Coming and Going, Toing and Froing: VP/PP Parallels in L1 Acquisition

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1   Introduction

The expression of deixis in complex verbal predicates is arguably dependent on identical syntactic structures in English and Japanese in certain cases, with a functional predicate expressing deixis above a lexical predicate expressing manner of motion. Similarly, deictic expression in PPs has been argued to involve a functional P expressing deixis above a lexical P expressing spatial geometry; this has been said to hold not only in English and Japanese but across languages (e.g. van Riemsdijk, 1990; Koopman, 2000; Ayano, 2001). This paper explicitly draws a parallel between the verbal and adpositional domains in terms of the expression of deixis, and extends the analysis to argue that such structures are not only an integral part of the adult grammar, but are also fixed and inviolable for English and Japanese children at all stages of the acquisition process. In Section 2, I provide examples of deixis in complex verbal predicates, and offer a descriptive analysis of this construction in the two languages. Examples from other languages suggest that this structure may be crosslinguistically pervasive. In Section 3, an original first language experiment is described, in which grammaticality judgements concerning complex verbal predicates were elicited from English and Japanese children and adults. In Section 4, these results are compared to those of previous research on deixis in

the PP hierarchy, which suggests that such syntactic knowledge is part of the initial state.

2 Deictic verb complexes in English and Japanese

2.1 The 'come running' construction

The syntactic structure of primary concern in this paper is that in which a functional verb expressing deixis (*come*, *go*) is above a lexical verb expressing manner in a motion event (e.g. *run*, *fly*). One of the most typical uses of this structure is found in expressions such as *John came running into the room*, so I shall refer to this as the 'come running' construction. The following example (taken, incidentally, from the children's film *Chitty Chitty Bang Bang*), illustrates the structure I assume for English.

(1)   a.   The big, brown bear came lolloping over the mountain.

      b.

DeicticVP
- DeicticV — *come*
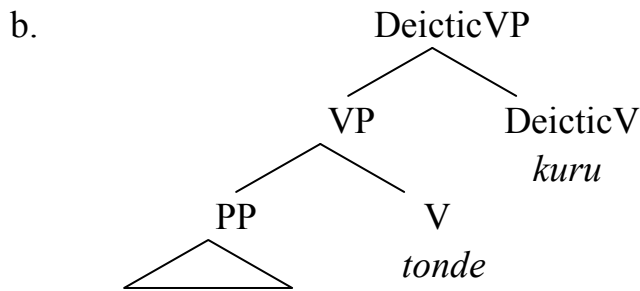- VP
  - V — *lolloping*
  - PP
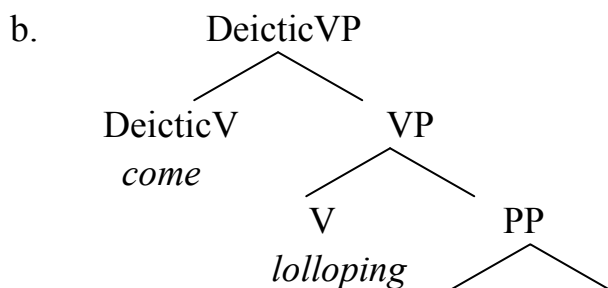
As predicted by the head parameter, the Japanese deictic verb complex is the mirror image of the same structure in English, as shown below.

(2)   a.   Tori wa ki kara tonde kita.

       bird TOP tree from fly-TE came

       'The bird came flying out of the tree.'

b.

```
                    DeicticVP
                   /        \
                 VP         DeicticV
                /   \          kuru
              PP      V
             /△\    tonde
```

The syntax of 'come' and 'go' in such expressions is distinct from other uses of these functional verbs not discussed here, e.g. *going to* (to express future tense) or *come see* in American English (Jaeggli and Hyams, 1993). Despite being often collapsed in the same verb class as 'geometric Path verbs' such as *enter* and *cross* (e.g. Berman and Slobin, 1994), deictic verbs are distinct in that they specify direction but not trajectory, and exhibit a different range of syntactic possibilities.

2.2   Properties of Deictic V in the 'come running' construction

Deictic V serving in this particular construction has similar, though not identical, combinatorial possibilities in English and Japanese, as shown in the following five descriptive generalizations. First, Deictic V may combine with Manner V in a fixed order in English and Japanese, e.g.

(3)   a.   Sally came flying out of the clouds.

     b.   *Sally flew coming out of the clouds.

(4)   a.   Billy went sailing over the horizon.

     b.   *Billy sailed going over the horizon.

(5)   a.   Maki ga   oka no   ue   kara   korogatte kita.

        Maki NOM hill GEN top   from   roll-TE   came

        'Maki came rolling from the top of the hill.'

b. *Maki ga   oka no   ue   kara kite   korogatta.[1]

Maki NOM hill GEN top   rom come-TE rolled

'Maki rolled coming from the top of the hill.'

Second, 'geometric Path V' cannot perform this function in English, with or without a preposition. In contrast, such combinations are allowed in Japanese.

(6)   *Sally crossed flying (over) the Channel.

(compare: *Sally flew across the Channel*.)

(7)   *Billy passed sailing (by) the Cape.

(compare: *Billy sailed past the Cape*.)

(8)   Hiro ga   kawa o   oyoide   watatta.

Hiro NOM river ACC   swim-TE crossed

'Hiro swam across the river.'

Third, Deictic V cannot combine in such fashion with geometric Path V in English. In contrast, such combinations are allowed in Japanese.

(9)   *Jason went crossing the river.

(10)   *Mary came entering the palace.

(11)   Osamu wa   suberidai o   orite   kita.

Osamu TOP slide   ACC descend-TE came

'Osamu came down the slide.' (literally: 'came descending the slide')

(12)   Naeko wa   tonneru ni   haitte   itta.

Naeko TOP tunnel   LocP enter-TE went

'Naeko went into the tunnel.' (literally: 'went entering the tunnel')

Fourth, in both English and Japanese, Deictic V and Manner V may form a complex predicate, in which the two verbs describe simultaneous events, and share the same set of arguments. In Japanese, whilst Deictic V carries tense, it is Manner V that assigns accusative case, as shown by the contrast in grammaticality between (14) and (15).[2]

(13) Taro ga   kawa o   oyoide   kita.
      Taro NOM river ACC swim-TE came
      'Taro came swimming across the river.'

(14) Taro ga   kawa o   oyoida.
      Taro NOM river ACC swam
      'Taro swam across the river.'

(15) *Taro ga   kawa o   kita.
      Taro NOM river ACC came
      'Taro came the river'.

Fifth, in languages such as Japanese that allow multiple concatenations of V, it appears to be the case that Deictic V always tops the hierarchy and carries tense.[3] This is illustrated below with examples from Japanese, Thai (adapted from Zlatev and Yangklang, 2004: 167-168) and Mandarin (adapted from Slobin, 2004: 228); note that the other verbs in the series are also in a fixed order.

(16) a. Mari ga   heya ni   hashitte haitte kita.   JAPANESE
          Mari NOM room LocP run-TE enter-TE came
          'Mari came running into the room.'

    b.   Also OK: *hashitte haitta / hashitte kita / haitte kita*

               run-TE entered / run-TE came / enter-TE came

    c.   Ungrammatical: **haitte hashitta / *kite hashitta / *kite haitta*

                 enter-TE ran / come-TE ran / come-TE entered

(17) a.   Chán dəən phlɔ̀o   ʔɔɔk paj   THAI

        I   walk pop-out exit go

        'I'm popping out on foot.'

    b.   Ungrammatical: **phlɔ̀o dəən ʔɔɔk paj / *dəən ʔɔɔk phlɔ̀o paj*

                  pop-out walk exit go / walk pop-out exit go

(18) a.   fēi chū lái   MANDARIN

        fly exit come

        '(It) comes flying out.'

    b.   Ungrammatical: * *chū fēi lái* / * *lái fēi chū*

                  exit fly come / come fly exit

This observation seems to be generally robust, but requires much more crosslinguistic investigation.[4]

3   Experimentation

3.1   Preliminaries: The problem of prosody

     As part of a broader investigation into the first language acquisition of directional predicates, grammaticality judgements were elicited from English and Japanese children to test for knowledge of the fixed hierarchy, using original experimental methodology. The general technique was that of a reward/ punishment procedure (Crain and McKee, 1985), used to elicit judgements of

two types: (i) pure well-formedness, and (ii) truth value (for clarification, see McDaniel and Cairns, 1996). However, a particularly pernicious complicating factor was the important effect on syntax and semantics of small changes in prosody, which meant that absolutely uniform delivery of the test sentences had to be ensured. Of the variations on (19a) below, (19b) has the reverse order with the same prosodic boundaries, and is completely ungrammatical; in (19c), however, either slight stress of the *te*-form or the insertion of a pause between the manner verb and the deictic renders the sentence grammatical, and changes the interpretation so that the events are no longer simultaneous, but consecutive.

(19)   a.   Oka ni [nobotte itta].   [prosodic boundaries]

           hill LocP go-TE climbed

           'He went climbing up the hill.'

       b.   *Oka ni [itte nobotta].

       c.   Oka ni it*te* [STRESS on *-te* or PAUSE] nobotta.

           (i.e. first he went to the hill, and then he climbed)

Similar effects are observed for English when a manner verb combines with a geometric path verb.

(20)   a.   *James [crossed jumping] the stream.

       b.   James crossed, PAUSE, jumping the stream.

In trial runs with native speakers delivering the test sentences, there was a strong tendency to alter prosodic boundaries in such cases, changing both the syntax and the semantics of the test items. In order to circumvent this problem entirely,

all test sentences were pre-recorded. This eliminated almost all variables in delivery style, but required a ruse to make the activity more interactive.

3.2   Props

3.2.1   Toto the Robot

It was decided to have a puppet deliver the pre-recorded test sentences in order to provide a layer of personality for the tape recorder, as well as to minimize possible effects of other experimental variables discussed below. As the children interacted with the puppet, it was necessary for the recording equipment controls to be flexible. A simple battery-operated hand-held tape recorder inside the puppet was settled on as the most versatile solution. After months of trial and error, the final choice of puppet was a robot in the form of a metallic little boy. The metallic clicking and whirring of a tape recorder does not sound particularly natural coming out of the mouth of a baby dinosaur or a giant rabbit. The robot was, in fact, a large, hollow plastic container for toy building blocks, spayed with silver and gold paint. A hole was cut in the back to allow the tape-recorder to be held inside. He was introduced to the English children as *Toto the Robot*, and to the Japanese children as *Robotto no Toto*.

Three further properties of the robot contributed to the children's willingness to play games with him. First, it was important that the robot be quite cute (3-year-olds can be frightened by robots that spend their time fighting demons or destroying Tokyo). Second, his utterances were all pre-recorded by adult female native speakers (young children find female voices less threatening, and many boy characters in cartoons are, in fact, voiced by women). Third, the children were told that he was very shy. As his conversational ability was limited to the recording, he could not start chatting to the children. His shyness, as well

as his being a robot, helped account for his lack of verbal charm. The idea of shyness as a puppet characteristic has other well-recognized advantages, as discussed by Thornton (1996). In his finished state, Toto the Robot proved very convincing to the 3-year-old test subjects. When he introduced himself, they all, without exception, spontaneously replied 'Hello'.[5]

3.2.2 The Monkey Book

Toto was asked to describe the events in a purpose-designed picture-story, illustrating events with both Manner and Path, which had been previously used to elicit production data from the same test subjects. In the narrative, a parrot steals a banana from a monkey, who then chases the bird through several different spatial environments before finally getting his banana back. On each page relevant to the analysis, he follows a particular trajectory varying with the obstacles he encounters, and he exhibits a particular manner of motion, e.g. he 'slides' down a tree-trunk, 'runs' under a bridge, 'jumps' over a rock etc.

3.3 Procedure

Toto was placed on a table between the test subject and the experimenter with the hand-held tape-recorder in his back carefully hidden from view. Two empty silver boxes were also placed on the table, as well as a large golden box filled with two types of sweets: rainbow-coloured boiled sweets, and liquorice. The children were told that they were going to 'play a game' with the robot and the sweets. The subsequent protocol may be summarized as follows. The experimenter has built the robot at home, and is now teaching it how to speak. Sometimes Toto can speak 'properly' and 'get the words right', but sometimes he 'makes mistakes', 'talks funny', and 'gets the words mixed up'. The children

are asked if they can help the experimenter teach Toto how to speak better, by playing a game. He really loves the brightly-coloured sweets, but he doesn't like liquorice as much. If he says something properly, they can choose a colourful sweet from the big, golden box in the middle, and place it the small, silver box on the left, but if he makes a mistake, they take a liquorice from the same big box, which they place in the small, silver box on the right.

A pretest was devised mainly to exclude from the analysis children who did not grasp the concept of grammaticality, or who did not grasp the rules of the game. Children who for example always replied positively, or always replied negatively, or who replied randomly, or who could not distinguish between judgements of form and content, were excluded.

For the experiment itself, Toto was shown the Monkey Book, and asked to describe what was happening on each page. On each response the children had to give him one type of sweet. Toto repeated each test sentence twice, in order to provide a second hearing if necessary. These utterances were separated on the tape by a 4-second interval. During this break, the experimenter would stop the tape for a length of time determined by the response. If test subjects needed to hear it a second time, the tape was simply started again. If subjects successfully responded first time, they were thanked for helping Toto, and Toto was told 'Well done! Say it again', or 'That wasn't very good, Toto…try again'. The strategy of utterance repetition allowed the experimenter to avoid having to constantly rewind, which would have burst the bubble of those who thought Toto was a real robot, and seriously interrupted the rhythm of the session.

Both pretest and experiment were recorded on micro-cassette, and transcripts were created with all binary responses and other relevant utterances.

3.4   Test subjects and settings

The participants comprised 31 English and 28 Japanese children and adults, divided into 6 age groups (3-7 years, and adults). The elicitation task was carried out in a quiet room at school, in the presence of one experimenter and one research assistant known to the child (school teachers, or school teaching assistants). Adults were tested under the same experimental conditions, but with just the experimenter present. Numbers of participants in this study are given below by language and by age group.

Table 1. *Toto experiment: Numbers of Japanese test subjects by age group.*

Age Groups (in years)	J3	J4	J5	J6	J7	JA	Total
No. of participants	4	4	5	6	4	5	28

Table 2. *Toto experiment: Numbers of English test subjects by age group.*

Age Groups (in years)	E3	E4	E5	E6	E7	EA	Total
No. of participants	5	5	5	5	5	6	31

3.5   Scoring Grammaticality

Given the relatively small number of test subjects in each version of the experiment, it was necessary throughout to relate the assessment of grammaticality to the performances of individual subjects. As a general, violable criterion, grammaticality was assumed if the acceptance rate in a given group was over 80%. By the inverse criterion, an acceptance rate of less than 20% was taken to indicate ungrammaticality. All results between these levels were

assessed on the basis of individual responses.

3.6 Japanese test materials and results

The Japanese results are presented immediately following the test materials, for ease of comparison. The coding for subjects indicates the language, the age, and the position in the group, so that, for example, J3c is a Japanese 3-year-old and the third in the group.

3.6.1 Japanese test materials

There were three sentences with a reversal of deictic hierarchy:

(21) *Saru-san wa   oka no   shita ni   [itte korogarimasu]*.

monkey-TITLE TOP hill GEN bottom LocP go-TE roll

'The monkey goes rolling down the hill.'

Structure: [[$V_{PATH, DEIXIS}$] V_{MANNER}] / V: *iku* [PATH, DEIXIS]

(22) *Kawa no   mukō   ni   [itte oyogimasu]*.

river GEN other-side LocP go-TE swim

'He swims going across the river.'

Structure: [[$V_{PATH, DEIXIS}$] V_{MANNER}] / V: *iku* [PATH, DEIXIS]

(23) *Ki no   ue   ni   [itte noborimasu]*.

tree GEN top LocP go-TE climb

'He climbs up the tree.'

Structure: [[$V_{PATH, DEIXIS}$] $V_{PATH, MANNER}$] / V: *iku* [PATH, DEIXIS]

In addition, there were three sentences with canonical order:

(24) *Saru-san   wa   kawa o   oyoide   [watatte ikimasu].*

monkey-TITLE TOP river ACC swim-TE cross-TE go

'The monkey goes swimming across the river.'

(25) *Saru-san   wa   oka no ue   ni   [nobotte ikimasu].*

monkey-TITLE TOP hill GEN top LocP climb-TE go

'The monkey goes climbing up the hill.'

(26) *Ishi   o   [tobikoete ikimasu].*

rock ACC jump-go-over-TE go

'He jumps over the rock.'

3.6.2 Japanese results

Table 3. *Toto experiment. Japanese individual results. (o = acceptable; * = unacceptable; ? = don't know / mixed responses.) (Subjects excluded following pretest: J3a, J4b, J6d.)*

	INDIVIDUAL TEST SUBJECTS					
TEST	J3	J4	J5	J6	J7	JA
SENTENCES	b c d e	a c d e	a b c d e	a b c e f g	a b c d	a b c d e
(21)	* * * *	? * * o	o * * * *	* * * * * *	o * * *	* * * * *
(22)	* * * o	* * * *	o * * * *	* * * * * *	* * * *	* * * * *
(23)	? * ? *	* * * *	o * * o *	* * * * * *	* * * *	* * * * *
(24)	o o o o	o o o o	o o o o o	o o o o o o	o o o o	o o o o o
(25)	o o o o	o o o o	o o o o o	o o * o o o	o o o o	o o o o o
(26)	o o o o	o o o o	o o o o o	o * o o o *	o o o o	o o o o o

Table 4. *Toto experiment. Japanese Group Results: Percentages of positive responses to each question by age group, and mean averages assigning equal weight to (i) groups; and (ii) individuals.*

TEST SENTENCES	AGE GROUPS						MEAN (groups)	MEAN (individuals)
	J3	J4	J5	J6	J7	JA		
(21)	0	25	20	0	25	0	11.7	10.7 (3/28)
(22)	25	0	20	0	0	0	7.5	7.1 (2/28)
(23)	0	0	40	0	0	0	6.7	7.1 (2/28)
(24)	100	100	100	100	100	100	100	100 (28/28)
(25)	100	100	100	83.3	100	100	97.2	96.4 (27/28)
(26)	100	100	100	66.7	100	100	94.4	92.7 (26/28)

3.7   English test materials and results

Following the same pattern as above, the English results are presented immediately following the test materials, for ease of comparison. The same system of test subject coding obtains.

3.7.1 English test materials

There were two sentences with a reversal of deictic hierarchy:

(27)   *The monkey [runs coming] out of the cave*.
     Structure: $[V_{MANNER} [V_{PATH, DEIXIS}]]$ / V: *come* [PATH, DEIXIS]
(28)   *He [crawls going] through the tree trunk*.
     Structure: $[V_{MANNER} [\quad V_{PATH, DEIXIS}]]$ / V: *go* [PATH, DEIXIS]

One sentence combined geometric Path V with a Manner V (possible in

Japanese, but impossible in adult English, as discussed in Section 2.2):

(29) *The monkey [crosses swimming] the river.*

   Structure: $[V_{PATH} [V_{MANNER}]]$ / V: *cross* [PATH]

In addition, there were two sentences with deictics and manner verbs in the canonical order:

(30) *The monkey [comes rolling] down the hill.*

(31) *He [goes swimming] across the river.*

3.7.2 English results

Table 5. *Toto experiment. English individual results. (o = acceptable; * = unacceptable; ? = don't know / mixed responses.) (Subjects excluded following pretest: E3a, E3f.)*

	INDIVIDUAL TEST SUBJECTS					
TEST	E3	E4	E5	E6	E7	EA
SENTENCES	b c d e g	a b c d e	a b c d e	a b c d e	a b c d e	a b c d e f
(27)	* o * * *	* ? * * *	* * * * *	* * * * *	* * * * *	* * * * * *
(28)	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * * *
(29)	* o * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * * *
(30)	* o o o o	o * o o o	o o o o o	o o o o o	o o o o o	o * o o o o
(31)	o o ? o o	o o o o o	o o o o o	o o o o o	o ? o o o	o o o o o o

Table 6. *Toto experiment. English Group Results. Percentages of positive responses to each question by age group, and mean averages assigning equal weight to (i) groups; and (ii) individuals.*

TEST SENTENCES	AGE GROUPS						MEAN (groups)	MEAN (individuals)
	E3	E4	E5	E6	E7	EA		
(27)	20	0	0	0	0	0	3.3	3.2 (1/31)
(28)	0	0	0	0	0	0	0	0 (0/31)
(29)	20	0	0	0	0	0	3.3	3.2 (1/31)
(30)	80	80	100	100	100	83.3	90.6	90.3 (28/31)
(31)	80	100	100	100	80	100	93.3	93.6 (29/31)

3.8   Result summary

A glance at Tables 3-6 reveals that the difference in acceptability between the canonical and the reverse hierarchy is categorical, across all ages in both languages. The results may be summarized as follows. In English, the two test sentences exhibiting a reversal of syntactic hierarchy in deictic complex predicates had average acceptance rates of 3.2 % (1/31) and 0% (0/31) across the age range. In contrast, the two test sentences with canonical hierarchical order were accepted at rates of 90.3% (28/31) and 93.6% (29/31). In Japanese, three sentences with a reversal of the deictic and the lexical predicate were accepted at rates of 10.7% (3/28), 7.1% (2/28), and 7.1% (2/28), and within each age group any acceptance of the inverse hierarchy was exceptional. The canonical hierarchy was accepted at rates of 100% (28/28), 96.4% (27/28) and 92.7% (26/28). The results are virtually uniform across tokens, across

individuals, across languages and across age groups. Rare exceptions were almost certainly just noise. For example, Table 3 shows that the only subject to systematically accept the reverse hierarchy was J5a, but at least for (23) his comments reveal that he phonologically restructured the utterance. On giving a positive response, he repeated the sentence, but automatically stressed the *te*-form and inserted a pause, indicating that this was not the complex predicate interpretation (as discussed above). Thus knowledge of this aspect of syntactic structure is available to children at all stages of development within the age range.

4   Deixis in layered PP

4.1   The PATH/PLACE hierarchy

These results concerning the expression of deixis in a functional layer above lexical V suggest an intriguing parallel with previous findings concerning the expression of deixis in the domain of adpositions. In a different task in the same series of experiments, utterances with directional predicates were elicited from the same test subjects, with the Monkey Book once more providing pictorial stimuli (Stringer, 2005a,b). The accompanying analysis of PP structure in acquisition was based on research in comparative syntax that points toward a universal layered PP structure, with a higher functional head hosting a PATH feature, and a lower lexical head hosting a PLACE feature (Jackendoff, 1990; van Riemsdijk, 1990; Koopman, 2000; Ayano, 2001). Incorporation of locative nouns into this layered PP structure, as argued for in Ayano (2001) and Stringer (2005a,b), results in the hypothesis that Universal Grammar (UG) makes available the following syntactic structure:

(32)　　[P, PATH α [P, PLACE β [N, LOC γ [P δ]]]]

An illustrative example from the English transcripts is provided below.

(33)　a.　　<E3e: *he jumps from on top of the rock*>

　　　b.　　[PP, PATH from [PP, PLACE on [NP, LOC top [PP　of　[DP the rock]]]]]

　　　In Japanese there is a complication in that both P slots may not be simultaneously filled. I follow Ayano (2001) in assuming that examples such as (34) have *ni* 'LocP' in the lower position, with an abstract directional morpheme in the upper slot, whilst examples such as (35) have an overt Path P and a covert Place P (see Stringer, 2005b: Ch.11 for further discussion).

(34)　a.　　<J5d: *dōkutsu no　naka　ni　haittetteru　　　no*>

　　　　　　　cave　　GEN inside LocP enter.TE.go.PROG PART

　　　　　　　'He's going inside the cave.'

　　　b.　　[[[[[[dōkutsu DP] no P] naka NP, LOC] ni P,LOC] Ø P, PATH] haittetteru VP]

(35)　a.　　<J6d: *yama　　no　ue　kara korogatta*>

　　　　　　　mountain GEN top from rolled

　　　　　　　'He rolled from the top of the mountain.'

　　　b.　　[[[[[[yama DP] no P]ue NP, LOC] Ø P,LOC] kara P, PATH] korogatta VP]

　　　On the assumption that UG is available in continuity throughout the acquisition process, it is to be predicted that this structural hierarchy will be inviolable at all stages of acquisition. The following are examples of the types of errors thus predicted never to occur.

(36) a. *on from top of the rock   *[P$_{PLACE}$ [P$_{PATH}$]]

      b. *from top on of the rock   *[N$_{LOC}$ [P$_{PLACE}$]]

          (context: from on top of the rock)

(37) *dōkutsu no   ni   naka   *[N$_{LOC}$ [P$_{PLACE}$]]

       cave   GEN   LocP inside

       (context: dōkutsu no naka ni 'into the cave')

The English and Japanese elicited production transcripts furnished 1084 examples of PATH predication from children aged 3-7 years and adults, with not a single error of this type. Such a finding does not constitute watertight proof that this structural hierarchy is part of the initial state (errors with language-particular word order, whilst attested, are also generally infrequent), but it does bolster the comparative syntactic argument for the universal status of the hierarchy through the claim that it holds not only across languages but at all stages of first language acquisition.

4.2   The deictic nature of functional P

What has not been previously commented on in the recent generative literature on this topic is the fact that these higher, functional Path morphemes are specifically deictic in nature. Thus in the adpositional as well as the verbal domain, deixis is hosted in a functional layer above the lexical predicate. Crosslinguistically, only three types of adpositional morpheme fill this particular slot, corresponding to the notions of TO, FROM and VIA, although precise interpretations may vary. The first two semantic elements are found, respectively, in the English prepositions *to* and *from*, and the Lezgian allative and ablative case suffixes *–di* 'to'and *–aj* 'from' (van Riemsdijk and Huybregts, 2001,

drawing on Haspelmath, 1993). The third is found, for example, in the French preposition *par* 'through/by' and the Inuit vialis case suffix *-kkut* 'through/by' (Bok-Bennema, 1991).

It is tempting to think, and much of the literature assumes, that such elements are semantic universals. However, whilst certain core aspects of the semantics may be universal, the actual interpretation of such morphemes depends on the language-specific pragmatics of deixis. For example, van Riemsdijk (1990: 233) gives the following pair of examples from German, in order to illustrate that when locative morphemes such as *auf* 'on' are in the higher functional position, with directional interpretation, extra morphology is required, specifically *hin* 'to' or *her* 'from'.

(38) a.   auf den Berg *hin*auf

on the mountain to-on

'up onto the mountain'

b.   auf den Berg *her*auf

on the mountain from-on

'from up on the mountain'

c.
```
                    functional PP
                   /            \
             lexical PP          P
            /        \        hin- / her- auf
           P          DP
          auf        /  \
                    den Berg
```
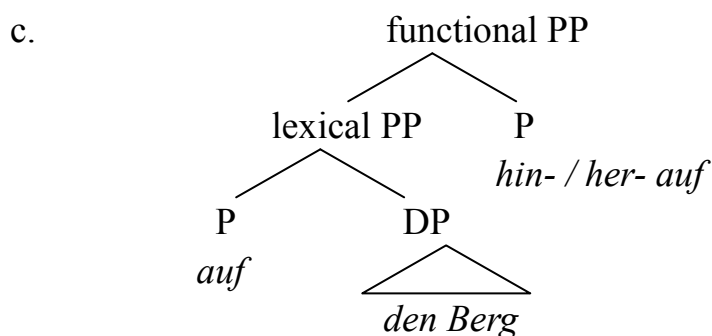

Van Riemsdijk's (1990:233) glosses are perfectly adequate in the context of his

argumentation. However, whilst *hin* and *her* in German are indeed analogous to *to* and *from* in English, the correspondence is inexact. In the case of a man running to the top of a mountain, one may characterize the motion event in terms of a moving object termed the FIGURE (the man) and a reference object or landmark termed the GROUND (the top of the mountain). As such, the English deictics *to* and *from* take the GROUND as their reference point: one can always say *to the top of the mountain* if the FIGURE is moving toward it, and *from the top of the mountain* if the FIGURE is moving away from it. In contrast, the German deictics *hin* and *her* take the location of the speaker as their reference point, and mean something like 'from the speaker' and 'toward the speaker'. Thus if the speaker is located halfway up the mountain, and the FIGURE is on the lower slopes moving toward both speaker and GROUND, *auf den Berg herauf* is appropriate, and the translation in (38b) is false: it should be 'to' rather than 'from'. Once the FIGURE begins to move away from the speaker, *auf den Berg hinauf* is appropriate.[6] This is illustrated in the Figure 1.
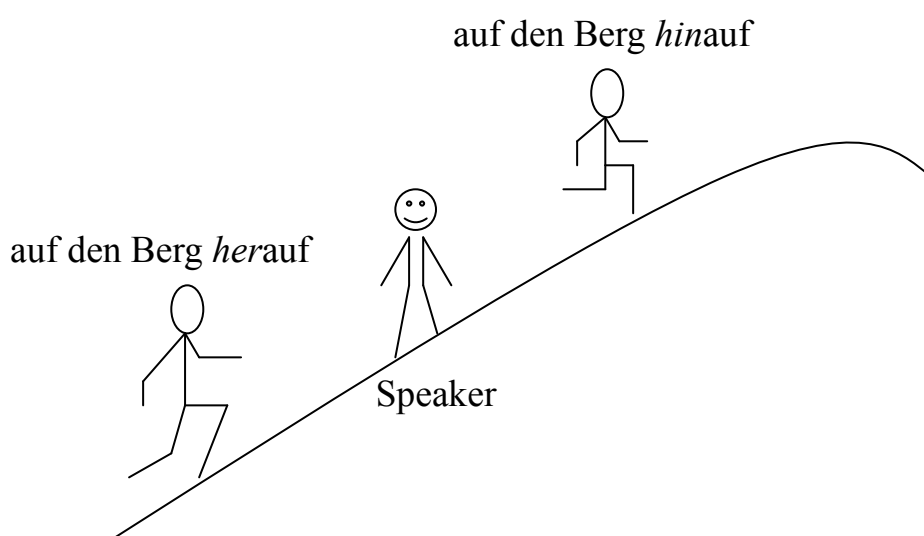

Figure 1. *The speaker as the reference point for the German deictic morphemes* hin *and* her, *on translating the English* 'to the top of the mountain'.

That we should find such variation in the interpretation of intuitively 'basic' concepts as TO and FROM should not come as a surprise. Other posited semantic universals such as BE and HAVE are inevitably expressed in morphemes for which there are no exact one-to-one correspondences in other languages. What is worthy of note in the context of the current investigation is that despite differences in fine-grained semantics and pragmatics, aspects of the *syntax* of deixis appear to be uniform across languages, throughout the acquisition process, and in both the VP and PP domains.

5   Conclusion

The results of the grammaticality judgement experiment demonstrate that the hierarchical internal structure of deictic complex predicates in English and Japanese is in evidence at all tested stages of acquisition. Children as young as 3 years old strictly observe the canonical hierarchy in structures such as English *come running* and Japanese *hashitte kuru* - run-TE go – 'come running', revealing consistent knowledge of syntactic categories and underlying principles of combination. This conclusion is shown to be parallel to the observation that deixis in the realm of PP is similarly constrained at all tested stages of acquisition, with deixis in a functional projection above lexical adpositions. Knowledge of such constraints on syntactic structure is plausibly part of the initial state. The question remains as to *why* deixis should head both VP and PP hierarchies. One speculative avenue of thought is that the greater the dependence on context for interpretation, the higher the position in the functional hierarchy. Whether such a hypothesis can really hold across categorial domains is a matter for future investigation.

Notes

[1] This is uncontroversially ungrammatical if [*kite korogatta*] is read as a single prosodic unit, with the two verbs describing simultaneous events, parallel to the previous example.

[2] English Manner V are restricted in this capacity; examples such as *jump the fence (*hole)*, *swim the river (*lake)* and *walk the path* (*park) exhibit limited productivity.

[3] This is true also in multiple verb constructions that do not express motion events, e.g. *Takashi-kun wa ookiku natte {kita/itta}* - Takashi-DIM TOP big become-TE {came/went}- 'Takashi has really grown.' (N.B. **ookiku {kite/itte} natta*)

[4] Thomas Hun-tak Lee (p.c.) observes that if this sequence were Cantonese, the order would be the same, but the verb 'fly', rather than the deictic, would carry tense.

[5] I later discovered that this was not the first time a robot had been used to elicit judgements, although the nature of the robot and the task were quite distinct. Gerken and McIntosh (1993) created sentences with a DECTalk Speech Synthesizer, played through a speaker placed next to a robot, as part of a picture-selection task (children had to point to one of four pictures after hearing the utterance). Their rationale for this approach was precisely to control for

unintentional prosodic differences in delivery of test items.

[6] This observation is due to Thomas McFadden (p.c.).

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