Chapter 7
Lexical Semantics:
Relativity and Transfer

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ABSTRACT

Lexical semantics is concerned with inherent aspects of word meaning and the semantic relations between words, as well as the ways in which word meaning is related to syntactic structure. This chapter provides an introduction to some of the main themes in lexical semantic research, including the nature of the mental lexicon, lexical relations, and the decomposition of words into grammatically relevant semantic features. The mapping between the semantics of verbs and their associated syntax is discussed in terms of thematic roles, semantic structure theory, and feature selection. A review of some of the most influential findings in second language research involving both open-class and closed-class lexical items reveals important implications for classroom pedagogy and syllabus design in the domain of vocabulary instruction.

WHAT IS SEMANTICS?

Semantics is the study of how language is used to represent meaning. More precisely, semantics aims to explain how literal meanings are linguistically encoded and decoded by speakers and hearers. Other approaches to meaning include pragmatics, which deals with how meanings are inferred in relation to context, and semiotics, which is a more general study of how we interpret both linguistic and non-linguistic signs. For example, if one person shows a ring to another, saying "Here is the ring", there are several layers of meaning that could be examined. At the level of semantics, the deictic pronoun *here* indicates a proximal location; the verb *be* signifies existence in a location; the determiner *the* shows that both speaker and hearer have previous knowledge of this ring; and the word *ring* picks out a particular type of object in the world. At the level of pragmatics, depending on the context, the hearer might infer that this speech act is a proposal of marriage, or a request for a divorce, or a directive to embark upon a magical quest. In terms of semiotics, the ring itself may be understood as a symbol of a bond, alliance,

or vow, which by extension might signify matrimony, allegiance to a college, or religious authority. In comparison with pragmatics and semiotics, semantics has a narrower scope of investigation in that it restricts its concern to linguistic aspects of meaning. Within semantics, there are various theoretical approaches, including formal semantics, which uses propositional logic to capture relations between linguistic expressions and the things to which they refer, and cognitive semantics, which sees meaning in language as emerging from general cognitive principles. These important lines of research are beyond the bounds of the current chapter, which deals with a different aspect of semantics with direct relevance to the language classroom: lexical semantics, the study of how meaning is encoded in words, and how word meaning relates to sentence meaning.

In the following section, fundamental concepts of lexical semantics are introduced, including the traditional distinction between reference and sense, the mental lexicon as a network, and the various types of meaning relations between words. Most modern research in this domain focuses on elements of meaning below the word level, and investigates both features inside words as well as features that words can require in their surrounding linguistic context. An overview is given of the fascinating and ongoing debate among researchers concerning how the meanings of words determine syntactic structure. In the second part of this chapter, several examples of second language (L2) research are presented in order to illuminate how lexical semantics might be relevant for language learning in the classroom. Such research addresses questions of how word meanings in a new language are acquired, given that learners initially assume equivalence between words in translation, even though words rarely have the same meaning in two different languages. It is argued that several findings in L2 lexical semantics are of direct relevance to teaching practice, materials development, and syllabus design.

THE MENTAL LEXICON: A WORLD OF WORDS

Reference, Sense, and Lexical Relations

An important traditional distinction in lexical semantics, as most influentially articulated by Frege (1980 [1892]) and Saussure (1983 [1916]), is between **reference** and **sense**. The reference of a word is the thing, event, or state that it points to in the world. It is what the word denotes, and it is external to the mind. Thus if someone refers to a particular piece of wooden furniture with four legs and a back using the word *chair*, the reference is to that object in the world. In contrast to reference, the sense of a word is its meaning in relation to the linguistic system of which it is a part, and this meaning is internal to the mind. The precise meaning of the word *chair* in English is related to other words such as *beanbag*, *bench*, *pew*, *seat*, *sofa*, *stool,* etc. Translational equivalents of words are rarely completely accurate because the precise set of things a word can denote varies from language to language, in part due to this relational aspect of meaning. In a given language, the translation of the English word *chair* might denote both chairs and stools, or there might be two words corresponding to different types of chair. Moreover, different words or phrases with distinct senses could point to the same individual in the world, for example *Bill*, *Shakespeare*, *Ann's husband*, *the author of Hamlet*, and *the Bard of Avon* might all refer to the same person but they carry different meanings. As Frege (1980 [1892]) observed, using two senses to denote the same referent is quite different from a repetition of terms. The planet Venus may be referred to as the morning star or the evening star, but for someone who is unaware that these terms denote the same object, example (1) carries information, while example (2) does not.
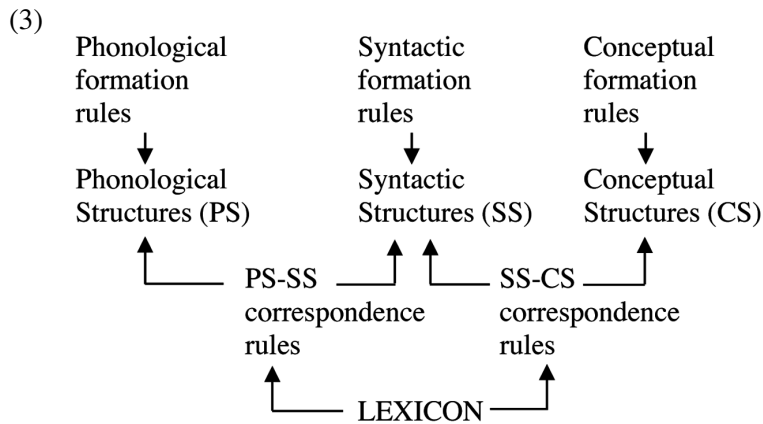
(1) *The morning star is the evening star.*
(2) *Venus is Venus.*

The distinction between reference and sense has led to two distinct research traditions in semantics. Referential (denotational) theories of meaning focus on how words manage to pick out the set of things to which they refer. Formal semantic approaches, such as truth-conditional semantics (e.g., Chierchia & McConnell-Ginet, 2000), as well as Montague Grammar (Montague, 1974), are characterized by their use of logic in semantic analysis, and in such frameworks, whether an expression is meaningful depends on whether it is a logical and truthful expression of external reality. For example, in truth-conditional semantics, nouns and verbs are meaningful because they denote actual entities and situations, respectively. They can either be true or false descriptions of reality. In this tradition, the term *sense* is restricted to an idealistic notion of word meaning, independent of the variation in speakers' minds, such that languages are seen as abstractions over individual differences and the "psychological and sociological" representations "used by a person or population" (Lewis, 1972, p. 170).

In contrast to denotational theories of formal semantics, representational theories of lexical semantics do not consider any aspect of meaning as external to the mind. On this account, one cannot compare a linguistic representation with reality to determine truth, but only check it against other mental representations of the world. The perception of a chair, in terms of its shape, texture, colors, perspective, etc., is created in the mind, and the categorization of this object is likewise a cognitive process. The emphasis in lexical semantic research is on words as concepts, and on the lexicon as a means of relating phonological, syntactic, and conceptual representations. Jackendoff (1989, p. 74) interprets this distinction between (i) meaning in terms of external reality and (ii) meaning in cognition by drawing on Chomsky's (1986) constructs of E-language (external, language as a social abstraction outside the individual mind, out there in the world) and I-language (internal, language as a cognitive system). Denotational theories can be thought of as E-semantics and representational theories as I-semantics, respectively. In this sense, the focus of this chapter is squarely on I-semantics, and on theories of lexical semantics that have arisen in this tradition.

An account of lexical semantics must be somehow embedded in a more general theory of the **mental lexicon**, so let us begin with the question: What is a lexical item? While it is conventional to think of a word as a unitary entity, many researchers in lexical semantics assume some version of Jackendoff's (1997) theory of parallel architecture, according to which a lexical item is a relation, rather than a thing. At a minimum, a word consists of a phonological representation, linked to an independent syntactic representation, linked to an independent conceptual representation. Moreover, the generation of phonological, syntactic, and conceptual forms occurs in modular fashion, so that, for example, only phonological primitives and combinatorial rules are used to create phonological representations. A lexical item is created through correspondences between these distinct representations, as in (3)

(3)

| Phonological formation rules | Syntactic formation rules | Conceptual formation rules |

Phonological formation rules → Phonological Structures (PS)

Syntactic formation rules → Syntactic Structures (SS)

Conceptual formation rules → Conceptual Structures (CS)

PS — PS-SS correspondence rules — SS

SS — SS-CS correspondence rules — CS

PS-SS correspondence rules ← LEXICON → SS-CS correspondence rules
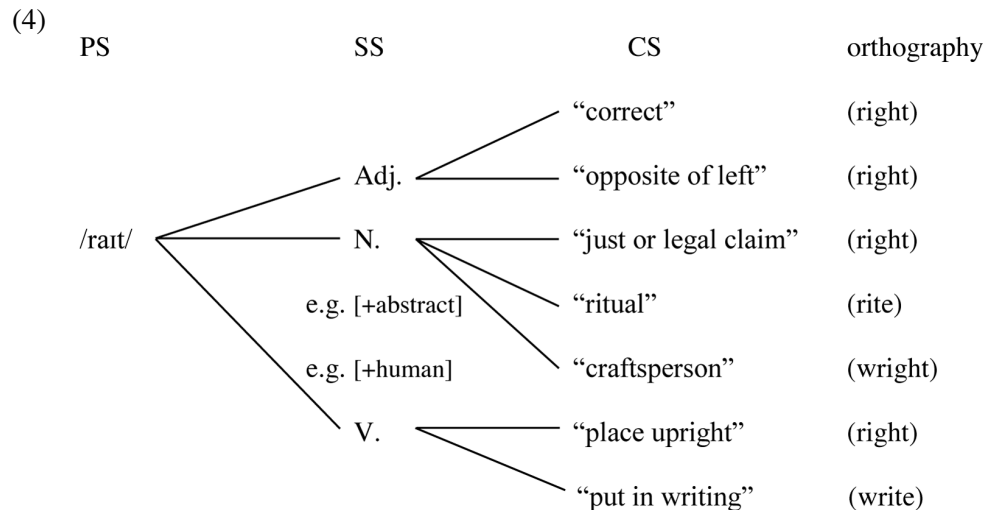
(adapted from Jackendoff, 1997, pp. 39, 100)

This conception of representational modularity at the lexical interface with other cognitive systems is compatible with evidence from speech processing research. When we hear a word, we search to retrieve it from our mental storage system first by paying attention to phonology, not semantics. Words that begin with the same sounds are "primed", that is, they are activated in lexicon so as to enable fast retrieval and integration into syntax. For example, in an early experiment by Swinney (1979), when participants heard the sentence *Because he was afraid of electronic surveillance, the spy carefully searched the room for bugs*, they showed evidence that at least two interpretations of *bugs* ('microphones' and 'insects') were primed, despite only one being pragmatically appropriate.

Just as words stored in the mental lexicon may be phonologically primed in a way unrelated to meaning, they may also be subject to semantic priming, depending on their conceptual relations to other words. For example, in a word recognition task, a response to a target (e.g., *boy*) is faster when it is preceded by a semantically related prime (e.g., *girl*) compared to an unrelated prime (e.g., *telephone*). Evidence from semantic priming, as well as word association tests, slips of the tongue, and lexical recall in cases of aphasia (language deficits following brain damage) makes clear that there are various types of relations between lexical items, and that the organization of the mental lexicon is significantly more complicated than an alphabetically organized dictionary. It makes sense to think of the lexicon as an interactive network with multiple types of connections between elements. In order to develop a theory of how this network might be organized, it is important to understand the various ways in which words can semantically relate to one another.

One of the most important concepts in semantic relations is that of the lexical field, which is a grouping of lexical items that have a general conceptual association, either in terms of an area of knowledge or regular co-occurrence in real-word situations. Modern theories of lexical fields stem from Trier (1931), who built on earlier insights by Saussure (1983 [1916]) to argue that word meaning cannot be understood in isolation from relations with other semantically related words in the same lexicon. Subsequent decades of research have confirmed that words do tend to exhibit strong semantic associations with words in the same semantic domain. This can be effectively demonstrated when two different words have the same phonology or spelling. For example, the word *pole*, meaning a long, thin rod made of wood or metal, is associated with the word *tent*, while another word *pole*, meaning either the northern or southern ends of the rotational axis of the earth (or another celestial body), is associated with the word *north*. These two words (identical phonology, different semantics) sit in distinct lexical fields.

While this general associative concept is useful, more precise **lexical relations** are often identified to clarify the links between particular words, including homonymy, polysemy, synonymy, antonymy, hyponymy, and meronymy, which will be briefly examined in turn. **Homonyms** are unrelated meanings of words that either sound the same (homophones) or are written the same (homographs). Examples of homophones of the word *right* /raɪt/ "correct" are shown below, with links between (simplified) phonological (PS), syntactic (SS), and conceptual structures (CS).

(4)

PS	SS	CS	orthography
		"correct"	(right)
	Adj.	"opposite of left"	(right)
/raɪt/	N.	"just or legal claim"	(right)
	e.g. [+abstract]	"ritual"	(rite)
	e.g. [+human]	"craftsperson"	(wright)
	V.	"place upright"	(right)
		"put in writing"	(write)

Dialectal differences in pronunciation mean that not all speakers of English share the same homonyms. For example, *writer* and *rider*, or *caught* and *cot*, may or may not have identical phonology depending on the speech community. Another aspect of homonymy in need of clarification is that true homonyms are perceived as having unrelated semantics (even if there is sometimes a historical connection between meanings), while there often also exist sets of related meanings of a given phonological word.

When different senses of the same phonological word are related in identifiable ways, this is termed **polysemy**. Thus *right* in the sense of *correct* is closely linked to such meanings as *right conduct* (= just, proper), *the right clothes* (= suitable, appropriate), or *the right way round* (= principal side of an object). The distinction between homonymy and polysemy is reflected in many dictionaries, as homonyms usually have separate entries, while polysemous items are listed under a single entry. Thus *bark¹* (the harsh sound made by a dog) is kept distinct from its homonyms, *bark²* (the protective covering of a tree) and *bark³* (a kind of boat). Within these entries, polysemous use is listed in terms of nuances or aspects of meaning, including related shifts in syntactic category. So *bark¹* may cover usages such as (Noun 1) *the bark of a dog*, (Noun 2) similar sounds, such as *coughs* or *gunfire*, (Verb 1) *to make the sound of a bark*, and (Verb 2) *to speak gruffly*, etc. (examples from *The American Heritage Dictionary*).

Polysemy has received significant attention in research on lexical semantics, as aspects of word meaning are often systematically related through **alternations** that shed light on general cognition. Examples of polysemy investigated by Pustejovsky (1995) include the following.

(5)   Count / Mass alternations
    a.   *The lamb is running in the field.*
    b.   *John ate lamb for breakfast.*

(6) Container / Containee alternations
    a.   *Mary broke the bottle.*
    b.   *The baby finished the bottle.*
(7) Figure / Ground reversals.
    a.   *The window is rotting.*
    b.   *Mary crawled through the window.*
(adapted from: Pustejovsky, 1995, p. 31)

In the case of Figure / Ground reversals, a considerable number of nouns seem to alternate in sense between a physical object used to frame an opening, and the opening itself which is framed by that object (e.g., *window, door, gate, fireplace, hallway, room*). The intended sense is derivable only through linguistic context. That is, in the sentence *John is painting the door*, the door is an object, and in the sentence *John walked through the door*, the door is an opening. Such examples make it clear that a theory of lexical semantic composition has to go beyond simply enumerating meaning components inside words.

Synonymy is in some sense the reverse of homonymy: synonyms are words with different phonology but with the same, or approximately the same, meaning. However, while this is a well-known concept, taught to schoolchildren from a young age, it is rare that two lexical items can be truly interchangeable. The difference between reference and sense is useful to invoke in this case, as more often, supposed synonyms are often two separate senses with a common referent. Pairs such as the nouns *peace* and *calm*, the verbs *enjoy* and *like,* and the adjectives *funny* and *humorous*, can be substituted in some contexts and not others, and word choice is often contextually conditioned. On closer inspection, we find most words are polysemous, and that each sense of a word has different synonyms. The noun *play* may allow *performance* as a synonym in a theatrical context, but *move* or *action* as synonyms in the context of a game. The verb *play* may be close in meaning to *mimic* in the context of imitation, while it could be substituted for *feign* in the context of false emotion or behavior. Apparent synonyms stand apart when polysemy is manipulated; for example, while *big* and *large*, *little* and *small* are often given as classic synonyms, *a big sister* is not the same as *a large sister* (Saeed, 2016, p. 62). Synonyms are sometimes differentiated by dialect and sometimes by register: for example, the choice of *freeway, highway*, or *turnpike* may carry regional dialectal associations, and one would not use *inebriated*, *drunk*, and *squiffy* interchangeably without consideration of discourse context. As words cannot generally be substituted for one another without some change in interpretation, it is arguable that pure synonyms do not exist.

A related notion is **antonymy**, with refers to the link between words that are considered to be opposites. The semantic assertion of some words implies the negation of others, such that they can form binary pairs. If a book is *open*, this entails that it is not *shut*. If a creature is *alive*, it means that it is not *dead*. Complementary pairs that often work this way include, *day / night*, *empty / full,* and *on / off.* Another type of antonymy involves so-called relational (or converse) pairs, both of which must exist simultaneously for each to carry a truth value, e.g., *husband / wife, above / below*, and *lend / borrow*. Yet a third type that is commonly identified is gradable (or polar) antonyms, which operate on a scale, and whose truth value is determined by speakers in relation to the scale. Examples include *hot / cold, young / old, happy / sad, long / short*, and *fast / slow*. Subclasses of antonyms are also analyzed in terms of reverse relations. Reverse antonyms include directional terms such as *come / go, enter / exit*, and *up / down*, as well as reversible processes, such as *fill / drain, inflate / deflate,* and *push / pull*. Antonymic relations can be somewhat complex and have engendered considerable research (for more detailed discussion, see Cruse, 1986, pp. 197-262).

The term antonymy is sometimes extended to describe contrasts beyond the binary, especially if words are part of a contrastive taxonomy. Contrastive taxonomies involve "horizontal" relations in a set of terms, in which the elements are neither superordinate nor subordinate to one another. One classic example is that of colors. If a door is described as *red*, this implies that it is not *blue, yellow, green*, etc. This kind of relation also obtains for items at the same level of a hierarchy, such that if something is described as a *duck*, it enters into a contrastive relationship with *goose, swan,* etc. Many taxonomies additionally involve "vertical" relations, such that words are nested in hierarchical structures within the network of the mental lexicon. This type of inclusional relation is known as hyponymy.

Hyponymy may be easily illustrated with either living things or artifacts. For example, a Dalmatian is a type of dog, and a dog is a type of mammal. In this case, the word *Dalmation* is a hyponym of *dog*, and *dog* is a hyponym of *mammal*. The word *armchair* is a hyponym of *chair*, which is a hyponym of *furniture*. Conversely, *mammal* is a hypernym of *dog*, and *dog* is a hypernym of *Dalmatian*, while *furniture* is a hypernym of *chair*, which is a hypernym of *armchair*.

(8)
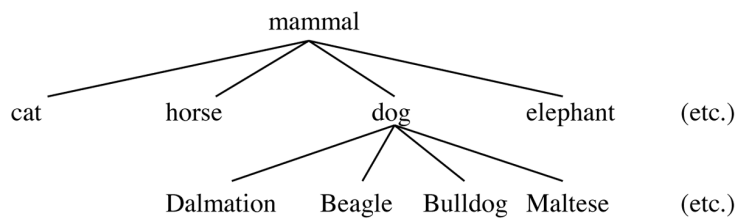
(9)
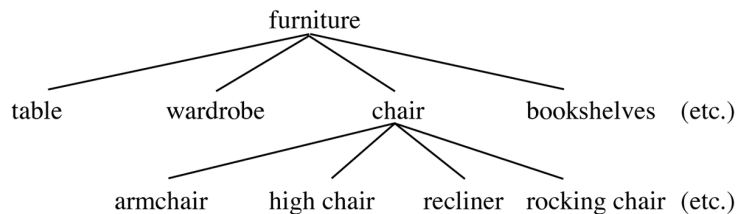
It is important to remember that we are modelling lexical semantics in terms of the kinds of relations between words in the minds of individuals, and as such these types of hierarchies are not always reflective of scientific taxonomy (or the classification systems of, say, furniture manufacturers). In an individual mind, relations between terms may not accord with prescriptive definitions handed down by academia, governments, or other prestigious social institutions. These are folk taxonomies, which may vary from language to language and even from one individual to another. Thus for some people, a tomato is a fruit, and for others it is a vegetable. For most people, the term *berries* subsumes strawberries, although they are not scientifically classified as such, and the term usually excludes certain botanically defined berries such as watermelons.

In discussing commonalities across cultures in how humans classify the natural world, Atran (1990, 1998) notes the relation between hyponymy and the capacity to make generalizations about the environment. Hyponymies of living things involve strict transitivity; that is, if a relation holds between the first and second level, and between the second and third level, it also holds between the first and third level. All dogs are mammals, and all mammals are animals, therefore all dogs are animals, irrespective of any prototype effects (a dog with three legs would be no less of an animal). Folk taxonomies provide the

foundation for systematic reasoning about living kinds relevant to human survival, so that, for example, if a disease is found in one bird species, we know that it is more likely to be found in other bird species than among mammals or reptiles (Atran, 1998). However, the organization of names for artifacts in the lexicon does not exhibit the same rigidity in entailment relations. For example, a dog is an animal, and a chair is furniture. However, while animal is part of the definition of dog, perhaps surprisingly, furniture is not part of a strict definition of chair. Artifacts are more prototypically defined, and cross-cut superordinate categories. For example, car-seat is a kind of chair, but not a kind of furniture, and a piano can be both furniture and a musical instrument (Atran, 1990).

If hyponymy describes relations of inclusivity between categories of whole entities, the term **meronymy** refers to part-whole relations within entities. The words *hand* and *foot* are meronyms of the word *body*, just as the words *wheel* and *pedal* are meronyms of the word *bicycle*. While meronymy and hyponymy can be represented using similar diagrams (as in examples 8 and 9), meronymy often shows less regularity. Some parts are necessary to the whole (e.g., *seed – apple*, *eye – face*), while others are typical or even occasional but not necessary (*pocket – coat*; *porch – house*). Meronymy is also less likely to exhibit strict transitivity. For example, if a cupboard has a handle, and a kitchen has a cupboard, this does not entail that a kitchen has a handle. The lexical relation of meronymy underlies the linguistic device of synecdoche, used in both literary and everyday language. Thus we can refer to the sea as *the waves*, or a ship as *sails*, or a car as *wheels*.

Lexical relations such as homonymy, polysemy, synonymy, antonymy, hyponymy, and meronymy are well-established semantic links between words in the mental lexicon, but in modern linguistic approaches to lexical semantics, the focus is more often on aspects of meaning below the word level. In particular, much work focuses on those semantic elements that play a role in grammar. The following section presents a brief overview of how this research has developed into a growing and exciting subfield of linguistics.

Features, Subcategorization, Thematic Roles, and Semantic Structures

In one of the most influential research programs attempting to formalize lexical relations, Katz and colleagues (Katz & Fodor, 1963; Katz & Postal, 1964; Katz, 1972) sought to identify semantic components of word meaning that support the kind of inferences we make automatically as we process natural language. On hearing the word *bachelor*, we know that the referent is male, human, animate, and unmarried. Instead of representing such relations in terms of word hierarchies as in examples 8 and 9, Katz posited that the word itself contained these elements as interpretable features. The existence of semantic features within lexical items allows for a reconceptualization of lexical relations. Consider the following examples.

(10) a.   *man* [+MALE] [+ADULT] [+HUMAN]
     b.   *bachelor* [+MALE] [+ADULT] [+HUMAN] [+UNMARRIED]
     c.   *boy* [+MALE] [-ADULT] [+HUMAN]

The relation of hyponymy between (10a) and (10b) is clear because all the features of the word *man* are contained in the feature set of the word *bachelor*. On this account, a lexical item is a hyponym of another term if it contains all of the linguistically relevant features of that term. Similarly, certain types of ant-

onymy can be captured in terms of contrasting features. The word *boy* allows one to infer that the referent is HUMAN, but rules out the interpretation of ADULT and is therefore incompatible with the term *man*.

Early Katzian approaches favored comprehensive semantic definitions, so as to fully explain entailment relations. A word such as *chair* was understood to contain not only grammatically relevant features such as [+OBJECT] and [+CONCRETE (physical)] but also elements to capture a general conceptual definition of the term, such as [+HAS LEGS], [+HAS A BACK], and [+PORTABLE]. Such definitional approaches to word meaning have largely been abandoned, not only in linguistics, but also in philosophy and psychology, following lines of thought that can be traced through Wittgenstein (1958), Putnam (1962), and Rosch (1978) (for an overview and implications for language acquisition, see Stringer, 2012). However, building on Katz's analyses, several researchers developed lexical semantic theories that involved a more restricted subset of meaning components, which included only those semantic components of relevance to grammar. Chomsky (1965) introduced **subcategorization** theory not only to provide an account for how verbs and prepositions select (or subcategorize) for particular syntactic categories in their linguistic environments, but also to explain how certain lexical semantic features might be involved in selectional processes. In other words, the meaning of a verb involves not only inherent semantic features, contained within the verb itself, but contextual features, which it may require of subjects or objects. In the examples in (11), the meaning of the verb constrains the possible semantics of other elements in each sentence.

(11) a.　*The boy may frighten sincerity.*
　　 b.　*John solved the pipe.*
　　 c.　*The book dispersed.*

Arguably, these examples are not simply semantically incongruous, but involve syntactic violations; they "have a borderline character" (Chomsky, 1965, p. 77), and raise the question of whether this selectional information should be in the syntactic or the semantic component of the grammar. Chomsky (1965) opted for the syntactic solution, proposing interpretable syntactic features such as [+ANIMATE], [+HUMAN], [+ABSTRACT], [+PLURAL], etc. to account for such constraints. However, he maintained a distinction between 'strict subcategorization rules' (category selection) and 'selectional rules' (feature selection), within a general syntactic subcategorization process (Chomsky, 1965, p. 95). In the half-century since Chomsky's (1965) seminal work, while some researchers have continued to analyze such semantic features as part of syntactic selection (e.g., Emonds, 2001), many have taken the alternative option in developing an independent semantic account of how predicates license other elements in their linguistic environment (e.g., Grimshaw, 1979; Jackendoff, 1990; Pinker, 2013 [1989]).

Participants which are integral to the event or state expressed by the predicate are called **arguments**, and the relation between the verb and the participants it selects is termed **argument structure**. Several influential approaches to understanding argument structure have attempted to characterize semantic selection not through features, but through the roles that participants can play in events or states. Lists of the types of roles that arguments can play vary from author to author, and have been termed *participant roles* (Allan, 1986), *deep semantic cases* (Fillmore, 1968), *semantic roles* (Givon, 1990), *thematic roles* (Dowty, 1991; Jackendoff, 1990), and *theta (θ)-roles* (Chomsky, 1981). The term **thematic roles** will be adopted here for subsequent discussion. Drawing on distinctions made in the above works, it is possible to come up with a reasonably standard list of thematic roles, as follows.

(12) AGENT: the initiator of an action, often demonstrating volition, e.g.:
    a.   *<u>Harry</u> telephoned Sally.*
    b.   *<u>The owl</u> flew out of the tree.*
    PATIENT: the entity undergoing the effect of an action, often with a change of state, e.g.:
    a.   *Alfred burnt <u>the cakes</u>.*
    b.   *The dog chewed <u>the slipper</u>.*
    THEME: the entity which is moved by an action, or whose location is described, e.g.:
    a.   *Janice put <u>a flower</u> in her hair.*
    b.   *<u>The honey</u> is on the table.*
    LOCATION: the place in which an action takes place or where something is situated, e.g.:
    a.   *They met at <u>the station</u>.*
    b.   *The ruin lies under <u>the waves</u>.*
    INSTRUMENT: the means, either concrete or abstract, by which an action is carried out or something is made possible, e.g.:
    a.   *William split the apple with <u>an arrow</u>.*
    b.   *She charmed him with <u>her wit</u>.*
    EXPERIENCER: the entity which is aware of the action or state described by the predicate but which is not in control of the action or state, e.g.:
    a.   *<u>Helen</u> saw the hawk.*
    b.   *<u>Thelma</u> felt good.*
    BENEFICIARY: the entity in whose interest an action is performed, e.g.:
    a.   *George made some tea for <u>his wife</u>.*
    b.   *Ella sung <u>him</u> a song.*
    GOAL: the entity towards which something moves, in either (a) a physical or (b) an abstract sense, e.g.:
    a.   *Olive gave the spinach to <u>the sailor</u>.*
    b.   *Bill tells the same story to <u>everyone he meets</u>.*
    SOURCE: the entity from which something moves, in either (a) a physical or (b) an abstract sense, e.g.:
    a.   *The package was sent from <u>India</u>.*
    b.   *All his ideas come from <u>his teacher</u>.*

On this approach to argument structure, thematic roles are determined by the lexical semantics of the verb, and the mapping to syntax is via a thematic hierarchy (Jackendoff, 1972; Larson, 1988; Speas, 1990), according to which the highest role is linked to the subject position, the next highest to object position, and others to indirect object positions. For example, the verb *put* has the theta-grid <agent, theme, goal>, and the hierarchy specifies Agent > Experiencer > Theme > Source > Goal > Obliques (manner, location, time, etc.), so the canonical mapping of thematic roles will be Agent = subject, Theme = object, and Goal = indirect object (e.g., *Janice put a flower in her hair*). In contrast, the verb *see* lacks an Agent: as the theta-grid is <experiencer, theme>, the mapping will be Experiencer = subject, Theme = object (e.g., *Helen saw the hawk*). The relevance of this for language learning is clear when one considers that translational equivalents in different languages often have different theta-grids. The Spanish verb *gustar* is the most common verb used to translate the English verb *like*, but it patterns thematically

like the verb *please*, with an agent in its theta-grid, rather than *like*, which has an experiencer-subject *(Chocolate {pleases / *likes} me; I {like / *please} chocolate)*. This creates a bidirectional learnability problem, such that acquisition is tricky going from English to Spanish as well as from Spanish to English.

Research on thematic roles dominated formal approaches to lexical semantics for the 1980s and much of the 1990s, as researchers attempted to integrate the lexical semantic specifications of verbs with syntactic structure. Chomsky (1981) argued that there cannot be more or fewer NPs in a clause than is required by the verb's argument structure, and stated this in terms of the Theta-Criterion (p. 36):

(13) Each argument bears one and only one θ-role, and each θ-role is assigned to one and only one argument.

Baker (1988) drew on both the Theta-Criterion and on observations by linguists working in the Relational Grammar approach (such as Perlmutter & Postal, 1984), as he formulated the influential Uniformity of Theta Assignment Hypothesis (UTAH). Notably, UTAH claims that thematic roles are assigned via syntactic structure, and that when there is variation in argument structure, identical thematic relationships can be traced to identical structural relationships at the level of deep structure. In this way, the word *boat* in the following examples is a Theme irrespective of whether it surfaces as a subject or an object.

(14)
  a. *Jim sank the boat*.   (*boat* generated in object position, receives Theme interpretation)
  b. *The boat sank ____*.   (*boat* generated in object position, receives Theme interpretation,
       ⎰_____⎱   moves to subject position)

Despite the significant influence and inspiration of research on thematic roles in syntax and psycholinguistics, and despite their continued use as useful descriptive terms, several problems have been identified with this approach. Much current research in lexical semantic theory views thematic roles as epiphenomena whose intuitive appeal belies an underlying inadequacy to fully describe selectional relations.

One criticism has been the lack of evidence for an underlying one-to-one mapping between thematic roles and syntactic structure. In the following sentence, there appear to be at least two types of thematic role assignment.

(15)   *James throws the ball to Sarah*.   (prepositional form)

If understood in terms of conscious actors, volition, and affectedness, the roles are Agent (*James*), Patient (*the ball*), and Beneficiary (*Sarah*). If analyzed in terms of objects, motion, and trajectory, the roles are Source (*James*), Theme (*the ball*), and Goal (*Sarah*) (for an analysis involving two separate tiers of thematic role assignment, see Jackendoff, 1990, pp. 125-129). Another problem for one-to-one mapping is that some verbs allow alternating argument structures. The previous example can be used to illustrate the dative alternation: in the following related structure, on standard accounts, the indirect object is promoted to direct object position.

(16)   *James throws Sarah the ball.*   (double-object dative form)

Approaches that posit one-to-one mapping between thematic roles and syntactic positions would seem to predict that, in cases of alternating argument structure, the basic form should be acquired first, with the more complex, derived form acquired later. However, despite plausible, evolving transformational accounts of this double-object structure (Emonds & Whitney, 2005; Fillmore, 1965; Larson, 1988), the supposedly underlying argument structure is not acquired first for all verbs (Pinker, 1984). That is, the prepositional form does not precede the double-object dative in the spontaneous speech of children, making it likely that it exists as an independent structure (with independent semantics, according to Pinker, 2013 [1989]).

A second general criticism of thematic roles as an account of argument structure is that they lack the fine-grained semantic analysis necessary to explain semantic selection. For example, the English verb *spray*, regardless of context, encodes the interpretation of the moving object in the event as a three-dimensional (3D) aggregate of psychologically dimensionless points (e.g., water, sand, bullets); *smear* requires that the moving object be a 3D semisolid substance (e.g., honey, paint, make-up); and the verb *wrap* specifies that the moving object be a two-dimensional (2D) flexible solid (e.g., paper, foil, a leaf). The verbs *fill*, *cover,* and *coil* require that the entity with the thematic role of location be respectively conceptualized as a volume, a surface or a line. In order to capture this complexity, **Semantic Structure Theory** (Jackendoff, 1990; Pinker, 2013 [1989]) elaborates an independent level of representation, subsuming both lexical and phrasal semantics. While this might seem to be a much more complicated approach to semantic selection than either subcategorization or thematic role assignment, Pinker (2013 [1989], pp. 215-220) argues that the grammatically relevant semantic subsystem is relatively restricted when one considers that it aims to capture the lexical semantics of all verbs in all human languages. This kind of theoretical approach includes conceptual constituents such as EVENT, STATE, THING, etc., basic functional verbs such as GO and BE, a set of subordinating semantic relations, temporal and spatial functions, and the kind of lexical distinctions discussed above, such as animacy, human / nonhuman, dimensionality, count / mass / aggregate, rigidity, and states of matter (solid, liquid, semi-solid, gas). The semantic categories are motivated by descriptive typological surveys of the world's languages and by previous work in the tradition of cognitive linguistics (e.g., Talmy, 1985). The cognitive values of the suggested categories also delimit the kind of inferences that were part of Katz's original feature-based approach to lexical semantics.

Recall that Chomsky (1965) mused on whether semantic selectional information should be in the syntactic or the semantic component of the grammar. While some modern lexical semantic research posits independent semantic structures (Jackendoff, 2010; Levin & Rappaport Hovav, 2011; Pinker, 2013 [1989]), other research opts for conceptual features in syntax (Emonds, 2000; Harley & Ritter, 2002; Lardiere, 2009; Stringer, 2012). However, there is consensus in current work that fine-grained accounts of lexical semantics are an integral part of grammatical description. Moreover, as the acquisition of the lexicon underlies the acquisition of argument structure, and as lexical representations differ across languages, lexical semantics is generally understood to be a core component in the acquisition of L2 syntax.

IMPLICATIONS FOR TEACHING ENGLISH LANGUAGE LEARNERS

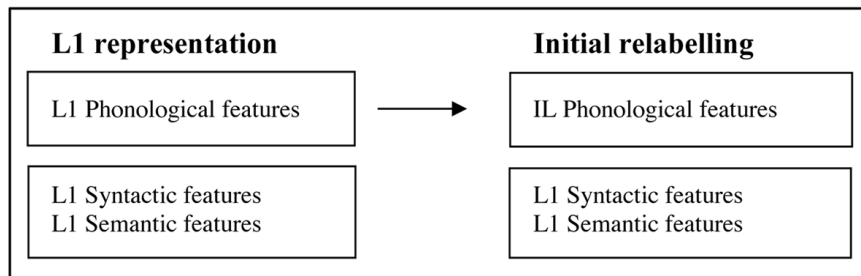### Lexical Relativity, Lexical Transfer, and Feature Reassembly

Research into L2 acquisition of lexical semantics has furnished several insights that are directly relevant to the language classroom. One fundamental pair of related observations is that (i) when comparing any two languages, it is apparent that exact lexical equivalence is either rare or nonexistent, such that all words resist precise translation; and (ii) the learner's initial assumptions about word meaning in an L2 stem largely from knowledge of the first language (L1). The first of these observations is termed **Lexical Relativity** (Stringer 2010), and captures the fact that, following the earlier distinction between reference and sense, the meaning of any lexical item is relative to its ambient lexicon. That is, a paired translation may hold for a shared reference in a particular context, but the senses of the two words will necessarily diverge across multiple contexts. Perfect translational equivalence is virtually non-existent due largely to the fact that both the denotational and syntactic properties of words are constrained by those of other words in the same combinatorial system, as famously observed by Saussure (1983 [1916]). Even basic verbs expressing existence or location, equivalent to the English verb *be*, can vary, for example, according to whether the existence is permanent or temporary (Spanish *ser / estar*), or whether the entity is animate or inanimate (Japanese *iru / aru*). A universal human activity such as drinking does not lead to universal verb semantics. The English verb *drink* is used only of liquids. In Turkish, one can "drink" smoke as well as liquids; in Japanese, one can "drink" medicine, even in solid form; and in Kazak, one can "drink" both liquids and solids, in contexts where English would require the verb *eat*. Young and Morgan (1987) list 15 verbs of consumption in Navajo, corresponding to either *eat* or *drink*, which differ according to such criteria as whether the thing to be consumed is hard, mushy, leafy, liquid, solid but dunked in liquid, or meat, or whether it is consumed from an open or closed container.

Common nouns also splinter in translation: English *rice* corresponds to both Japanese *kome* (uncooked rice) and *gohan* (cooked rice). Sometimes while the referent is ostensibly the same, the grammatical properties vary, shedding light on differences in conceptualization. Thus in English, *grape* is a count noun (and grapes are conceptualized as small bounded objects) while in French, *raisin* 'grape' is a mass noun (and conceptualized as a substance). In French, one must refer to a grain of grape, just as in English one must refer to a grain of rice. The same relativity exists in so-called closed-class categories (word classes that do not regularly admit new coinages), such as prepositions, articles, and quantifiers. For example, crosslinguistic comparisons reveal that the concepts of *"on" a table*, *"on" a wall*, and *"on" a ceiling* are not at all linked to some kind of universal spatial preposition, but involve different lexicalization patterns depending on the language (Bowerman, 1996). In general, assumed equivalence between lexical items falls apart on closer examination.

The second of these insights may be termed **Lexical Transfer**, and was articulated in terms of Full Transfer and Relexification in seminal work by Sprouse (2006). Lexical Transfer builds on what is perhaps the most influential hypothesis of linguistic approaches to L2 grammar, the Full Transfer/Full Access model (Schwarz & Sprouse, 1996), which posits that the initial state of L2 learning corresponds to the L1 grammar, but that learners may nevertheless go beyond their initial assumptions, as their analysis of L2 input is guided by Universal Grammar. Sprouse (2006) extends this approach beyond syntax and phonology to include lexical knowledge. He argues that in L2 acquisition of the lexicon, words initially maintain the syntactic and semantic packaging associated with them in the L1, and are simply relabeled with perceived L2 phonology (Interlanguage (IL) Phonology), as illustrated below.

(17)

L1 representation	**Initial relabelling**
L1 Phonological features →	IL Phonological features
L1 Syntactic features L1 Semantic features	L1 Syntactic features L1 Semantic features

If the learner's initial assumptions about word meaning stem largely from previous linguistic knowledge, then on hearing a new word, such as *gohan* 'rice' in Japanese or *raisin* 'grape' in French, an L1 English-speaking learner will initially assume that the former refers also to uncooked rice, while the latter is a count noun referring to small, bounded objects. Learners of English will experience similar problems in reverse. A shift from one lexicon to another entails thousands of subtle shifts in how we conceptualize the world in order to talk about it.

Taken together, Lexical Relativity and Lexical Transfer imply that standard vocabulary lists with translated word-pairs found in all textbook series, while useful in promoting noticing effects, are also necessarily misleading; that multiple exposure to words in different contexts is a prerequisite for acquisition; that much of lexical learning is bound to be implicit rather than explicit; and that learners from different L1 backgrounds will have different assumptions and paths of acquisition regarding the L2 lexicon.

Not only does Lexical Relativity apply to open-class items (lexical classes that freely admit new members, such as verbs or nouns) but it is also relevant to closed-class items ("functional" classes of grammatical words that do not easily allow new members, such as modals, articles, or quantifiers). The idea that reorganization of functional features is fundamental to L2 acquisition is at the heart of the **Feature Reassembly Hypothesis** (Lardiere, 2009). On this approach, syntactic, phonological, and semantic features constitute the grammatically relevant elements within lexical items, and it is the presence or absence of such features that accounts for language variation (Chomsky, 1995; Travis, 2008). In the course of L2 acquisition, learners must reconfigure syntactically relevant semantic features from functional items in the L1 into new configurations, sometimes on different types of lexical items.

Two examples may be used to illustrate the profound implications of relativity in this domain. Learners of English who are in the process of acquiring the plural morpheme *-s* or the definite article *the* will be quick to realize that the semantics of these elements in the function lexicon do not correspond exactly to analogous items in the L1. In order to explain what the acquisition of plural morphemes entails for English learners of Korean and Korean learners of English, Hwang & Lardiere (2013) provide a comparative analysis of the two languages before reporting their empirical study. Among other things, the plural morpheme in Korean is often optional rather than obligatory. Intrinsic plural marking is, like English, on the noun, and can carry a collective or distributive reading (e.g., *The students read a book* could mean "all together" or "individually"). The intrinsic plural also indicates specificity, ruling out generic readings. It is obligatory with demonstratives, but impossible with numerical classifiers, unless the noun carries the feature [+human], in which case it is optional. Unlike English, extrinsic plural marking in Korean can spread from the noun so that manner adverbs or locative phrases can be marked as plural, in which case the meaning is distributive. There are further specifications for use of these two types of plural marking, but suffice it to say that when faced with the challenge of acquiring the English

plural morpheme, a simple dictionary definition equating Korean –*tul* and English –*s* falls far short of a learning strategy. Among other things, Korean learners must come to understand the obligatory nature of plural marking on English count nouns, semantic coercion when it is used to turn mass nouns into count nouns (e.g., *two beers*), and its relation with articles and quantifiers as regards specific count, nonspecific count, or generic interpretation (e.g., *I like {the / some / Ø} tigers*).

Hwang & Lardiere (2013) capture the subtleties of semantic interpretation by splitting the traditional feature of PLURAL and deriving meaning through the interaction of smaller, abstract features such as [±group], [±individuation], [±human], [±quantity], [relative/absolute], and [±specific]. The details of the analysis are beyond the scope of this chapter, but it is important to note that other researchers have arrived at the same conclusion regarding the need for a finer-grained feature analysis of plurality. Harley & Ritter (2002) propose a feature geometry consisting of abstract semantic features in order to produce various categories of plural in languages: plural meaning more than one, dual (only two), plural meaning more than two, paucal (small group), as well as inclusive and exclusive (plurals including or excluding the hearer).

The learning task for plural morphology might seem daunting, but in fact, current theoretical approaches are essentially good news for language teachers. In contrast to previous theories that argued that, depending on the combination of L1 and L2, successful acquisition was difficult or even impossible in this domain, due to an inability to acquire the functional lexicon after a purported critical period (Hawkins, 2005; Hawkins & Hattori, 2006), the Feature Reassembly approach maintains that "any feature contrast that is detectable is, in principle, ultimately acquirable" (Lardiere, 2009, p. 214). And in fact, Hwang and Lardiere (2013) demonstrate in their experimental study that English learners of Korean do converge on nativelike knowledge of the grammar at higher levels of proficiency. One clear implication for the language classroom is that teachers and textbook authors need to be aware of how the target language works in order to provide students with the necessary variety of input, so that students are exposed to lexical items across their full range of distribution. For example, learners of Korean would benefit from juxtaposed examples of [+human] and [–human] numerical classifiers, with optional plural marking only for [+human], while learners of English would benefit from juxtaposed examples of mass nouns and coerced count nouns, so that liquids are identified as countable when in containers.

A second example of relativity in the lexical semantics of functional items involves acquisition of the definite article in English. As argued by Ionin, Ko, & Wexler (2004), the definite article carries a feature [+definite], which means that both speaker and hearer can identify the referent. This is in contrast to other languages, such as Samoan, in which the article carries a feature [+specific], meaning that the speaker (but not necessarily the hearer) can identify the referent. The researchers found that Russian and Korean learners of English, whose L1s lack articles of any kind, fluctuated between definite and specific interpretations. Especially notable was the difficulty learners had in [+specific, -definite] situations, where the speaker, but not the hearer could identify the referent. This finding may help teachers understand why it is that learners of English whose L1s lack articles produce utterances such as *I'm going to meet the friend tonight* when only the speaker knows which friend. In such cases, learners are using a specific rather than a definite article. In their survey of English-language textbooks, Ionin, Ko, & Wexler (2004) note that the relevant data is not sufficiently available as to facilitate acquisition. It seems clear that learners need to be exposed systematically to the article in contexts such as the one given above that clearly distinguish between definite and specific interpretation. Again, the implication for the language classroom is that teachers must provide students with input that covers the full range of contexts in order for the relevant lexical semantics to be learnable.

The Acquisition of Argument Structure

Lexical Relativity and Lexical Transfer are also apparent in research on the L2 acquisition of argument structure, with several implications for instructed language learning. One particular focus in L2 research has been cross-linguistic differences regarding alternations in argument structure. Types of variable argument structure that have been studied include the dative alternation discussed above (examples 15 and 16), the locative alternation (*Mary {sprayed paint onto the car / sprayed the car with paint}*), the benefactive alternation (*Mary {baked a cake for John / baked John a cake}*), the passive alternation (*Mary touched John / John was touched by Mary*), and the causative alternation (*The butter melted / Mary melted the butter*). In each case, some English verbs allow the alternation while others do not, depending at least in part on lexical semantics (for full discussion, see Pinker, 2013 [1989]). Following Lexical Relativity, verbs themselves do not share exact meaning across languages, and moreover, the morphology relevant to the alternations differs cross-linguistically. This means that not only are alternations a problem for all learners, but we expect different sets of issues depending on the L1, even though, if Lardiere (2009) is correct, the necessary evidence for learners is detectable in the input, and therefore ultimately acquirable.

In one pioneering study on the L2 acquisition of causative verbs, Montrul (2000, 2001) examined how the relevant patterns were acquired in three languages, in each case contrasting the performance of learners from the other two languages. In English, many verbs, such as *brea*k or *sink*, may alternate without any additional morphology, while in Spanish, the basic form of the verb is used in transitive contexts and an anticausative morpheme *se* is required for the intransitive variant (example 18). In Turkish, some verbs exhibit a similar pattern to Spanish, with an anticausative morpheme, while other verbs show the opposite pattern to Spanish, with the basic form of the verb in intransitive contexts and a causative morpheme *ır* being required in transitive contexts (example 19).

(18)   a.   *María rompió los vasos.*   (causative)
                Mary broke the glasses
                'Mary broke the glasses.'

         b.   *Los vasos <u>se</u> rompieron.*   (change of state)
                the glasses ANTI-CAUSE *broke*
                'The glasses broke.'

(19)   a.   *Gemi bat-tı.*   (change of state)
                Ship sink-PAST
                'The ship sank.'

         b.   *Asker-ler   gemi-yi   bat-<u>ır</u>-dı.*   (causative)
                Soldier-PL *ship*-ACC *sink*-CAUSE-PAST
                'The soldiers sank the ship.'

In the course of a complex battery of tests, Montrul (2000, 2001) found that the L1 did influence learners' assumptions about L2 grammar. For example, Spanish learners of Turkish and Turkish learners of Spanish were facilitated in the recognition of an anticausative morpheme, while English learners of both languages accepted bare intransitive verbs. Moreover, while recognizing the anticausative morpheme in Spanish, Turkish learners nevertheless incorrectly accepted particular intransitive verbs without morphology if these corresponded to bare verbs in the L1. In responses to Turkish stimuli testing causative morphology, both Spanish and English participants often omitted the causative morpheme with

transitive verbs, and Spanish speakers had lower accuracy with bare intransitive forms. In the English study, more than 50% of Spanish learners of English rejected the target-like form of the intransitive verb *break*, preferring a form with extra morphology, e.g., *got broken*. Although Montrul (2000) has a more nuanced interpretation of her findings, her results can certainly lend support to the idea that the lexical semantics of predicates in the L1 affects L2 acquisition, and that learners from different L1 backgrounds will have distinct patterns of L2 development. Language teachers can therefore expect the same materials to pose different levels of challenge depending on the L1 backgrounds of learners and can also expect differences at the level of particular verbs, to the extent that not all verbs necessarily pattern the same way in acquisition.

Another common argument structure error familiar to teachers of English involves overpassivization. This term refers to the phenomenon of using passive morphology in cases where a bare intransitive verb would be expected. Research into overpassivization was pioneered by Zobl (1989), who provides L2 writing samples like the following.

(20) a. *The most memorable experience of my life was happened fifteen years ago*. (L1 Arabic)
    b. *My mother was died when I was just a baby*. (L1 Thai)

One productive avenue of L2 research has confirmed that such forms are far from random, as overpassivization occurs with a particular subclass of intransitive verbs. Intransitives may be divided into unergative verbs, whose subject is an Agent generated in subject position, and unaccusative verbs, those whose subject is a Theme, generated in object position before raising to subject position to receive case (Burzio, 1986; Levin & Rappaport, 1995; Perlmutter, 1978). The unaccusative analysis is more intuitive with verbs that have a transitive counterpart (e.g., *John rolled the ball* / *The ball rolled*; *Mary opened the door* / *The door opened*), but there is also evidence for underlying object status for the Theme in nonalternating unaccusatives, such as *arrive, fall, and die.* For example, expletive *there* may fill the subject position, or the verb may form a dynamic nominal modifier, as shown below.

(21) a. *There arrived three men* (unaccusative) / **There laughed three men* (unergative)
    b. *the fallen soldiers* (unaccusative) / **the hesitated leader* (unergative)

Tests for **unaccusativity** vary from language to language. For example, in French only unaccusative verbs take the 'be' rather than the 'have' auxiliary in the perfect tense (*Il est arrivé* – he is arrived – "He arrived; *Il a toussé* – he has coughed – "He coughed"). In Turkish, only unergative verbs license the impersonal passive construction (*Burada çalış-ıl-ır-* here work-PASS-PRES – "Here people work"; **Burada öl-ün-ür -* here die-PASS-PRES – "Here people die"). In Japanese, the quantifier *takusan* 'a lot' only modifies objects, so the interpretation differs for unaccusatives (with underlying objects) and unergatives (*Takusan tui-ta -* a lot arrive-PAST - "A lot of people arrived"; *Takusan ason-da -* a lot play-PAST - "Somebody played a lot"). However, despite variation in how the difference is manifested, all languages seem to distinguish the two classes.

There is a consensus in L2 research that learners of English overgeneralize from the passive (in which objects also raise to subject position) in assuming that this subclass of intransitive verbs also needs a morphological reflex (in the form of auxiliary *be*) to license the raising of the Theme to subject position. Interestingly, L2 learners of English demonstrate this kind of abstract analysis of the input irrespective of the L1, clearly revealing a deep knowledge of unaccusativity (Balcom, 1997; Hirakawa, 2001;

Oshita, 2002; Zobl, 1989). However, there are arguably still transfer effects in the case of those verbs that alternate with a transitive variant, depending on how such alternations are morphologically realized in the L1. Kondo (2005) showed that while both Japanese and Spanish learners of English patterned together in overpassivizing unaccusatives in general, they differed in the case of alternating verbs. The Spanish participants only made significant overpassivization errors with unaccusatives that had transitive counterparts (precisely those that would require anticausative morphology in Spanish, as shown earlier in example 18). These findings illuminate not only a universal distinction based on knowledge of unaccusativity, but also argument structure transfer from Spanish.

Lexical Semantics in the Language Classroom

Collectively, the findings on acquisition of the lexical semantics of verbs corroborate research in the domain of functional items such as articles and plural morphology in revealing that learner language is often sophisticated in terms of its lexical architecture. It exhibits both universal aspects of the human language faculty as well as evidence of cross-linguistic influence. Some of the more important implications for language instruction may be summarized as follows.

- The twin observations of (i) Lexical Relativity (which holds that word meaning is relative to particular language systems) and (ii) Lexical Transfer (which argues that L1 lexical semantics constitutes the initial state for the learning of the L2 lexicon) together imply that acquisition of L2 lexical semantics requires multiple exposure to words across a range of semantic and syntactic contexts. Note that this is in tandem with findings in pedagogical research on first language acquisition of vocabulary, which holds that effective teaching must involve multiple exposures in different contexts (Stahl, 2005) and that contextual support greatly enhances acquisition (Nash & Snowling, 2006), with learners ideally engaged in structured read-alouds, discussion sessions, and independent reading experiences (Cunningham, 2005).
- Traditional vocabulary lists are noticing tools, rather than keys to acquisition.
- Successful vocabulary teaching must incorporate systematic recycling of new words with contextual cues.
- In order to provide students with exposure to lexical items across their full range of distribution, teaching, textbook writing, and curriculum development require linguistic awareness of how open- and closed-class items work in the target language.
- Teachers can expect (and can predict) student variation in this domain based on the L1 background of students, as the L1 determines learners' initial assumptions regarding both the syntax and semantics of lexical items.
- Given that acquisition relies on contextual cues, as learners process language input in a range of contexts for communicative purposes, much of lexical learning is bound to be implicit rather than explicit. However, this does not preclude explicit direction of attention to meaning in context.
- Despite the magnitude of the learning task, any contrast in semantic features is acquirable as long as it is detectable in the language to which learners are exposed, so there are no limits on second language learning in this domain.

DISCUSSION QUESTIONS

1. Even though words in two different languages can have the same reference, they almost always differ in the senses that they can have, so that in a different context, reference is no longer shared. For example, the Japanese word *doa* is the translation of English *door*, but only for a Western-style door with hinges and a handle. Other senses have other translations, such as *shoji* for traditional paper sliding doors, or *fusuma* for wooden panel doors. Can you think of other examples in languages that you know of words that do not share senses with their most typical English translation?

2. In classroom contexts, we often assume that learners "know a word" such as *put* if they can match it with a word in another language (as in a vocabulary list), or if they can use it correctly in a particular sentence. Yet the Shorter Oxford English Dictionary (1993) uses over three-and-a half thousand words to define the verb *put*. What does it mean to know a verb? What does it mean to know a noun?

3. Consider the locative verbs *put*, *fill*, *spray*, and *splash*. In syntax, do they all need a direct and an indirect object? What variations are there? In semantics, do they specify particular kinds of direct or indirect objects? How can we state these selectional properties in lexical entries?

4. Textbooks often explain the English passive (e.g., *The garden was painted by Monet*) as a construction derived from an underlying active sentence (e.g., *Monet painted the garden*), following several distinct grammatical operations. Which of these is relevant to overpassivization errors in L2 English? Why might some learners use passive morphology with some intransitive verbs?

5. If you were designing a series of L2 English textbooks, how would you propose to incorporate new vocabulary, whether open-class items, such as verbs and nouns, or closed-class items, such as articles and quantifiers?

EXERCISES

1. In the following sentences, decide which noun phrases might be used by the speaker as referring expressions.
   a. James bought a new bike.
   b. Emily might buy a cake.
   c. My daughter pointed at the dragon.
   d. Who opened the door to find nobody there?

2. Choose two nouns, one animate, one an artifact, and create tree diagrams to illustrate hyponymy. Do you find any differences between the two diagrams?

3. Assign thematic roles to the noun phrases in these sentences. Are there any that could have two different roles?
   a. *Bill* kissed *Jennifer*.
   b. *Maggie* threw the *frisbee* to *Ian.*
   c. *Elliot* baked *Jane a cake*.
   d. *The key* opened the *door*.
   e. *The sun* crosses *the sky* from *east* to *west*.

4. Using the diagnostics mentioned in the chapter, decide which of these intransitive verbs are unergative (with an underlying subject), and which are unaccusative (with an underlying object): *agree, burn, cough, depart, fall, live, sit, smile, think, yawn* What kind of overpassivization errors might we expect in L2 English with some of these verbs?
5. In which of the following contexts could we predict overuse of the definite article in L2 English, and why?

  a. Mark wants to buy a book on Saturday. (He already knows which one)
                     (He doesn't know which book yet)
  b. Karen did not want to talk to a reporter. (She wanted to avoid one reporter in particular)
                      (She didn't want to talk to any reporter)

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