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The Gloss Trap

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1. Introduction

Comparative syntactic studies of the world's languages are greatly facilitated by the use of glosses, which allow for a closer analysis than is possible through conventional translation. However, the creation of glosses can be misleading if the elements given as lexical analogues differ from language to language, to the extent that the meanings of words determine possible syntactic environments. In fact, it is extremely difficult to find true matches in the open-class lexicons of any two languages, and this is certainly the case for closed-class items, whose syntactic properties are inevitably language-particular (Emonds, 1985: 165-170, 2000: 115). Such differences in lexicalization across languages appear to so ubiquitous as to be indicative of a fundamental organizing principle in the mental lexicon. I draw on observations by Saussure (1983 [1916]) to argue for a principle of lexical relativity, according to which lexical concepts are determined relative to other items in the lexicon, with the result that no two languages lexicalize concepts in the same way. This does not necessarily lead to a radical Whorfian approach, as the semantic machinery used to build lexical items contains elements of meaning that are plausibly universal, and mental construals of the world are not only constructed through language; however, it does support an approach in which the particular language we speak determines linguistically mediated construals of events, states and objects, in line with Slobin's (1996) proposal of Thinking for Speaking. For present purposes, discussion is restricted to encoded aspects of lexical meaning, rather than aspects of meaning that may change according to context, on the assumption that encoding and inference are independent systems of interpretation (Sperber and Wilson, 1995 [1986]). For example, the English verb *spray*, regardless of context, encodes the interpretation of the moving object in the event as a 3-dimensional aggregate of psychologically dimensionless points; *smear* requires that the moving object be a 3-dimensional semisolid substance; and the verb *wrap* specifies that the moving object be a 2-dimensional flexible solid (see Pinker, 1989: Ch.5 for discussion). Such semantic specifications not only hold across normal contexts, but are robust even in counter-intuitive scenarios. One doesn't usually spray deck chairs onto a public lawn, but if one spoke of a machine that did just that, the spraying would still involve a 3-dimensional aggregate of psychologically dimensionless points. Meaning in context is a necessary part of interpretation, but the current focus of investigation is inherent lexical semantics.

Although most linguists recognize that glosses are an imperfect tool, cases continually surface in which syntactic generalizations are made on the basis of assumed equivalence in a given context between lexical analogues whose properties differ in significant ways. Syntactic comparison in such cases often relies on a notion of lexical equivalence at the level of the gloss: a morpheme glossed as 'walk' is assumed to correspond in relevant respects to the English verb *walk*; a morpheme glossed as 'into' is assumed to correspond in relevant respects to the English preposition *into*. If one language allows a phrase such as *walk into the house*, whilst another language prohibits the supposedly equivalent combination, this may be held to be a syntactic difference

between the two languages. In this chapter, I consider a flaw in this type of analysis, which surfaces with some regularity in studies of comparative syntax and second language acquisition, and point to a solution in terms of fine-grained lexical semantic decomposition. I examine two instances of the gloss trap in the domain of motion events, and argue that proposed language-particular lexicalization patterns unravel on closer inspection of the syntax and semantics of the predicates involved. In each case, the differences are shown to lie in lexical items, not in whole languages. In Section 2, I briefly review some of the evidence that lexical items do not reflect a universal set of concepts, but rather package concepts in different ways in different languages. Sections 3 and 4 consider the two aforementioned generalizations from the perspective of lexical relativity and second language acquisition: (i) that verbs expressing Manner (of motion) in so-called 'verb-framed' languages cannot take directional complements (Hohenstein, Naigles and Eisenberg, 2004; Inagaki, 2001, 2002; Jackendoff, 1990); and (ii) that English verb classes underlying syntactic alternations (locative, dative, causative, etc.) exist as classes with 'equivalent' verbs in other languages, thus creating problems for L2 acquisition when the syntactic settings of such classes fail to coincide (Bley-Vroman and Joo, 2001; Juffs, 1996; Schwartz, Dekydspotter and Sprouse, 2003). The implications of lexical relativity for second language acquisition are drawn out in Section 5. Comparative syntactic analysis of predicates is argued to be feasible through their decomposition into grammatically relevant semantic components. In the light of the lexicalist approach to such issues, it is suggested that the gloss trap may be avoided in studying the L2 acquisition of argument structure by means of *a priori* contrastive analyses at the level of lexical semantics. Viewing acquisition of the L2 lexicon as, in part, a reanalysis of the lexical semantics of the L1 lexicon (Sprouse, 2006) makes it possible to predict exactly where many problems for learners are likely to lie.

2. Lexical relativity and the gloss trap

2.1 The reality of lexical relativity

Despite the fact that lexical non-equivalence across languages is intuitively apparent to most translators, language teachers and linguists (see the collected papers in Van Patten, Williams and Rott, 2004), the opposite idea has also been posited in the literature: that open-class lexical items in the world's languages are drawn from a universal lexicon that labels a universal and innate set of concepts. For example, Chomsky (1995: 131) writes: 'If substantive elements (verbs, nouns, etc.) are drawn from a universal vocabulary, then only functional elements will be parameterized'. The idea that the only important differences between languages are encoded in the functional lexicon has also been pursued in the work of Fukui (1993, 1995). The more general notion of the open-class lexicon as a repository of universal concepts is in line with the 'semantic atomism' proposed by Fodor (1998), who claims that we should never find that a lexical item in one language is broken down into constituent meaning parts in another language.

The myth of lexical equivalence soon dissipates on consideration of research that has specifically focused on comparing any two lexicons in detail. When Apreszjan and Pàll (1982) compiled their Russian-Hungarian dictionary, they opted to eliminate the

problem of giving inevitably false equivalents by doing away with definitions altogether, relying instead on descriptions with examples of typically co-occurring elements, and translations of the example sentences. Even in the absence of definitions, the entries are very long (the Russian verb *brat* 'take' takes ten pages), and, according to Mel'čuk (1985), remain incomplete. When Adjemian (1983) compared lexical acquisition by English learners of French and French learners of English, he found that the syntax associated with L1 verbs was subject to transfer, so that native French speakers incorrectly made English verbs reflexive when the French analogues had this property (e.g. *se retirer* – REFL retire – 'retire'), and English learners of French used strictly intransitive verbs in causative contexts (e.g. **marcher les chats* 'walk the cats'). One of the most striking examples of this kind of comparative analysis is Wierzbicka's (1985) attempt to provide complete semantic descriptions of common English words, reminiscent in its boldness and optimism of a grand medieval quest, ultimately quixotic. The point to note here is that none of these words could be exactly matched by Wierzbicka to their analogues in Polish: something is lost even when translating such commonplace objects as *cup* or *shirt*.

More recent work on the L2 acquisition of argument structure serves to strengthen the idea that lexical relativity is fundamental to our understanding of both the initial state of learners and their subsequent paths of development. In the case of locatives, Kim (1999) shows that Korean analogues of ground-oriented English locatives often alternate, unlike in English (*fill the glass with water* / **fill the water into the glass*). Schwartz, Dekydtspotter and Sprouse's (2003) reanalysis of results obtained by Joo (2000) shows that this difference in meaning and syntax transfers: Korean learners of English assume lexical equivalence and wrongly allow the alternation. If the findings of Dekydtspotter, Schwartz, Sprouse and Bullock (2005) are generalizable, these learners eventually come to have native-like judgements, despite an absence of evidence in the input to force them to a more restrictive grammar. This parallels the problem in the first language acquisition of such alternation patterns, as children also overgeneralize and then retreat to a more restrictive grammar in the absence of negative evidence (Pinker, 1989). This learnability conundrum remains without a convincing explanation, and highlights the need for more fine-grained theories of both first and second language acquisition of the lexicon.

In sum, the idea of a universal open-class vocabulary is wholly undermined by the abundant evidence for lexical relativity, which appears to be fundamental for our understanding of the nature and development of the mental lexicon.

2.2. The scope of lexical relativity

The degree to which lexical relativity characterizes human languages remains an open question. One might ask if, rather than lexical mismatches simply being commonplace, they systematically fall out of the design template of natural languages. I adopt the position that lexical 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. This point was made eloquently and influentially by Saussure (1983 [1916]: 112-120), who argued that the 'sense' of a word can be thought of as a linguistic 'value'. Just as the value of a coin can be determined by its relation to something dissimilar that can be exchanged for the coin (e.g. bread), and by its relation to

something similar that can be compared with it (e.g. other coins in the same currency, or a coin in a different currency), a word can be substituted for something dissimilar (i.e. an idea) and can be compared with something similar (i.e. other words). To follow through with this metaphor, the semantic value of a word is determined not only by its relationship with an associated concept, but by its relationship to other words in the same linguistic system. Saussure illustrates this point with several well-known examples. The French word *mouton* corresponds both to English *sheep* and *mutton*, i.e. it refers both to the animal and the meat. In this comparative light, the scope of the meaning of English *sheep* can be seen to be partly determined by the existence of the term *mutton* (ibid. 114). Saussure argued that this is also true in respect of closed-class morphology. In Sanskrit, the equivalents of the French *mes yeux*, *mes oreilles*, *mes bras*, *mes jambes* ('my eyes, my ears, my arms, my legs') are not plural, but dual. Thus the semantic value of the French plural morpheme does not correspond exactly to that of the Sanskrit plural: the meaning of the latter is determined relative to the existence of the dual.

One important part of Saussure's (1983 [1916]) account of lexical relativity that must be re-evaluated is his insistence on relative differences in a single lexicon as the only source of meaning: for him, words may be defined *only* in contrast with one another: '…although in general a difference presupposes positive terms between which the difference holds, in a language there are only differences, *and no positive terms*' (p.118, italics in the original). Only when the semantic and phonological values are arbitrarily linked does the 'sign' as a whole take on a positive aspect (p.118-9). However, as Bloom (2000: 73) notes, opposition in and of itself is insufficient to characterize lexical meaning. Whilst words in a given relational set may be characterized with reference to one another, the opposition between totally unrelated lexical items does not contribute to our understanding of the meaning or syntactic behavior of either item. To take a further example from Saussure (1983 [1916]), French verbs such as *redouter* 'to dread', *craindre* 'to fear', and *avoir peur* 'to be afraid' have particular meaning only in contrast with other members of the set; if one of these lexical items did not exist, its nuances would be shared out among the other members (ibid.114). Nevertheless, these words are not defined in contrast with all the other words in the lexicon. If the contrasts in question are all between closely related items, we need to be able to say how the items are related as well as what distinguishes them, and it is unclear how such groupings could be made without reference to positive aspects of meaning. Stringer (2005: 90) defines lexical relativity as follows:

(1) *The Lexical Relativity Hypothesis*: When comparing lexical analogues in different languages, the meaning of any lexical item [LI] is relative to its ambient lexicon.

An articulate theory of what constitutes the 'ambient lexicon' (the other lexical entries to which the meaning of the item is relative) is beyond the scope of the current chapter; suffice it to say that it is conceptually necessary.

The relative nature of lexical meaning with a single language carries with it a fundamental implication for the debate on linguistic relativity: the lexicalization of concepts necessarily differs between languages. This effects not only the referential properties of vocabulary items, but any aspects of syntax that are lexically determined. For example, as verb meanings are representations of events, specifying roles and

properties of participants, the particular verb we use determines how we conceptualize the event as we speak (to others or ourselves). This does not rule out alternative, nonlinguistic means of event construal, but it does imply that 'thinking for speaking' is true at least in respect of the syntax of argument structure, on the assumption that this is lexically derived (Jackendoff, 1990, Levin, 1993, Pinker, 1989, 2007). Even very subtle differences in conceptualization can effect syntax, and conversely, subtle differences in syntax can reveal conceptual disparity. As Levin and Rappaport Hovav (2005: 19) argue, 'When alternate construals are possible and involve different grammatically relevant aspects of meaning, the result can be pairs of near synonyms within or across languages showing different argument realization options'. Lexical relativity therefore has important implications for syntactic variation.

2.3. The forms of lexical relativity

Recasting lexical relativity in positive terms, two kinds of conceptual variation may be considered: firstly, those inherent conceptual elements that play no role in syntax; and secondly, those semantic elements that do have syntactic effects, whether they be inherent to predicates or contextually required in their arguments.

The first type of variation is a typical rather than exceptional characteristic of open-class lexicons. Conceptual elements that play no role in syntax may be readily observed on close examination of most pairs of corresponding open-class lexical items, even when it seems most counterintuitive from a monolingual perspective. Surely modern inventions must be labeled with equivalent vocabulary, one might suppose. Yet the English noun *television* has no exact equivalent in German: *der Fernseher* refers to the machine, while *das Fernsehen* refers to the medium.[1] Other common nouns splinter in similar fashion in translation: English *rice* corresponds to both Japanese *kome* (uncooked rice) and *gohan* (cooked rice); English *sink* corresponds to both French *évier* (for washing dishes) and *lavabo* (for washing hands); French *noix*, which generally corresponds to English *nut*, is also the specific French term for *walnut*, rendering ambiguous a term such as *huile de noix* 'nut/walnut oil'. Such mismatches are not restricted to the nominal domain, but are found with activities and states that one might expect to be expressed with the same types of verbs. A universal human activity such as drinking seems likely to be expressed with universal semantics. However, the English verb *drink* is used only of liquids. In Turkish, one may 'drink' smoke as well as liquids; in Japanese, one may 'drink' medicinal pills or powders with or without water, as long as they are orally ingested; in Kazak, the verb 'drink' is used for both liquids and solids, in contexts where English would require the verb *eat*. Such examples may oversimplify the mapping from one lexical item into another language, which is rarely a case of one-to-two correspondence: the relations are often much more complicated. Sometimes there is a lexical gap, such that no word may be analogous, and the concept must be expressed periphrastically. Thus while Japanese has two verbs meaning 'go under', *moguru* meaning 'go under and stay there' and *kuguru* meaning 'go under and out the other side', English has no single verb meaning 'go-under'. In other cases, rather than there being a lexical gap, there are a number of different verbs corresponding (often inexactly) to various senses of a single term. For example, the English verb *put* has multiple

[1] Thanks to Rex Sprouse for this observation.

translations in Korean, each incorporating other aspects of meaning, none having lexical equivalents in English:

(2) a. *pwuchita* ≈ 'juxtapose surfaces' (e.g. put a magnet on a refrigerator)
b. *nohta* ≈ 'put on a horizontal surface' (e.g. put a cup onto a table)
c. *ssuta* ≈ 'put clothing on head' (e.g. put a hat on)
d. *kkita* ≈ 'fit tightly' (e.g. put a ring on a finger, or a videocassette in a case)
e. *nehta* ≈ 'put loosely around' (e.g. put an apple in a bowl, or a book in a bag)
(adapted from Bowerman and Choi, 2001)

Thus it is nonsensical to ask how the verb *put* differs in English and Korean in terms of its semantic features or its argument structure, or if the stages of acquisition of *put* are similar for English and Korean children, or if the syntax of *put* transfers from Korean to English in second language acquisition. All such questions have a hidden presupposition: that there is a verb 'put' in both languages (and presumably in all languages). To gloss one of the above Korean verbs as *put*, which may be reasonable in the context of a particular analysis, leaves one in danger of falling into the gloss trap if syntactic generalizations are based on such a correspondence.

Such examples can easily be multiplied, and in each case, the folk reaction is one of surprise. English-speaking learners of Japanese are inevitably bewildered as they realize that the body parts *foot* and *leg* are expressed with the same term in Japanese (*ashi*). Yet despite having relative complexity in some lexical entries, and relative simplicity in others, speakers of all languages seem to have enough lexical resources to communicate perfectly well. As such, tradeoffs in complexity in the lexicon parallel those in syntax and phonology.

The second type of lexical mismatch involves what I have elsewhere called 'computational semantic features' (Stringer, 2005: 101): those elements of lexical meaning that play a role in syntax, which are either inherent to predicates or selected by predicates and inherent to their arguments. Such semantic components play an important role in most lexicalist theories, and are variously referred to as 'interpretable syntactic features' (Emonds, 2000); 'ontological categories' or 'conceptual functions' (Jackendoff, 1990); 'meaning components' (Levin, 1993); or the 'grammatically-relevant semantic subsystem' (Pinker, 1989). Copious evidence for the existence of inherent semantic features with grammatical import is given by Levin (1993), drawing on resource materials from the MIT Lexicon Project in the 1980s. Levin (1993) shows how variation in syntactic argument structure can be used to discover which meaning elements in predicates might have syntactic effects. For example, the verbs (a) *cut*, (b) *crack*, (c) *stroke*, and (d) *whack* may seem conceptually similar at first glance, but detailed analysis reveals that *crack* and *stroke* may not be used in the 'conative' construction (e.g. *Harry cut at the pastry*), *crack* may not be used in the 'body-part ascension' construction (e.g. *Sally cut Harry on the arm*), and *stroke* and *whack* may not be used in the 'middle' construction (e.g. *This surface cuts easily*), while *cut* is grammatical in all three environments (Levin, 1993: 6-7). The semantic elements that appear relevant to this distribution appear to be conflated as follows.

(3) a. *cut*: [CAUSE, CHANGE OF STATE, CONTACT, MOTION]
b. *crack*: [CAUSE, CHANGE OF STATE]
c. *stroke*: [CONTACT]
d. *whack*: [CONTACT, MOTION]

If this analysis is correct, then predictions can be made as to the syntax of verbs that share the same semantic features. Such predictions are borne out with the syntactic distribution of (a) *cut*–type verbs (*scratch*, *hack, slash* etc.); (b) *crack*–type verbs (*rip*, *break*, *snap* etc.); (c) *stroke*–type verbs (*tickle*, *pat*, *touch* etc.); and (d) *whack*-type verbs (*kick*, *hit*, *tap* etc.), leading to the conclusion that lexical semantic features do play a determining role in the syntax of argument structure.

Such meaning components may well be universal in languages, or at least universally available to language learners. However, they are packaged differently in different languages, resulting in lexical mismatches. Thus the English verb *drown* encodes CHANGE: there is a change of state such that death must certainly ensue. In contrast, the Japanese verb *oboreru* can be used in contexts in which a person may 'drown' for five minutes and then be rescued; a change of state may be inferred in certain contexts, but it is not encoded in the verb. Similarly, the English preposition *on* encodes CONTACT, while the Japanese analogous expression *no ue de* – GEN top LocP – 'on' may be used whether there is contact or not. The Japanese sentence below is always semantically ambiguous in respect of the bird's contact with the tree.

(4) Tori wa eda no ue de utatteiru.
bird TOP branch GEN top at sing-PROG
'A bird is singing {on / above} the branch.'

Correspondingly, the element CAUSE may be lexically encoded in an English verb such as *roll* or *break*, but requires extra morphology for its expression in Turkish (Montrul, 2001: 4,5).

(5) a. Gemi bat -mış.
ship sink-past
'The ship sank.'
b. Dü_man gemi-yi bat -*ir* -mış.
enemy ship-acc. sink-CAUSE-past
'The enemy sank the ship/made the ship sink.'

Such mismatches between lexical analogues across languages are found not only for the lexical semantic elements CHANGE, CONTACT and CAUSE, but for every grammatically relevant semantic component in the language faculty. As seen in the work of Levin (1993), such differences in lexicalization invariably cause domino effects in syntax, which leads us to predict that lexical transfer in second language acquistion leads to non-targetlike patterns of interlanguage syntax.

3. Manner verbs and directional complements

3.1 Talmy's typology revisited

One crosslinguistic generalization that has been made partly on the basis of loose glosses is the widely-accepted assumption that verbs expressing manner of motion in certain languages cannot take directional complements. The constraint in question is drawn from Talmy's (1985, 1991) observation that 'verb-framed' languages, such as those in the Romance, Altaic, Semitic and Polynesian families, usually express 'paths' (or 'trajectories') in verbs, whilst 'satellite-framed' languages, such as those in the Indo-European family, do so in adpositions, affixes or particles, as exemplified below in the verb-framed French example and its satellite-framed English translation.

(5) Le petit cochon est entré dans la maison en courant. (PATH in verb)
the little pig AUX entered in the house by running
'The little pig ran into the house.' (PATH in adposition)

It should be noted at the outset that Talmy (1985, 1991) does not posit this dichotomy in the world's languages as a formal constraint. Rather, a verb-framed language is so by virtue of the above means of expression being a 'characteristic lexicalization type', in other words: '(i) it is *colloquial* in style, rather than literary, stilted, etc.; (ii) it is *frequent* in occurrence in speech, rather than only occasional; (iii) it is *pervasive*, rather than limited, that is, a wide range of semantic notions are associated with this type' (Talmy, 1985: 62; italics in the original). Nevertheless, a number of researchers have advanced the idea that Talmy's typology concerns more than characteristic expression, and might be stated in terms of either a formal principle or constraint operative at the whole-language level, e.g. Levin and Rapoport's (1988) principle of 'lexical subordination'; Jackendoff's (1990) GO-adjunct rule; Snyder's (1995) positing of a null telic morpheme in this type of English structure, linked to a more general 'compounding parameter'; and Inagaki's (2001, 2002) hypothesis of parameterized PATH conflation. Such accounts take as significant the observation that if, when translating into a verb-framed language, we substitute lexical analogues for a given English MANNER verb and a given English directional preposition and then combine them, the result may be ungrammatical. However, I maintain that once the lexical semantics of both verbs and adpositions are taken into consideration, this kind of argumentation can be seen to unravel.

3.2 English prepositions and the gloss trap

The problem can be illustrated by taking a look at some contrasts between two adpositions, French *à* and Japanese *ni*, and their common English glosses. The French preposition *à* as found in motion events is usually glossed as either 'at' or 'to', depending on whether the interpretation is locational or directional, as shown below. I follow Emonds (2000) in assigning to this adposition the general spatial feature LOCATION, which subsumes interpretations of PLACE and PATH.

(6) Gilda était à la gare. PLACE
Gilda was at the station
'Gilda was at the station.'

(7) Gilda est allé à la gare. PATH
Gilda AUX gone to the station
'Gilda went to the station.'

However, whilst glossing *à* as 'at' or 'to' in such a context may be appropriate for a particular level of analysis, it would be inaccurate to assume that it is equivalent to either English preposition. Such assumptions may lead to the following type of misanalysis.

The wrong rationale:

Step 1: In English, one can say:
(8) Gilda waded to the sandbank.

Step 2: In French one cannot say:
(9) *Gilda a pataugé au banc de sable.
Gilda AUX waded to-the bank of sand
'Gilda waded to the sandbank.'

Step 3: In French one must express this with a PATH verb:
(10) Gilda est allé au banc de sable en pataugeant.
Gilda AUX went to the bank of sand by wading
'Gilda waded to the sandbank.'

Step 4: Therefore French and English syntax differ in this respect.

The reason this analysis falters is the gloss in Step 2, which holds *à* and *to* as 'equivalent' (i.e. having the same lexical properties and syntactic effects). Whilst English *at* is strictly and inherently locational,[2] and English *to* is strictly and inherently directional, French *à* is a more general spatial preposition which is locational by default, and directional only in the appropriate syntactic environment, i.e. when it is the complement of a directional verb. French *patauger* 'wade' is not such a verb.[3] If the example in Step 2 contained a *bona fide* directional preposition such as *vers* 'towards', the 'English' pattern would be perfectly possible:[4]

[2] Other than in the 'conative' and 'directive force' senses, e.g. *He cut at the rope* / *They ran at the enemy*. Note the impossibility of a simple directional sense in e.g. **She walked at her friend* / **We drove at our destination*.

[3] Indeed, *patauger* also fails to map exactly onto the meaning of its English 'equivalent', *wade*. While an appropriate translation in examples such as (9-11), in its intransitive use *patauger* may have a playful, non-directional sense, more aptly translated by 'splash about'.

[4] That the relevant feature is PATH rather than boundedness (*contra* Aske, 1989; Stringer, 2002) is discussed below.

(11) Gilda a pataugé vers le banc de sable.
Gilda AUX waded towards the bank of sand
'Gilda waded towards the sandbank.'

From this perspective, the difference between French and English in the above examples appears to be lexically determined rather than the product of a language-wide parameter setting.

Similar argumentation holds for glosses of Japanese *ni*, which is likewise ambiguous between locational and directional interpretations:

(12) Hiro wa gakko ni imashita. PLACE
Hiro TOP school at was
'Hiro was at school.'

(13) Hiro wa gakko ni itta. PATH
Hiro TOP school to went
'Hiro went to school.'

English glosses of *ni* exhibit even more variation than French *à*, due to a relatively impoverished inventory of directional adpositions in Japanese. Both French *à* and Japanese *ni* indicate location conceptualized as a 0-dimensional point in space, or arrival at that point. However, if a French speaker conceptualizes the location not as a point but as a 3-D interior space, or as a 2-D surface, the prepositions *dans* 'in' and *sur* 'on' are respectively more appropriate.

(14) Gilda était {dans la mer / sur le toit}. PLACE
Gilda was {in the sea / on the roof}
'Gilda was {in the sea / on the roof}.'

(15) Gilda {a sauté dans la mer / a grimpé sur le toit}. PATH
Gilda {AUX jumped in(to) the sea / AUX climbed on(to) the roof}
'Gilda {jumped into the sea / climbed onto the roof}.'

Japanese *ni* serves as an all-purpose locative postposition in such cases, as shown below.

(16) Hiro wa {umi ni / yane ni} imashita. PLACE
Hiro TOP {sea in / roof on} was
'Hiro was {in the room / on the roof}.

(17) Hiro wa {umi ni jampu shita / yane ni nobotta}. PATH
Hiro TOP {sea in(to) jump did / roof on(to) climbed}
'Hiro {jumped into the sea / climbed onto the roof}.'

The assumption that the multiple glosses of *ni* have a theoretical status could lead not only to the PATH / PLACE confusion we saw above with French *à*, but also to further misanalysis if geometric properties are taken into account, as follows:

The wrong rationale:

Step 1: In English, one can say:
(18) Mika danced into the room.

Step 2: In Japanese one cannot say:

(19) *Mika wa heya ni odotta.
Mika-TOP room in(to) danced
'Mika danced into the room.'

Step 3: In Japanese one must express this with a PATH verb:

(20) Mika wa heya ni odotte haitta.
Mika-TOP room into dancing entered
'Mika danced into the room.'

Step 4: Therefore Japanese and English syntax differ in this respect.

Again, the reason this analysis falters is the gloss in Step 2, which holds *ni* and *into* as equivalent. In parallel to the French examples above, *ni* is unlike English *into* in that it is not inherently directional. The directional reading is only possible when *ni* is the complement of a directional verb. Japanese *odoru* 'dance' is not such a verb. Moreover, as shown above, whilst sometimes found in the same surface environment, Japanese *ni* is unlike English *in* and French *dans* in that it has no geometric specifications in any case (thus French *sauter dans* –'jump in' is not equivalent to Japanese *ni jampu suru* – 'LOCATIVE jump-do'). Again, the differences prove to be due to lexical aspects of the adposition: English *into* specifies a 3D interior and is unambiguously directional, while Japanese *ni* neither specifies a 3D interior nor is unambiguously directional. It is a general locative adposition, which can only support a directional interpretation if merged with an appropriate verb.

The above examples show that sublexical features with grammatical import, such as LOCATION, PATH and PLACE, may vary in the representations of lexical analogues, making it difficult to assume that *at*, *to* or *into* can serve as adequate English glosses for either French *à* or Japanese *ni* in any linguistic example in which the preposition plays an important role.

Such use of literal translation to facilitate comparative syntactic analysis can be seen in the treatment of Talmy's typology by Hohenstein, Naigles and Eisenberg (2004: 572) with reference to the following English and Spanish examples:

(21) a. The children ran
b. The children ran into the room.

(22) a. Las niñas corrieron.
b. *Las niñas corrieron hacia adentro del cuarto.

Example (22b) is an attempt to literally translate (21b), for the purpose of showing that Spanish grammar does not allow directional phrases such as *into the room* to merge with manner verbs such as *run*. These examples are used to support a claim for language-specific syntax: '…The issue with Spanish is that it lacks the requisite rule, so that Spanish manner verbs cannot always appear with the same directional phrases' (Hohenstein et al., 2004: 572). It is here assumed that English *into* finds its lexical equivalent in the Spanish phrase *hacia adentro de* (towards inside of). However, the assembly of this latter phrase does not take into account the lexical properties of its parts, which I shall briefly examine in turn. *Hacia* 'towards' shares several properties with its English counterpart (it is an unbounded, transitive preposition, and can, in fact be merged with a MANNER verb', e.g.

(23) Las niñas corrieron hacia el cuarto.
the girls ran towards the room
'The girls ran towards the room.'

Adentro 'inside', on the other hand, is an intransitive preposition (or verb particle, or satellite, depending on the analysis), which also may be used with satellite-framed syntax. Thus example (24a) is possible, but (24b) is impossible.

(24) a. Las niñas corrieron adentro.
the girls ran inside
'The girls ran inside.'

b. *Las niñas corrieron adentro el cuarto
the girls ran inside the room
'The girls ran inside the room.'

Presumably, the grammatical preposition *de* is added to *adentro* to make it resemble the locative P *dentro (de)*, which is legitimately transitive, as shown below.

(25) Las niñas estaban dentro del cuarto.
the girls were inside of-the room
'The girls were inside the room.'

Irrespective of theoretical assumptions, it seems clear that the Spanish combination *hacia adentro de*, invented by these authors, cannot be considered a lexical equivalent of English *into*, and thus its impossibility cannot serve as the basis for the claim that Spanish grammar lacks a 'requisite rule'. The fact of the matter is that English *into* has no lexical equivalent in Spanish.

The question remains as to whether manner V may merge with locational P on a directional interpretation in such languages if features *do* match either side of the V-PP merger. In a series of experiments eliciting descriptions of motion events from Japanese and French children and adults, Stringer (2005) documented productive use of such combinations. As long as the Manner V is PATH-incorporating (e.g. 'run', 'swim', 'fly', *dance, *float, *walk), the so-called satellite-framed pattern is possible, as exemplified

below for Japanese and French (the child examples were later judged to be grammatical in the given directional context by five native informants

(26) <soto e hashitta> (Jap, 3 yrs)
outside to ran
'He ran outside.'

(27) <yama no ue kara korogatta> (Jap, 6 yrs)
mountain GEN top from rolled
'He rolled from the top of the mountain.'

(28) <ishi no ue ni jampu shi-yō to shiteru no> (Jap, 5 yrs)
stone GEN top P_{LOC} jump do-INT COMP do.TE.PROG PART
''He's trying to jump onto the rock.'

(29) <il a roulé en bas de la montagne> (Fr, adult)
he AUX rolled P_{LOC} bottom of the mountain
'He rolled down the mountain.'

(30) <il continue à le poursuivre, il court dans la caverne> (Fr, 7yrs)
he continues to him pursue, he runs in the cave
'He keeps chasing him, he runs into the cave.'

(31) <il nage de l'autre côté> (Fr, 7 yrs)
he swims P_{LOC} the other side
'He swims across.'

Previous research on whether Manner V-LocP combinations are allowed in verb-framed languages has invoked boundedness as the determining factor, in an attempt to explain those counterexamples to Talmy's generalization involving unbounded P such as Spanish *hacia* 'towards', and French *autour de* 'around' (Aske, 1989; Stringer, 2002). However, this approach must be re-evaluated in the light of the above examples, which show that such combinations in Japanese and French are not restricted to unbounded (atelic) contexts. Both Japanese and French clearly allow combinations of Manner V and LocP with a bounded (telic) interpretation, if the verb belongs to the subclass of Manner V that incorporates PATH.

Setting aside the issue of what speakers usually do in particular discourse contexts, it is clear that variation between languages in terms of grammatical possibilities in the expression of motion events resides not in a language-specific 'principle' (Levin and Rapoport, 1988) or 'rule' (Jackendoff, 1990) or 'parameter' (Inagaki, 2001, 2002), but in the lexical resources available to the syntax.

4 Verb classes and syntactic alternations

A further area in which potential gloss traps abound is in the study of syntactic alternations. The first in-depth, theoretically sophisticated examination of this domain from the perspective of second language acquisition is arguably found in the pioneering work of Juffs (1996). He develops a modified version of Pinker's semantic structure theory to examine the representation and second language acquisition of locatives, causatives and psych verbs by Chinese learners of English. Whilst Juffs (1996) provides a

very careful analysis of his data, pointing out exceptions and providing insightful glosses, his whole-language approach is undermined by the evidence, and the linguistic examples given have led others into the gloss trap. He proposes the following lexicalization parameter:

(32) a. English-type languages allow the conflation of causation and change of state in roots:
+[ACT(+effect) [GO [STATE]]]
b. Chinese-type languages do not:
-[ACT(+effect) [GO [STATE]]]

Simplifying the semantic representation, this parameter may be expressed as follows:

(33) a. English-type: +[CAUSE [CHANGE]]
b. Chinese-type: -[CAUSE [CHANGE]]

The generalization can be seen in the following examples (Juffs, 1996: 117 [my italics]), all involving a Figure (or moving object) and a Ground (a location with reference to which the object is moved). When the verb *gai*, sometimes glossed as 'cover', is in the bare form, the Figure (the blanket) is selected as the direct object, but not the Ground (the bed).

(34) a. *Zhang San yong tanzi *gai* le chuang.
Zhang San use blanket cover ASP bed
'John covered the bed with a blanket.'
b. Zhang San wang chuang *gai* le tanzi.
Zhang San to bed on cover ASP blanket
*'John covered a blanket onto the bed.'

This verb does therefore not correspond to English cover, which has the opposite pattern: one can *cover a bed with a blanket*, but not *a blanket onto a bed*. However, if the CHANGE morpheme *zhu* is added, it selects the Ground as direct object, but not the Figure (Juffs, 1996: 87 [my italics]).

(35) a. Zhang San yong tanzi ba chuang *gaizhu* le.
Zhang San use blanket OBJ-bed cover-'stop' ASP
'John covered the bed with a blanket.'
b. *Zhang San wang chuang shang ba tanzi *gaizhu* le.
Zhang San to bed on OBJ-blanket cover-'stop' ASP
*'John covered a blanket onto the bed'

Juffs (1996) argues that when overt verbal morphology in Chinese corresponds to the proposed abstract meaning components in English, we see shared syntax. This certainly does appear to be the case, bolstering the idea of universal mappings between lexical semantics and syntax (Gropen, Pinker, Hollander and Goldberg, 1991; Stringer, 2000).

Chinese learners of English may be misled by mismatches of the type exemplified above. Juffs (1996) found that L1 mappings were subject to transfer, generating forms such as **The man covered the cloth onto the table* in an elicited production task. Advanced speakers produced significantly fewer of these forms, indicating that the underlying grammar of such L2 forms is, in fact, learnable. The interpretation of Juffs (1996) is that these interlanguage mappings are the result of transfer of 'lexical parameters' that can be reset during the course of L2 development. However, the numerous exceptions to the generalization suggest that conflation patterns are at the level of lexical items, not the whole language. True alternators include *mô* 'smear/spread', *tu* 'paint/spread', and *sa* 'sprinkle'. Examples with the verb *pen* 'spray' are given below (Juffs, 1996: 84 [my italics]):

(36) a. Nongmin wang guoshu shang *pen* le nongyao
peasant to fruit-tree on spray ASP pesticide
'The peasant sprayed pesticide onto the tree.'
b. Nongmin yong nongyao *pen* le guoshu
peasant use pesticide spray ASP fruit-tree
'The peasant sprayed the fruit-tree with pesticide.'

Such verbs violate the proposed generalization in Chinese, and call into question the language-specific restriction on the [CAUSE [CHANGE]] configuration. This conflation is indeed possible in root morphemes. Juffs (1996: 98) is aware of these exceptions, and admits, '…it is hard to argue conclusively that parametric variation across all members of verb classes exists.' This calls into question the proposal of a formal parameter, and suggests the pattern found with many Chinese verbs is simply a lexicalization tendency. The only way forward on the lexical parameterization approach is to say that such parameters are not categorical settings but statements of tendency, and this appears to be Juff's (1996) solution: '…a parameter is a strong statement of a crosslinguistic bias' (Juffs, 1996: 98). This in turn leads to a cline problem: how strong must the bias be before one can claim a particular setting of the ±[CAUSE [CHANGE]] parameter?

The subtleties of Chinese morphology articulated in Juffs' (1996) examples have on occasion been lost as these examples are cited elsewhere, with the result that generalizations are made on the basis of simplified and inaccurate glosses. A commonplace in the literature on the locative alternation is to ask whether container-oriented verbs such as *fill*, which do not alternate in English (*He filled the glass with water*; **He filled water into the glass*), do so in East Asian languages such as Chinese, Korean and Japanese. For example, Schwartz, Dekydspotter and Sprouse (2003: 251), following Kim (1999), claim that 'there is no cross-linguistic variation for *pour*-class verbs; such verbs are not allowed in Ground frame', and go on to argue that 'English alternating change-of-state verbs like *stuff* and *cram* [the *fill* class] allow both Ground frame and Figure frame, but in Chinese and Thai, they allow only the Figure frame, even though the meaning of these verbs is change-of-state'. In contrast, Hirschbuhler (2004) claims that 'fill-type verbs' do alternate in Chinese. A common assumption here is that an equivalent verb to English *fill* can be identified in Chinese and its syntactic behaviour compared with its English counterpart. However, as shown in Section 2.3 with reference to Korean analogues of English *put*, such mappings are often less than straightforward.

To ask whether or not the verb *fill* alternates in Chinese is to fall into the gloss trap: there is no verb 'fill' in Chinese, as Juffs (1996) recognizes.[5] Consider the following examples, taken from Juffs (1996: 86 [my italics]).

(37) a. Zhang San zai beizi li *dao* le shui
Zhang San at cup in pour ASP water
b. Zhang San ba shui *daojin* le beizi
Zhang San OBJ-water pour-in ASP cup
c. *Zhang San yong shui ba beizi *daojin* le
Zhang San use water OBJ-cup pour-in ASP
d. *Zhang San ba shui *daoman* le beizi
Zhang San OBJ-water pour-full ASP cup
e. Zhang San yong shui ba beizi *daoman* le
Zhang San use water OBJ-cup pour-full ASP

The verb *dao* is approximately analogous to English *pour*. It may host the morpheme *jin*, roughly translatable as *in*,[6] in which case it selects the Figure as direct object, or it may host the morpheme *man*, here glossed as *full*, in which case it takes the Ground as direct object. Although *daoman* may be rendered as English *fill* for the purposes of translation, it can in no way be considered equivalent; it cannot be used of filling events which do not involve pouring (scooping water into a cup form a bowl, filling a bucket with rainwater, etc.) and it derives its CHANGE semantics entirely from the morpheme *man*. Closer examination of other locative verbs uncovers the kind of extreme relativity mismatches discussed in Section 2. For example, that the verb *zhuangshi* 'decorate' does not slect Ground objects in Chinese is unsurprising when we realize that it is not semantically equivalent to 'decorate': it can be glossed as 'put-ornament', something you can do in a room but not to a room.

The implication for L1 transfer in the course of second language acquisition is clear. That Chinese learners of English produce utterances such as **The man covered the cloth onto the table* is not due to transfer of a parameter setting, as maintained by Juffs (1996), but the result of lexical transfer. This conclusion may be applied to non-targetlike forms arising from the kinds of lexical mismatches discussed in the previous section: if predicate-argument structure is represented in the lexicon, rather than stated in the form of language-specific principles, transfer will take place item by-item.

[5] A reviewer suggests that *guan* might be closer to *fill* than *dao*. However, *guan* is also usually translated as *pour*, usually implying more physical effort; more importantly, it patterns exactly like *dao* in (37), being ungrammatical in the (c) and (d) examples. Thus the argument holds for either verb.

[6] This gloss may be controversial, as *jin* can also be used as a main verb or in serial-verb constructions, in which case it is often translated as *enter.* However, I accept Juff's (1996) assertion that it approximate to the English morpheme *in* when used in the relevant locative contexts.

5. Modelling second language acquisition of the lexicon

5.1 Reinterpreting previous investigations of the L2 acquisition of argument structure

In the face of the counterevidence for parameterization of PATH conflation and [CAUSE [CHANGE]] conflation discussed above, the findings of Inagaki (2001, 2002) and Juffs (1996) must be re-evaluated in order to explain the interlanguage patterns found. On Inagaki's (2001) account, the primitive semantic notions PATH and PLACE are realized as distinct nodes in the syntax, and the relevant difference between English and Japanese may be stated in terms of patterns of incorporation (Baker, 1988). More specifically, English incorporates a Place head into a Path head, as in (38), whilst Japanese incorporates a Path head into V, as in (39), thus preventing a MannerV from being generated in the main predicate slot. Examples are given in English for ease of comparison.

(38) [V [PATH [PLACE [NP]]] e.g. [go [into [t [the room]]]]

(39) [V [PATH [PLACE [NP]]] e.g. [enter [t [in [the room]]]]

However, as shown earlier in examples (26-28), Japanese does allow both conflation types, so this cannot be a case of parametric transfer. An alternative account is needed to explain why English learners of Japanese incorrectly allow verbs such as *aruku* 'walk' to merge with a locational PP on a directional interpretation as in the example below.

(40) *Sam wa ie no naka ni aruita.
Sam TOP house GEN inside LocP walked
'Sam walked into the house.'

At least two lexicalist accounts of this are possible. Either (i) learners overgeneralize on the basis of L2 input, as verbs such as *hashiru* 'run', *oyogu* 'swim', *korogaru* 'roll', and *suberu* 'slide' do permit this conflation type (Stringer, 2005), or (ii) there is transfer of the syntax and semantics of the English lexical item *walk* to its analogue in the interlanguage. These hypotheses are not mutually exclusive. On either account, further investigation requires more detailed lexical semantic analysis of particular verbs and adpositions, rather than couching the acquisition problem in terms of general syntactic frames (for further discussion, see Stringer, 2007).

The conclusions of Juffs (1996) may also be straightforwardly restated in lexicalist terms. Juffs (1996: 230) claims that the evidence indicates that (i) '…L1 semantics-syntax correspondences are transferred from the L1 to the L2 grammar' (*i.e. there is Full Lexical Transfer*), (ii) '…lexical parameters can be reset' (*i.e. lexical acquisition is possible*), and (iii) '…semantic structures which require pre-emption are those which learners have most difficulty with' (*i.e. lexical mismatches create problems for acquisition*).

The debate over the locative alternation in interlanguage development conducted in the wake of Juff's (1996) initiatory work may be subject to a similar lexicalist reanalysis. Bley-Vroman and Joo (2001) argue that Korean learners of English allow the verb *pour* to alternate, thus violating a universal mapping principle that MANNER verbs with no CHANGE component select themes as direct objects. They assume that the phonological label /pɔɹ/ has been associated with the meaning of a Korean equivalent *pwutta*, but that the L2 learners behaviour concords with neither English nor Korean, as L2 learners are not bound by this mapping principle of Universal Grammar. However, what *pour* means for these learners is by no means certain. In various contexts where *pour* would be used in English, the verb *chaywuta* 'fill' might be used in Korean, as in the following example.

(41) Juhi-ka mul-ul cep-ey chaywu-ess-ta.
Juhi-NOM water-ACC cup-Loc fill-PAST-DECL
'*Yumi filled water into the glass.'

Given multiple verb-to-verb mappings across languages of the type discussed in Section 2, for each interlanguage verb there may be several possible mappings; moreover one particular mapping may not be chosen in exclusion to others. Furthermore, the representation may not be stable, but subject to alternations in the course of development before a given representation becomes established. This is, after all, what happens in first language acquisition, where English verbs such as *pour* and *fill* may alternate until children are about 8 years old. Pinker (1989) draws on Bowerman (1981, 1982) to provide examples like the following:

(42) Pour, pour, pour. Mommy, I poured you.
[Waving empty container near mother.
Mother: You poured me?]
Yeah, with water. (E: age 2;11)

(43) Can I fill some salt into the bear?
[fill a bear-shaped salt shaker with some salt]. (E: age 5;0)

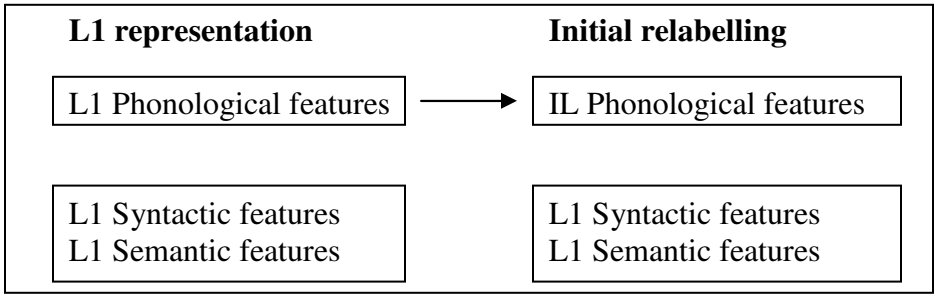
(adapted from Pinker, 1989: 26)

The critique of Bley-Vroman and Joo (2001) by Schwartz, Dekydspotter and Sprouse (2003) is more compatible with the approach set forth here. While Bley-Vroman and Joo (2001) claim that locative verbs in the interlanguage are not finely differentiated and should pattern the same with regard to syntactic alternations, Schwartz, Dekydspotter and Sprouse (2003) predict variation in the behaviour of individual verbs, and 'do not necessarily expect the precise verb classes of English to characterize Korean-English Interlanguage' (ibid. p.259). Their approach is nevertheless coloured by the underlying assumption that verb classes have psychological reality. The position adopted here, in line with Levin and Rappaport Hovav (2005), is that the association of particular meaning components with a particular lexical entry is fundamental; verbs classes are epiphenomena.

5.2 Avoiding the gloss trap: L2 lexical acquisition as Relexification

The lexicalist approach to the L2 acquisition of argument structure is commensurate with the model of acquisition advocated by Sprouse (2006), who suggests that Lefebvre's (1998) model of Relexification, which she uses to explain creole genesis, may be suitable as a model of L2 acquisition more generally. This can be seen as an extension of the influential Full Transfer/Full Access model of Schwartz and Sprouse (1994, 1996). In stating the stronger version of his hypothesis, Sprouse (2006: 170) goes so far as to say that 'Full Transfer can be restated in terms of Relexification, and that Relexification is at the core of the Second Language Instinct, accounting both for the L2 initial state and for the frequent failure of failure-driven (UG-constrained) revision ("learning") to effect convergence on the Target Language.' On this account, transfer of L1 knowledge to the interlanguage does not actually involve transfer from one set of lexical representations to another: L1 lexical representations do not go anywhere. The L1 lexicon is itself the initial state for L2 lexical acquisition; lexical entries initially maintain their syntactic and semantic packaging, and are simply relabelled with perceived L2 phonology, as illustrated below.

(41)



Thus a Korean learner of English will start the process of acquisition of a verb such as *pour* by simply relabelling the perceived L1 analogue given the context in which the input is made available: that is, the syntax and semantics of *pwutta* or *chaywuta* (as discussed in Section 5.1) will remain initially, and only be subsequently revised if there is sufficient and appropriate input made available for failure-driven reanalysis. Similarly, a Korean learner of English will first associate the L2 label *put* with one or more of a range of L1 verbs including *pwuchita*, *nohta*, *ssuta*, *kkita*, and *nehta* (see Section 2, ex. 2). This interlanguage representation may be subject to change given continued input, and at particular stages of its development will not necessarily resemble either the L2 target or one of the L1 analogues in terms of the semantic features that determine participation in particular syntactic alternations.

Given the ubiquity of lexical relativity, it is necessary to have a heightened awareness of the gloss trap in investigations of L2 syntax. One strategy that might be employed in such investigations is as follows. First, a descriptive metalanguage can be developed in terms of shared, syntactically-relevant concepts, either as part of the syntax (Inagaki, 2001) or the semantics (Juffs, 1996) of lexical representations. Every such description carries theoretical assumptions. Crosslinguistic analysis of this type must be consciously theory-driven, as the semantic components invoked provide the very

platform for comparison. Second, lexical items in both the native language and the target language can be decomposed to reveal those elements of meaning that are grammatically relevant. An analysis of one or two verbs generalized to a verb class in one language does not presuppose the same grouping of analogous verbs in another language. Third, just as in syntax and phonology, the 'comparative fallacy' (Bley-Vroman, 1983) must be scrupulously avoided in the study of lexical acquisition: it is always possible that learners will draw on aspects of the language faculty that are manifested in neither the L1 nor the L2, so an *a priori* contrastive analysis at the level of lexical semantics must also be supplemented by knowledge of semantic elements and possible conflation patterns in human language more generally.

6. Conclusion

Lexical relativity is a fundamental organizing principle of the mental lexicon, implying that when we conceptualize events, states and things in the world at the lexical level, such construals are to some degree language-specific. It follows that we must tread carefully when making crosslinguistic syntactic generalizations on the basis of the way supposedly equivalent items line up in translation. Two avenues of research into the syntax of motion events were examined here, both of which are characterized by crosslinguistic generalizations which unravel on closer inspection of the predicates involved. First, a comparative analysis of spatial adpositions was used to question the widely-accepted generalization that verbs expressing manner-of-motion in 'verb-framed' languages cannot take directional complements (e.g. Talmy, 1991; Inagaki, 2002). Second, a comparative analysis of syntactic alternation patterns showed that generalizations based on the behaviour of 'equivalent' verbs (e.g. Juffs, 1996) is likely to be misleading in the absence of an item-by-item lexical semantic analysis. Hypotheses elaborated in both domains rest on the assumption of equivalence between lexical items which are, in fact, syntactically unique. The implications for our understanding of L2 argument structure are clear: neither parameter-resetting at the whole-language level nor redundancy rules across verb classes can serve as theoretical models in this domain; rather, a lexicalist account is required in which L1 semantic representations form the initial state of the interlanguage lexicon.

Glosses remain an integral and undeniably useful part of linguistic research, but they remain a rough guide: they can prove to be as much of a hindrance as a help if one assumes that a close lexical equivalent is reflective of the properties of the original lexical item. On the approach advocated here, a lexical item may be viewed as a particular combination of meaning components, which corresponds in inexact fashion to an analogous combination in another language. These sublexical features not only contribute to the precise meaning but also determine the combinatorial possibilities of the lexical item. For this reason, semantic decomposition is a prerequisite for comparative syntactic analysis in the domain of argument structure. On a final note, although lexical items differ across languages, the grammatically relevant semantic components which they contain appear to be drawn from a universal set of meaning elements, involving notions of space, time, matter and causality, as discussed earlier. Thus the crosslinguistic study of

words not only helps us understand variation, but also provides insight into universals of language and cognition.

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