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# Part I

## INTRODUCTION







## 1

# AN INTRODUCTION TO COGNITIVE LINGUISTICS, SECOND LANGUAGE ACQUISITION, AND LANGUAGE INSTRUCTION

*Nick C. Ellis and Peter Robinson*

Cognitive Linguistics (CL) is about language, communication, and cognition. They are mutually inextricable. Cognition and language create each other. Language has come to represent the world as we know it; it is grounded in our perceptual experience. Language is used to organize, process, and convey information, from one person to another, from one embodied mind to another. Learning language involves determining structure from usage and this, like learning about all other aspects of the world, involves the full scope of cognition: the remembering of utterances and episodes, the categorization of experience, the determination of patterns among and between stimuli, the generalization of conceptual schema and prototypes from exemplars, and the use of cognitive models, of metaphors, analogies, and images in thinking. Language is used to focus the listener's attention to the world, it can foreground different elements in the theatre of consciousness to potentially relate many different stories and perspectives about the same scene. What is attended is learned, and so attention controls the acquisition of language itself. The functions of language in discourse determine language usage and language learning. Cognition, consciousness, experience, embodiment, brain, self, and human interaction, society, culture, and history are all inextricably intertwined in rich, complex, and dynamic ways in language. Yet despite this complexity, there are patterns everywhere. Patterns that are not pre-ordained by god, by genes, by school curriculum, or by other human policy, but patterns that emerge—synchronic patterns of linguistic organization at numerous levels (phonology, lexis, syntax, semantics, pragmatics, discourse genre, . . .), dynamic patterns of usage, diachronic patterns





## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

of language change (linguistic cycles of grammaticization, pidginization, creolization, . . .), ontogenetic developmental patterns in child language acquisition, etc. CL investigates these patterns, the cross-linguistic and panchronic generalities as well as the more specific patterns of particular languages, cultures, times, individuals, and places. As a discipline, it is a relatively new area of linguistic and psycholinguistic enquiry, dating back perhaps to 1990, when the first journal, *Cognitive Linguistics*, dedicated to this approach was published.

CL shares many of the assumptions of more broadly defined functional linguistics, which sees the processing conditions of language performance, and the communicative goals and intentions of language users as shaping influences on language structure, but CL seeks to go beyond these functional explanations of linguistic form to further explain how language mutually interfaces with conceptual structure as this becomes established during child L1 development and as it becomes available for change during adult L2 language learning. As Langacker notes, “However great its functional motivation, the structure of a language cannot be predicted in full and precise detail on the basis of the motivating factors (1999, p. 19). The additional cognitive commitment of CL is to specify the interface of linguistic representation (grammatical factors), which can be used to communicative effect in producing utterances, with other aspects of conceptual structure (e.g., semantic factors, such as our concepts of time, and spatial location), as well as with the constraints imposed by the architecture of cognitive processes, and the structure of cognitive abilities (e.g., psychological factors, such as those involved in the allocation and inhibition of attention).

Because CL holds that the basic units of language representation are *constructions*—form-meaning mappings, conventionalized in the child L1 learner and adult L2 learner speech communities, and gradually entrenched as language knowledge in the child L1 or adult L2 learner’s mind—work within this approach links and builds with that in a range of research areas within Cognitive Science:

- *Functional analyses* of language which hold that constructions are symbolic, their defining properties of morphological, syntactic, and lexical form being associated with particular semantic, pragmatic, and discourse functions (Croft, 2001; Croft & Cruise, 2004; González-García & Butler, 2006; Halliday, 1985, 1987; Langacker, 2000; Taylor, 2002).
- *Perception and Attention analyses* of the ways our embodiment and perceptuo-motor systems govern our representation of the world and the ways that language can guide our attention to these representations (Barsalou, 1999; Coventry & Garrod, 2004; Mandler, 2004; Talmy, 1988, 2000a, 2000b).





## INTRODUCTION

- *Usage-based theories* of language acquisition which hold that we learn constructions while engaging in communication (Barlow & Kemmer, 2000; Hopper, 1998), the “interpersonal communicative and cognitive processes that everywhere and always shape language” (Slobin, 1997).
- *Constructionist theories* of child language acquisition where dense longitudinal corpora chart the emergence of creative linguistic competence from children’s analyses of the utterances in their usage history and from their abstraction of regularities within them (Goldberg, 2006; Tomasello, 2003, 1998).
- *Cognitive theories* of categorization and generalization whereby schematic constructions are abstracted over less schematic ones that are inferred inductively by the learner in acquisition (Harnad, 1987; Lakoff, 1987; Schank & Abelson, 1977; Taylor, 1998).
- *Construction Grammar and Phraseological theories* of language demonstrating that much of communication makes use of fixed expressions memorized as formulaic chunks, that language is rich in collocational and colligation restrictions and semantic prosodies, and that the phrase is the basic level of language representation where form and meaning come together with greatest reliability (N. C. Ellis, 1996; Goldberg, 1995, 2003; Granger & Meunier, in press; Pawley & Syder, 1983; Sinclair, 1991, 2004; Vygotsky, 1980, 1986; Wray, 2002).

CL holds that language is learned from usage, and this assumption involves natural interplay with investigations of language usage and language processing and computational and statistical simulations of acquisition:

- *Corpus Linguistic analyses* of large collections of language which show how there are recurrent patterns of words, collocations, phrases, and constructions, that syntax and semantics are inextricably linked, and that grammar cannot be described without lexis, nor lexis without grammar (Biber, Conrad, & Reppen, 1998; Biber, Johansson, Leech, Conrad, & Finegan, 1999; Hoey, 2005; McEnery & Wilson, 1996; Sinclair, 1991, 2004). Distributional analyses of language also show the importance of Zipf’s law at all levels in determining the structure and network characteristics of linguistic systems and the effects of these properties on learning (N. C. Ellis, in press 2007; Ferrer i Cancho & Solé, 2001, 2003; Ferrer i Cancho, Solé, & Köhler, 2004).
- *Psycholinguistic theories* of the mental representation of language which show that fluent language users are sensitive to the relative probabilities of occurrence of different constructions in the language input and to the contingencies of their mappings to meaning (Altman, 1997; Gernsbacher, 1994).
- *Probabilistic and frequency-based theories* of language which analyze





## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

how frequency and repetition affect and ultimately bring about form in language and how probabilistic knowledge drives language comprehension and production (Bod, Hay, & Jannedy, 2003; Bybee & Hopper, 2001; N. C. Ellis, 2002a, 2002b; Jurafsky, 2002; Jurafsky & Martin, 2000).

- *Connectionist, Competition model, and Rational models* of language which demonstrate the ways in which generalizations emerge from the conspiracy of memorized instances, the ways in which different cues and their cue reliabilities compete for activation, and the ways in which these representations provide the best model of language that is available from the learner's sample of experience, one that is optimized in its organization for usage (Anderson, 1989; Anderson & Schooler, 2000; Bates & MacWhinney, 1987; Chater, 2004; Chater & Manning, 2006; Christiansen & Chater, 2001; N. C. Ellis, 2006; Elman et al., 1996; MacWhinney, 1987, 1997).
- *Dynamic Systems Theory (DST)* which analyses language as a complex dynamic system where cognitive, social and environmental factors continuously interact, where creative communicative behaviors emerge from socially co-regulated interactions, where flux and individual variation abound, and where cause-effect relationships are non-linear, multivariate and interactive in time (de Bot, Lowie, & Verspoor, 2007; N. C. Ellis, 2007; N. C. Ellis & Larsen Freeman, 2006a, 2006b; Port & Van Gelder, 1995; Spivey, 2006; van Geert, 1991).
- *Sociocultural theory* which analyses how language learning takes place in a social context, involving action, reaction, collaborative interaction, intersubjectivity, and mutually assisted performance (Lantolf, 2006; Lantolf & Pavlenko, 1995; Lantolf & Thorne, 2006; van Geert, 1994), and how individual language learning is an emergent, holistic property of a dynamic system comprising many dialectic influences, both social, individual, and contextual, involving the learner in a conscious tension between the conflicting forces of their current interlanguage productions and the evidence of feedback, either linguistic, pragmatic, or metalinguistic, that allows socially scaffolded development (Kramsch, 2002; Lantolf & Pavlenko, 1995; Lantolf & Thorne, 2006; Norton, 1997; Swain, 2000; Vygotsky, 1980, 1986).
- *Emergentist and Chaos/Complexity Theory (CCT)* where language is neither a genetic inheritance, largely prescribed by innate linguistic universals in a modularized Language Acquisition Device, nor a collection of rules and target forms to be acquired, but rather a by-product of communicative processes. CCT analyses how complex patterns are emergent from the interactions of many agents, how each emergent level cannot come into being except by involving the levels that lie below it, and how at each higher level there are new and





## INTRODUCTION

emergent kinds of relatedness not found below (N. C. Ellis, 1998; N. C. Ellis & Larsen Freeman, 2006a; MacWhinney, 1999).

One purpose of this Handbook is to summarize current Cognitive Linguistic perspectives on patterns of language, patterns of language use, and patterns of child language acquisition, and this is the focus of the chapters in Part II of the volume. These chapters concern how language draws on other, more basic cognitive systems and abilities, such as perception, attention allocation, memory and categorization, and how it cannot be separated from these as a distinct, modularized, self-governed entity; how knowledge of language is integrated with our general knowledge of the world; and how, in usage-based child language acquisition, attention to input controls the products of learning, the increasingly productive frames, schemata and constructions that reflect and in turn enable the development of fluent, and complex, language use.

The other focus of this Handbook is Second Language Acquisition (SLA). There are many essential patterns of SLA, too (Doughty & Long, 2003; R. Ellis, 1994; Kaplan, 2002; Kroll & De Groot, 2005; Long, 1990; Perdue, 1993). For illustration, consider an agreed list of summary essentials of SLA gathered by Long (1990) as “the least a second language acquisition theory needs to explain”:

- There are common patterns in development in different kinds of learner under diverse conditions of exposure. These systematicities of interlanguage—regular developmental sequences as well as systematic production of non-targetlike forms—indicate that learners do not simply echo input but instead go through successive stages of cognitive analysis and representation of the input.
- There are systematic differences in the problems posed learners of different L1 backgrounds by certain kinds of L1/L2 configuration and by other qualitative features of the input such as the salience of certain linguistic features. These patterns suggest that L1 cognition transfers to that of the L2, sometimes facilitating L2 development, sometimes interfering with it.
- Children and adults learning under comparable conditions differ in their rate of acquisition (adults initially learn faster) and in their level of attainment (children achieve greater ultimate proficiency).
- Learners’ aptitude, attitude and motivation are all systematically related to rate of progress and ultimate attainment, but affective factors are subordinate to more powerful cognitive developmental and maturational factors.
- Some aspects of an L2 require awareness and/or attention to language form—implicit learning is not sufficient for successful SLA and focus on form improves rate and ultimate L2 attainment.







## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

- Some aspects of the L2 are unlearnable for positive evidence alone—exposure to samples of comprehensible input is necessary for SLA but not sufficient, and some forms of negative feedback and correction are necessary.
- Development is gradual and U-shaped acquisition profiles occur, suggesting that learners gradually construct their system of L2 representation over considerable periods of time and language usage.

These systematicities of second language acquisition are all, in essence, issues of second language cognition. The adult's language learning task is clearly different from the child's. As Slobin notes, "For the child, the construction of the grammar and the construction of semantic/pragmatic concepts go hand-in-hand. For the adult, construction of the grammar often requires a revision of semantic/pragmatic concepts, along with what may well be a more difficult task of perceptual identification of the relevant morphological elements" (1993, p. 242). In cases where the forms lack perceptual salience and so go unnoticed by learners (Robinson, 1995, 1996; Schmidt, 1990, 2001), or where the semantic/pragmatic concepts available to be mapped onto the L2 forms are unfamiliar, additional "Focus on Form" (attention to form in communicative context: Doughty & Williams, 1998; N. C. Ellis, 2005; R. Ellis, 2001; Lightbown, Spada, & White, 1993; Long, 1991; Long & Robinson, 1998; Robinson, 2001, 2002, 2003, in press a, b) is likely to be needed in order for the mapping process to be facilitated. Thus, the second aim of this volume is the development of a Cognitive Linguistics of SLA and L2 pedagogy. This is why many of the authors of the chapters in Part II, primarily from the fields of linguistics and psycholinguistics, have been asked to make links between their own work and SLA, and why the issues they raise are then taken up and expanded upon in the Part III by authors from the fields of SLA and SL pedagogy.

### Chapter overviews

#### *Part II. Cognitive Linguistics and cognition*

Chapters 2–5 represent classic *Cognitive Linguistics*: cognitive semantics, the ways language controls listener attention, the grounding of language in cognition, the prototype structure of linguistic construction categories, the interrelation of linguistic and other information in semantic networks, and the interplay of language and usage. Chapter 6 supplements these with a more *Psycholinguistic* investigation of how the perceptual systems interface with language—introspection is a good start to the understanding of cognition, but psychological experimentation is necessary, too. Chapter 7 focuses upon *Language Processing* and how the





## INTRODUCTION

functions of a limited-capacity working memory system in language parsing constrain the types of structure that emerge in language and their orders of acquisition. Finally, this section moves to *Acquisition*, with chapters 8 and 9 presenting construction grammar perspectives on child language acquisition, and chapter 10 focusing on the ways in which type and token frequency of usage affect language structure, language change, and language learning.

In chapter 2, Talmy presents an overview of research in Cognitive Semantics and describes his analysis of the *Attentional System of Language*. In a speech situation, a hearer may attend to the linguistic expression produced by a speaker, to the conceptual content represented by that expression, and to the context at hand. But not all of this material appears uniformly in the foreground of the hearer's attention. Rather, various portions or aspects of the expression, content, and context have different degrees of salience. Such differences are only partly due to any intrinsically greater interest of certain elements over others. More fundamentally, language has an extensive system that assigns different degrees of salience to the parts of an expression, reference, or context. This system includes some fifty basic factors, its "building blocks." Each factor involves a particular linguistic mechanism that increases or decreases attention on a certain type of linguistic entity. Although able to act alone, the basic factors also regularly combine and interact to produce further attentional effects. Thus, several factors can converge on the same linguistic entity to reinforce a particular level of salience, making it especially high or especially low. Or two factors can conflict in their attentional effects, with the resolution usually either that one factor overrides the other, or that the hearer's attention is divided or wavers between the two claims on it. Or a number of factors can combine in the production of higher-level attentional patterns, such as that of figure-ground assignment, or that of maintaining a single attentional target through a discourse. Learning a language involves the learning of these various attention-directing mechanisms of language, and this, in turn, rests upon L1 learners' developing attentional systems and L2 learners' attentional biases. Because languages achieve these attention-directing outcomes in different ways, Talmy proposes that such cross-linguistic differences must affect L2 learning, making it easier where languages use them in the same way, and more difficult when they use them differently, themes which are taken up empirically in later chapters by Cadierno, Gullberg, Ellis, MacWhinney, and Odlin.

In chapter 3, Taylor describes how an important impetus to the development of Cognitive Linguistics from the 1980s onwards came from cognitive psychological theories of *Prototype Categorization*. These offered a radical alternative to the, till then, dominant "checklist" models of categories. The liberating effect of the prototype concept was felt, most





## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

obviously and most immediately, in lexical semantics. Subsequently, prototype theories permeated other areas of language study—morphology, syntax, phonology—as well as the study of language change and language acquisition. This chapter first summarizes the reception and development of prototype theories in linguistics, highlighting some of the more problematic and contentious issues surrounding the prototype concept, including (a) the different ways in which “prototypes” can be understood, and (b) the properties of so-called “prototype categories,” in interaction with such matters as the taxonomic “level” of categorization (with special reference to the basic level), the distinction between natural and nominal categories, the polysemy vs. monosemy debate, and the role of Idealized Cognitive Models (ICMs) in categorization. Taylor illustrates these points primarily with examples from lexical semantics, though he also shows their relevance in the study of word classes and syntactic constructions, as well as phonological categories. Prototype effects apply throughout linguistic knowledge, its acquisition, and deployment, and Taylor considers how “bottom-up,” exemplar-based models of categorization from usage might underpin the induction of these categories, themes taken up in later chapters by Goldberg, Lieven & Tomasello, Bybee, and Gries.

In chapter 4, Langacker summarizes *Cognitive Grammar* and considers how this offers a natural and promising basis for language instruction. The most obvious reason is that it advances a conceptually grounded account of linguistic meaning. By showing in detail how alternate expressions construe the same situation in subtly different ways, it renders comprehensible the varied means of expression a language provides. A second reason is that this conceptual semantics is not confined to lexicon but also supports the characterization of grammar. Since every grammatical element or grammatical construction imposes a particular construal on the situation being described, grammar can be presented as an array of meaningful options whose ranges of application are in large measure predictable. A third reason is the usage-based nature of Cognitive Grammar. Language structure emerges by abstraction from expressions that occur in usage events, embracing all dimensions of how they are understood by interlocutors in the social, cultural, and discourse context. This interactive grounding has a number of implications for language learning: the importance of non-descriptive modes of speech; the need to actually produce and understand appropriate expressions in a natural context; and the great extent to which fluent speech depends on mastery of a vast array of complex fixed expressions and conventional ways of phrasing things, out of all the ways a language in principle makes available. Langacker’s proposals are analyzed, implemented for SLA, and evaluated in chapters in Part II by Achard, and Tyler.

In chapter 5, Hudson outlines *Word Grammar*, and considers the





## INTRODUCTION

consequences of its major components for second-language learning and teaching. Firstly, language is just knowledge, and thus learning a language is just like other kinds of learning, with the same need for a balance between instruction and practice. Secondly, language is a (symbolic) network, and this is true not only of the vocabulary but also of the more general patterns of morphology and syntax, and thus L2 is also a network which grows inside the L1 network and interacts with it (e.g., by sharing its word classes). Thirdly, categories show prototype effects, with some members more typical than others, and thus learners benefit from experiencing typical examples before exceptions. Fourthly, knowledge of language is declarative, and we match both produced and perceived tokens with it; thus, learners will maximize the value of their existing knowledge by using L1 for guessing unknown L2 patterns; this should be encouraged so long as it does not prevent learning. Fifthly, the grammar includes the lexicon in a single homogeneous lexico-grammar; thus, grammar and vocabulary are likely to follow a very similar pattern of acquisition. Sixthly, meanings are embedded in culture, so there is no clear boundary between the learning of language and the learning of culture. Finally, language is based on usage, and masses of detailed patterns of usage—including relative frequencies—are stored in language, and this is why it is so important for classroom L2 teaching to include as rich as possible a diet of L2 usage. These various themes of L1 and L2 usage-based acquisition, transfer, and instruction resonate through Part II of this volume.

In chapter 6, Coventry and Guijarro-Fuentes present a *Functional Geometric Framework of Spatial Language*. Although early CL theories argued that the distinction in visual science between the so-called “what” and “where” systems maps fairly directly onto differences between syntactic categories in language, with closed class categories such as spatial prepositions relating more to the output of the “where” system and open class terms such as nouns relating more to the “what” system, subsequent studies demonstrated that the comprehension and production of spatial prepositions have to do with *what plus where*. The chapter reviews the empirical evidence for the importance of the three components of the framework: geometric routines, extra-geometric dynamic-kinematic routines, and object knowledge. It then describes computational, developmental, and cross-linguistic considerations of these components. The computational work involves the implementation of this framework as a connectionist model that grounds spatial language understanding directly in visual processing. The developmental contribution explores the various non-verbal understandings of space which the child brings to language acquisition and considers how language acquisition in different languages might be coordinated with such knowledge. Cross-linguistic contrasts of spatial language in English and Spanish along these lines make various predictions of whether there would be transfer from L1 or





## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

not. Coventry and Guijarro-Fuentes present some initial empirical tests of these predictions, and there is further evidence in the existing empirical literature on second language acquisition of spatial language reviewed by Cadierno, Gullberg, and Odlin in later chapters. Whatever the detailed findings now and from future research, this chapter, like that of Langacker, presents a clear interim conclusion that SLA instruction must provide grounded, contextualized, and communicative opportunities where language maps properly onto relations in a spatial world rather than taking place through the translation equivalents of an existing L1 system.

In chapter 7, O'Grady presents an *Emergentist* theory of *Syntactic Computation* that proposes that key properties of human language follow from more basic non-linguistic forces rather than from a grammar, as traditionally assumed. The basic idea is that the mechanisms that are required to account for the traditional concerns of syntactic theory (e.g., the design of phrase structure, pronoun interpretation, agreement, and structure dependence) are identical to the mechanisms that are independently required to account for how sentences are processed from "left to right" in real time. The key proposal involves an efficiency-driven linear computational system that operates from "left to right," building structure by combining words and resolving their lexical requirements at the first opportunity. As the chapter explains, such a computational system is nothing but a processor that seeks to minimize the burden on working memory (the pool of operational resources that holds representations and supports computations on them). O'Grady explores the implications of this perspective for a series of both first and second language acquisition.

In chapter 8, Lieven and Tomasello consider *Child Language Acquisition* from a usage-based perspective. Whereas traditional accounts of L1A use as analytic tools adult-like syntactic categories and grammars, with little concern for whether they are psychologically real for young children, recent research within a cognitive-functional framework has demonstrated that children do not operate initially with such abstract linguistic entities but instead operate on the basis of item-based, form-meaning constructions. Children construct more abstract linguistic constructions only gradually on the basis of linguistic experience. The chapter reviews naturalistic studies demonstrating that children's ability to deal with more general and abstract categories, for instance of argument structure and inflectional marking, changes radically between the ages of 2;0–4;0. It supports these with empirical studies showing how construction generalization depends upon type and token frequency, consistency of form-function mapping, and complexity of form, giving examples of these processes in three aspects of child language acquisition: morphological development, the development of the transitive construction in English, and in the development of more complex sentences. The chapter closes with an emphasis on the ways in which contextual and processing factors





## INTRODUCTION

can affect success with a construction, for example forced-choice recognition between known alternatives is much easier than productive generalization. Thus, they argue, the best account of first language acquisition is provided by a usage-based model in which children process the language they experience in discourse interactions with other persons, relying explicitly and exclusively on social and cognitive skills that children of this age are known to possess.

In chapter 9, Goldberg and Casenhiser present a detailed *Construction Grammar* analysis of the ways that form–function pairings (constructions) are learned on the basis of frequencies in the input. The chapter summarizes studies involving training child and adult subjects on a novel construction which indicate that subjects can in fact learn to recognize the form and meaning of a novel construction with quite minimal training. Morphological marking of the construction is not necessary for it to be learned. When overall type and token frequencies are held constant, input that is skewed such that one type of example accounts for the preponderance of tokens results in more accurate generalization than input that is more representative. Skewed input is also present in the natural Zipfian frequency distributions for constructions in naturalistic language. In addition, if the skewed examples are presented first, there is further facilitation in learning the generalization. On the other hand, input that is noisier inhibits generalization. These themes resonate with the analyses of natural language constructions made earlier by Taylor, and with the evidence of the differential effects of type and token frequency in child language acquisition reviewed by Lieven and Tomasello. Goldberg and Casenhiser conclude by outlining implications for second language learning and pedagogy, implications which Bybee also develops in the following chapter.

In chapter 10, Bybee considers the effects of *Usage Frequency*, analyzing the separate effects of token frequency and type frequency on construction learning, structure, and productivity, providing examples from morphology, syntax, and grammaticization. Experience with language shapes the cognitive representations of language users, just as language use leads to the creation of grammar: high-frequency constructions have stronger mental representations and are easier to access and less susceptible to change; patterns with high type frequency are more productive; repetition of sequences of linguistic units leads to representation at a higher level as a single unit, with fluent language users making use of these prefabricated chunks of language; and extremely high levels of use lead to the development of grammaticized forms and constructions. There is no unitary “grammar” of language but rather a continuum of categories and constructions ranging from low frequency, highly specific, and lexical to high frequency, highly abstract, and general. The chapter examines three points along the continuum: first, the pervasive use of specific prefabricated





## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

word combinations; second, limited scope patterns generalized from pre-fabricated constructions; and, third, fully grammaticized constructions. Bybee pays particular attention to the interaction of type and token frequency on productivity and categorization, and considers the question of to what extent exposure to a second language in a classroom situation should mirror exposure in more natural situations. The suggested answer is that an exact parallel to natural situations is not necessary, but attention to issues of token and type frequency remains important, with there being plenty of opportunity for communicative, grounded, authentic usage of language which mirrors the natural Zipfian frequency distributions, whilst additionally providing privileged practice of lower-frequency prefabs and formulas embedded in an approach that also teaches general morphosyntactic constructions.

### *Part III. Cognitive Linguistics, SLA, and L2 instruction*

Chapters 11–13 analyze the classic *Cognitive Linguistic* issues of linguistic relativity and “thinking for speaking” as they affect SLA—to what extent is there transfer, with cross-linguistic differences between the L1 and the L2 facilitating acquisition where the L1 and L2 are typologically similar, and interfering where they are different? Chapters 14 and 15 present *Psychological* accounts of the competition between different linguistic constructions, within and between languages, in processing language, and the ways that fundamental properties of associative learning such as construction frequency, salience, redundancy, and exposure order affect learners’ attention to language, thereby affecting the course and level of ultimate attainment in the L2. Chapter 16 provides a *Corpus Linguistic* analysis of construction grammar, demonstrates its potential for studying the second language acquisition of constructions and their potential applications in language teaching. Chapters 17 and 18 develop and evaluate a *Cognitive Linguistic Pedagogy*, focusing on classroom teaching and the nature and scope of a pedagogic grammar informed by the tenets and descriptive procedures of CL. Chapter 19 summarizes the major themes of the volume and looks to *Future Developments*.

In Chapter 11, Cadierno discusses how cognitive semantics informs investigation of adult language learners’ *Expression of Motion Events in a Foreign Language*. Talmy’s (2000a, 2000b) typological framework for describing the linguistic encoding of motion events distinguishes between languages that are verb-framed and those that are satellite-framed. Cadierno reviews support for this typology from analyses of novels and novel translations, cross-linguistic first language acquisition studies, and cross-linguistic studies of gesture and language. Slobin (2004) argues that these typological differences between languages lead their speakers to experience different “thinking for speaking” and thus to construe experience in





## INTRODUCTION

different ways. Cadierno develops hypotheses motivated by these theories to examine the extent to which typologically different L1s influence how motion events are construed and filtered through the resources a language has available to describe them. The major issue for SLA research is that of transfer. Cadierno presents a thorough review of the existing experimental evidence for what Slobin (2004) has called “thinking for speaking” in studies of the use of preferred lexicalization patterns for referring to motion events in L2 narrative production. While the studies do demonstrate effects of transfer, there are qualifications that depend upon such factors as the particular motion verbs studied, learner proficiency, and assessment task. The chapter concludes by outlining the ways in which this research needs to develop to include studies of learners at early and intermediate stages of language acquisition to examine whether the influence of the L1 thinking patterns at these stages is stronger than at more advanced levels, and bi-directional studies to compare the expression of motion events by learners of satellite-framed languages (e.g., Spanish learners of English) and learners of verb-framed languages (e.g., English learners of Spanish) in order to determine similarities and differences in both acquisitional processes.

In chapter 12, Gullberg shows how the study of *Gestures* provides an additional window on *Second Language Cognition and Acquisition*. Gestures, the symbolic movements speakers perform while they speak, are systematically related to speech and language at multiple levels, and they reflect cognitive and linguistic activities in non-trivial ways. The chapter first outlines current views on the relationship between gesture, speech, and language, and establishes that there is both cross-linguistic systematicity and variation in gestural repertoires. Next it considers what gestures can contribute to the study of a developing language system—both to a particular L2 and to the developing L2 system in general. With regard to particular L2s, gestures open new avenues for exploring cross-linguistic influences in that learners’ gestures allow us to glean information about L1/L2 interactions at the level of semantic-conceptual representations and their interfaces with information structure, beyond surface forms. With regard to L2 development generally, evidence of systematically parallel change in gesture and speech at a given point in development allows the interactions between communicative and cognitive process-related constraints on learner varieties to be investigated. Gullberg also addresses the effect of gestures on learning more generally, and reviews findings that suggest that both the perception and production of gestures facilitates SLA. The chapter concludes by discussing some implications of these findings for L2 acquisition and instruction, specifically regarding the relationship between underlying representations and surface forms, and the notion of native-likeness.

In chapter 13, Odlin considers *Semantic Extensions and the Problem of*







## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

*Conceptual Transfer in SLA*. There is more to language than the encoding of space and time, and this chapter considers broader issues of linguistic relativity, the hypothesized influence of language upon thought, as it relates more generally to conceptual transfer and second language acquisition. Starting from the opposing historical perspectives on linguistic relativity of von Humbolt and Whorf, Odlin surveys relativistic research using monolinguals (cross-linguistic differences in cognitive processing by speakers of different native languages) and bilinguals (SLA research on “conceptual transfer” of meanings related to space and time). The chapter then focuses upon a particular problem: the fact that L1 structures involving space and time often have additional meanings which can and do affect the acquisition of L2 structures. For example, the tense forms in Quechua and Turkish code not only temporal meanings but evidential ones (i.e., meanings involving the source of information for an assertion), and studies of Quechua influence on Peruvian Spanish and Turkish influence on L2 English show interlanguage forms with evidential and not just temporal information. Such cases clearly involve meaning transfer from either the semantic or pragmatic system of a native language. Odlin considers whether they reflect conceptual transfer, too—whether the “habitual thought” of individuals depends somewhat on their native languages and whether grammar itself plays an especially important role in habitual thought.

In chapter 14, MacWhinney outlines his *Unified Competition Model of SLA*, an information-processing model of language acquisition which holds that first and second language acquisition share the same goals (the learning of the norms of the target linguistic community) and the same structures, processes, and learning mechanisms. In both cases, learning involves the tuning of a core system of device competition. The input to this core system comes from self-organizing neural network associative maps for syllables, lexical items, and constructions. The central competitive processor integrates information stored in map-based buffers. Processes of chunking and resonance promote learning and fluency. The chapter presents information processing descriptions of the learning mechanisms involved in first and second language construction acquisition, embodied meaning, language and attention focusing, and thinking and rethinking for language. In this view, what separates first and second language acquisition are the abilities and experiences that older second language learners bring to this task that are very different from those of young children. For the second language learner, L1 entrenchment leads to interference and transfer, and the limitations typical of L2A are not age-related changes but instead arise from entrenchment in associative maps.

In chapter 15, Ellis provides a psychological overview of the *Associative Learning of Linguistic Constructions*. The chapter first describes the aspects





## INTRODUCTION

of associative learning that affect both L1A and L2A: frequency, contingency, competition between multiple cues, and salience. It explains each of these from within associative learning theory, and illustrates each with examples from language learning. This section concludes by illustrating the combined operation of these factors in first and second language acquisition of English grammatical morphemes, a particular illustration of a broader claim that they control the acquisition of all linguistic constructions. The second half of the chapter considers why usage-based SLA is typically much less successful than L1A, with naturalistic SLA stabilizing at end-states far short of native-like ability. It describes how “learned attention” explains these effects. The fragile features of L2A, those aspects of the second language that are not typically acquired, are those which, however available in the input, fall short of intake because of one of the factors of contingency, cue competition, salience, interference, overshadowing, blocking, or perceptual learning, all shaped by L1 entrenchment. Each phenomenon is explained within associative learning theory and exemplified in language learning. The chapter concludes with evidence of L1/L2 differences in morpheme acquisition order, illustrating these processes as they contribute to transfer and “learned attention.” That the successes of L1A and the limitations of L2A both, paradoxically, derive from the same basic learning principles provides a non age-invoked biological explanation for why usage-based L2A stops short while L1A does not. These processes also explain why form-focused instruction is a necessary component of L2A, and why successful L2A necessitates a greater level of explicit awareness of the L2 constructions.

In chapter 16, Gries provides a *Corpus Linguistic* analysis of *Construction Grammar*: the nature of the symbolic units within the construction, the ways in which usage frequency and reliability of mapping results in elements of various degrees of schematicity, and the ways these affect first and second language acquisition. Usage-based theories are based on the evidence that distributional information—frequencies of occurrence and frequencies of co-occurrence—plays a vital role for the acquisition, processing, and representation of language. Thus, the quantification of corpus linguistics is necessary to properly describe this distributional information. At a basic level, corpus analyses can identify the token frequency of instances of a linguistic schematic unit, which contributes to its entrenchment, routinization, and speed of access in language learning and use. It can also identify type frequency, the number of different instances which conform to the schema, which is important to the development of productive and abstract constructions. Using data from the International Corpus of Learner English, Gries describes three corpus linguistic methods (frequency lists and collocational analyses, colligation and collocation analyses, concordancing), and demonstrates their potential for studying the second language acquisition of constructions,





## HANDBOOK OF COGNITIVE LINGUISTICS AND SLA

as well their potential applications in language teaching. This chapter closes with a review of methodological issues in analyzing and using corpora for research and teaching purposes.

In chapter 17, Achard describes *Cognitive Pedagogical Grammar*, an approach to second language pedagogy based on Cognitive Grammar (CG). This chapter complements Langacker's overview of CG in Part II by considering issues of how grammar instruction should proceed in practice. Achard argues that the CG position that the grammar of a language is composed of a "structured set of conventionalized symbolic units" validates grammatical instruction on a par with lexical instruction, a highly desirable outcome for second language teachers because it allows for a kind of grammatical presentation fully congruent with the methods and principles of communicative models of instruction. CG takes the position that linguistic production is mostly a matter of speaker construal, i.e., her/his desire to structure a given scene in a specific way for purposes of linguistic description. This focus on speaker choice rather than on the nature of the linguistic system has profound ramifications for the teaching of grammatical expressions because it calls into question the time-honored way of presenting those expressions as patterns of lexical association. Rather, a CG-inspired grammar lesson shows that constructions are best seen as conventionalized ways of matching certain expressions to specific situations. Achard illustrates a CG-informed teaching of construal by distinguishing the meaning of two constructions, VV and VOV, as they are affected by the use of French causation/perception verbs. The key for the instructor is to precisely isolate and clearly present the various conditions that motivate speaker choice. Pedagogic proposals based on the theoretical and descriptive principles described are then made in the final section, which involves a grammatical presentation of the French definite and partitive articles and recommendations for teaching.

In chapter 18, Tyler explores the *Cognitive Linguistics of Second Language Instruction* by outlining several principles foundational to the CL enterprise, their contributions to a more complete, systematic description of language, and the subsequent implications for second language teaching. A central point is that whatever instructional approach a teacher chooses, teaching is well served by CL analyses of the language being taught. A review of current ELT texts and grammars, which teachers rely on for instructional activities, materials, and curriculum, reveals that these texts and grammars fail to provide accurate, complete explanations of many key points of the English language. The discussion then focuses on modals, a notoriously difficult area of English which has long been represented as highly idiosyncratic and hence as largely immune to any kind of learning strategy other than rote memorization. The chapter demonstrates that under Sweetser's (1990) cognitive analysis, much of the apparent arbitrariness falls away. Recognizing that having a better description does





## INTRODUCTION

not automatically translate into more effective learning, Tyler presents example materials, based on these analyses, which can be used for explaining modals to advanced learners of English as a second language. She then describes the findings of two effects-of-instruction studies examining the learning of appropriate use of English modals, the first a pretest-posttest study comparing a feedback plus CL instruction treatment with a minimal feedback group over the course of 10 weeks' instruction, the second a longitudinal analysis of six students in an AB single-subject design as they received two days' baseline followed by three days' CL feedback. These small-scale studies suggest that providing a cognitive explanation in conjunction with several interactive tasks does indeed result in significant learner gains in their appropriate use of modals in comparison to instruction which either relies solely on task-based instruction or incidental learning. The chapter concludes by pointing to CL analyses of other patterns of relevance, and describes the ways in which teaching materials can be developed that are based upon these analyses.

Finally, in chapter 19, we, Robinson and Ellis, summarize the main themes of the book as we see them and we look to *Future Directions*. We identify important issues that future SLA research should address, adopting many of the principles and approaches to CL described by authors in Part II, and developing many of the ideas presented by authors of chapters in Part III.

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