the process of learning are underpinned by the dichotomy of whether the learner is consciously aware of the knowledge he or she possesses, or whether the knowledge is implicit, and thus cannot be reasoned by the learner. While the terminology for this dichotomous relationship varies across linguistic domains, the concepts will here be referred to as **explicit** (i.e. declarative, or conscious) and **implicit** (i.e. procedural, unconscious) knowledge. Over the years, different learning theories have brought about a variety of hypotheses about whether and how these two types of knowledge interact, resulting in the non-, weak, or strong interface positions, which will also be addressed in this context.

The impact of cognitive psychology on linguistics and issues of language learning has already been outlined in the discussion of the domain-general processes involved in L1A, and is again highlighted by the integration of the dichotomous relationship between implicit and explicit knowledge into research about SLA. The reasons for adopting this relationship

are quite apparent given that most linguists would agree that (early) child language acquisition is first and foremost a process that dispenses with any form of explicit or form-focused instruction, often resulting in native speakers being unable to verbally justify grammatical choices in their mother tongue despite their having a highly sophisticated command over their language that can hardly ever be matched by a scholar who is not part of the discourse community. While this notion of different types of knowledge appears to be quite practical in the context of language acquisition, it is a much more complex undertaking to measure the type of knowledge that is at work when language is produced, or the impact of implicit or explicit learning on output performance respectively. The issue of defining and measuring implicit and explicit knowledge and learning will therefore be the focus of the following two subsections. Furthermore, Stephen Krashen's Monitor Hypothesis (cf. Krashen 1981), which is based on the notion that implicit and explicit knowledge are two entirely separate entities with no transfer between them will be introduced and its impact on SLA will be critically examined.

#### 4.1 Defining implicit and explicit knowledge and learning

Before one can attempt to measure the outcome or product of implicit learning or knowledge, it is necessary to know what to look for in the examination of language production. A definition of both concepts is therefore an indispensable preliminary for practical research. In his definition of explicit and implicit knowledge, for instance, Rod Ellis (2009: 3) describes learners, who have acquired knowledge implicitly, as "unaware of the learning that has taken place, although it is evident in the behavioural responses they make". This results in the fact that "learners cannot verbalize what they have learned", whereas "[in] the case of explicit learning, learners are aware that they have learned something and can verbalize what they have learned" (R. Ellis 2009: 3). Under this assumption, the degree of **awareness** is a vital factor in determining the type of knowledge that is accessed and applied, and will consequently play a role in any attempt at measuring them.

In his 1994 publication 'Implicit and explicit learning of languages', Nick Ellis provides examples that go beyond the language context, and which make the distinction between explicit and implicit learning/knowledge more tangible:

Some things we just come able to do, like walking, recognizing happiness in others, knowing that *th* is more common than *tg* in written English, or making simple utterances in our native language. We have little insight into the nature of the processing involved – we learn to do them implicitly like swallows learn to fly. Other of our abilities depend on knowing how to do them, like multiplication, playing chess, speaking pig Latin, or using a computer programming language. We learn these abilities explicitly like aircraft designers learn aerodynamics. (N. Ellis, 1994: 1)

N. Ellis refers to implicit knowledge as abilities that one might consider second nature. His comparison of implicit knowledge in the human mind to a swallow's ability to fly, attributes a sense of instinctiveness, and hence a lack of meta-knowledge to it.

This notion of complete unawareness however, raises the question of how implicit knowledge can be measured. Furthermore, if human beings are oblivious to the learning processes that have led to the acquisition of implicit knowledge, how can inferences about the impact of learning be drawn in order to improve practices in SLA? The following subsections will attempt to resolve these questions, by drawing on previous empirical research on implicit and explicit knowledge and learning. First, I will turn to the role of awareness in the process of measuring implicit knowledge.

#### 4.2 Measuring implicit knowledge based on awareness

A first and ground-breaking attempt to document implicit knowledge and learning was undertaken by Arthur S. Reber (1976) who developed a test using an artificial grammar (AG) which generated letter sequences based on an underlying formal rule comparable to a UG. Reber's approach was inspired by the generative paradigm and thus based on the notion that an AG consisting of a formal set of rules would implicitly be processed by means of the language acquisition device (cf. section 3.1.). The participants in the survey were asked to perform grammaticality judgement tests (GJT) on newly generated letter sequences without having received any explicit instruction to pay attention to organising principles of the sequences. The results from the following GJT were clearly above chance, indicating that some form of learning must have occurred. However, when asked whether they could verbally justify their choices in the test, the participants were unable to give an explanation. Reber's experiment demonstrated that there must be implicit processes that are geared towards identifying statistical patterns or anomalies that we simply cannot verbalise if we do not possess the necessary explicit and hence declarative knowledge.

While these findings were originally thought to support the generativist poverty-of-stimulus hypothesis and hence the notion of a language acquisition device, they can be considered just as much an indication of basic, non-language specific cognitive processes, such as pattern-finding based on the online processing of frequency, which has been identified as one of several domain-general processes in CL by Evans and Green (2006: 63-68), and which plays a central role in Tomasello's usage-based approach to child language acquisition (Tomasello 2000; Tomasello et al. 2003). Irrespective of the cognitive nature of these processes, however, Reber's findings prove that implicit learning takes place when we are exposed to language, and is manifest as implicit knowledge in behaviour.

While Reber's experiment was based on the notion of awareness<sup>17</sup> insofar as it was designed to elicit implicit knowledge under the preliminary assumption that the participants were unaware of their knowledge, other experiments on implicit knowledge and learning focussed on the issue of **automaticity** (cf. Williams 2009: 324-325), e.g. by limiting the response time for participants in timed GJTs (R. Ellis 2005, 2006). As the factor automaticity is closely associated with Stephen Krashen's hypotheses about implicit and explicit knowledge, the following section will also provide an introduction to Krashen's theories, before critically examining his Monitor Hypothesis and its impact on the field of SLA research.

#### 4.3 Measuring implicit knowledge based on automaticity: fluency and Krashen's Monitor Hypothesis

When using automaticity as a determinant in a test measuring implicit knowledge, it is assumed that an enforced quick response to a grammatical or ungrammatical form prevents the participants from consciously reflecting their choice, and thus from accessing their explicit knowledge. Explicit knowledge is therefore reflected in intentional actions, while implicit knowledge is accessed and used automatically (Cleeremans & Jimenez 2002; Dienes & Perner 1999, referred to in Williams 2009: 324).

An example of this approach is R. Ellis' study on learning difficulties, in which he investigated problem areas in L2 grammar by measuring the implicit and explicit grammatical knowledge of L2 learners (R. Ellis 2006). In his tests, Ellis included timed

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<sup>17</sup> Leow, Johnson, and Zárate-Sánchez (in Leow & Sanz 2010: 61-72) offer an updated in-depth discussion of the concept of awareness and its implications for methodology in SLA.

GJTs for a variety of structures ranging from third person -s constructions to relative clauses. A controlled response time for the participants' grammaticality judgements was thereby supposed to reflect the extent to which automatised use of implicit knowledge occurred.

One of the key processing dimensions in Ellis' study was therefore the accessibility of knowledge (R. Ellis 2006: 433). The assumption held by Ellis was that while "the deeply embedded knowledge [i.e. implicit knowledge] allows for automatic processing, the more weakly [sic] held knowledge (i.e. explicit knowledge) requires more controlled processing" (R. Ellis 2006: 433). The close association of explicit knowledge with controlled processing as deployed in R. Ellis' study clearly shows parallels to Stephen Krashen's Monitor Hypothesis (Krashen 1981), which reduces the role of explicit knowledge to a controlling function. In fact, Ellis explicitly adopts Krashen's position that the two types of knowledge are to be viewed as dichotomous (R. Ellis 2006: 432).

In Krashen's view, explicit learning cannot become implicit knowledge, and in language production, explicitly learned knowledge can only take on a monitoring function (cf. Krashen & Terrell 1983). This means in effect that explicit knowledge is limited to controlling utterances reactively, but has no effect on spontaneous speech, which is always accessed implicitly and unconsciously. Krashen's Monitor Theory has drawn criticism over the years, partly because of its ambiguity in definition (Hulstijn 2015: 27), but also because of its claim that "acquisition (implicit learning) takes place when and only when the language acquisition device is in operation" (Schmidt 1994: 171-172). Processes of measuring implicit knowledge and/or learning that rely on automaticity are therefore prone to such criticism: According to Williams (2009: 327), for instance, the degree to which automatised or spontaneous responses, such as timed responses in grammaticality judgement tests, reflect fluency in the sense of Krashen's model of naturally acquired implicit knowledge, is simply a matter of "*assuming* that conscious knowledge could not have been used in the moment of generating the behaviour that [researchers] are measuring" [original emphasis]. In fact, DeKeyser (2003: 320), has argued that it might be explicit knowledge that is accessed under time pressure, as "the accumulation of instances in memory takes much more time than the short cut provided by explicit insight". Where Krashen has argued that explicit knowledge can only take the long road, i.e. the controlling or monitoring function, DeKeyser takes a complete opposite stance, i.e. the assumption that explicit knowledge may in fact be a short cut that is more readily accessible. Based on that, any test that uses automaticity in response

as a parameter in determining which knowledge domain was accessed is therefore subject to interpretation (cf. Williams 2009).

Ultimately, what tests aimed at automaticity in response cannot provide is conclusive evidence of whether the measured results are the product of implicit acquisition or explicit learning that has transformed into automatized behaviour. It might thus be more suitable to approach this issue from a more inclusive perspective, such as the one reflected in Rod Ellis' more recent definition in which he determines that declarative knowledge is "the representation of facts", whereas procedural knowledge is "the representation of actions in particular situations" (R. Ellis 2015: 17). This notion allows for a less rigid understanding of what language performance reflects and subverts the separative view of explicit (declarative) and implicit (procedural) knowledge or learning as dichotomous entities. This would then refute the core principle of Krashen's Monitor Hypothesis, i.e. that explicit knowledge can only take on a controlling function, and further imply that transfer from one domain to the other is not necessarily mutually exclusive.

While tests on awareness and automaticity in language production have certainly advanced research on the respective knowledge domains, they have also exhibited the limitations of such tests in terms of their conclusiveness per se, but also with regard to the efficacy of different learning approaches (i.e. implicit vs explicit learning). The intricacies of measuring implicit and explicit knowledge ultimately led to neurological studies in which neuroimaging technology was used to find out whether implicit and explicit knowledge are manifest in different regions of the brain. The findings of this research will be outlined in the following section.

#### 4.4 Locating implicit and explicit knowledge in the human brain

Neurolinguistics takes a particular interest in how neurological insults affect a person's linguistic competence. By investigating anomalies in the language of patients suffering from brain damage and by locating the damage in the brain, assumptions can be made about whether different regions of the brain can be mapped to certain features of language (cf. Nickels 2008). One potential approach in this context involves the differentiation between an explicit and implicit knowledge domain.

In the previous chapters, it has already been established that L1A is predominantly a process of implicit acquisition, whereas the learning of an L2 usually requires explicit attention to features of the target language. Based on this, it can be assumed that an isolated

and locatable insult provides neurological evidence of a physical separation of the two knowledge domains if it results in a patient's inability to produce the L1 effectively while at the same time the patient's ability to speak in an L2 remains largely unaffected.

This assumption has been reinforced by clinical studies, which have shown that different neurological diseases manifest impairment of either explicit or implicit memory for language with the respective counterpart often remaining unaffected (Paradis 1994: 396). For instance, while patients with Alzheimer's disease exhibit an intact implicit memory with an impairment of the explicit memory (Gabrieli, Reminger, Grosse & Wilson 1992), patients suffering from aphasia have shown an impairment of their implicit and automatic use of language (Cork, Kihlstrom & Hameroff 1992). Thus, while people who suffer from Alzheimer's or amnesia are often unable to store or access declarative knowledge such as names and addresses, their language remains largely unimpaired. However, patients suffering from aphasia usually sustain access to declarative knowledge with an impairment of their implicit knowledge. (Paradis 2008: 342-343).

In his article 'Language and Communication Disorders in Multilinguals', Michel Paradis (2008) presents a clinical case study, which in his view supports the assumption that the implicit and explicit knowledge domains are physically separated. The respective case was documented by Moretti et al. (2001) and describes the symptoms of a 46-year-old woman who had suffered a stroke and showed different stages of language impairment in the aftermath of the insult. While such cases of antagonistic recovery are very rare as only a minority of aphasics exhibit a nonparallel pattern of recovery (Urgesi & Fabbro 2009: 359), they nevertheless offer a tremendous potential for insight. The patient in Moretti et al.'s case was a bilingual speaker of Croatia (L1) and Italian (L2, age of onset 21), who had moved to Trieste at the age of 21 (Moretti et al. 2001). She also had an Italian husband and stated that until the time the stroke occurred she had regularly been using her L1, e.g. in frequent phone conversations with her relatives back in Croatia. During the first two months, the patient showed severe impairment of her L1 with relatively good command of the L2. However, after some time, the patient's L2 competence deteriorated significantly, whereas her command of the L1 improved. As Moretti et al. argue (2001: 810), this development had pathological causes. While the initial stroke had affected the subcortical region, the patient suffered five episodes of angina pectoris during the months of recovery which resulted in an extension of the lesion from the subcortical region to the frontal cortex of the left hemisphere. The pathological development in correlation with the significant change in the patient's L1



and L2 competency led Moretti et al. to the conclusion that the case at hand supported Paradis' (1994) hypothesis of a physical separation of the explicit and implicit knowledge domains, i.e. by locating implicit knowledge in the subcortical area and explicit knowledge in the frontal cortex of the left hemisphere (Moretti et al. 2001: 812). Further experimental studies involving bi- or multilingual subjects (cf. Paradis 2008: 345-346) have also reinforced the argument that specific areas in the brain correlate with specific symptoms in language production, which in turn can be associated with either implicit or explicit knowledge.

It is, however, crucial to emphasise that the notion of a rigid physical separation of the two knowledge domains is a severe oversimplification of the complex neural processes that are at work in language production. In fact, Moretti et al. (2001) emphasise the fact that “the entire process of language production and comprehension does not rely only on specific, limited, regions”; instead, they argue that these “complex mechanisms are probably regulated by neural pools whose relay stations are in the cortical and subcortical regions” (Moretti et al. 2001: 813). In addition to that, Paradis (2008) highlights the fact that the linguistic symptoms of a pathological disposition are largely constrained by the structural properties of a language, i.e. “the structure of the language determines what types of errors may occur” (Paradis 2008: 345). Therefore, the validity of any hypotheses made based on clinical studies rests on a profound understanding of the structural properties of the languages under scrutiny.

Nevertheless, the basic assumption that explicit and implicit knowledge (or declarative and procedural knowledge respectively) are accessed in different ways, especially with regard to the process of language acquisition, has largely been adopted in linguistics (cf. R. Ellis 2015). It can be assumed that future research in neurolinguistics will continue to make significant contributions to research in SLA, and any approach that targets the influence of declarative and procedural knowledge in language acquisition is well-advised to consult the latest findings in neurolinguistics in that regard. In the following, it will be investigated how learning theories and assumptions about the different knowledge domains have influenced L2 pedagogy.

#### 4.5 Implicit and explicit knowledge and learning in L2 pedagogy

In the early 1980s, Stephen Krashen established the view that language acquisition can only occur inductively and implicitly through natural input (Krashen 1981; Krashen & Terrell 1983). His hypotheses determined that learned, and thus explicit knowledge can only take a controlling, or monitoring function, i.e. it “can only serve to alter an utterance after it has been produced by the system of acquired knowledge” (Hulstijn 2015: 27). This implies that unplanned language production solely relies and draws on implicit knowledge, which in turn is the direct result of implicit acquisition through natural input to which the individual is exposed. Arguably the most significant theory with regard to L2 pedagogy was thus Krashen’s (1981) natural input hypothesis, which draws on theories from generative linguistics. The natural input hypothesis can be traced back to the then prevalent notion of a UG and the idea that language acquisition is the result of a genetic endowment which allows human beings to infer organising principles of a language despite the complexity of the language they are exposed to during the early years of infancy (cf. section 3.1. and Chomsky 1959, 1981). In Krashen’s view, any post-L1A process should consequently follow along the lines of child language acquisition for maximum efficacy (Krashen 1981; Krashen & Terrell 1983).

Krashen’s model postulates a rigid separation of implicit and explicit knowledge and learning, in which there can be no transfer from one domain to the other. This dichotomy is subsumed under the term “non-interface position” (R. Ellis 1994: 356), which reflects the assumption that there can be no transfer from one knowledge domain to the other, viz. what we have learned explicitly cannot become implicit knowledge and vice versa (section 4.6. will provide a more detailed discussion of the interface position). The notion that language acquisition can only occur through natural input and without explicit instruction had a severe impact on language pedagogy, as it questioned any prior approach in which language was learned on a meta-level e.g. in a form-focused, instructional classroom setting.

In the language pedagogy of the early 1980s, this led to assumptions that SLA could only occur as a by-product of exposure to stimulating language input (cf. Krashen & Terrell 1983; Hughes 1983). As a consequence of that, approaches which also relied on explicit instruction came under scrutiny, as they were thought to promote second language **learning** (SLL), i.e. the process of storing meta-linguistic knowledge to monitor, and eventually correct output which was considered secondary to implicit L2 knowledge (cf. Hughes 1983; Littlewood 1983). Thus, acquisition and learning were established as two opposing

processes, of which the first was considered the ideal path toward language proficiency (Krashen 1981). A key factor in the increasing popularity of Krashen's natural approach was the notion that implicit knowledge was to be equated with the ideal of fluency: Automaticity and fluency in response were considered a "reflection of acquisition, as opposed to learning" (Williams 2009: 324; cf. section 4.3. on the measuring of implicit knowledge based on automaticity). Overall, Krashen's hypotheses about implicit acquisition and the role of input resulted in a much stronger focus on communicative language teaching (CLT) and in an increased popularity of highly input-focused forms of SLA, as is the case in immersion schools or classes, in which subjects are taught in a target L2 entirely without attention to metalinguistic aspects (R. Ellis 1994: 225-227).

While it was supposed to clearly define the dichotomous relationship between the explicit and implicit knowledge domains, Krashen's differentiation between learning and acquisition had a contrary effect. In fact, a rather liberal use of the terms led to a typological incoherence within the field of language pedagogy, with both learning and acquisition being used almost synonymously in more recent publications (cf. Cook 2008; Mitchell, Marsden & Myles 2013). However, it is important to highlight the fact that the use of either term used to be a means of dissociation. In fact, the title of Krashen's (1981) publication 'Second Language Acquisition and Second Language Learning' already heralds the clear distinction between the two concepts. He suggests that when referring to the notion of a second language acquired through learning in a controlled, instructive setting, which includes error correction and explicit focus on form(s), one should not refer to that process as SLA, but rather as SLL, i.e. second language learning (Krashen 1981).

However, using the term learning rather than acquisition in the context of an L2 is problematic for a variety of reasons: Firstly, the perpetuation of the concept of SLL clashes with the widespread use of the term SLA, which has acquired near-canonical status and has also been employed to refer to instructed and form-focused second language learning (cf. Knop & Rycker 2008; Cadierno & Eskildsen 2015; R. Ellis 2015). Secondly, the use of the term SLL construes an opposition to SLA by default, and thus perpetuates the notion that acquisition and learning are to be viewed as dichotomous, which is a view that is still contested and by no means canonical.<sup>18</sup> Thirdly, studies have provided extensive evidence

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<sup>18</sup> The following section 4.6. on the various interface positions will provide an insight into different assumptions about the interplay of the knowledge domains with regard to the process of language acquisition. While it has been claimed that there can be no transfer from implicit/procedural knowledge to explicit/declarative knowledge and vice versa, CUB approaches have proposed a different view on the issue

that speaks against the notion that SLA can occur entirely through implicit learning, and that some form of conscious attention to language is, in fact, a requirement for successful acquisition of an L2 (cf. DeKeyser 1995; Swain 1991; Pavesi 1986). If one were to talk about SLA as the result of strictly implicit learning, it would only make up a fraction of the L2 competence of a speaker, rather than being a holistic term that reflects all aspects that lead to L2 knowledge. In addition to that, the assumption that explicit knowledge as well as learning play a crucial role in L2 acquisition has further been reinforced by research in neurolinguistics (cf. section 4.4.), which arguably provides the most compelling evidence against the notion that SLA merely follows the implicit learning procedures that are at work in L1A. If an L2 is consistently represented differently in the brain than the person's L1 irrespective of age, degree of exposure and use etc., it can be assumed that the path to the acquisition of the L2 is different from the L1 acquisition process (Urgesi & Fabbro 2009: 357).

Taking all this into consideration, the assumption thus ought to be that some form of explicit learning is necessary for an effective and successful L2 acquisition to take place. Therefore, the term SLA as it is applied in the majority of current publications would be inherently paradoxical if it were to describe a process isolated from any form of learning. It appears to be more expedient to employ the term SLA as an umbrella term, which includes instructed and explicit learning as well as procedural, or implicit learning.

The notion of dichotomous knowledge domains as proposed by Krashen did not only have an effect on typological matters as discussed above. It also marked the starting point of a debate about whether the knowledge domains interact, and whether explicit knowledge can eventually result in behaviour that is implicit and procedural in its nature. Naturally, this discussion had a significant impact on language teaching, which frequently relies on explicit instruction and declarative knowledge. The discussion about knowledge transfer across the domains is subsumed under different **interface positions** which propose either a strong or weak form of knowledge transfer, or which assume that no transfer at all can occur from implicit to explicit knowledge and vice versa (cf. N. Ellis 2005, 2010b; R. Ellis 2015). In the following section, the different interface positions will be discussed with reference to their role in SLA as well as their paradigmatic association with either generative or CUB approaches to linguistics. Based on a recent analysis undertaken by Han and Finneran

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running the gamut from a weak (N. Ellis 2010b; R. Ellis: 2015) to a strong interface position (e.g. DeKeyser 1995, 2003).

(2014), I will argue for a more inclusive view on the different interface positions, which are usually characterised by a clear dissociation from the respective other positions. The discussion will also be informed by research findings from neurolinguistics, which have been discussed in section 4.4.

#### 4.6 Non-, weak, or strong interface: the various positions on the relationship between explicit and implicit knowledge

Before embarking on the discussion of the various interface positions, it is important to emphasise that a distinction needs to be made between transfer in the process of learning and transfer occurring between the knowledge domains per se. While the former deals with the issue of whether explicit learning can result in procedural, implicit knowledge, or whether implicit acquisition can lead to explicit, declarative knowledge, the latter is concerned with transfer of stored knowledge (R. Ellis 2009: 20-21). In the following discussion of the various interface positions, I will thus explicate the nature of the transfer when elaborating on the respective hypotheses.

The onset of the interface debate can be traced back to Stephen Krashen's natural input hypothesis (Krashen 1981) and the rigid separation of the implicit and explicit knowledge domains that he proposed in his Monitor Hypothesis (cf. section 4.3.). Krashen argued that explicit knowledge can only take on a monitoring function meaning that declarative knowledge is a means to control output produced without awareness or attention to metalinguistic aspects, i.e. the result of implicit, procedural knowledge (Krashen 1981). Krashen's hypotheses are rooted in generative assumptions about language acquisition, according to which input is linked to a UG which results in implicit or procedural grammatical competence (Han & Finneran 2014: 373). In Krashen's view, the process of SLA is structured in the same way. Hence, "learned L2 knowledge cannot alter acquired L2 knowledge [and] explicit knowledge cannot be transformed into implicit knowledge through practice" (Hulstijn 2015: 35-36). In Krashen's strictly dichotomous notion, transfer can thus occur neither in the learning process, nor through practice. This consequently refutes any impact of explicit error correction on implicit knowledge as the nature of the correction process usually does not reflect the natural process of language acquisition (Truscott 1996: 328).<sup>19</sup> While the impact of the natural input hypothesis, and the Monitor Hypothesis

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<sup>19</sup> Cf. section 5.4. for a more detailed analysis of how the natural input hypothesis and the non-interface position have influenced research on the issue of error correction.

respectively, on language pedagogy has already been discussed in the previous section 4.5., the interface debate that ensued as a result of Krashen's theories requires further elaboration.

Krashen's approach, which relies on generative principles and hence focuses on input and competence over output and performance, has drawn criticism from the CUB paradigm resulting in different notions of weak or strong interface positions. The clearest distinction to Krashen's non-interface position is manifest in a strong interface position as proposed by DeKeyser (1995, 1996).

In DeKeyser's understanding of a strong interface position, transformation of declarative knowledge into procedural knowledge is possible through practice in the form of a "progression from conscious, controlled processing to unconscious, automatic use" (quoted in R. Ellis 2015: 17-18). Transfer through practice can therefore occur when explicit knowledge becomes automatised in such a way that it influences behaviour without awareness (Williams 2009: 320). In contrast to Krashen and the generative principles, DeKeyser thus takes a usage-based stance in emphasising the role of performance and output in the acquisition process. While the strong interface position is certainly coherent with the principles of CUB linguistics, there has been little evidence of such a strong interplay between the knowledge domains from a neurolinguistic standpoint. As the case study example of the Croatian bilingual aphasic patient has shown (Moretti et al. 2001; cf. section 4.4.), L1 and L2 knowledge appear to be affected in different ways depending on where a brain injury is located. If the L1 can be associated with the storage of implicit knowledge and the L2 with the storage of explicit knowledge, the implication is that the two domains are at least physically separated. It is thus little surprise that some of the most important publications in neurolinguistics about explicit and implicit knowledge have endorsed a predominately dichotomous view of the knowledge domains (cf. Paradis 1994, 2004, 2008; Hulstijn 2002). This view, however, is not entirely incompatible with the notion that practice supported by declarative knowledge can lead to the storage of procedural knowledge in a different location in the brain. What it does reject is DeKeyser's (1995) idea that knowledge can be transferred from one domain into another, or that explicit knowledge can physically transform into implicit knowledge in the sense that it changes its neurological attributes (Hulstijn 2015: 36). In fact, extensive practice can lead to the L2 becoming so strongly represented in the implicit knowledge domain that "when people master L2 with high proficiency [...] the cortical representations of L2 tend to overlap with that of L1", even in cases where the age of onset is significantly later (Urgesi & Fabbro 2009: 373). Contrary to

Krashen's interpretation of a non-interface position, evidence from neurolinguistics thus suggests that explicit learning in SLA can support and contribute to the storage of procedural knowledge of the L2.

As the rigid interpretations of either a non- or a strong interface position seem to fall short of providing a useful model of the role of explicit and implicit knowledge in the process of SLA, a more balanced approach seems to be required. A mediating role between DeKeyser and Krashen is taken by Nick Ellis (2003, 2005) and Rod Ellis (1994, 2005, 2006), who both propose different versions of a weak interface position. Both argue that declarative knowledge can contribute to the emergence of procedural knowledge, however, in contrast to the strong interface position, they do not propose a causal relationship between explicit and implicit knowledge (Hulstijn 2015: 36). Han and Finneran (2014: 373) summarise the two variants of the weak interface positions with regard to SLA as follows:

In sum, the two weak-interface positions are qualitatively different: One position considers the learning process largely explicit [i.e. R. Ellis] and the other largely implicit [i.e. N. Ellis], and accordingly, in one position, explicit knowledge is necessary, but ancillary, in the other. Nonetheless, the two views are in unison on one understanding, namely that *explicit knowledge may help where implicit knowledge fails* [...], and, in essence, that *everything is learnable*. [original emphasis]

On the one hand, R. Ellis' variation of the weak interface position is more oriented toward conscious attention to language and the notion that SLA is a process in which both implicit and explicit learning occur, of which the latter can also result in the emergence of procedural knowledge. On the other hand, N. Ellis considers SLA as a primarily implicit process in which interference of L1 bias requires explicit attention (cf. Han & Finneran 2014: 373). Much like in the process of L1A, however, L2 learners "intuitively identify and organize constructions or form-function mappings based on their probabilistic encounters with relevant exemplars in the communicative environment" (373).

N. Ellis' position with regard to the role of the L1 in SLA marks a departure from prior theories (cf. N. Ellis 2005). In Krashen's understanding of the non-interface position, for instance, there is no such thing as cross-linguistic influence in the acquisition process, due to the fact that the L2 input is linked up with the UG, and hence every acquisition process is a new and independent process along the lines of L1A (Krashen & Terrell 1983). Arguing from a usage-based standpoint, however, N. Ellis suggests that as the learner has already acquired the form-meaning mappings of the L1, explicit instruction (i.e. attention to form)

may be required to ameliorate potential interference of L1 mappings with the L2 input to which a learner is exposed (Han & Finneran 2014: 373). In sections 5.5. and 5.6., I will revisit the issue of cross-linguistic influence and discuss how CUB approaches to SLA can contribute to reducing negative transfer from the L1 to the target language. Before concluding the discussion of explicit and implicit knowledge and learning in SLA, I will briefly turn to the issue of **fossilisation**, which has had a significant impact on the discussion about the various interface positions. In accord with Zhao Hong Han and Rosette Finneran (2014), I will propose a more integrative view of the interface positions under the assumption that a variety of interface positions can be manifest in a learner's mind.

While the concept of fossilisation is rather contentious in that it has been overused and oversimplified in much of the literature dealing with SLA (cf. Han & Odlin 2006), it will nonetheless be applied here, as it provides a viable argument for the non-interface position. For the sake of brevity, fossilisation will here be defined as a “*particular type of non-nativeness which comes about and persists in spite of optimal learning conditions*” [original emphasis] under the assumption that “L2 acquisition will never have a global end state; rather, it will have fossilization, namely, permanent local cessation of development” (Han & Odlin 2006: 7-8). The key aspect is thereby the paradox that even proficient learners of an L2 persistently tend to produce erroneous utterances (i.e. by native-speaker judgement), despite highly favourable conditions, i.e. vast amounts of native-like input along with extensive focus on form.

The fact that learners produce certain errors even after they had received exhaustive explicit instruction has prompted Krashen (1982) to conceive of fossilisation as a convincing argument for the non-interface position. In ‘Principles and practice in second language acquisition’, Krashen refers to a case study of an advanced learner of English who showed great linguistic competence when given time in language production (e.g. in writing), but who made basic errors, such as the absence of plural-marking, in spontaneous production. Referring to his Monitor hypothesis, Krashen (1982: 86) described the learner as an “excellent Monitor user”, who despite the advanced level of English, however, did not show signs of automatisisation. Stating that “even well-learned, well-practiced rules may not turn into acquisition”, Krashen thus conceived of the case study as evidence of the non-interface position (86).



Indeed, the assumption that “everything is learnable” (cf. Han & Finneran 2014: 373)<sup>20</sup>, which characterises the variations of the weak interface positions as well as the strong interface position, appears to have no explanation of the occurrence of fossilised errors in spontaneous speech which are avoided in controlled or monitored use. Clearly, though, they must be examples of declarative knowledge that did not transform into procedural knowledge (Han & Odlin 2006).

As the discussion of the various interfaces reveals inconsistencies across the different interface positions, it appears to be necessary to strike a balance. In their analysis of the interface positions, which is fittingly titled ‘Re-engaging the interface debate: strong, weak, none, or all?’, Han & Finneran (2014) arrive at the conclusion that a clear-cut distinction between the interface positions cannot be made. In fact, they criticise the tendency that research on the different interface positions is often constrained by a reluctance toward involving the respective other positions. As is the case with many research paradigms in linguistics, research on the interface positions is focussed on dissociation from other approaches rather than on a possible integration of diverse positions. Han & Finneran (2014: 383) thus argue for a more inclusive perspective on the issue:

[We] would like to promote paradigmatic crossover by encouraging researchers to reengage the explicit-implicit knowledge debate, and more specifically, to co-investigate the following question: *which aspects of grammar are susceptible to a strong interface, a weak interface, or no interface across and within second language learners?* A sound understanding of these questions may not only help substantiate SLA research; it will also benefit second language education. The efficacy of second language instruction lies not in implementing what teachers or textbook writers think what and how students should learn but in proceeding with a scientific understanding of the potential and limits of instruction and instructed learning. [original emphasis]

Han and Finneran thus clearly highlight the potential benefits of a revised and more integrative understanding of the different interface positions. While DeKeyser, N. Ellis and R. Ellis have forcefully argued for the position that transfer from one domain to the other can occur, it is also important to account for the complexity and limitations in the interplay of explicit and implicit knowledge. In some cases, explicit instruction may fail to transform into procedural knowledge, thus resulting in the fossilisation of errors, e.g. in the case of grammatically complex or even arbitrary constructions, while at the same time, overreliance

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<sup>20</sup> The notion that everything is learnable is also highly prevalent in N. Ellis’ assumptions about whether L2 learners can reach native-speaker competence (cf. N. Ellis 1993: 315, quoted in Han & Odlin 2006: 1).

on implicit instruction may lead to shortcomings in a learner's grammatical competence (cf. Swain 2005).

The interplay of the knowledge domains and a flexible view of the interface positions already broach some of the subjects that will be further elaborated on in chapter five. In the following, the results of the previous analyses regarding the role of explicit and implicit learning will be summarised and the groundwork for the subsequent discussion of CUB approaches to L2 instruction will be laid. In this context, I will also draw parallels between the acquisition of music and language acquisition. Both processes have been found to be subject to the same cognitive, domain-general processes, some of which have been considered pivotal in CxG theory, for instance. In fact, such an analogy may contribute to making the seemingly inaccessible theoretical discussion of approaches to language acquisition more tangible.

To sum up, as the previous sections focussing on the different knowledge domains and their interplay (or potential lack thereof) have shown, the process of SLA requires some form of explicit attention. This notion is also supported by findings in neurolinguistics which have shown that a person's L2 is generally located in an area of the brain which is usually associated with the storage of explicit or declarative knowledge, whereas the L1 is largely stored in those areas that are activated when implicit or procedural knowledge is accessed (cf. section 4.4.). While the degree to which either implicit or explicit knowledge is involved in the process of SLA may vary, there is little doubt that explicit knowledge plays its part in it.

For the ensuing discussion of potential implementations of CUB approaches to SLA, a more clearly defined framework is in order. It has been argued that the reasons for a dogmatic adoption of only one position as the 'true' interface position are few (cf. Han & Finneran 2014). However, from a CUB point of view, an interpretation of the weak interface position as suggested by Nick Ellis (2010b) can provide an effective groundwork for a discussion of the role of explicit learning and knowledge in SLA to which other interface positions can add. With respect to the roles of the knowledge domains in SLA, Ellis has formulated the following principles (N. Ellis 2010b: 40):

- (a) Implicit and explicit learning are distinct processes.
- (b) Implicit and explicit memory are distinguished in their content, their form, and their brain localizations.

- (c) There are different types of knowledge of and about language, stored in different areas of the brain, and engendered by different types of educational experience.
- (d) A large part of acquisition involves the implicit learning of language from usage.
- (e) L1 transfer, learned attention, and automatization all contribute to the more limited achievements of exclusive implicit learning in SLA than in L1A.
- (f) Pedagogical responses to these shortcomings involve explicit instruction, recruiting consciousness to overcome the implicit routines that are non-optimal for L2.
- (g) Evaluation research in language education demonstrates that such Focus on Form instruction can be effective.

In short, Ellis emphasises the role of implicit learning from usage over explicit attention to linguistic features in SLA. However, as the learner's implicit knowledge is geared towards the L1, cross-linguistic influence might require intervention in the form of explicit instruction (cf. section 5.5. for a discussion of cross-linguistic influence in SLA). A strong emphasis in Ellis' understanding of the acquisition process is thus on the nature and frequency of the input to which the learner is exposed, as the implicit tallying processes at work in language processing require a considerable amount of input (N. Ellis 2002a).

In this regard, N. Ellis' understanding of the second language acquisition process presumes highly favourable circumstances for acquisition to take place. The reality of L2 instruction, however, may not provide these circumstances and might thus require a more explicit focus on form(s) as proposed by DeKeyser (2003), who argues that an explicit focus on forms can function as a short cut in production. In this case, however, it is necessary to examine which features of grammar are in fact susceptible to such a strong interpretation of the interface (cf. Han & Finneran 2014: 383).

Overall, the notion of a balanced and dynamic interplay of the different interface positions with regard to the storage of implicit and explicit knowledge adds a more undogmatic dimension to L2 instruction rendering it more adaptive to learners' needs. The role of explicit and declarative knowledge will be taken up again in chapter 5 and the subsequent sections, which will also discuss how the role of grammar instruction in TEFL/TESL has changed over time and how it relates to the various interface positions as discussed above. Before I turn to specifically CUB approaches to SLA, however, I will share a personal insight that I gained in the process of examining the interplay of implicit and explicit, or procedural and declarative knowledge respectively, namely the close relation

between our implicit knowledge of language and our implicit knowledge of music. In my view, this analogy can contribute to a better understanding of the importance of input and exposure, of how proficiency in music and language requires extensive amounts of exposure and practice, and how explicit attention to structural features can facilitate the learning process in the absence of sufficient practice and exposure.

Victor Wooten, arguably one of the greatest bass players alive, once said “It's rare that I ever meet a musician who doesn't agree that music is a language”. Indeed, the notion that the expressive potential in music is akin to that of language goes beyond the mere metaphor. In fact, recent research has found striking parallels in the implicit acquisition of music and other forms of implicit learning, such as motor action or language acquisition (Rohrmeier & Rebuschat 2012). How else would even untrained listeners conceive of an interval as wrong or ‘unmusical’, while it might be considered perfectly adequate within a different tonal system? As Rohrmeier and Rebuschat (2012: 526) argue:

Musical knowledge, like native-language knowledge, is implicit; it is mentally represented without awareness of the entirety of the complex grammar of rules, having been acquired through attending and interacting with a large number of samples.

As a guitarist with some twelve years of training, which also included music theory and the studying of scales for improvisation, I found the notion of implicit and explicit knowledge domains highly relatable. My personal experience with regard to the learning and practicing of such scales has thus led me to a better understanding of the interface positions. While the scales certainly provided a grid, it was only through hours of practice that I would become a more fluent player. One could argue that an automatization process occurred in which my declarative knowledge led to the acquisition or storage of procedural knowledge.

In accord with Rohrmeier and Rebuschat (2012) I would thus argue that language acquisition exhibits striking parallels to mastering the skill of improvisation on a musical instrument. The diatonic system as interpreted by jazz musicians, for instance, allows for a vast range of possible scales which can be used to build up and relieve tension and dissonance depending on the chord progression over which the musician performs the solo. Most proficient players invest thousands of hours learning the theory behind the music before they become so fluent in their playing that they forget about the fact that they are playing the flat 9 of the Mixolydian scale over the dominant because it is one of the many

effective ways to build up tension before ultimately resolving it in the tonic (i.e. the keynote). Nonetheless, if one were to ask them to compose a sophisticated arrangement for ‘Fly Me To The Moon’ on a blank sheet of music off the top of their heads, they could most likely give an extensive explanation and justification of their choices of chord voicings and soloing melodies against the backdrop of a complex theoretical framework. And then there are those musicians who simply know which note the solo needs, what it sounds like, and where they can find it solely based on the fact that they know their keys or their fretboards so perfectly well that they can already anticipate the next required interval due to years and years of playing and jamming out to songs. While these players are just as fluent in their playing as their theoretically trained colleagues, they will most likely not be able to give a meta-musical justification of their choice of voicings other than the fact that it sounds ‘right’ (similar to a native speaker performing a timed GJT), and they will potentially also fail to produce the aforementioned arrangement, which could be considered a meta-musical task.

Like in the acquisition of a second or foreign language, a theoretical framework in music might contribute to a better understanding of the principles that govern usage (or that arise from usage to stay within the principles of the usage-based approach). It might provide what DeKeyser (2003: 320) referred to as a ‘short cut’ in production. Nonetheless, knowledge of scales and tonal theory can never be a substitute for actual exposure to and practice of music. In fact, it takes a high level of proficiency for a musician to hear the melody and rhythm simply by reading its visual representation on a sheet of paper or to sight-read a piece. The prevalence of implicit knowledge in the acquisition process is further reflected in how accurately nonmusicians can give judgement on the properties of certain tonal sequences, i.e. they can identify certain melodies as jazzy, discordant, or even Middle Eastern without any declarative knowledge of the structural regularities that constitute them (cf. Rohrmeier & Rebuschat 2012). Exposure to certain tonal systems (e.g. the Western diatonic system which distinguishes between minor and major triad chords) will lead to implicit knowledge of the regularities within this system, and we can identify certain intervals that do not fit the conventionalised representations in our implicit knowledge.

In addition to that, music also reflects the dynamic nature of language, which causes the emergence of new structural regularities over the course of time (cf. section 2.3.2.). For instance, while the minor-major mode, which emerged as a characteristic feature during the Middle Ages, has remained the characteristic feature of what is conceived of as Western music, a lot of musicians and composers of the 20<sup>th</sup> century sought to subvert the principles

of tonality. Composers like Arnold Schönberg and Béla Bartók proposed a new atonality which breaks with the dichotomous minor-major mode. In a slightly less radical fashion, jazz musicians, have also pushed the boundaries of tonality, thus challenging and changing perceptions of what can be considered a ‘right’ or a ‘wrong’ note.

Overall, I thus argue that a lot can be learned about the importance of exposure to input and implicit learning in SLA by drawing parallels to the implicit acquisition of music. However, as the amount of target language input is often constrained by a great variety of factors, it is also necessary to emphasise the role that explicit instruction can take to facilitate the process of acquisition. In the following chapter, I will thus present CUB approaches to SLA which specifically address forms of instruction. In the process, I will discuss the different foci that emerged as models of grammar acquisition in SLA. Furthermore, the concept of CxG and the role of frequency will be revisited and elaborated in the context of the L2 classroom.

## 5. CUB approaches to instructed SLA

While Cognitive approaches to linguistics have been around for some time now, most publications that establish an explicit link between CL and instructed SLA are relatively young (cf. Dirven, Niemeier & Pütz 2001; Ellis & Robinson 2008; Knop & Rycker 2008; Cadierno & Eskildsen 2015; Madlener 2015). The impact of the central hypotheses and tenets of CUB linguistics sustains and keeps influencing the field of language pedagogy. Specifically research on child language acquisition, the increasingly prominent understanding of the usage-based dimension of language in CL, and a renewed understanding of grammar as something profoundly meaningful have contributed to a stronger interest in possible pedagogical implementations of CUB concepts.

In the previous sections, it has been established that SLA is to be understood as a process different from L1A insofar as some form of conscious attention to language is required for successful acquisition to take place (N. Ellis 2002a; R. Ellis 2015; Schmidt 2001). This notion is based on CUB approaches to linguistics and language acquisition, findings in neurolinguistics, and a rejection of rigid interpretations of the non-interface position, which claim that SLA occurs implicitly and incidentally if a learner is exposed to comprehensible input in the target language.

In section 4.6., I have argued that Nick Ellis' (2002a, 2002b, 2005, 2010b) interpretation of the weak interface position in which the role of explicit knowledge and learning is ancillary while the lion's share of SLA is attributed to implicit knowledge and learning reflects the CUB principles most adequately. However, I have also highlighted that such an interpretation of the weak interface position requires highly favourable conditions to come into effect (e.g. extensive input in the target language). Any approach to language instruction thus requires a profound understanding of the circumstances under which learning will take place. One crucial aspect in this regard is, naturally, to address individual learner differences. R. Ellis (2015: 38-39) has provided a detailed framework for the analysis of the psychological factors that influence a learner's process of SLA. For the sake of brevity, the focus will here be on the learner's age and their language aptitude, which can be considered a conglomerate of multiple intelligences or abilities that are commonly perceived as a special talent for the learning of second or foreign languages (R. Ellis 2015: 39). As both age and aptitude are considered influential with regard to implicit and explicit learning, these preliminary aspects need to be discussed first. The section will then address forms of input optimisation in more detail, i.e. (visual) text enhancement and input flooding, before it is rounded off by a discussion of the potential benefits of increased target language input in L2 classrooms of young learners with low proficiency levels.

After that, the role of explicit learning and form-focused L2 instruction will be outlined and potential implementations of CUB concepts and theories discussed. In this context, I will argue that approaches to grammar teaching that rely on rule-based learning fail to account for the diversity and richness in form-meaning mappings in the L2. As a consequence of rule-based grammar learning, instances of this diversity are often interpreted as 'irregularities', which are usually associated with rote learning. It will thus be suggested that an approach, which is rooted in CxG, theory and thus emphasises the semantic dimension of grammar, can offer a viable alternative to rule-based grammar teaching.

In the fourth subsection of chapter 5, the focus will then turn to the role of error correction in L2 learning. Again, this issue is closely connected with the discussion of implicit and explicit knowledge and learning as well as the concomitant interface positions. Particular attention will be paid to instances of cross-linguistic transfer which can result in the production of L2 errors. This discussion will then be followed by an analysis of specific errors made by German speaking learners of English. I will then approach these errors

against the backdrop of CUB approaches to SLA as discussed in sections 5.2. and 5.3., and suggest potential implementations to reduce negative effects of L1 transfer.

### 5.1 Preliminary aspects to consider: aptitude and age

While aptitude circumscribes a variety of factors, I will concentrate the discussion on the issue of language analytical ability as this aspect of aptitude is highly relevant in the context of explicit and implicit forms of instruction (R. Ellis 2015: 39, 43). For instance, in her article on ‘linguistic and metalinguistic categories in second language learning’, Karen Roehr (2008) connects a learner’s analytical aptitude with efficacy in learning based on metalanguage. Additionally, she emphasises the role of individual learner differences regarding learners’ attitudes towards their L2 learning situation:

Specifically, individuals with an analytic disposition who are likely to benefit from explicit learning and teaching drawing on metalinguistic knowledge will experience feelings of greater self-efficacy and will thus develop positive attitudes towards their L2 learning situation. By contrast, individuals with a non-analytic disposition who are likely to benefit less from explicit learning and teaching drawing on metalinguistic knowledge will experience greater anxiety and will thus develop negative attitudes towards their L2 learning situation. (Roehr 2008: 94-95)

When I henceforth elaborate on Cognitive approaches to L2 instruction, it is thus important to keep in mind that aptitude can play a role in the efficacy of the respective forms of instruction. Especially when inductive and analytical learning is involved, a learner’s predisposition in that regard might have an influence on the acquisition process. It is furthermore important to emphasise that aptitude should not be regarded as a stable category. Research has suggested that age also plays a role in the degree of language analytical ability, and that various forms of aptitude are subject to developmental change (R. Ellis 2015: 41-42). Adult learners are thus thought to show greater efficacy in SLA when they engage in explicit, analytical learning, whereas younger learners are more reliant on implicit learning (DeKeyser 2000). In this context, it is important to differentiate between aptitude as the result of affective factors (e.g. attitude), as characterised by Roehr, and aptitude as the result of general maturational processes. Long (1990, quoted in Robinson & Ellis 2008: 7), for instance, argues that while affective factors such as motivation and attitude are “systemically related to rate of progress and ultimate attainment, [they] are subordinate to more powerful cognitive developmental and maturational factors”. Long thereby refers to the assumption



that “[children] and adults learning under comparable conditions differ in their rate of acquisition (adults initially learn faster) and in their level of attainment”, with children reaching greater proficiency in the long run (Long 1990, quoted in Robinson & Ellis 2008: 7).

While such a view of the learner can certainly play its part in facilitating the planning of implicit or explicit instruction, one should be cautious not to overgeneralise or overestimate these tendencies. It does not mean that younger learners cannot make use of their analytical abilities in language learning, just as much as adults may acquire features of the L2 incidentally without having their attention drawn to them (cf. R. Ellis 2015). Ultimately, the role of individual aptitude should neither be overemphasized, nor should it be underestimated in the context of cognitive development. Nevertheless, as section 5.2. will illustrate, a nuanced understanding of differences in aptitude according to age may contribute to greater efficacy in L2 learning and should be recognised as an influential factor.

When I will now turn to the various approaches of CUB linguistics to implicit and explicit learning, I will thus on occasion revisit issues of learner aptitude. However, the bulk of the following sections should be regarded as largely independent of individual, affective learner differences in their approach to SLA. In congruence with the principles as formulated by N. Ellis (2010b: 40) I will first turn to issues of implicit learning, which constitute a large part of the acquisition process, before I turn to a discussion of CUB approaches to explicit learning.

## 5.2 CUB approaches to implicit learning

In his list of principles of SLA and under the assumption of a weak interface position, Nick Ellis (2010b: 40) argues that the acquisition process primarily occurs implicitly and incidentally, with explicit attention to language taking on an auxiliary role. Ellis’ approach is strongly influenced by usage-based linguistics and CxG, and puts emphasis on input and frequency. While Ellis’ view is congruent with usage-based theories of L1A, it raises a few issues with regard to instructed SLA. Consider again the following quote taken from Ellis’ article ‘Frequency effects in language processing: A review with implications for theories of implicit and explicit language acquisition’, which has already been referred to in section 3.4.:

Psycholinguistic and cognitive linguistic theories of language acquisition hold that all linguistic units are abstracted from language use. In these usage-based perspectives, the acquisition of grammar is the piecemeal learning of many

thousands of constructions and the frequency-biased abstraction of regularities within them. Language learning is the associative learning of representations that reflect the probabilities of occurrence of form-function mappings. Frequency is thus a key determinant of acquisition because “rules” of language, at all levels of analysis (from phonology, through syntax, to discourse), are structural regularities that emerge from learners’ lifetime analysis of the distributional characteristics of the language input. Learners have to *figure* language out. (Ellis 2002a: 144)

While his statement certainly reflects a usage-based and emergentist position on the issue of grammar and language acquisition, it is the fact that Ellis considers this process of learning a ‘lifetime analysis’ that requires closer inspection.

In the common L2 classroom setting, learners are expected to achieve a relatively high level of proficiency within a short amount of time, often with significant disruptions between lessons, and most importantly, with relatively little exposure to input in the target language. L2 learners thus find themselves in the paradoxical situation that they only have a fraction of the time and exposure/input that they had during the process of L1A, as described by N. Ellis (2002a), but are expected to progress quickly toward specific targets which are set by a syllabus. With these limitations in mind, much of the focus in CUB approaches to SLA has been on explicit forms of learning and on those structural features of the target language, which require explicit attention (cf. DeKeyser 1995). Implicit and incidental acquisition has long been viewed as a by-product of exposure to the language and most research on the subject has largely revolved around the compiling of corpus-based frequency lists (Gries 2008). These lists are organised according to frequency of occurrence and salience, and thus are supposed to present language and linguistic features in such a way that entrenchment is enforced (Gries 2008: 496-497). However, faced with the limitations in terms of quantity, more and more attention is now being paid to the quality of the L2 input, and how it can be enhanced or optimised in order to promote intake<sup>21</sup> and acquisition (cf. Madlener 2015; R. Ellis 2015). For the purpose of this discussion, input optimisation is to be understood as any form of conscious manipulation of L2 input with the aim of enhancing or amplifying the subconscious processes of tallying, pattern-identification, and structuring that in a CUB understanding are inherent to human cognition and language acquisition (cf. Tomasello 2000; N. Ellis 2002a; Evans & Green 2006). In the following section, various forms of input optimisation will be outlined in an overview. The focus will then be on two

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<sup>21</sup> Intake describes the part of the input that is noticed and thus processed in the learner’s working memory (R. Ellis 2015: 318).

approaches, which specifically target structural features of the L2, i.e. **(visual) text enhancement** and **input flooding**. Both approaches will be examined and evaluated in terms of their efficiency. The discussion of input optimisation will then be concluded by a review of Anne Dahl's (2015) study, which investigated the effects of increased use of the target language as the medium of instruction and interaction on young learners of L2 English.

### 5.2.1 Approaches to input optimisation

While not necessarily coming from the CUB approach to SLA, a significant contribution to the discussion about optimising input for effective SLA was made by Rodrigo, Krashen, and Gibbons (2004) whose study suggested that input, which has been made more comprehensible in accordance with the learners' proficiency levels, results in a better intake and more effective acquisition. This is based on the notion that acquisition occurs when a learner is exposed to comprehensible input under favourable conditions (cf. Krashen's natural input hypothesis as discussed in section 3.2). In the study undertaken by Rodrigo, Krashen, and Gibbons, learners from groups working with input graded according to their proficiency level achieved better results in a test than a group of learners who were taught in a traditional way, i.e. with explicit instruction of grammar and vocabulary in the target language. Although it is undoubtedly a form of input optimisation, this approach differs significantly from other forms of input enhancement in that it does not attempt to implicitly direct a learner's focus toward a particular structural feature. Because of the fact that the input is not skewed to draw attention to certain linguistic features, extensive exposure to input is required to achieve a more global acquisition effect (R. Ellis 2015: 153). While it certainly reflects a natural approach to language learning (cf. the simplified input to which children in their L1A are often exposed), the efficacy of comprehensible input based on grading and simplification is limited, especially with regard to grammar acquisition.

In the case of input optimisation approaches, which are geared towards the noticing<sup>22</sup> of structural features, Rod Ellis (2015: 151) describes two forms of input enhancement: The first approach is considered input flooding, i.e. a large number of instances of the target

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<sup>22</sup> 'noticing' is here to be understood as the conscious or subconscious detection of structural features in L2 input based on a broader understanding of Schmidt's 'Noticing Hypothesis' (e.g. Schmidt 2001) as suggested by Talmy (2008: 32-33) and R. Ellis (2015: 152); the assumption being that some form of noticing is required for implicit grammar acquisition to occur as otherwise the focus is on meaning comprehension over noticing (R. Ellis 2015: 152). However, recent research findings in neurolinguistics have suggested that such intake may even occur below the threshold for noticing (cf. N. Ellis 2010b: 41).

feature are represented in the input; The second approach is a form of highlighting or flagging of the target features in the form of (visual) text enhancement (henceforth VTE) (R. Ellis 2015: 151; Madlener 2015: 82, 87). In written input, this is usually done by using bold or italic type, whereas in the case of oral input, emphasis can be created by stress placement or intonation as well as breaks. Both these forms of input optimisation are congruent with CUB principles as they target the domain-general

Proactive input optimisation has also been labelled an implicit focus-on-form approach (Madlener 2015: 84), whereby this terminology is usually reserved for input enhancement that targets “notoriously difficult target constructions” (Doughty 2001: 206). In this case, however, the manipulation of the input is stronger and more targeted than in a usage-based approach, which seeks to amplify naturally occurring structural tendencies to enforce initial noticing processes (Madlener 2015: 84).

The role of enhanced input in interaction with learners, e.g. in the form of recasts as a response to language errors, which are also referred to as “interactionally modified input” in Rod Ellis (2015: 155), will be discussed in section 5.4. on corrective feedback. In the following sections, the effects of VTE and input flooding will be analysed.

### 5.2.2 Forms of input optimisation: (visual) text enhancement (VTE)

As far as VTE is concerned, there has been little evidence of a clear impact on intake and acquisition so far. While it can certainly have an effect on noticing, it is unclear whether VTE has any considerable effect on learning. In a study by Alanen (1995, referred to in Madlener 2015: 87), for instance, learners reported the noticing of target structures, but only showed signs of learning when the VTE was accompanied by an explicit and metalinguistic focus on form. In general, most studies that sought to measure the efficacy of VTE have led to mixed results, with age often being a determinant that would require more attention (Madlener 2015: 87). Furthermore, Madlener (2015: 88) has shared Rod Ellis’ concern (R. Ellis 2015: 152) that while in some cases VTE may lead to intake and contribute to learning, this could occur at the expense of input processing for meaning, as various studies have shown that input processing is often an either-or affair with regard to form and meaning (cf. Shook 1999; Lee & Huang 2008). Overall, VTE has largely been deemed ineffective, for instance, by Rod Ellis (2015), whose evaluation of the role of enhanced input reflects his interpretation of the weak interface position (i.e. an orientation towards explicit instruction).

In his conclusion, Ellis views the effect of optimised input on acquisition as negligible: “At best, input enhancement only increases the likelihood of acquisition and – in the case of over-enhancement – it can have a deleterious effect” (R. Ellis 2015: 154).

However, a rejection of the VTE approach to input optimisation might be premature, as the incoherent results in previous studies (cf. Lee & Huang 2008) might not necessarily reflect a flawed approach, but rather the consequence of heterogeneity in test designs and, most importantly, of the participants’ different age levels. For instance, in their extensive meta-analytic review of studies on visual input enhancement methods, Lee and Huang (2008) refer to the mixed study results as inconclusive regarding the efficacy of VTE in implicit learning, yet they do not make mention of the age factor at any stage. While the review does provide ample data regarding proficiency levels, it completely disregards the learners’ age in the various studies.

It is true that proficiency levels might play a role in a learner’s responsiveness towards enhanced input; however, age has been considered an influential factor when it comes to implicit and explicit learning (cf. section 5.1. on aptitude and age in this chapter). R. Ellis (2015: 33), for instance, emphasises that children have been shown to exhibit a faster rate of progress in implicit learning than adults, who in turn are thought to have advanced abilities in terms of learning strategies and analytic learning. Additionally, in her review of the various studies on VTE, Madlener also suggests that the large differences in age ranges as well as the different time constraints in the respective studies may well have contributed to the inconclusiveness of the reported results (Madlener 2015: 87, 92). Implicit learning in the sense of unconscious tallying of the types and tokens in input is a slow and gradual process that requires consistent exposure over a longer period, which is often not the case in a controlled study.

I thus argue that the mixed results regarding the efficacy of VTE should not be conceived of as evidence of the shortcomings of this particular approach to input optimisation, but that they should rather be taken as an incentive for further research that accounts for learner age as a vital factor in the processing of input and that allows for investigation of potential long-term effects in long-term studies.

### 5.2.3 Forms of input optimisation: Input floods

While the effectiveness of (visual) text enhancement has been questioned, there is little doubt about the efficacy of input floods regarding target structures (Madlener 2015). Input floods are largely based on assumptions from usage-based and constructionist theories, which emphasise the role of implicit tallying of frequencies that occur when learners are exposed to input (Madlener 2015; cf. sections 2.3.3. and 2.3.4.). However, while studies have shown that input floods can lead to acquisition of certain linguistic features, they do not necessarily lead to knowledge about restrictions in usage and can hence result in errors due to over-generalisation. With reference to the results from Trahey and White's (1993) study of French learners of L2 English, Madlener (2015: 89) emphasises that "from exposure to positive evidence alone, the learners did not recognize what was *not* possible in the target language" [original emphasis]. It can therefore be assumed that the restrictions to certain regularities in the target language require explicit attention which is an aspect that will be elaborated on in section 5.3.

Nonetheless, input floods can be a valuable form of input optimisation, especially with regard to features of the target language, which have been proven problematic for learners, such as *faux amis* across languages or phrasal verbs. Madlener (2015: 90) describes the value of input flooding in this regard as follows:

Implicit FoF [i.e. focus-on-form] techniques use input floods in order to optimize learners' input processing by exposing them to massive amounts of particular, notoriously error-prone target structures in meaningful input. Making these target constructions highly frequent and task-essential in the input maximizes the learners' chances to implicitly register a critical number of exemplars in varying and relevant morphosyntactic and discourse contexts. The proportion of input that goes by unnoticed and unprocessed is by this means decreased. In other words, input floods provide multiple occasions of rich intake generation and implicit tallying of (co-)occurrences, which are a prerequisite for subsequent interlanguage accommodation and restructuring.

In such an approach, a high type frequency of a linguistic item with variance in token occurrence can potentially lead to abstractions and inferences, and thus to productivity in use (Goldberg 2009: 104). Again, however, productivity based on high type frequency in the input is subject to over-generalisation, due to the fact that any inferences made rely on positive evidence alone. Nevertheless, input flooding should be regarded as a valuable method in input optimisation that can help cater to learners' needs.

Overall, the benefits of extensive exposure to the target language are indisputable. However, with the constraints in institutionalised language teaching, there is a need for finding the right balance between a) extensive exposure to the L2, b) meaningful interaction and thus practice of the L2, and c) explicit attention to specific and ‘difficult’ features of the L2. Research has shown that extensive exposure to input alone is no guarantee for achieving high L2 proficiency levels (Swain 1991, 2005). Input optimisation is thus a vital component as it can potentially improve the efficacy of a) while maintaining a balanced approach for optimal L2 instruction. It is crucial that the nature of the input and the degree to which input is the focus of instruction is geared to the learners’ needs as well as to their age and proficiency levels. More research needs to be done in this regard in order to investigate how the powerful implicit learning mechanisms that are attributed to younger learners correlate with the effects of optimised input, and particularly with exposure to input floods. This also concerns the issue of whether teachers opt for the L2 or the L1 as the medium of instruction and interaction. In the following section, this issue will thus be elaborated on in more detail.

#### 5.2.4 Reconsidering the role of input: the role of the target language in instruction and interaction

There is little doubt that the L1 is an important tool that, if used in a balanced and planned approach, can facilitate the L2 learning process (cf. Lee & Macaro 2013; Juárez & Oxbrow: 2008). However, more recent research has shown that especially younger learners might profit from increased exposure to the target language in the long run, even if this increase occurs mainly on the level of instruction and interaction (Dahl & Vulchanova 2014; Dahl 2015). This is particularly evident in Anne Dahl’s study (2015) of young Norwegian learners of L2 English. The participants in Dahl’s study did not grow up in a bilingual environment and entered their first year of L2 English instruction at school. The children were organised in two groups, which both covered the same syllabus over the same period of time (i.e. one school year). However, while in one group A the language used for instruction and real communication was Norwegian with L2 English used additionally, the teacher in the other group B relied more heavily on the target language in instruction and real communication. Furthermore, activities in group B were more focused on input and less on explicit instruction than in group A.

Dahl’s study showed that after a year, group B achieved better results than group A in sentence comprehension whereas the results in sentence repetition did not show any

significant deviations (Dahl 2015: 136-143). Sentence comprehension is thereby attributed to procedural, implicit knowledge, whereas sentence repetition is more strongly associated with declarative, explicit knowledge. The findings prompted Dahl to conclude that her study supports the assumption that younger L2 learners are more reliant on implicit learning, and thus benefit more from extensive exposure to input than from explicit instruction:

The greater effect on sentence comprehension [...] may reflect a greater benefit of a young AoA [age of acquisition] on aspects of language which depend solely on the procedural system. [...] The results may thus indicate a benefit of increased exposure on the ability to perceive and access lexical items in particular. The weaker effect on sentence repetition may indicate limited development of morphology, for example, verb inflection, which is a cue to role assignment in English (Dahl 2015: 140).

Dahl's findings have implications for language teaching on two levels. Firstly, the study showed that with younger learners, even a slight adjustment in input optimisation can result in greater efficacy. The learning environment in the study was by no means immersive or artificially enhanced with regard to input. Secondly, reliance on the target language for instruction does not impede explicit or declarative learning. In fact, the input-focussed group B achieved slightly better results in sentence repetition.

However, it is important to point out that this particular study also has its limits. As Dahl points out, the structural and lexical proximity between the children's L1 Norwegian and their L2 English may have facilitated the processing of the input (Dahl 2015: 132). Further research that investigates the effects of increased exposure to the target language over a long period, and in which the L2 differs more significantly from the L1, is thus necessary. This is especially relevant as multilingual classrooms become more and more common, and many teachers can no longer assume that their students share the same L1. Recently published data<sup>23</sup> have shown that 23.8% of students in Austrian schools do not speak German as their L1, with schools in areas of high population density exhibiting an average of 49.7% non-native German speaking students. In this regard, a stronger focus on the target language as the medium of instruction might not only be beneficial in terms of L2 (or in many cases then L3) proficiency, it might also provide and establish a level playing field on which students have equal opportunities to thrive.

While research on the efficacy of input optimisation has opened up new possibilities that can contribute to an increased efficacy in language learning, they have also proven that

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<sup>23</sup> Source Statistik Austria (2016).



successful L2 learning cannot dispense with explicit attention to certain features of the target language. In the following sections, I will thus elaborate on CUB approaches to explicit and form-focused instruction.

### 5.3 Focus on form(s): the value of explicit instruction

In the previous sections, it has been established that while input optimisation may contribute to more efficient L2 learning, the process of SLA cannot rely on exposure to input in the target language alone for a variety of reasons. Firstly, research in neurolinguistics has shown that an L2 is usually located in a different cortical area than the L1, with overlaps only occurring when a person exhibits great proficiency in the L2. This has been conceived of as evidence that SLA is different from L1A in that it relies more on explicit knowledge (cf. section 4.4.). Secondly, research has shown that L2 learners who participated in immersion programmes and thus relied exclusively on extensive exposure to the target language have been shown to fall short of grammatical accuracy in comparison to learners who received explicit instruction (Swain 1991, 2005). Thirdly, it has been found that with advancing age, learners tend to rely heavier on analytic learning strategies, whereas they show less efficiency in implicit learning (R. Ellis 2015: 42). Lastly, research abounds which suggests that an L2 cannot be learned based on positive evidence alone, i.e. some form of explicit attention to restrictions in the target language is required for effective SLA (N. Ellis 2002a: 144; R. Ellis 2015). Based on these assumptions, a more detailed discussion of CUB approaches to explicit learning and instruction is therefore in order.

In the following section 5.3.1., I will provide an overview of different approaches to form-focused instruction, a discussion of how they relate to the differentiation between implicit and explicit knowledge, and an analysis of how they have influenced L2 pedagogy.

I will then focus on the issue of rule-based grammar learning (cf. Littlemore 2009), i.e. the deductive and metalinguistic approach in which abstract schemata are learned in a top-down process as a formula, or rule, which can then be applied in language use (e.g. regular past tense is formed by adding the *-ed* suffix). These approaches to grammar can result in overgeneralisations or notions of arbitrariness, when students are faced with exceptions to a rule (cf. Littlemore 2009), and may also be detrimental to grammar acquisition if the rules are highly complex (Roehr 2008: 26). I will therefore argue that a CUB approach to grammar teaching may reduce such negative effects by investigating (ir)regularities and exceptions in the L2 in an inductive, exemplar-based, bottom-up process.

### 5.3.1 Focus on forms, focus on meaning, and focus on form: The changing role of explicit learning and instruction in L2 learning

The discussion of potential forms of explicit instruction in L2 learning has resulted in different emphases on the role of grammar instruction. This section will therefore provide a brief overview, before the CUB approaches to explicit learning and instruction can be addressed. Cadierno (2008: 260), for instance, differentiates between three approaches to the teaching of grammar, i.e. “focus on formS, focus on meaning and focus on form”. A focus on formS approach is thereby organised along the sequential learning of different linguistic elements, such as morphemes and sentence patterns, which are usually “presented in isolation in a step by step fashion according to given criteria (e.g., frequency and difficulty)” (Cadierno 2008: 260). Such an approach clearly targets the learning of declarative knowledge. Hence, it requires a strong interface (cf. DeKeyser 1995), and is thus at odds with the notion that SLA is a process that largely occurs implicitly (N. Ellis 2010b: 40; cf. section 4.6.).

The focus on formS approach was later abandoned in favour of a focus on meaning which was the result of the emergence of communicative language teaching. This development was accompanied by notions strongly associated with Krashen’s natural input and Monitor hypothesis (Krashen 1981, 1982; cf. section 4.3.). The idea was that declarative knowledge played little to no role in the process of SLA, even culminating in assumptions about grammatical instruction or attention to form in error correction being detrimental to the learner’s acquisition process (Cadierno 2008: 261; Hughes 1983). Instead, SLA was considered to occur in the same way as L1A, i.e. incidentally and through exposure to comprehensible input in the target language (Long & Robinson 1998: 18; Krashen & Terrell 1983).

However, studies soon began to show that despite highly favourable conditions, learners with a focus on meaning background exhibited significant shortcomings in their grammatical competence (cf. Swain 1991, 2005). This has led to a revaluation of the role of grammar instruction in foreign language classrooms and to a focus on form approach in which meaningful interaction remains the overriding focus with an “occasional shift of attention to linguistic code features” (Long & Robinson 1998: 23).

While they all differ in their understanding of the ideal process of L2 learning, all three approaches have one thing in common, i.e. that they are all a reflection of the various interface positions (cf. section 4.6.): A focus on formS approach, for instance, presumes a

strong interface position in which declarative knowledge can become automatized and thus represented as procedural knowledge in the implicit domain. A focus on meaning, which disregards the role of grammar instruction to a large extent, however, reflects a non-interface position, in which declarative knowledge cannot become implicit knowledge. Ultimately, a focus on form, which suggests attention to linguistic features in the greater context of a meaning-oriented instruction is congruent with a weak interface position, whereby the clear focus on implicit learning with explicit instruction taking on an auxiliary role reflects N. Ellis' interpretation of the weak interface (N. Ellis 2010b).

A key aspect of the focus-on-form approach is the fact that it treats grammar as something inherently meaningful. In doing so, it is congruent with the principles of CUB linguistics and CxG, i.e. that grammar is primarily semantic as its structural regularities emerge from language usage in meaningful interaction (Cadierno 2008: 264). In the following section, I will discuss how such a notion of grammar may facilitate L2 grammar acquisition when a rule-based approach fails.

### 5.3.2 Artificial language: problematic aspects of a rule-based approach to grammar

In the first chapter of this thesis, the different notions about language in the generic and Cognitive paradigm have been elaborated. Grossly oversimplified, the generative standpoint is that language is a set of abstract rules, which exists in the form of a universal grammar and is inherent to human beings in the form of a genetic predisposition. Therefore, generative grammar is primarily interested in language competence, i.e. the abstract rules that govern all human languages. CL, however, views language as an extension and reflection of other cognitive domains and processes, and is thus much more interested in how language is used. This is also reflected in usage-based, and constructionist notions of grammar (cf. Langacker 1987; Bybee & Beckner 2010; Croft: 2007), which reflect a bottom-up approach to language analysis, whereas generativists examine language in a top-down process (cf. section 2.3.3.).

In some way, a rule-based approach to grammar learning (cf. Roehr 2008) is reminiscent of the generative paradigm insofar as it reflects the top down approach from abstract, underlying rules to actual language performance. As discussed above, in a focus on formS approach, the structural principles of language are at the heart of the learning process. Frequently, the learning of such principles is accompanied by the use of metalanguage, which provides a categorizing function. In a deductive process, the learners then apply the

rules – and exceptions to the rules, i.e. the unbeloved irregularities of the target language – and practice them in interaction. Thereby, the learners work around the slow and seemingly ineffective way of implicit tallying of frequencies and inference of regularities in the input, by taking the short-cut of explicit rule learning (cf. DeKeyser 2003: 320).

While explicit, rule-based instruction can certainly offer a route to rapid progress, it has also been criticised for not reflecting the dynamic and often messy nature of linguistic meaning that keeps changing and is constantly renegotiated (cf. section 2.3.2.). Consider the following quote taken from Roehr's (2008) article on 'linguistic and metalinguistic categories in second language learning' in which she juxtaposes a usage-based and a rule-based, metalinguistic approach to linguistic analysis:

[The] usage-based model assumes that cognitive categories, whether conceptual or linguistic, are flexible and context-dependent, sensitive to prototype effects, and have fuzzy boundaries. By contrast, metalinguistic knowledge appears to be characterized by stable, discrete, and context-independent categories with clear-cut boundaries (Roehr 2008: 86).

Roehr's argument is to be understood as criticism towards the explicit learning of grammar rules. She emphasises that due to the fuzzy nature of language and linguistic meaning, the presentation of such rules is usually accompanied by a set of exceptions, which then need to be learned by rote (Roehr 2008: 87). With reference to Roehr's article, Littlemore (2009: 63) further argues that the acquisition of rules rather than of actual representations of structural patterns results in the learning of categories which are "stable, discrete, clearly delineated, and most importantly, largely artificial as they do not reflect language as it really is".

While it can certainly result in the correct use of target language, metalinguistic and rule-based knowledge of the grammar can just as much lead to errors, which are usually considered the result of overgeneralisation, e.g. in the case of adding the *-ed* suffix to an irregular verb. I recently encountered a particularly striking example of this phenomenon myself. As a tutor of English, I frequently mentor young learners of English with a low level of proficiency, and whose first encounter with the L2 often occurs in the classroom setting. In a focus-on-formS approach, one of my students, a ten year old boy in his first year of learning L2 English, had recently been presented with the rule that the regular past simple form requires adding the suffix *-ed* at the end of the verb. Despite the fact that he had previously learned about the respective past simple forms of *to be*, he was unable to produce them in the context of a gap-filling exercise in which he was supposed to fill in the past

simple forms of either regular verbs, or of *to be*. Instead, the student consistently produced forms such as the following example (8):

(8) \*Bed you at home yesterday evening?

While the task was designed to elicit declarative knowledge (explicit grammar focus, written), errors like this nonetheless provide an insight into how prevalently explicit knowledge can be manifest in learners, especially in those who are still at a low proficiency level and have experienced little exposure to the target language. While this particular error will certainly not be retained for sheer matters of frequency of occurrence, it can be assumed that when accessing declarative knowledge, learners of an L2 will be susceptible to overgeneralisation and therefore incorrect or at least unconventional, non-canonical use of the target language. Furthermore, the frustration with which the student reacted to my corrective input left a lasting impression on me, as he was clearly upset about the fact that the rule did not apply to all verbs. Throughout the years that I have worked as a language tutor, I have frequently observed that learners find it highly frustrating when they perceive features of language as arbitrary. In the majority of cases, these irregularities are associated with a need for rote learning, as in the case of the irregular verbs in English, which can further cause negative attitudes towards the process of explicit learning (cf. Roehr 2008).

In an attempt to rectify the dilemma of language being perceived as frustratingly arbitrary, Littlemore (2009: 148) suggests the notion of a ‘motivated’ and thus meaningful grammar, and emphasises the role of CL in that regard: According to Littlemore, principles in CUB linguistics, such as embodiment (cf. section 2.3.1.) or the dynamic nature of linguistic meaning, which drives language change and the emergence of grammar (cf. sections 2.3.2., 2.3.3. on usage-based grammar, and 2.3.4. on construction grammar) can have a positive influence on learners’ attitude towards the structural properties of language:

Using these findings, teachers can explain, in theory, to their students why it is that certain expressions mean certain things, instead of simply telling them ‘that’s just the way it is’ and expecting them to learn expressions by heart. This engages learners in a search for meaning, which is likely to involve deeper cognitive processing which [...] leads to deeper learning and longer retention (Littlemore 2009: 148)

A very effective example of this is, for instance, the emergence or grammaticalisation<sup>24</sup> (Hopper & Traugott 1993) of *will* and *to be going to* as forms, which construe future events based on their original literal or lexical meanings of *desire* and *physical movement* (Littlewood 2009: 153).<sup>25</sup> The argument is that students learning these constructions in an approach as suggested by Littlewood might benefit in the long run. In the case of *to be going to* future, for instance, students might find it easier to infer the meaning from sentences such as *I'm going to Prague this weekend*, in which the present continuous is used with reference to a future event.

In the case of *will*, the positive effects might even be more significant. Consider the following example sentences, which are instances of spoken interaction taken from the Corpus of Contemporary American English (COCA) (Davis 2008) [my emphasis]:

- (9) It looks like something about the size of a grapefruit, **if you will**.
- (10) So he said **will you marry me**. The baseball had it on there. And that's a beautiful moment.
- (11) You blamed everybody for the downgrade except for yourself, senator.  
Senator -- SEN-DICK-DURBIN-: **Will you be quiet**, please?

In (9) and (10), *will* still has its original volitional meaning. Interpreting the modal as a future marker makes little sense in the context of the respective examples. Furthermore, while the use of *will* in (11) resembles that of (10) from a grammatical point of view, the difference in pragmatic meaning could hardly be any bigger. All the above examples clearly reflect the semantic variability of *will* as well as its fuzziness and context-dependency. In Austrian schools, however, most learners encounter *will* for the first time when they learn about the future tense, which is usually within their first year of learning L2 English. In a focus on formS approach that may result in the learning of a rule, such as '*will* expresses future events/actions with a low degree of certainty', which is, however by no means reflected in the examples taken from COCA. Furthermore, the phrase *if you will*, for instance, occurs relatively frequently in spoken interaction and is quite likely to be encountered in an authentic setting. As with the original volitional meaning of *will*, discussing the construction *to be going to* by reference to the meaning of *being on the way with the intention of doing*

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<sup>24</sup> A word or construction is considered 'grammaticalised' if it has undergone a change from content word or construction to function word or construction (Hopper & Traugott 1993: 4).

<sup>25</sup> A more detailed account of the grammaticalization process of *to be going to* can be found in Evans and Green (2006: 730-733).

*something* has the implication that a decision has been made and that the result of this decision is inevitable. Understanding the conceptual origins of the respective grammaticalised items may well be the key that unlocks these constructions for L2 learners.

In contrast to that, a top-down, rule-based approach to grammar may provide a short cut in terms of productivity, *viz.* it may result in the learner quickly applying the rule in new contexts. However, such an approach fails to convey the dynamic nature of linguistic meaning. In the case of younger learners, over-reliance on metalanguage and on explicit instruction could in fact be detrimental to their learning process in the long run, whereas a constructionist, usage-based approach to grammar may be the more adequate option.

Holme (2010: 361), for instance, has proposed such a *construction grammar for the classroom*, which offers a more meaning-centred approach to grammar. He argues that “the close relationship between how a construction’s meaning has been conceptualised and the meaning itself may help students to understand the nature of a meaning” (Holme 2010: 361). Offering a more concrete view of construction grammar in L2 pedagogy, Holme further suggests that it is vital to encourage students to “**explore** constructions as multiple tokens of a type” [my emphasis] (Holme 2010: 362). While the aim is certainly to arrive at some level of generalisation<sup>26</sup>, which allows for productivity in usage, Holme’s approach to grammar learning reflects a more inductive, bottom-up process, as opposed to rule-based approaches. The exploration of corpus-based examples of authentic language use, as used in the discussion of *will* above, for instance, may well contribute to a better understanding of features in the target language that cannot be contained by rule-based constraints.

Furthermore, the focus on specific instances, (i.e. tokens), instead of abstract rules may have a positive effect on fluency. Diessel (2011), for instance, has suggested that learners are more likely to make associations on the token level (horizontally) rather than on the type level (vertically), i.e. “novel tokens are not generally categorized by abstract schemas (or rules), but are often licensed by individual tokens or token clusters that may be stored in memory in addition to high-level generalizations” (Diessel: 2011: 834). Under this assumption, it appears more adequate in explicit instruction to focus on exemplars rather than on the abstract rule. As Diessel (2011: 834) conclusively argues: “memory is cheap and computation is costly. Therefore, language users will often draw on concrete tokens and low-level generalizations to license a particular structure”.

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<sup>26</sup> I am consciously refraining from using the term ‘rule’ here.

In a similar way, Roehr (2008) questions the usefulness of rule-based learning with regard to highly abstract schematizations. She argues that the degree of complexity of a construction and the level of abstractness in its metalinguistic description have a significant impact on the efficacy and success of explicit learning:

Linguistic constructions which are captured relatively easily by Aristotelian categories and relations between such categories will be easier to acquire explicitly than linguistic constructions which are not captured easily by Aristotelian categories and relations between such categories. Specifically, linguistic constructions which show comparatively systematic, stable, and context-independent usage patterns should be more amenable to explicit teaching and learning than linguistic constructions which do not show these usage patterns (Roehr 2008: 92-93).

The implication is that while certain constructions will be relatively easily accessed by means of metalinguistic knowledge, others might be more easily licensed by reference to specific exemplars. While Roehr does not provide specific examples to support her hypothesis, it can, for instance, be assumed that a metalinguistic construct, such as *verb + -ed* for regular past tense is more easily accessed than the construct for the omission of the by-agent in a passive sentence or the ‘rules’ that govern the omission of the definitive article *the*.

However, even constructs that are seemingly simple may occasionally cause difficulties, especially with learners who are less responsive to analytic and metalinguistic learning. As the example of the 10-year-old student who produced the form *\*bed* instead of *were* has shown, top-down deductive process may lead to overgeneralisations if the learner lacks knowledge of the exceptions to the schematic regularity. Especially for younger learners, who are supposed to show greater efficacy in implicit and inductive processing of L2 regularities, an exemplar-based approach to more complex structures may be beneficial. In fact, Casenhiser and Goldberg (2005) argue that both children and adults learn a new construction faster if they are exposed to one higher-frequency token as well as several types exemplifying the construction.

Overall, the role of explicit instruction in SLA is characterised by a give-and-take between a focus on metalinguistic abstractions (types, high-level generalisations and schematisations), and on specific instances (tokens) or low-level generalisations. Differences in emphasis on either form are often due to exterior constraints imposed on the L2 classroom situation. A bottom-up process to the learning of grammar may require large



amounts of language input as well as more long-term oriented objectives with regard to grammatical accuracy. After all, an environment which still emphasises the step-by-step learning of specific features of the target language in a focus-on-formS approach may discourage teachers from opting for a more usage-based approach to grammar and result in a stronger reliance on rule-based grammar teaching. While it is true that the limitations inherent to institutionalised language teaching render some forms of explicit learning indispensable (cf. Pawlak 2014: 15; DeKeyser & Juffs 2005: 437-454), I argue that constructionist and usage-based approaches to grammar as discussed above can provide an alternative to a rule-based focus-on-formS approach. Similar to the issue of implicit learning, more research is required in order to draw inferences about the impact of age with respect to metalinguistic awareness (cf. Tellier 2013) as well as an investigation into which linguistic constructions are amenable to explicit instruction, and which are better accessed by association on the token level (Roehr 2008: 93).

So far, the discussion of CUB approaches to SLA was largely focussed on issues of input, with the emphasis either on implicit and incidental learning or on explicit attention to features of the target language in the input. In the following section, however, the issue of learner output will be analysed in the context of error correction and corrective feedback.

#### 5.4 The role of error correction and corrective feedback

In the previous section, I have already broached the subject of errors resulting from overgeneralisation as a consequence of a rule-based approach (cf. section 5.3.2.). Furthermore, research has shown that SLA cannot rely on positive evidence alone, as it may result in exemplar-driven overgeneralisations (Mitchell, Myles & Marsden 2013: 104).<sup>27</sup> A crucial aspect in dealing with learner output is thus the question of how to respond to errors in L2 production. In the following sections, this issue will therefore be addressed in more detail. In this context it should be noted that while issues of error correction are not necessarily exclusive to CL, I will revisit the discussion of CUB approaches to SLA when I address specific instances of L2 errors in section 5.6..

In the first subsection 5.4.1., the concept *language error* will be defined. Subsequently, the role of corrective feedback will be discussed in the context of various approaches to L2

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<sup>27</sup> This is reflected in the shortcomings of Krashen's natural input hypothesis (Krashen 1981; Swain 2005).

pedagogy, such as communicative language teaching (CLT), or the natural approach as proposed by Krashen (cf. 1981; Krashen & Terrell 1983). Ultimately, the issue of whether corrective feedback is more effective when delivered explicitly or implicitly will be elaborated on with due regard to the different interface positions. As far as sources of L2 errors are concerned, the focus will then be on the matter of cross-linguistic influence and potential interferences of form-meaning mappings in the L1 with the target language. This section will ultimately provide the backdrop for a brief analysis of errors made by German speaking learners of L2 English based on Geoff Parkes' 'Southampton Survey' (Parkes 2003: 9).

#### 5.4.1 Defining a language error

Most of the recent research on corrective feedback and error correction has focused on the role of feedback in the foreign language classroom (e.g. Pawlak 2014, Reitbauer et al. 2013). This might be due to the fact that the instructional setting demands an in-depth approach on how to deliver feedback on students' performances in order to document, assess and ultimately grade their progress. Since the process of assessment requires justification, feedback is often carefully planned and based on shared norms, which allow for comparability across school types, and even countries. An example of a set of such broadly shared norms is the 'Common European Framework of Reference' (Council of Europe 2001), which provides clear statements of what a learner should be able to do with regard to different skills. While these criterion-referenced forms of feedback are certainly a valuable source, the following paragraphs will mainly focus on ad-hoc feedback and error correction in spoken interaction that may also occur outside the language classroom. In order to investigate the issue of error correction in interaction further, it is first necessary to typologically clarify what makes an utterance erroneous.

In his latest publication on error correction in the foreign language classroom, Mirosław Pawlak (2014) adheres to Lennon's (1991: 182) and Chaudron's (1986) definition of an error, which can be subsumed as a) any deviation from the native speaker norm (i.e. any linguistic form which would not be produced by a native speaker under similar circumstances), and b) any other form which is deemed inadequate by the teacher. While the latter of the two definitions appears to be rather far-reaching in its absolute claim regarding the teacher's judgemental abilities, it should merely be considered a concession to the fact that the majority of teachers of English as a foreign or second language are non-native

speakers, and hence have their own perception of correct language use. At the same time, one could argue that Pawlak's definition may be considered reductive as it limits the competence and authority in error correction to native speakers and teachers alone and thus takes other participants in L2 interaction out of the equation. In the process of elaborating the role of corrective feedback in second language acquisition, the issue of who can and should give corrective feedback will also be addressed.

#### 5.4.2 Corrective Feedback in SLA: implicit or explicit feedback?

Ever since the emergence of communicative approaches to language teaching which focus on meaning rather than on form (e.g. Widdowson 1990; Brumfit & Johnson 1979), the understanding of SLA has changed. While linguistic accuracy is still an objective in most communicative approaches, the primary focus has shifted towards the pragmatic functions of language use and to fostering the communicative competence of the learner. The conveyance of meaning in interaction with the purpose of achieving a communicative goal through effective language use is at the centre of the communicative approach. However, due to a lack of specific methodological advice on implementation, the concept of CLT has been labelled "fuzzy" (Larsen-Freeman & Anderson 2011: 115), and indeed, a lack of clarity is also reflected in the CLT stances on negative feedback.

Originally, the role of corrective feedback and a focus on linguistic accuracy were long disregarded as being disruptive to the ideal of free communication in the CLT classroom and unsuitable due to the assumption that the students' attention would shift towards a focus on form rather than on meaning (Loewen 2012: 24, Littlewood 1983: 90-91). Notions about language acquisition in the classroom based on Krashen and Terrell's (1983) natural approach, for instance, were very much focused on input and entrenchment through exposure, and thus dispensed with explicit negative feedback, with the interlocutor only providing prompts or recasts if requested. Based on the assumption that no transfer could occur between the explicit and implicit knowledge domain, any explicit corrective feedback would merely result in declarative knowledge, which the speaker cannot access in the production phase (cf. Krashen's Monitor hypothesis and the non-interface position as discussed in section 4.5.). The value of corrective feedback in SLA is therefore considered negligible at best.

The following example, which is taken from Arthur Hughes' contribution to Johnson & Porter's 'Perspectives in Communicative Language Teaching' (Hughes 1983: 8-10), gives an insight into how the natural approach is meant to be implemented. The emphasis here is clearly on the provision of comprehensive input in the target language without directing the learner's attention to form(s). The implication is further that providing models of target language use like the prompts and recasts in the conversation between a language instructor A and his student B are not to be considered error correction:

- (12) B: and then ... I went to the bathroom ... and I washed ... and I brushed my h...  
A: your hair, yes  
B: I brushed my hair ... and then went to the bathroom  
A: yes  
B: I washed  
A: yes  
B: I dress ... or I am dressed?  
A: no ... I dressed  
B: I dressed ... I dressed ... and I put the blankets on the chair ... opened the window ... or door

Reading through this conversation, it is rather difficult not to conceive of A's interventions as some form of error correction. One might, for instance, argue that the student's failure to produce a form could be considered an error equivalent to the production of a form which falls into Lennon's and Chaudron's categorisation of an error mentioned above (i.e. deviations from native speaker norms, or norms defined by the instructing authority), and that the consequent provision of the form by the instructor (e.g. *your hair*) should therefore be classified as an act of error correction. Furthermore, when A provides the form *I dressed*, and explicitly negates the form as proposed by the student, one may even consider this an instance of explicit corrective feedback as the focus is inevitably drawn to the specific form. Nonetheless, for the sake of clarity, the provision of the correct form shall here be conceived of as an example of a recast, and thus as an implicit form of feedback.

Feedback on errors in a natural approach to CLT as proposed by Hughes (1983) and Krashen & Terrell (1983: 177) is generally characterised by implicit correction through provision of model language use, based on the assumption that SLA should lean towards the natural process of acquiring one's mother tongue, in which little or no form-focused instruction, and hence error correction, takes place. Negative (or corrective) feedback in the

form of recasts has been the subject of extensive research in child language acquisition, and arguments have been brought forth that children's disposition of being more liberal in their testing of hypotheses may contribute to their ability to learn an L2 more easily than adult learners (Dulay & Burt 1974b: 95). With regard to the prevalent focus on meaning over form, however, the testing of hypotheses in the target language by the learner is in this case considered to generate more input, e.g. in the form of corrective recasts, but has no further impact on the process of language acquisition.

The lack of form-focused instruction in the Communicative Approach and the predominance of input over output based on the notion that sufficient exposure eventually leads to acquisition pose a serious challenge to research on error correction, and render its role dispensable, or negligible at the very least. Recent approaches, however, propose a more balanced position on the subject. While the priority of meaning over form is still a core principle, linguistic features should also be emphasised in a planned or spontaneous focus on forms within the framework of the communicative task (R. Ellis 2001, Loewen 2011: 579).

Based on the incongruent stance on corrective feedback in CLT (or lack thereof), it appears to be more adequate to turn to an interactionist approach as proposed by Gass and Mackey (2012). A primary feature of the interactionist hypothesis is that it integrates both Krashen's Input Hypothesis (e.g. Krashen 1982) and Swain's Output Hypothesis (e.g. Swain 2005), whereby Swain's description of the "hypothesis testing function" of output bears particular significance for the importance of corrective feedback (Swain 2005: 476). In it, Swain claims that learner output often resembles a trial run in which assumptions about the target language are tested. In order to falsify or verify their hypotheses, learners are dependent on feedback from someone who is a more proficient speaker of the target language. Much like the natural or input-focused approaches, the trial-and-error aspect of Swain's output hypothesis incorporates several notions of, and assumptions about child language acquisition and the part that error correction plays in it. However, Swain claims that the impact of language output goes beyond the act of generating response and thus more language input to process and ultimately integrate. She argues that the greater depth of processing and the concomitant extent to which input is analysed and elaborated when learners test their hypotheses in interaction is linked with stronger memory traces in the long run (Swain 2005: 475).

Further research based on the output-based theory (e.g. Pica et al. 1989) did not only validate Swain's claims empirically, but also provided important information about the efficacy of specific forms of corrective feedback. For instance, learners were found to exhibit greater depth of processing in response to elaboration requests from the instructor, for instance by restructuring their utterances semantically or morphosyntactically (Pica et al. 1989, Swain & Lapkin 2002). This approach constitutes a clear departure from the recasting and paraphrasing exhibited in the conversation extract from Hughes (1983: 8-10) quoted above, in which intervention from the more proficient speaker is reduced to a minimum in order not to disrupt the communicative flow.

In the following, explicit and implicit forms of corrective feedback will be compared and evaluated in terms of their efficacy. Furthermore, the resulting findings will be discussed in the context of learner aptitude and age of acquisition. Based on this analysis, the discussion of the role of error correction will then be concluded.

#### 5.4.3 Evaluating implicit and explicit forms of corrective feedback

As in the discussion of implicit and explicit approaches to language and grammar learning (cf. sections 5.2. and 5.3.), it can be assumed that age and aptitude also play a role in terms of the efficacy of either implicit or explicit corrective feedback. Adult learners and students who generally rely on metalinguistic analysis, for instance, might respond better to explicit forms of feedback, whereas younger learners or those who are exposed to the language more frequently, might benefit more from implicit forms of error correction, such as recasts.

In a large-scale meta-analysis of the effects of corrective feedback, Roy Lyster and Kazuya Saito (2010) found that, overall, younger learners seemed to respond better to corrective feedback than older learners, with prompts being more effective than recasts.<sup>28</sup> Lyster and Saito attributed these findings to the assumption that younger learners are especially sensitive to the impact of CF [...] because it engages implicit learning mechanisms that are more characteristic of younger than older learners" (Lyster & Saito 2010: 293).

In another study, Takako Egi (2007) investigated whether implicit corrective feedback in the form of recasts is noticed as such, i.e. whether the learners become aware

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<sup>28</sup> This is most likely due to the fact that prompts require more attention on the learner's behalf, as the process of engaging with the error is more extensive and requires more cognitive effort from the learner than in the case of a 'prefabricated' recast.

that they made an error, and that the correct target form is provided. In this study, the participants' age levels ranged from 18 to 41. Under the assumption that implicit learning occurs to a lesser degree with progressing maturity, the efficacy of the recasts is expected to have been low with these learners. Indeed, Egi stated that in most cases the learners remained unaware of their errors with 18.7% of the surveyees reporting awareness of the target model being provided, and approx. 26% reporting awareness of their errors and of the target model being provided. Implicit error correction in interaction thus leads to variable noticing effects with the majority of recasts remaining unattended to. While they certainly offer a form of corrective feedback without disrupting the communicative flow, the efficacy of recasts regarding grammar acquisition appears to be negligible. Nonetheless, adjustment to learner needs is also crucial in this aspect. Younger learners might respond more strongly to implicit error correction than the adult learners in Egi's study.

Overall, it has been shown that the process of SLA requires some form of feedback on learner output as it has a hypothesis-testing function and informs the language learner about potential limitations in the target language. Based on research findings, it might be especially effective to engage the learner in a more reflective and analytic approach by providing prompts rather than the correct target form, which frequently seems to go unnoticed, especially when more mature learners are involved. Furthermore, I propose a more inclusive and open definition of error correction than the one proposed by Pawlak (2014), which solely takes native speaker and teacher norms into consideration. In my view, the setting of a communicative classroom is much less restrictive, and the person requesting elaboration or clarification does not necessarily have to be the teacher alone. It might just as well be a more proficient student B, who provides corrective feedback on student A, for example in the process of fulfilling a communicative task where clarification is required to achieve a shared goal. Under this assumption, it might be desirable to integrate the learners in a discussion on error correction, so that they develop a sense of awareness of how to deliver corrective feedback appropriately and to the best possible effect.

In the following, I will present a particularly interesting issue in SLA. In the various branches of linguistics and SLA theory, the role of the learner's L1 has been interpreted in different ways. In some approaches, it has been considered the most prominent source of errors, whereas in others, the L1 is thought to have no negative impact on L2 acquisition at all. In the following sections, the different assumptions about how influential the L1 is in the

process of L2 acquisition will thus be elaborated. The respective findings will then be used as a point of reference for a brief analysis of errors made by German speaking learners of L2 English in which I will return to CUB approaches to SLA, and TEFL/TESL respectively.

### 5.5 The role of the L1: cross-linguistic influence in SLA

The value attached to the role of the L1 in the process of SLA has differed significantly over years of research and due to different assumptions about learning and acquisition processes. According to Rod Ellis (2015: 119), cross-linguistic influence is now a widely accepted fact and the current debate has settled on what can be considered a balanced, median position between a maximalist and a minimalist view of language interference.

On the one hand, the maximalist understanding (i.e. the L1 influences L2 acquisition significantly) was the result of behaviourist notions about language learning, in which it was thought that old habits would interfere with, and inhibit the development of new habits (cf. R. Ellis 2015: 118). As a result, linguists and researchers investigating SLA focussed on contrastive analyses of languages under the assumption that such analyses would predict the likelihood of L2 errors, thus determining areas that could be targeted in formal L2 instruction (cf. Lado 1957).

On the other hand, a minimalist understanding was the result of naturalist views of SLA. The close association of L2 acquisition with the process of child language acquisition as proposed by Krashen and other researchers who endorsed his view, suggested that little to no transfer across languages occurs in SLA. This notion is mainly based on the assumption that L2 acquisition is independent from the learner's L1. According to Krashen's view of acquisition (as opposed to learning), L1 interference can *a priori* only occur through the monitor, i.e. in the explicit domain (Sajavaara 1982: 151), whereas the main, procedural domain remains unaffected by the L1.

Most studies undertaken in efforts to either confirm or rebut the principles of the contrastive analysis hypothesis were insofar inconclusive as some of them seemed to support minimalist views (most notably Dulay & Burt 1974), whereas others showed indications of L1 influences resulting in L2 errors (cf. R. Ellis 2015: 118). In short, what all studies reflect is the complexity inherent to cross-linguistic influence, which is dependent on and influenced by a variety of factors. Sajavaara (1982: 152) argues that "what has been called interference from L1 is a complex system of interrelationships and that the research on



language transfer has had a far too simple starting point”. Any model that attempts to investigate language transfer must therefore accommodate the broad range of variables involved in this subject matter. In his 2015 publication ‘Understanding Second Language Acquisition’, Rod Ellis (2015: 121) lists five different factors that play a part in language transfer. These include:

1. Linguistic factors
2. Psycholinguistic factors
3. Contextual factors
4. Developmental factors
5. Individual factors

For the purposes of the following analysis of errors made by German speaking learners of L2 English I will adhere to Rod Ellis’ suggestion for identification, i.e. that errors in the L2 will be identified and then analysed in terms of whether the error corresponds to a feature in the L1 (R. Ellis 2015: 120). This approach clearly focuses on linguistic factors and will consider the linguistic distance between the languages as well as linguistic markedness (R. Ellis 2015: 121-126).

Language distance has been found to result in positive and negative language transfer, i.e. if an L1 is linguistically close to the L2, learners will achieve greater proficiency faster, but they are also more susceptible to make more errors as the result of negative transfer (cf. Ringbom & Palmberg 1976). Linguistic markedness describes whether a feature of the language is more basic or special in relation to other features, which is strongly related to matters of type and token frequency (R. Ellis 2015). Features that are more common in a language than others are thereby considered unmarked, whereas more uncommon features are considered marked. The assumption is that unmarked features of the L1 are more likely to be transferred into the target language, as they are more readily accessible (R. Ellis 2015: 126).

The aspect of linguistic markedness is closely associated with psycholinguistic factors. Investigating native language intuitions as a source of predictions about transferability, Kellerman (1978, referred to in R. Ellis 2015: 126-128) asked native Dutch speakers which sentences containing the Dutch verb *breken* for *to break* they would transfer into English. The results showed that the surveyees were most likely to transfer sentences with the core meaning (i.e. an unmarked meaning) of *break*, such as *he broke his leg*, whereas semantic extensions of the core meaning, such as *break a strike* were less likely to be

conceived of as transferable (R. Ellis 2015: 126). Kellerman's findings thus suggest that learners will be more likely to transfer core, or prototypical constructions from their L1 into the L2 than constructions with extended meaning. An error due to cross-linguistic influence might thus occur when a linguistic item is unmarked in the L1, when it exhibits linguistic closeness to a respective feature in the L2, and when it has a core meaning in the L1 and is thus considered transferable, but the resulting L2 form does not reflect conventional use in the target language.

In the following section these assumptions will be implemented in an analysis of several errors, which have been found to occur in the L2 use of German speaking learners of L2 English. These errors are taken from what Geoff Parkes has termed the 'Southampton Survey' (Parkes 2003: 9). In the analysis, I will investigate whether these errors can be related to the aforementioned factors that are thought to play a role in cross-linguistic influence, i.e. I will examine whether they can be considered the result of negative language transfer. Consequently, I will present ways in which CUB approaches to SLA as presented in sections 5.2. and 5.3. of this chapter can potentially ameliorate effects of negative language transfer.

## 5.6 Applied CUB linguistics: addressing the issue of cross-linguistic influence

Before proceeding with the analysis, the scope and the design of Parkes' (2003) study will briefly be outlined. Due to its limitations, the following analysis should be viewed as a blueprint, which models a CUB approach to dealing with negative language transfer in the L2 classroom, rather than as an empirical investigation of cross-linguistic influence in German speaking learners of L2 English. While the realisation of such an analysis is strongly encouraged, future research in this regard would require a more detailed data set than the one offered by Parkes (2003).

### 5.6.1 The Southampton Survey

The Southampton Survey is a collection of frequent mistakes made by German native speakers with knowledge of L2 English. It was compiled by Geoff Parkes over the period from 1984 to 2001 and comprises a total of around 14,500 errors made by 2,120 different learners of L2 English. The definition of an error in Parkes' survey is congruent with

Chaudron (1986), Lennon (1991), and Pawlak (2014), i.e. any form that is considered unacceptable by native speaker standards is considered an error or mistake (cf. section 5.4.1.). The participants in the survey were all attendants of the English Language courses offered by the Southampton English Language Centre. The survey consists mainly of errors in spoken language, which were recorded during a variety of activities that took place in the lessons. The average age of the participants was around 24, with the youngest learners aged 18 and the oldest aged 42. The overwhelming majority of participants were of German nationality (97%), and the participants' occupations were apportioned as follows (Parkes 2003: 9):

Teachers of English (all levels but mainly Gymnasium and Realschule)	13%
University students of English	35%
University students of other subjects	42%
Professional people (nurses, secretaries, bank clerks, economists etc.)	6%
People still at school (mostly doing Abitur or Matura)	4%

#### 5.6.2 Limitations of the study

As the above categorisation according to occupation reflects, the participants cover a broad ability range. Since 48% of the surveyees can be expected to have a very high level of L2 knowledge, whereas the proficiency levels of the other 52% potentially vary significantly, it is impossible to make any inferences about the impact of proficiency on language transfer. Furthermore, the study reveals neither absolute, nor relative frequencies of the individual errors. While Parkes provides the relative frequency of mistakes according to the domains of grammar, pronunciation and vocabulary (Parkes 2003: 11-12), there is no information about the number of instances of a specific item within the total of the near 14,500 errors compiled. What is provided in Parkes' survey, however, are lists in which he ranks specific types of errors (e.g. vocabulary, prepositions etc.) according to their frequency. As there are no total numbers, it is unclear how representative the items on the lists are. Therefore, only those items which ranked highest in the survey will be used for analysis.

#### 5.6.3 Frequent errors made by German speaking learners of L2 English as the potential result of negative L1 transfer

In the following, I will analyse uses of *make*, *person*, and of *with* and *in*, which were considered errors by means of native speaker judgement and ranked highest in Parkes' lists

for most frequent vocabulary and preposition mistakes (Parkes 2003: 120, 125). In identifying whether they can be considered the result of negative transfer from the L1 into the L2, I will draw on R. Ellis' (2015) list of factors involved in cross-linguistic influence as discussed in section 5.5. Due to the lack of detailed information, and the heterogeneity in the participants' age levels as well as their levels of proficiency, I will rely on linguistic factors and psycholinguistic factors. While the former are based on linguistic distance and markedness, the latter play a role when I make assumptions based on my intuitions as a native speaker of German. The following examples are all taken from Parkes' Southampton Survey with the respective page numbers given (Parkes 2003):

Wrong use of *make*:

- (13) \*After I leave Heidelberg, I want to make my doctorate in Australia. (21)
- (14) \*After making his apprenticeship, Bob got a job as a plumber in Graz. (49)
- (15) \*We need to make something useful to limit the danger of global warming. (57)

Wrong use of *person*:

- (16) ?Three kilos of cheese definitely won't be enough for 30 persons. (25)

Wrong use of *with* and *in* for *at*:

- (17) \*I left school with 18 and joined a pharmaceuticals company. (17)
- (18) \*Gilbert is a pretty difficult child but in his age it's to be expected. (65)

As I have encountered these errors on many occasions during my years of working as a tutor, it comes as no surprise that they made it on Parkes' list. While it would certainly be more desirable to have access to more documented errors in L2 English made by students with a different L1 background for matters of comparability, the argument that the errors as cited above are the result of negative transfer are quite convincing.

For instance, in the case of the wrong use of *make* in (13), the error can be explained by the linguistic closeness between German *machen* and English *make* as well as by the fact that the concept of *taking action* can be considered a core meaning of *machen*. If psycholinguistic factors contribute to language transfer, it can be assumed that German

native speakers are susceptible to transferring the core meaning of *taking action* to *make* as in (13). Furthermore, the use of *machen* in the German phrase *eine Lehre machen* (=to do an apprenticeship) is highly conventionalised, i.e. unmarked, and (11) could in fact be considered an extension of this conventionalised phrase. In such a context, wrong use of *make* as in (12) and (11) is highly likely to be the result of language transfer.

As in the case of *machen* and *make*, German *Person* and English *person* are considered linguistically close. However, while the use of the plural form *Personen* in a sentence like (14) would certainly be considered acceptable in German, the use of *persons* has been considered an error by Parkes. This is most likely not due to semantic incompatibility, but to the conventionalised context of use for *persons* in English. According to data from COCA and the British National Corpus (BNC), the English plural *persons* is much more common in academic contexts, with a frequency of occurrence of 114.88 tokens per million for academic contexts in COCA, as opposed to 45.83 tokens per million in non-academic contexts (BNC), whereby the majority of uses still occurred in formal contexts (law, arts, non-academic social sciences). While in German, *Personen* is perfectly acceptable and unmarked in informal contexts, it is marked in English when compared to usage in formal contexts. Again, the inappropriate use of *persons* can thus be considered the result of negative transfer.

As for the wrong use of *with* and *in*, the argument that these errors are the result of language transfer solely relies on R. Ellis' hypothesis that if an error type corresponds to a feature of the L1, it can be considered negative transfer (R. Ellis 2015: 120). However, Ellis himself has considered this approach as inferior to other methods, which analyse errors in the L2 by reference to a variety of first languages in order to draw inferences about whether the error in the target language can be attributed to a specific L1 group. Nonetheless, and for the sake of the argument, I will consider (15) and (16) the result of negative transfer, as the literal, or lexical translations of English *with* and *in* (German *mit* and *in*) are represented in the German versions of these phrases, which could be translated as follows (the respective prepositions are in bold type):

- (19) **Mit** 18 Jahren verließ ich die Schule und schloss mich einem Pharmakonzern an.
- (20) Gilbert ist ein schwieriges Kind, aber **in** seinem Alter ist das zu erwarten.

In the following section, some of the concepts that have been described in sections 5.2. and 5.3. and which reflect CUB approaches to SLA will be revisited with regard to potential implementations in the specific context of the errors mentioned above. The suggestions that

will be made in this context are not to be understood in a dogmatic sense, i.e. as the only acceptable approaches to dealing with negative L1 transfer, or to teaching L2 English in general. However, in due consideration of the impact that CUB theories had on linguistics and research on language acquisition in particular, it can be argued that such approaches might contribute significantly to increasing the efficacy of L2 teaching, and learning respectively. The range of potential implementations of CUB principles in SLA is vast, and a variety of concepts and methods that have been discussed in chapter 5 so far, and which may apply here will go unmentioned due to the limitations of this paper. Those principles which are applied should thus be conceived of as examples of a variety of potential uses of CL, which may contribute to greater efficacy in L2 learning.

#### 5.6.4 Addressing the wrong use of *make* and *persons* in the CUB classroom: accounting for frequency patterns in usage – an explicit and implicit focus on form.

As discussed in section 5.5., markedness and frequency of occurrence can contribute to a linguistic item becoming conventionalised in certain contexts and patterns of use. These patterns can further become constructions with their own meanings that extend beyond the specific lexical item (cf. the case of idioms as discussed in 2.3.3. and 2.3.4.). While the lexical items *machen* and *make* or *Personen* and *persons*, for instance, may exhibit linguistic closeness, their use has become conventionalised in different ways in the two languages. In section 2.3.2., the dynamic nature of linguistic meaning was established as one of the core principles of CL, and the emergence of patterns as well as the changing of meaning based on usage has further been emphasised in usage-based theories and construction grammar (cf. sections 2.3.3., 2.3.4.). These concepts can help teachers and students alike to understand how and why certain features of a language may differ conceptually and semantically, despite their ‘closeness’, instead of conceiving of them as arbitrary deviations from a perceived L1 norm.

While some degree of comparability is required for effective SLA to take place, it is vital not to understand the target language as a directly corresponding equivalent to the form-meaning mappings in the learner’s L1. Since many human experiences are shared across different countries, societies, cultures, languages, and dialects, many linguistic forms have come to find resembling counterparts in other languages. As we can infer generalisations from the patterns in language, we can thus also infer corresponding patterns across languages.

However, as Robinson and Ellis argue in their ‘Introduction to Cognitive Linguistics, Second Language Acquisition, and Language Instruction’, “cognition, consciousness, experience, [...] human interaction, society, culture, and history are all inextricably intertwined in rich, complex, and dynamic ways in language (Robinson & Ellis 2008: 3). In many cases, concepts and the respective expressions for them can therefore not be transferred from one language into another by simply translating the individual linguistic representations as one would using a dictionary. Instead, – and this is where CL plays a vital part – one has to transfer the concept of the experience into the target language.

In the case of *make* and *persons*, students may thus benefit from an implicit focus on form (e.g. through input optimisation), or explicit attention to the form which targets prototypical instances of the respective items in the L2 in a meaningful context. In doing so, teachers can avoid implications of arbitrariness which may arise if the students are expected to transfer forms, rather than to explore form-meaning mappings in the target language. Especially younger students may benefit from input floods in meaning-oriented L2 settings when dealing with linguistic items which have been found to be susceptible to negative language transfer. Such an approach would further be beneficial in settings where students have different L1 backgrounds, and may be put at a disadvantage if the focus is on a specific L1.

#### 5.6.5 Addressing the wrong use of *with* and *in* in the CUB classroom: conceptualising time as motion in space

In the first chapter of this paper, it was established that CL treats language as a reflection and manifestation of domain-general processes. In this context, reference was made to the different ways in which time is conceptualised in spatial categories in order to demonstrate, how the generalisation commitment translates to linguistic analysis (cf. section 2.3.1.). In section 5.3.2., it was further elaborated how learners might profit from a grammar that is rooted in how language is used to express meaning, rather than from understanding it as a set of rules which can generate potentially meaningful sentences. It was therefore assumed that if students explore the underlying experiential meaning that motivated certain constructions (cf. Littlemore 2009), they will be more likely to integrate such constructions into their L2 knowledge.

In the case of *with* and *in* as falsely applied in (15) and (16) (cf. section 4.3), it may thus be beneficial to approach these constructions by reference to the conceptualisation of

the passing of time as motion through space. Consider the correct forms (18) and (19) as presented in Parkes (2003):

(21) I left school **at** 18 and joined a pharmaceuticals company. (20)

(22) Gilbert is a pretty difficult child but **at** his age it's to be expected. (68)

If learners understand the passing of time and the process of growing older as moving from a point A toward a point B on a timeline, it is much easier to relate to the use of the preposition *at* for certain points at which the movement is stopped or interrupted. Such an approach would be especially beneficial in classroom settings with different L1 backgrounds, as it is the conceptual experience that is transferred rather than a form-meaning mapping. One could, for instance, embed the learning of temporal uses of prepositions in a spatial context as in (23):

(23) We arrived **at** Jill's house **at** 10 pm.

Explaining and understanding specific features of a language such as tense, idioms and metaphors etc. by grounding them in perceptual experience and hence embodied cognition can be of great value in L2 teaching, especially when younger learners are involved, as they are thought to rely more on implicit learning and inductive processing than their adult counterparts. Clearly, this is an approach, which carries great potential and which should encourage linguists and educators alike to pursue the path of CUB approaches to SLA.



## 6. Conclusion

At first inspection, the theoretical framework of CL may appear so broad in scope that teachers, who are looking for practical advice, find themselves discouraged from delving into it. However, the main implications of the CUB paradigm for SLA are relatively straightforward: 1) The role of input and frequency of exposure needs to be emphasised, even when the learners exhibit low proficiency in the target language. This is especially true for younger learners who are thought to rely more on implicit learning than on declarative, metalinguistic knowledge. And 2) the teaching and learning of grammar should not rely on the teaching and learning of rules in a deductive approach; it should draw attention to the process by which regularities in a language emerge from use. In this context, it should be made explicit, how grammaticalised forms are motivated by their original semantic meaning.

While both aspects can be attributed to either a stronger focus on implicit or explicit learning processes, they are similar in that they promote inductive learning. Such an approach is more oriented towards how language is used in context and can potentially convey the complexities of a language better than a top-down, deductive, rule-based approach that imposes a set of rules on the language. However, a CUB approach may also require a more patient understanding with regard to the rate of attainment. Where explicit, declarative knowledge may be a short cut in production, and especially in tasks that are aimed at such knowledge (e.g. grammar-specific cloze tests), inductive learning processes might take longer until they are manifested as learned knowledge in production. The question is thus, whether the circumstances in the L2 classroom allow for a more patient approach to grammar acquisition.

An environment that encourages teachers to measure the proficiency of young learners of EFL by their integration of certain grammatical items can pose a serious threat to the potentially beneficial implementation of Cognitive and usage-based theories to SLA. There is a discrepancy between the ambition to define learner proficiency by competency-oriented statements as reflected in the ‘Common European Framework of Reference’ (Council of Europe 2001), and the fact that teachers are expected to provide gradings of students’ performances that are open to scrutiny and thus ought to be objectively measurable.<sup>29</sup>

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<sup>29</sup> cf. the guidelines for grading of students’ performances as published by the Bundesministerium für Bildung (2007).

In the course of my work as a tutor of young learners of EFL aged 10 to 18, I was frequently asked to reach out to the students' English teachers, and I was therefore confronted with a great variety in approaches to teaching EFL. Similarly, I had to report to parents or guardians about the students' performances in the lessons I conducted, and thus also gained insight into their expectations and notions of what constitutes 'good' TEFL/TESL practice. Interestingly, in the overwhelming majority of cases, the exam preparation of 10 to 14-year-olds involved specific grammar foci, such as the present progressive, or the use of either *will* or *going to* in reference to future events. Proficiency in the use of these grammar features was then usually measured in isolated cloze tests. Furthermore, in the few cases in which teachers did not follow that scheme, parents frequently voiced the concern that such an approach may be detrimental to the students' rate of acquisition. Future research could thus investigate attitudes towards what is considered 'good' TEFL/TESL practice and grammar teaching in order to investigate how a CUB approach may be received in that regard.

The implementation of a CUB syllabus – while potentially highly beneficial – is thus subject to institutional constraints. These include the design of course materials as well as officially required testing from the first year of learning EFL onward.<sup>30</sup> While a change in these issues can hardly be brought about by the individual teacher, there are still ways in which the basic principles can be applied. Especially Dahl's study (Dahl 2015), which suggests that young learners of EFL with low levels of proficiency benefit from teachers using the target language as the medium of instruction in the long run, should be considered an encouragement to those, who are still hesitant when it comes to the use of the target language at beginner level.

Overall, I believe that the various approaches to language within the scope of CL have a lot to offer with regard to L2 pedagogy, and we are yet to see the effects of the implementation of CUB approaches to SLA in L2 classrooms. More extensive long-term studies will be required to test the efficacy of usage-based approaches to SLA. Such studies may provide the most convincing argument for a refurbishment of current syllabi and course materials.

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<sup>30</sup> It should be noted that teachers have free reign in designing these tests. However, the test scores need to be comparable and follow an objective grading scale. From my personal experience, I got the impression that a lot of teachers resort to cloze tests that target specific grammar items when designing tests, because they are easily quantifiable and hence justifiable. Again, an empirical investigation into this issue, may offer clarification in this regard.

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## Appendix

### Abstract in English

Cognitive and usage-based linguistics have revolutionised the study of language. Language and the rules governing it are no longer detached from other domain-general processes of human cognition; they are embodied in human experience and shaped by usage in interaction. Language and grammar thus reflect these experiences on all levels ranging from words to idioms to grammatical constructions. This has a significant impact on notions of grammar. In a usage-based view, structural regularities in a language (i.e. the grammar) no longer exist as abstract, governing principles, but they emerge from how language is used in interaction. These assumptions led to a new understanding of language acquisition. This thesis therefore concerns itself with the question of how Cognitive and usage-based theories can be applied to second language acquisition theory with the aim of investigating potential uses of a Cognitive and usage-based approach in a language classroom, in which English is taught as a second or foreign language. Pivotal points in this thesis are therefore the discussion of how the processes of first and second language acquisition are commensurable and how a learner's first language interacts with the second language that is to be acquired. This discussion will therefore focus on the roles of implicit and explicit knowledge in first and second language acquisition. Findings from neuroscience as well as from research investigating the efficacy of a variety of approaches to second language acquisition will be consulted in order to offer insight into potential uses of Cognitive and usage-based theories in TEFL/TESL pedagogy.

## Abstract in German (Deutsche Zusammenfassung)

Forschungen in der kognitiven und gebrauchsbasierten Linguistik haben die Sprachwissenschaft revolutioniert. In diesem Modell werden Sprache und die Regeln, die den Sprachgebrauch bestimmen, nicht mehr als ein abstraktes System betrachtet, das sich von anderen kognitiven Prozessen abhebt oder unterscheidet. Sprache und Grammatik sind in der sensomotorischen Erfahrung und Auseinandersetzung des Menschen mit seiner Umwelt verankert und werden durch den Gebrauch in Interaktion ständig geformt. Diese Eigenschaften sind in allen Ebenen der Sprache manifest, sowohl in einfachen Wörtern als auch in Redewendungen und grammatikalischen Konstruktionen. In einem gebrauchsbasierten Verständnis von Sprache existiert Grammatik nicht länger als eine Sammlung von abstrakten Regeln und Prinzipien, die den Sprachgebrauch leiten, sondern sie entsteht aus der Art und Weise, wie Sprache in Kommunikation angewandt wird. Diese Hypothesen der kognitiven und gebrauchsbasierten Linguistik beeinflussten auch Theorien zum Spracherwerb. Diese Diplomarbeit untersucht daher die Frage inwiefern Theorien der kognitiven und gebrauchsbasierten Linguistik auf den Zweitspracherwerb übertragbar sind, mit dem Ziel möglicher Anwendungen im englischen Sprachunterricht. Wesentliche Aspekte sind in diesem Zusammenhang die Vergleichbarkeit von Erst- und Zweitspracherwerb, sowie die Frage inwieweit die Muttersprache den Zweitspracherwerb beeinflusst. Unter diesen Aspekten werden daher die Rollen, die explizites und implizites Wissen im Spracherwerb spielen, genauer untersucht. Dabei werden Ergebnisse aus den Neurowissenschaften ebenso herangezogen, wie empirische Forschung, die die Effektivität von verschiedenen Formen des unterstützten Zweitspracherwerbs untersucht hat. Ausgehend von diesen Ergebnissen werden dann mögliche Anwendungen der kognitiven und gebrauchsbasierten Linguistik im Englischunterricht diskutiert.