Pouring the Fire with Gasoline:
Questioning Conclusions on L2 Argument Structure

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1. Introduction

Acquisition of the complex facts associated with the mapping of argument structure onto morphosyntactic representation has attracted much attention in L1 acquisition research for over two decades, and more recently also within the L2 acquisition research community.

Consider, for example, the challenge tied to acquiring the three English verb classes associated with the so-called locative alternation, illustrated in (1)-(3).

(1) Alternating class: *spray*, *load*, *pack*, *sprinkle*
    a.   John sprayed the wall [GROUND] with paint [FIGURE].
    b.   John sprayed paint [FIGURE] onto the wall [GROUND].

(2) Ground class: *fill*, *cover*, *decorate*, *pollute*
    a.   John filled the glass [GROUND] with water [FIGURE].
    b. * John filled water [FIGURE] into the glass [GROUND].

(3) Figure class: *pour*, *spill*, *glue*, *nail*
    a. * John poured the glass [GROUND] with water [FIGURE].
    b.   John poured water [FIGURE] into the glass [GROUND].

All of these verbs denote an action that involves causing some object or substance, the Figure (or theme, or content), to come to be at some location, the Ground (or goal, or container). With the alternating class, illustrated in (1) by the verb *spray*, either the Ground, as in (1a), or the Figure, as in (1b), can be mapped onto direct object position. However, there are also verbs, such as *fill*, which allow only the Ground to be the direct object, as in (2a); the Figure cannot be in direct object position, as shown in (2b). Finally, there is also a class of verbs that allow only the Figure to be mapped into direct object position. This Figure class is illustrated in (3) by the verb *pour*.

Pinker (1989) made the important distinction between the acquisition of the rather general properties associated with the two Broad conflation classes, his Broad Range rules, and the setting up of the language-particular Narrow Range rules distinguishing verb classes, such as those comprising the actual classes in English, namely, alternating Ground, alternating Figure, non-alternating Ground, and non-alternating Figure (in his classification). These Broad Range rules are statements about the linking between lexical semantics and syntax. They can be summarized as in (4):

(4) *Linking rules for locative verbs* (Broad Range rules)
    a.   Manner-of-motion meaning $\leftrightarrow$ V NP$_{\text{FIGURE}}$ PP$_{\text{GROUND}}$
    b.   Change-of-state meaning $\leftrightarrow$ V NP$_{\text{GROUND}}$ PP$_{\text{FIGURE}}$ (Kim 1999: 16, (22))

The Narrow Range rules further classify verbs into narrowly defined semantic classes, and the classes are either alternators or not. For instance, the shared meaning of the *pour*-class is "a mass enabled to move via the force of gravity" and verbs in this class cannot alternate. By contrast, *spray*-class verbs, where the shared meaning is "ballistic motion of a mass," do alternate.

In addition to sorting out which verbs belong to which class, the language acquirer must somehow

come to know the Object Holism Effect, stated in (5).

(5) *Holism Effect* (e.g. Anderson 1971)
     Ground-objects, but not Ground-PPs, are interpreted as *completely affected.*

The Holism Effect is the observation that a Ground-NP in direct object position, such as *the wall* in (1a) or *the glass* in (2a), is understood as completely affected. That is, the interpretation of (1a) involves the wall being completely covered with paint; the interpretation of (2a) involves the glass being completely filled with water. However, this does not hold of Ground-PPs. Thus, the interpretation of (1b) does not necessarily involve the wall being completely covered with paint and the interpretation of (3b) does not necessarily involve the glass being completely filled with water.

The general assumption in the literature is that the Holism Effect, associated with (4b), the Ground frame—that is, when the Ground is realized as direct object—derives from lexical semantics-to-syntax linking given by UG, whereas Narrow Range rules are subject to variation across languages. However, others have suggested that Holism may in fact be a matter of implicature.

For Rappaport & Levin (1988) and Jackendoff (1996), Holism is a *pragmatic* effect that supervenes on a grammatical representation. As Jackendoff (1996) notes, Holism is a defeasible inference, as shown in (6). Holism is thus not a strictly *semantic* inference. As also shown in (6), the type of predicate plays an important role in the strength of the Holism Effect (Jackendoff 1996).

(6) a.   Bill sprayed/smeared/dabbed/splashed the wall with paint (for ten minutes), but it still wasn't
          covered.
     b. ? Bill loaded the truck with dirt for an hour, but there was still room for more.
     c. ? Bill crammed/packed the crack with cement (for five minutes), but it still wasn't full.

                                                                      (Jackendoff 1996: 346, (63))

According to Brinkman (1997), Holism follows from the Presupposition of Indivisibility, as in (7) proposed by Löbner (2000), as a felicity condition on predication in natural language.

(7) *Presupposition of Indivisibility*
     Whenever a predicate is applied to one of its arguments, it is true or false of the argument as a
     whole.

                                                                      (Löbner 2000: 239, K)

Löbner (2000) notes that the effect of the Presupposition of Indivisibility on the interpretation depends on the nature of the predication. So the predication in *touched the book* is "integrative": touching any part counts as touching the whole. In contrast, the predication in *read the book* is "summative"; *read the book* is true *iff* it is true of all relevant parts of the book.

The type of predication, that is, integrative or summative, also seems to play into the strength of the Holism Effect noted by Jackendoff (1996), as illustrated in (6). *Spray/Smeared/Dabbed/Splashed the wall* in (6a) constitute integrative predication (i.e. any coverage of, e.g., smearing on the wall counts as affecting the wall). Here, contextual interpretive leeway is allowed. By contrast, the predicates in (6b, c), *load the truck, cram/pack the crack*, constitute summative predication (i.e. a loaded truck, e.g., has all (relevant) subparts loaded). The Holism Effect is thus stronger here, with the null context leading to the assumption that all parts are loaded.

Thus, Holism is a complex phenomenon that (a) requires just the right syntax; (b) is necessarily computed as part of the interpretation; and (c) manifests itself in a context-dependent manner.

These two aspects of the locative alternation, i.e. Narrow Range verb classes and Holism, are the focus of this L2 essay. We start with the L2 study by Joo (2000) and Bley-Vroman & Joo (2001).

2. Summary of Joo (2000) and Bley-Vroman & Joo (2001)

Based on work by Joo (2000), Bley-Vroman & Joo (2001) claim that adult Korean speakers acquiring English have knowledge of the Broad Holism Effect, but that even advanced Korean-English L2ers are incapable of assembling target-like Narrow-Range verb classes. On the assumption that "access" to

Universal Grammar is required for assembling Narrow-Range rules, Bley-Vroman & Joo conclude that UG is inaccessible in adult L2 acquisition. We now examine their study more closely, for the details turn out to be important.

Three groups participated in Joo's study: 17 native English speakers, 58 Korean-English L2 adults, whose TOEFL scores ranged from 550 to 650, and 16 native speakers of Korean living in Korea (this last group is not relevant here). There were two experiments: Task A, a picture-selection task, and Task B, a sentence-selection task. We first consider the picture-selection task, the one also reported on in Bley-Vroman & Joo (2001). In this task, respondents were presented with a sentence accompanied by two pictures and were asked *which picture* better fit the sentence, with 'neither' as a third option. Each test sentence employed a locative verb from one of the three classes with either the Figure or the Ground in object position. This included *ungrammatical* English sentences, for Figure-class verbs (such as *pour*) are not possible with Ground objects (as in (3a)) and Ground-class verbs (such as *fill*) are not possible with Figure objects (as in (2b)). The two pictures offered a minimal pair, both representing the relevant Figure being transferred to the relevant Ground, but differing with respect to whether or not the Ground was completely affected. Table 1 presents the results from Task A, with Table 1a for the native English speakers and Table 1b for the Korean-English L2ers.

The three verb classes were in fact each represented by the four verbs listed in (1)-(3), and for each verb there was one sentence with the Figure in object position and one sentence with the Ground in object position. In Table 1, the numbers in the column labeled "Mean choice of Ground picture" are the mean selection of the picture with the completely affected Ground for the four verbs of that class; this is therefore a measure of "Ground-ness." In other words, 4.00 would mean that respondents selected the completely affected Ground picture in 100% of the cases.

Table 1a: Task A, Native English speakers (n=17), picture-selection task, consisting of 2 pictures differing w.r.t. [± completely affected Ground]; respondents selected the picture that best matched a sentence; they could select 'neither' (adapted from Joo 2000: 38, Table 3)

Verb class	Sentence type	Mean choice of Ground picture	SD
Figure class	Figure frame	1.88	0.78
(***pour*, *spill*, *glue*, *nail***)	Ground frame	**0.59**	0.94
Ground class	Figure frame	0.53	0.87
(***fill*, *cover*, *decorate*, *pollute***)	Ground frame	3.65	0.79
Alternating class	Figure frame	1.94	0.97
(***spray*, *load*, *pack*, *sprinkle***)	Ground frame	3.35	0.49

Table 1b: Task A, Korean-English L2ers (n=58), picture-selection task, consisting of 2 pictures differing w.r.t. [± completely affected Ground]; respondents selected the picture that best matched a sentence; they could select 'neither' (adapted from Joo 2000: 38, Table 4)

Verb class	Sentence type	Mean choice of Ground picture	SD
Figure class	Figure frame	1.97	1.31
(***pour*, *spill*, *glue*, *nail***)	Ground frame	**2.83**	1.24
Ground class	Figure frame	1.62	1.28
(***fill*, *cover*, *decorate*, *pollute***)	Ground frame	3.46	0.88
Alternating class	Figure frame	1.98	1.33
(***spray*, *load*, *pack*, *sprinkle***)	Ground frame	2.98	1.19

A two-way ANOVA indicated that the native speakers exhibited a statistically significant effect for both sentence type and verb class, whereas nonnatives exhibited a statistically significant effect only for sentence type. Joo's interpretation is that these results suggest that both groups have knowledge of the Holism Effect, but that only the native speakers of English have knowledge of the verb classes.

For Joo (2000) and Bley-Vroman & Joo (2001), these L2 data pose a serious challenge for UG approaches to (adult) L2 acquisition because the L2ers fail to distinguish between the three verb classes as native English speakers do. In particular, unlike the native speakers who, with a mean response of 0.59, very rarely selected a Ground picture for an *ungrammatical* Ground frame with Figure-class verbs, the nonnative speakers, with a mean response of 2.83, often do. Bley-Vroman & Joo (2001: 216) conclude that for L2 adults, "principled knowledge of narrow classes is difficult or impossible to attain." Having noted that acquiring such knowledge in the absence of direct evidence "is exactly the sort of situation that Universal Grammar is set up to deal with" (2001: 210), Bley-Vroman & Joo see these results as evidence that UG is not involved in (adult) L2 acquisition.

3. Reconsidering Joo (2000) and Bley-Vroman & Joo (2001)

The question, then, reduces to whether Bley-Vroman & Joo's conclusion is justified. We argue that the fact, in and of itself, that the Korean-English L2ers do not make the *same* distinctions in verb classes as English native speakers is not relevant to conclusions about UG constraining (adult) L2 acquisition. Nevertheless, a much stronger test case can be made, one that the Task A L2 results, on first glance, make matters all the worse for proponents of UG involvement in (adult) L2 acquisition.

The point is this: although there is a certain amount of cross-linguistic variation with locative verbs, one linking between lexical semantics and syntax, as depicted in (8), appears to be universal, according to Kim (1999):

(8) Manner-of-motion meaning $\rightarrow$ Figure frame (cf. (4))   (Kim 1999: 150)

In her survey of locative verbs in 13 languages, Kim (1999) comes to the generalization that locative manner-of-motion verbs map to Figure frame, whereas other locative verbs display more syntactic variation, although not totally unconstrained. For instance, English alternating change-of-state verbs like *stuff* and *cram* allow both Ground frame and Figure frame,[1] but in Chinese and Thai, they allow only the Figure frame, even though the meaning of these verbs is change-of-state (Kim 1999: 146). Thus, (4b) is not universal.

More specifically for our concerns, Kim found that the class of non-alternating Figure verbs like *pour* is "syntactically identical across *all* of the languages" in her survey (1999: 156). In other words, there is no cross-linguistic variation for *pour*-class verbs; such verbs are not allowed in Ground frame. This proposed universal is given in (9):[2]

(9) *pour*-class manner-of-motion verbs allow *only* Figure frame   (Kim 1999: 156-158)

The universality of (9) (and (8)) can also be seen to be generally respected in L1 development. Children are much more likely to make errors mapping change-of-state meaning to Figure frame, as in (2b)—?*John filled water into the glass*—than errors mapping manner-of-motion meaning to Ground frame, as in (3a)—*John poured the glass with water* (Bowerman 1982; Gropen, Pinker, Hollander & Goldberg 1991a, 1991b; Kim 1999; Stringer 1998).

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[1] More accurately, *stuff* and *cram* are Ground alternators. Consider how they behave on two tests for verb-class membership, namely, whether the Ground and/or the Figure (a) can stand as the sole argument of the verb, and (b) can be pre-modified with an adjectival passive of the verb: *stuff the pillow/*stuff the feathers*; *cram the suitcase/*cram the clothes*; *the stuffed pillow/*the stuffed feathers*; *the crammed suitcase/*the crammed clothes*.

[2] The languages exemplified in Kim's (1999: 156-158) Appendix 3.B are English, Singapore Malay, Najdi Arabic, Hebrew, Japanese, Chinese, Thai, Turkish, Luganda, and Hindi; and (9) is also true of Korean (Kim 1999: 18, (25)) and French.

Now, what does all this have to do with Task A in Joo's study? Take a look at that bolded 2.83 in Table 1b. This is the L2 result least like that of the native speakers, namely, the robust selection of a Ground picture in the context of an *ungrammatical* Ground frame with a Figure-class verb. That is, when presented with a sentence like **John poured the glass with water*, L2ers often picked the Ground picture (showing sensitivity to the Holism Effect). The native speakers did not do this, opting instead for 'neither'. Indeed, Joo claims that this task "could be said to be a mixture of a grammaticality judgment [test] and a preference test" (2000: 35). We will reassess this claim later, but assuming for the time being that Task A is getting at knowledge of grammaticality, UG proponents have a problem. On this interpretation of Task A, the Korean-English L2ers are allowing *pour*-class verbs to alternate between Figure frame and Ground frame. Not only is this unlike what this class of verbs does in their L1, Korean,[3] and unlike the more common Figure-frame overgeneralization errors found in the L1 acquisition of English, but it is also in violation of the proposed universal in (9).

At this point either we could shrug our shoulders and concede that these Korean-English L2 adults appear to violate an absolute universal, or we could try to persuade you that appearances can be deceiving and that something else is happening in Task A. Unsurprisingly, we take the second tack.

3.1. Reasons not to concede...

Our first argument comes from the results of Task B in Joo (2000), the sentence-selection task. In this task, respondents were presented with a picture accompanied by two sentences and were asked *which sentence* better described the picture; again, they also had the possibility of picking 'neither'. Half the pictures were 'Ground pictures', depicting a Ground that was completely affected; the other half were 'Figure pictures', depicting a Ground that was not completely affected. The sentences from which the respondents had to choose were minimal pairs, differing only in whether the Ground or the Figure was in direct object position. Again, some sentences were ungrammatical, i.e. Figure verbs with Ground frame ((3a)) and Ground verbs with Figure frame ((2b)). The results are given in Tables 2a and 2b.

Table 2 reads as before, only this time the column labeled "Mean choice of Ground frame" gives the mean selection of the sentence with the Ground in direct object position for the four relevant pictures depicting verbs of the indicated class with or without a completely affected object. (So this is, again, a "Ground-ness" measure.) A score of 4.00 would indicate that respondents selected the sentence with the Ground in direct object position in 100% of the cases. Table 2a shows the results for the native speakers of English and Table 2b shows the results for the Korean-English L2ers.

Table 2a: Task B, Native English speakers (n=17), sentence-selection task, consisting of 2 sentences differing w.r.t. [Figure-object] vs. [Ground-object]; respondents selected the sentence that best described a picture; they could select 'neither' (adapted from Joo 2000: 42, Table 7)

Verb class	Picture type	Mean choice of Ground frame	SD
Figure class	Figure picture	0.12	0.33
(***pour, spill, glue, nail***)	Ground picture	0.41	0.71
Ground class	Figure picture	2.41	1.37
(***fill, cover, decorate, pollute***)	Ground picture	3.88	0.33
Alternating class	Figure picture	0.29	0.47
(***spray, load, pack, sprinkle***)	Ground picture	3.24	1.25

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[3] In Korean, *pwutta* 'pour', *epiciluta* 'spill', *pwuchita* 'glue' and *motpakta* 'nail' are all non-alternating Figure verbs.

Table 2b: Task B, Korean-English L2ers (n=58), sentence-selection task, consisting of 2 sentences differing w.r.t. [Figure-object] vs. [Ground-object]; respondents selected the sentence that best described a picture; they could select 'neither' (adapted from Joo 2000: 42, Table 8)

Verb class	Picture type	Mean choice of Ground frame	SD
Figure class	Figure picture	0.79	0.95
(***pour***, ***spill***, ***glue***, ***nail***)	Ground picture	2.47	1.37
Ground class	Figure picture	0.67	1.09
(***fill***, ***cover***, ***decorate***, ***pollute***)	Ground picture	3.47	0.73
Alternating class	Figure picture	0.68	1.10
(***spray***, ***load***, ***pack***, ***sprinkle***)	Ground picture	3.05	1.16

As Joo reports, a two-way repeated measures ANOVA revealed that the native speakers of English exhibited a statistically significant effect for both picture type and verb class, and verb class accounts for more of the variability than picture type. The L2ers likewise exhibited a statistically significant effect for both picture type and verb class, but here picture type accounts for more of the variability than verb class. Joo's interpretation once again is that these results suggest that both groups have knowledge of Holism, but that only the native speakers of English have knowledge of the verb classes.

Joo's interpretation notwithstanding, the statistical analysis of Task B shows that the L2ers *are* distinguishing the three verb classes. Notice in particular that the lowest mean for 'Ground picture' (2.47) is the one paired with Figure-class verbs, i.e. given a picture of pouring/spilling/gluing/nailing events where the Ground ends up completely affected, the ungrammatical sentence in the Ground frame (e.g. **John poured the glass with water*) was picked a little over half the time. By contrast, the grammatical Ground-frame sentence with the other two verb classes was picked in the context of a 'Ground picture' on average over 75% of the time. So, even these data, which we will suggest are not actually getting at *grammaticality* per se, are less problematic with respect to the proposed universal of (9) which, you will recall, says that *pour*-class verbs only map to Figure frame. We will come back to this issue momentarily, since L2 data that more directly test (9) are in fact already available.

3.2. *The upshot*

To recapitulate: the main claim of Joo's (2000) study, from both Task A and Task B, is that Korean-English L2 adults display knowledge of the Holism Effect, but not the English locative verb classes. Bley-Vroman & Joo conclude (on the basis of Task A results) that although the L2ers' Holism Effect (probably) derives from their L1, their (ostensible) inability to assemble target-like verb classes stems from the unavailability of UG in adult L2 acquisition.

We believe that this conclusion is premature on three counts. First, the instrument is inappropriate for the conclusion, because it tests *interpretive* effects, but not acceptability as such. Bley-Vroman & Joo give us no direct evidence bearing on which sentences the L2ers take to be grammatical vs. ungrammatical. This holds of both Task A and Task B. Second, we question Joo's logic in her interpretation of Task B. Recall that both picture type and verb class were significant for both groups. Because picture type accounted for more of the variability in the L2 data than verb class did, Joo concludes that the L2ers do not know the verb classes. However, she does not in parallel fashion conclude that for native speakers because verb class accounted for more of the variability in *their* data than picture type did, they do not know the Holism Effect. It seems clear to us that multiple statistically significant effects should be treated as "real" for both groups. And finally, Bley-Vroman & Joo do not seriously consider other possible ways of viewing these results, more specifically, approaches that do not implicate the unavailability of UG. This is what we turn to next.

4. Alternative accounts of the data

We now consider three ways to cast further doubt on Bley-Vroman & Joo's conclusion, that is, three ways to show that what the L2 adults are doing does not contravene UG: (a) problems with the tasks; (b) L1 influence; and (c) contextual coercion.

4.1. Problems with the tasks

The first issue relates to task. Choi (2001), summarized in Choi & Lakshmanan (2002), tested 20 adult Korean-English L2ers on aspects of locative verbs. Relevant to our concerns is the pre-test, a grammaticality judgment task. Respondents judged the acceptability of Ground-frame and Figure-frame syntax for each of the four verb classes investigated, as outlined in (10)-(13).

(10) Alternating Ground verbs: *load*, *stuff*   (4 items)
     a.   She stuffed clothes into the suitcase.
     b.   She stuffed the suitcase with clothes.   (Choi & Lakshmanan 2002: 99, (11))

(11) Alternating Figure verbs: *spray*, *plaster*   (4 items)
     a.   She sprayed water onto the fruit tree.
     b.   She sprayed the fruit tree with water.   (Choi & Lakshmanan 2002: 99, (10))

(12) Non-alternating Ground verbs: *fill*, *cover*, *soak*   (6 items)
     a. * She filled water into the glass.
     b.   She filled the glass with water.   (Choi & Lakshmanan 2002: 99, (9))

(13) Non-alternating Figure verbs: *pour*, *spill*, *spit*   (6 items)
     a.   She poured water into the cup.
     b. * She poured the cup with water.   (Choi & Lakshmanan 2002: 99, (8))

L2ers were deemed to have knowledge of English verb classes in the locative alternation if they made at most one error (viz. over- or under-accepting) in each class. Their results, reproduced in Table 3, show that 9 of the 20 had such knowledge.

Table 3: Mean correct responses by Korean-English L2ers and native English speakers, grammaticality judgment task (pre-test), with all verbs presented in both Figure and Ground frames (adapted from Choi & Lakshmanan 2002: 101, Table 2)

Verb class	Intermediate (n=11)			Advanced (n=9)			Native (n=10)		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
Alternating Ground (*load, stuff*)	2.55	1.04	(1–3)	3.22	0.44	(3–4)	4.00	0.00	(4–4)
Alternating Figure (*spray, plaster*)	2.36	0.67	(1–3)	3.11	0.33	(3–4)	4.00	0.00	(4–4)
Non-alternating Ground (*fill, cover, soak*)	3.27	1.27	(1–5)	5.33	0.50	(5–6)	5.70	0.67	(4–6)
Non-alternating Figure (*pour, spill, spit*)	**4.73**	1.42	(2–6)	5.78	0.44	(5–6)	5.70	0.48	(5–6)

The nine subjects that we classify as Advanced were not significantly different from native speakers in each of the verb classes. Thus, contrary to Bley-Vroman & Joo's conclusion that "principled knowledge of narrow classes is difficult or impossible to attain" (2001: 216), it does seem to be possible for L1 Korean speakers to acquire knowledge of the English verb classes relevant to the locative alternation.

Even more interesting is what the Intermediate group does on non-alternating Figure-class verbs, where their mean correct score is 4.73 (out of 6). This is the verb class relevant to the universal in (9), "*pour*-class manner-of-motion verbs allow *only* Figure frame." And the Intermediates adhere to this. To quote Choi (2001): "The post-hoc Scheffe test revealed that, in non-alternating content [i.e. Figure] classes, the three groups did not differ significantly" (p. 68). Indeed, this is the sole comparison for the Intermediate group that does not show a significant difference. This finding is crucial because it strongly suggests that Korean acquirers of English do not in fact violate the universal in (9).

In sum, Choi (2001) and Choi & Lakshmanan (2002) supply the first two arguments against the conclusion of Bley-Vroman & Joo. First, Korean speakers can come to have the same locative verb classes as native English speakers, and second, they systematically map *pour*-class verbs only to Figure frame.

Somewhat similar, albeit preliminary, results are reported in Sawyer (2002), but this time for Japanese-English Interlanguage. Japanese is much like Korean in terms of locative verbs (according to the classifications given in Kim 1999: 145, Table 3.5). Sawyer investigated adult Japanese-English L2ers' knowledge of the verb classes in (1)-(3). He employed two instruments, a picture-description task (borrowing from Juffs 1996) and a grammaticality judgment task, and he tested 50 subjects whose TOEFL scores ranged between 380 and 550—i.e. much lower than the TOEFL range in Bley-Vroman & Joo's Korean-English study. Sawyer's results from both tasks indicate that these Japanese-English L2ers distinguish the three verb classes, although they are clearly not near-native, particularly for the alternating verbs. As for the universal in (9), the L2 results from the two tasks do not show complete convergence. In the production task, for which subjects could write up to three sentences per picture, although Figure verbs readily appear in Figure-frame syntax, they virtually never appear in a Ground frame, i.e. here the L2ers are virtually indistinguishable from native speakers. In the judgment task, by contrast, the L2ers do not systematically reject Figure verbs in the Ground frame; on the 1 to 6 acceptability scale, where 1 is "completely unnatural" and 6 is "completely natural," their mean rating (across 4 verbs) is 3.5 (compared to the native speakers' 1.8). Nevertheless, this mean is far lower than the means of Figure verbs in Figure frames at 5.3 (compared to the natives' 5.4) and of Ground verbs in Ground frames at 5.6 (which is the same for natives).[4]

So although Sawyer's results are still at an early stage of analysis, they look like they're going to be our third and fourth arguments against the conclusion that Bley-Vroman & Joo come to.

Where does this leave us? Two L2 studies, one of Korean-English and the other of Japanese-English, seem to contradict the results of Bley-Vroman & Joo's study. In these two studies the L2ers display knowledge of English verb classes and, more importantly, the cross-linguistic universal in (9), i.e. they map verbs of the *pour*-class to Figure frame and are disinclined to map them to Ground frame. And this is so despite *similarity* of verb-class division in Japanese and Korean and despite *differences* in English proficiency. It is noteworthy that while the studies by Choi (& Lakshmanan) and Sawyer both employed a grammaticality judgment task, Sawyer, with his lower-level L2ers, got even more robust results from his picture-description task than his grammaticality judgment task. One should thus wonder whether Bley-Vroman & Joo's study is not the anomaly, an anomaly due to *task*.

That Bley-Vroman & Joo do not seem to consider the task-dependent nature of Joo's results is, we would maintain, a serious oversight. Task A showed a general collapse of the verb classes, but Task B did not. If the L2ers do not have knowledge of the verb classes, whence then does the knowledge exhibited in Task B derive? In view of the results from the other two studies described above, it seems reasonable to infer (a) that the nature of Joo's Tasks A and B does not really allow for the most direct investigation of grammaticality, and (b) that the discrepancies between Tasks A and B are a function

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[4] For alternating verbs, the L2 means (across 6 verbs) are 4.4 in the Ground frame (compared to the natives' 5.5) and 5.1 in the Figure frame (compared to the natives' 5.6). In combination with the means reported in the main text, this shows, again, that the L2ers are indeed distinguishing the three verb classes.

of the types of performance the tasks demanded. The punchline of what we will be arguing is that Joo's tasks inappropriately conflate *grammaticality* with *interpretability*.

As illustration, in what follows we therefore reconsider Joo's tasks in terms of what it means, in Task A, for a 'Ground picture' to be selected in response to an ungrammatical Figure-verb-in-Ground-frame sentence such as **John poured the glass with water*, and likewise what it means, in Task B, for the same type of ungrammatical sentence to be selected in the context of a 'Ground picture'. (We note that the same kind of problem arises for (non-alternating) Ground verbs (e.g. *fill*) in Figure frame.)

Joo's Task A, which asks subjects to pair a sentence with one of two pictures, is best characterized as a "preference interpretive" task. Assuming Löbner's universal Principle of Indivisibility, in (7), the Korean-English acquirer will know that in the configuration predicate *P(a)*, the object *a* is wholly affected in the manner prescribed by the property *P*. This means that when presented with a Ground frame, the wholly affected picture functions as the target value (i.e. 'true') for *any* predicate in the Ground frame. For a subject to go with the 'neither' option indicates that the *ungrammaticality* of the Figure verb in that syntactic frame interferes *too much* with the syntax-to-picture mapping task. In order for this task to be a valid indicator of sensitivity to *ungrammaticality*, one must assume that *only if* someone has the right semantic representations for Figure verbs could s/he *not* interpret Figure verbs in the (ungrammatical) Ground frame (and so pick 'neither'). This assumption, however, is patently false, since 'ungrammatical' does not mean that *no* interpretation obtains.

Similarly, Joo's Task B, the sentence-selection task, which asks subjects to pair a picture with one of two (putative) sentences, is likewise problematic. This is because given, say, a Ground picture of 'pouring' (i.e. where the Ground is wholly affected) plus the two sentences *John poured water into the glass*/**John poured the glass with water*, it is the latter sentence, albeit ungrammatical, that more closely corresponds to the picture (i.e. only that one conforms to Holism). Again, in order for this second task to be a valid indicator of sensitivity to *ungrammaticality*, the assumption must be made that an interpretation of Figure verbs in the (ungrammatical) Ground frame simply could not obtain if the acquirer had the right semantic representations for Figure verbs. Again, we know for a fact that ungrammaticality is not synonymous with uninterpretability (we can all interpret *John poured the glass with water*!), and we will presently review supporting evidence of this from L1 acquisition.

It all boils down to this: does the simple fact of interpretability imply and indeed equate with grammaticality? The answer is clearly 'no': one can interpret ungrammatical sentences, and one can likewise be unable to interpret grammatical ones. To test for distinctions between locative verb classes, what is required is a task testing for constraints on mapping from lexical semantics to syntax, not a task testing for an interpretive reflex determined by a syntactic configuration, with potential *blocking* effects of the grammar*, such that only if this blocking is exhibited does one attribute knowledge of grammar to the subject*. In a nutshell, in so far as both of Joo's tasks are of this type, neither is a particularly useful measure of lexical semantics. And this is because both tasks conflate grammaticality with interpretability.

Nevertheless, there are clear differences between the natives and nonnatives on the two Joo tasks. We therefore next consider the type of things that could possibly contribute to an apparent leveling of verb classes in her experiments.

4.2. L1 influence

Given the nature of Interlanguage, it is of course possible (if not likely) that in the (Bley-Vroman &) Joo research, some of the L2ers' systems are nontarget-like but still within the strictures of UG, as a function of the L1. To see this point, first consider, for instance, the Korean examples in (14):

(14) Korean: the gloss of English *fill* is an alternating verb (*chaywuta*)
    a. Minsu-ka mwul-ul kulut-ey chaywuta.
        Minsu   water-acc bowl-obl fill
        '* Minsu filled water into a bowl.'
    b. Minsu-ka kulut-ul   mwul-lo chaywuta.
        Minsu   bowl-acc   water-obl fill
        'Minsu filled a bowl with water.'(Joo 2000: 22, (10))

Whereas English *fill* is a non-alternating Ground verb, (14) shows that Korean *chaywuta* belongs to the alternating class. Given this, the representation of the predicate *fill* for some Korean-English L2ers may well mirror that of the Korean counterpart, *chaywuta*, including its syntactic properties.

In fact it turns out, according to Kim (1999), that all (monomorphemic) Ground verbs in Korean alternate, i.e. they allow both Ground and Figure frames. It is thus not surprising that L2 adults in the Bley-Vroman & Joo study at times treat Ground verbs as alternators. Indeed, on the Full Transfer/Full Access model of Schwartz & Sprouse (1996), one might expect precisely this sort of L1 influence.

In any case, given this fact about Korean Ground verbs, it is hard to see how a Korean-English L2er who takes English Ground verbs like *fill* to be alternators has somehow stepped outside the boundaries of what is permitted by UG. It is even more challenging to try to understand how a native Korean speaker who judges (14a) as grammatical could come to know that (2b) is ungrammatical in English (as in, e.g., Choi & Lakshmanan 2002). In fact, such a retraction constitutes a classic projection problem that *prima facie* motivates a domain-specific, deductive mechanism. That is to say, the fact that *fill* in the Figure frame is not part of the L2ers' English exposure does not a priori inform them of the ungrammaticality of *fill* in the Figure frame.

4.3. Contextual coercion

Last but not least, Bley-Vroman & Joo disregard the possibility of the phenomenon known as "coercion." Coercion can be seen in children acquiring, for example, English when they produce sentences such as in (15), where *fill* and *cover* are used with a Figure direct object (see (15a-c)) and *pour* and *spill* are used with a Ground direct object (see (15d-e)). In discussing these nonadult patterns, Pinker (1989) considers two possibilities: first, that young children have not yet sufficiently narrowed down the semantics of the verbs, and second, that slightly older children have knowledge that is essentially adult-like but their basic representations can be extended to fill temporary lexical gaps.

(15) *Coercion in Child English up to age 5*
    a. E, 4;1:   I didn't fill water up to drink it.
    b. E, 4;5:   I'm going to cover a screen over me.
    c. E, 5;0:   Can I fill some salt into the bear?
    d. E, 2;11: Pour, pour, pour. Mommy, I poured you. [Waving empty container near M.]
        M: You poured me?
        E: Yeah, with water.
    e. E, 4;11: I don't want it because I spilled it of orange juice.
                           (Pinker 1989: 26, (1.18), (1.19), attributed to Bowerman 1981, 1982)

The same approach could certainly extend to L2 adults. First, as a function of the L1 and/or insufficient input, they may not yet have zeroed in on target-like lexical semantics of particular verbs. Second, they may have target-like representations but may contextually coerce verbs beyond their lexical specifications so that, for instance, the verbs describe pictures in an experimental task.

Coercion is not limited to L1 children, of course. Strict compositionality, Jackendoff (1997) notes, does not suffice for certain aspects of language use in which an expression is used in a manner that does not conform to its lexical specification. In this case, the context coerces the expression to function in some other capacity. In other words, the context can play a role in extending the lexical meaning of an expression along some natural dimensions, beyond its lexical semantics restrictions.

For example, as Pinker notes, (16a) is markedly improved as (16b) by adding the predicate *full*, which specifies the resultant state of the object. Thus, L2ers might well be acting on representations such as (16c), in which a contextual variable "C" stands for the appropriate context-given function effecting coercion, when the basic predicate fails to satisfy the frame in which the verb appears. This is presumably what the English native speaker does in order to interpret *pour* as a version of *fill*, by construing it as effecting a change of state. A distinct but still quite common example of coercion of *fill* is found in the context illustrated in (17). Other examples of coercion are provided in (18).

(16) a. * John poured the glass [GROUND] with water [FIGURE].
  b. John poured the glass full with water.
  c. John [C(pour)] the glass with water.

(17) a. fill the mixture [FIGURE] into the zucchini [GROUND]   (first noted by Beth Levin)
  b. [C(fill)] the mixture into the zucchini

(18) a. The light flashed until dawn.   (Jackendoff 1997: 51, (3a))
  b. John is resembling his father *(more and more).
  c. I'm liking it (more and more).

  To summarize Section 4 (and Section 3): suffice it to say that in regard to Joo's Korean-English data, there is a variety of significant issues that Bley-Vroman & Joo have not considered. Our goal in discussing them was to affirm that it is far from established that these data invalidate the hypothesis that adult L2 acquisition is fully constrained by UG.

5. Closing remarks

The constraints on possible basic lexical semantic representations of predicates and on possible mappings to syntax are a crucial aspect of knowledge of language, and whether these constraints fully guide L2 acquisition is relevant to the issue of L2 epistemology. Insights into L2 acquisition can thus be gained from understanding the basic L2 lexical representations of predicates and how they map to syntax.

  According to Bley-Vroman & Joo, locative verbs in their subjects' Korean-English Interlanguage are not differentiated, falling instead into *one large alternating class*. If correct, then for these L2ers, all these locative verbs should behave the same on the purely syntactic tests of their argument structure provided in (19)-(21).

  For instance, on Bley-Vroman & Joo's account, the Interlanguage of their subjects should allow Figure-class verbs (like *pour*) and Ground-class verbs (like *fill*) to 'drop' either the PP Ground or the PP Figure, and hence these L2ers should accept (19a, b) and (19c, d) on a par with (19e, f), namely, Alternating-class verbs (like *load*).

(19) *Test 1: PP-omission*   (adapted from Kim 1999: 75)
  a. * John poured the glass (with water).
  b. John poured water (into the cup).
  c. * John filled water (into the cup).
  d. John filled the glass (with water).
  e. John loaded the truck (with hay).
  f. John loaded the hay (into the truck).

  Similarly, Bley-Vroman & Joo should predict that the deverbal adjective use of Figure-class verbs (like *pour*) and of Ground-class verbs (like *fill*) should be just as available as with Alternating-class verbs (like *load*), as in (20e, f).

(20) *Test 2: Deverbal adjectives*   (adapted from Kim 1999: 77)
  a. * The poured glass was in the sink.
  b. The poured water was in the sink.
  c. * The filled water was in the sink.
  d. The filled glass was in the sink.
  e. The loaded truck was in the yard.
  f. The loaded hay was in the yard.

  Finally, Bley-Vroman & Joo would predict the existence of a causative-inchoative alternation for all their L2ers' locative verbs, patterning the way Alternating-class verbs do, as in (21e, f).

(21) *Test 3: Raising to subject*

    a. * The glass poured with water.   (Kim 1999: 76, (37c))

    b.   Water poured into the glass.   (Kim 1999: 76, (37b))

    c. * Water filled into the glass.   (Kim 1999: 76, (39c))

    d.   The glass filled with water.   (Kim 1999: 76, (39b))

    e. * The truck loaded with hay in three hours.

    f.   The hay loaded onto the truck in three hours.

We, on the other hand, do not necessarily expect the precise verb classes of English to characterize Korean-English Interlanguage. However, assuming the universal in (9)—"*pour*-class manner-of-motion verbs allow *only* Figure frame"—and target knowledge of verb semantics, we minimally expect *pour*-class verbs to be distinguished from the other verb classes in regard to the syntactic tests in (19)-(21).

In brief, a mixture of methodological, empirical, and conceptual reasons lead us to vigorously contest the conclusion of Bley-Vroman & Joo (2001). Furthermore, we think it is critical to separate syntactic tests of verb classes from interpretive tests of the Holism Effect.

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