Relations between Paths of Motion and Paths of Vision: 
A Crosslinguistic and Developmental Exploration

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The gods … contrived the eyes to give light … The pure fire which is within us … they made to flow through the eyes in a stream smooth and dense …

–Plato, *Timaeus* (c. 360 BC/1949, p. 27)

… when the eyelids are contracted [the sight] is made to strike in a concentrated way …

–Aristotle, *Problems connected with the eyes* (*Problems, XXXI, 7-11*)
(c. 350 BC/1937, p. 189)

We note that the set of prepositions used [with *look* and *see*] is a subset of the prepositions which can be used with an ordinary verb of motion, such as *fly*, to indicate the goal of the motion.

–Gruber (1967, p. 937)

1. PATHS OF VISION IN LANGUAGE

Whatever the facts of physics and physiology, I feel that I look *out* at the world through my eyes; that I can look *through* the window *over* the treetops *down towards* the city below. The ancient Greeks, too, thought that the eyes send out beams that meet objects and make them visible to us. And linguists, starting at least with Gruber in 1967, have noted that verbs of perception appear in the same syntactic and semantic constructions as verbs of motion. Various terms have been used to designate the imagined “probe” that emanates from the eyes. Gruber suggests that we speak of someone’s “gaze” going across a room, just as we speak of a person going across a room. In Talmyn’s insightful analysis of “fictive motion” he speaks of “the motion of the line of sight that emerges from my eyes” (Talmy, 2000a, p. 110). In a dissertation on English perception verbs, Gisborne (1996) refers to “the path of the gaze” (p. 41) and suggests that the gaze itself is a “hidden theme” (p. 154). Talmy provides an example—*I looked into/toward/past/away from the valley*—and proposes a corresponding image schema:

Here, the conceptualization appears to be that the Agent subject volitionally projects his line of sight as a Probe from himself as Source along the path specified by the preposition relative to a Reference Object. (Talmy, 2000a, p. 116)

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1 This chapter is dedicated to Melissa Bowerman, who has always provided me with her vision, wisely pointing to the paths to be followed. The ideas presented here were developed at the Max Planck Institute for Psycholinguistics, Nijmegen, and the University of California, Berkeley (Institute of Cognitive and Brain Sciences, Institute of Human Development). I thank the support of these institutions as well as valuable input from colleagues and students. Especially useful suggestions were provided by Colette Grinevald and her students in Lyon, Tatiana Nikitina, Enrique Palancar, Stephanie Pourcel, Stephane Robert, Len Talmy, David Wilkins, and my undergraduate research lab. I am grateful to Ginny Gathercole and an anonymous reviewer for helpful comments on an earlier draft.
This conceptualization has received explicit formulation in the FrameNet Project of Fillmore and his colleagues (Johnson, Fillmore, Wood, Ruppenhofer, Urban, Petrucc, & Baker, 2001). Verbs such as look fit in the frame PERCEPTION_ACTIVE, which “contains perception words whose Perceivers intentionally direct their attention to some entity or phenomenon in order to have a perceptual experience.”

The Frame has the following elements that are relevant to the present chapter:

- Perceiver-Agentive
- Phenomenon
- Direction
- Location of Perceiver
- Manner

In English, at least, various combinations of these elements are possible, such as: He looked into the house. He looked at the house. He looked across the street. He looked from the balcony. He looked carefully.

In English, at least, various combinations of these elements are possible, such as: He looked in through the window at her; She looked out from between the curtains. Directional adverbs can be combined with path phrases, e.g., They looked down/north from the tower toward the sea. This chapter focuses on the two components that express Path: Direction (way-stations and goal) and Location (source).

This all seems so natural to English speakers that we would be surprised if comparable visual path expressions were found to be lacking in other languages. The ancient Greek idea of emanation or extramission is clearly based on a conceptualization of some visual entity that moves along physical paths. And, indeed, visual path expressions are widely found across languages.

The following examples of expressions that fit the PERCEPTION_ACTIVE frame come from two quite different types of languages, Spanish and Russian, but note that in both languages the constructions in (a) combine a verb of looking with the same path expression that is used in (b) for physical motion.

(1) Spanish:

a. visual path: miraron hacia la escalera
   they:looked toward the staircase

b. physical path: caminaron hacia la escalera
   they:walked toward the staircase

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2 The following lexemes are listed as fitting this frame: attend .v, attention .n, eavesdrop .v, feel .v, gaze .n, gaze .v, glance .n, glance .v, listen .v, look .n, look .v, observe .v, palpate .v, peek .n, peek .v, peer .v, savour .v, smell .n, sniff .n, sniff .v, spy .v, stare .n, stare .v, taste .n, taste .v, view .v, watch .v. The present chapter deals only with equivalents of look .v in various types of languages.

3 I’ve supplemented my own observations with helpful responses to queries posted on electronic discussion lists. Such sources are indicated by name and date, without entries in the References. I’m especially grateful to Yo Matsumoto for providing unpublished materials, and to Nikolas Gisborne for providing his unpublished dissertation on English perception verbs (Gisborne, 1996).
Russian:

a. visual path:
   starik vy-gljanul iz okna
   old.man out-looked from window

b. physical path:
   ptica vy-letela iz okna
   bird out-flew from window

Looking more broadly across languages, the recruitment of path expressions to verbs of looking is widespread and apparently independent of factors of morphological and lexical typology. Table 1 provides representative examples from a range of languages of different types, underlining expressions of the path ‘into the hole’ (based on “the frog story,” Berman and Slobin, 1994). The examples present a considerable array of morphosyntactic path constructions: prepositions, particle verbs, serial verbs, verb components, function verbs. The conceptual and linguistic equation of physical and visual paths seems to be universal, although expressed by various linguistic means in languages of different types.

The remainder of this chapter focuses on two major types of languages, categorized by Talmy (1985, 1991) on the basis of their dominant lexicalization pattern for motion events. The classification is based on the preferred means of encoding Path. In one type, verb-framed, Path tends to be encoded in the main verb of a clause, using verbs with meanings such as ‘enter’, ‘exit’, ‘ascend’, ‘descend’. Verb-framed language groups include Romance, Semitic, and Turkic—represented in the present chapter by Spanish and Turkish. In the other major type, satellite-framed, Path tends to be encoded by elements associated with the main verb, such as verb particles and affixes. The corresponding Path expressions in satellite-framed languages are ‘go in / out / up / down’. Satellite-framed language groups include Germanic, Slavic, and Finno-Ugric—represented here by English and Russian.

Although much of the psycholinguistic research in this domain has focused on expressions of Manner of motion in these two language types, it is Path that is at issue in the present cross-typological analysis. In satellite-framed languages with nonbounded verb particles, such as English, a clause with a single verb can present a series of path elements, e.g., the owl flew down from out of the hole in the tree. Languages like English and Russian also have a large lexicon of locative prepositions, with various possibilities of combination, such as English from under and Russian iz-pod ‘from-under’. By contrast, in verb-framed languages each change of path requires a separate verb, and combinations are difficult or impossible. In the example given above, one can say that the owl ‘descended’ (=down), that the owl ‘exited’ (=out), or that the owl ‘flew’—but these three sorts of information cannot be presented in a single clause. The collection of path markers in nounphrases tends to be limited—a small collection of prepositions in Spanish, with fairly general meanings (e.g., en ‘in/on’), or a small set of locative nominals in Turkish (e.g., iç ‘interior’, üst ‘top’) and a binary choice of locative casemarkers: DATIVE (motion toward goal) and ABLATIVE (motion away from goal). Research on path descriptions in novels and elicited narratives (Slobin, 1996b, 1997, 2003) suggests that speakers of satellite-framed languages tend to provide more elaborate path descriptions than speakers of verb-framed languages. This tendency is explored here in the domain of visual paths.

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4 The last four languages in Table 1 represent types that do not readily fit into Talmy’s dichotomy (see Slobin, 2004, for a proposal of a third major type: equipollently-framed). These languages are not considered in the present analysis. However, a recent analysis of visual path expressions in Mandarin (Chu, 2003) indicates that this serial-verb language uses many physical path expressions with verbs of looking, as shown in the examples in Table 1; Matsumoto (2001) reports similar use of serial path verbs with a verb of looking in Thai (drawn from Takahashi, 2000).
Ongoing research suggests that speakers of these two language types develop different patterns of “thinking for speaking” (Slobin, 1987, 1991, 1996a). Briefly—habitual means for describing physical paths appear to influence mental processes involved in the conceptualization of motion events. Language-specific differences show up in strategies for the presentation of both Path and Manner information in narratives—oral as well as written, produced by children as well as adults (Berman & Slobin, 1994; Slobin, 1996b, 1997). And

Table 1.
Examples of Visual Path Expressions in Various Types of Languages

<table>
<thead>
<tr>
<th>prepositions: Hebrew (Berman)</th>
<th>casemarking: Chantyal [Tibeto-Burman] (Noonan)</th>
<th>locative nominals (postpositions), casemarking: Turkish (Aksu-Koç)</th>
<th>serial verbs: Cantonese (Wong)</th>
<th>bipartite verbs: Nez Perce (Rude)</th>
<th>directionals (DIR): Tzotzil Mayan (de León)</th>
<th>function verbs: Jaminjung [Yirram, N. Australia] (Schultze-Berndt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ha-def ART boy looks to-inside hole</td>
<td>mar dala-nfka-ri pəni kyata-so sfya-m downward hole-INESSIVE also boy-ERGATIVE look-at-NONPAST ‘Downward into the hole the boy looks.’</td>
<td>deliğ -in iç -in -e bak - ti hole -GEN interior -POSS -DAT look -PAST ‘He looked into the hole.’</td>
<td>nei5 zong1 jup6 go3 lung1 dou6 aal you peek enter CLASSIFIER hole there SENTENCE.FINAL.PARTICLE ‘You look into the hole there.’</td>
<td>staláh ‘look up’ steléh ‘look down’ steléh ‘look out’ stylek ‘peer in’</td>
<td>s-k’el-oj ech’e muvel li tz’i’e 3E-see-PF pass:DIRECTIONAL ascend:DIRECTIONAL ART dog ‘The dog is looking away upwards.’</td>
<td>ngayirr ganarram jarriny=biyang peep 3SG:3SG-transfer.away.from.deictic.center hole=FOCUS ‘He peeps into the hole.’</td>
</tr>
</tbody>
</table>

5 The examples in Table 1 are drawn from frog story narrations and email correspondence provided by Ayhan Aksu-Koç, Michael Bamberg, Ruth Berman, Lourdes de León, Michael Noonan, Noel Rude, Eva Schultze-Berndt, and Richard Wong. Glosses of grammatical terms can be found in the Appendix.
cognitive effects are found in crosslinguistic studies of mental imagery (Slobin, 2003), memory (Oh, 2003), and learning tasks (Kersten, Meissner, Schwartz, & Rivera, 2003). We also know from the work of Bowerman, Choi, and others, that very young children show language-specific conceptual patterns in the domain of space (Bowerman, 1996a, 1996b; Bowerman & Choi, 2001; Choi, 1997; Choi & Bowerman, 1991). Thus, although physical movement must be the same for all people—in terms of perceptual and motor patterns—there is growing evidence that differences on the level of semantics may differentially affect attention to components of motion events.

If these differences carry over into the domain of visual motion—that is, a domain of fictive motion—there might be similar differences between verb- and satellite-framed languages in preferred means of encoding visual paths, and consequently, in conceptual representations across languages. On the other hand, verb-framed languages do not provide specialized verbs for visual paths, on a par with ‘enter’, ‘ascend’ and the like; rather, both types of languages rely on all-purpose perception verbs such as ‘look’, combined with various sorts of adjuncts (adpositional phrases and directional adverbs in both language types, plus satellites in satellite-framed languages). It may be, therefore, that the marked differences between the two language types in the domain of physical motion fall away in the domain of visual motion. This chapter is an initial attempt to explore such differences. So far, the only available information comes from data of language production—oral and written texts. The following section explores differences in written materials in two satellite-framed languages, English and Russian, and two verb-framed languages, Spanish and Turkish. The concluding section addresses the same issues in child language, examining transcripts of child-caregiver discourse and elicited oral narratives in the same four languages.

2. PATHS OF VISION IN ENGLISH

To begin with, consider the English verb *look* and its associated path expressions. The *Oxford English Dictionary* (*2nd* edition) provides Path as part of the basic meaning of the verb:

I. To direct one’s sight.
   1. intr. To give a certain direction to one’s sight; to apply one’s power of vision; to direct one’s eyes upon some object or towards some portion of space.
   a. with phrase or adv. expressing the direction or the intended object of vision.

The basic use of *look*, of course, is in a construction with a generic locative preposition, *look at* (previously *look upon*). Beyond this core path expression, Branch IV of the OED definition provides numerous “specialized uses with prepositions.” Many of them are figurative, but there is a core of visual path expressions across a wide range of prepositions. Some are obsolete, indicating that this is a domain that continues to draw upon directional terms for the expression of visual paths. Table 2 lists most of the forms, with an early example of each.
| Table 2. |
| Uses of *look* with path prepositions in the *Oxford English Dictionary* |

| 13. look against — To look at (something dazzling). Obs. 1598 Shakes. Merry W. ii. ii. 254 She is too bright to be look'd against. |
| 16. look into — b. To direct one's sight to the interior of. 1841 Lane Arab. Nts. 1. 99 The fisherman, looking into the lake saw in it fish of different colours. |
| 20. look through — a. To direct one's sight through (an aperture, a transparent body, or something having interstices) 1580 Lyly Euphues (Arb.) 289 Since your eyes are so sharpe, that you cannot onely looke through a mistone, but cleane through the minde. |
| 21. look to — a. To direct a look or glance to. In early use chiefly Sc., equivalent to the mod. look at c1375 Sc. Leg. Saints xviii. (Egipciane) 358 þane stud Þe monk..to Þe erde lukand. [then stood the monk...to the earth looking] |
| 22. a. look toward(s — a1310 in Wright Lyric P. 69 Ihesu..With thine suete eyen loke towar me. [with thy sweet eyes look toward me] |
| 23. look unto — arch. = look to, in various senses 1591 Spenser M. Hubberd 292 For ere that unto armes I me betooke, Unto my fathers sheepe I u}sde to looke. |
| 30. a. look around. intr. To look in several directions 1754 A. Murphy Gray’s Inn Jml. No. 93 He looked around, and saw a reverend Form advance towards him. |
| 31. look aside. intr. To turn aside one's eyes; to look obliquely. 1855 Browning Andrea del Sarto 147 They pass and look aside. |
| 32. look back. intr. a. To turn and look at something in the direction from which one is going or from which one's face is turned. a1586 Sidney Arcadia i. (1590) 2 At yonder rising of the ground she turned her selfe, looking backe toward her woonted abode. |
| 33. look down. a. intr. See simple senses and down adv. c1375 Sc. Leg. Saints xxxvii. (Vincencius) 326 Keparis of Þe presone, Þat thru smal holis lokit done. […]that through small holes looked down] |
| 34. look downward. intr. = look down, 33. 1667 Milton P.L. iii. 722 Look downward on the Globe whose hither side With light from hence, though but reflected, shines. |
| 35. look forth. intr. To look out (of a window, etc., on to something). Now arch. and poet. 1611 Bible Song Sol. ii. 9 He looketh forth..at the windowe. |
| 37. look in. a. See simple senses and in adv. a1300 Cursor M. 17288 + 188 (Cott.) lohne..loked in... |
†38. **look off**. To turn one's eyes away. Obs.
1710-11 Swift Jnl. to Stella 4 Jan., No, no, look off, do not smile at me.

40. **look out**.
a. intr. (See simple senses and out.) To look from within a building or the like to the outside
1390 Gower Conf. II. 352 That I be nyhte mai arise, At som wyndowe and loken oute.
[...at some window and look out]

41. **look over**.
a. trans. To cast one's eyes over; to scrutinize
1706 Hearne Collect. 8 Mar. (O.H.S.) I. 201 Dr. Kennett..look'd them [MSS.] all over.

42. **look round**. intr.
a. To look about in every direction.
1526 Tindale Mark iii. 5 He loked rounde aboute on them angrily.

43. **look through**.
a. trans. To penetrate with a look or glance
C1450 Holland Howlat 49, I sawe ane Howlat. Lukand the laike throwe.
[...looking the lake through]

†44. **look under**. intr. To look down. Obs.
1700 Dryden Pal. & Arc. ii. 340 Thus pondering, he looked under with his eyes.

45. **look up**.
a. See simple senses and up adv.; to raise the eyes, turn the face upward.
[...looked up and down and all about]

*For clarification, glosses of path components of older examples are added in square brackets.*

A preliminary search of the British National Corpus (BNC) reveals a much wider range of prepositions and directional adverbs occurring with **look**. The following simple path expressions are found: *about, across, along, among, around, away, back, behind, below, beneath, between, beyond, down, eastward, in, inside, northwards, out, over, past, round, southwards, through, towards, under, underneath, up.*

### 3. COMPLEX PATH EXPRESSIONS

The BNC also has numerous examples of complex path expressions, such as **look down into** *X*, **look through** *X* into *Y*, and **look beyond** *X* then **over** *Y*. Such multi-segment paths frequently occur in English descriptions of physical motion, but they are quite rare in some other languages, such as Spanish. This seems to be a general characteristic of satellite-framed languages (e.g., English, German, Russian) in comparison with verb-framed languages (e.g., Spanish, Turkish, Hebrew) (Slobin, 1997). For example, (4) is a sentence from a novel written in English (Anaya, 1972), with a single motion verb, *run*, associated with a complex path: *out – past – towards*. A Spanish translation of this sentence (Anaya, 1992) breaks it into three clauses, each with its own verb and associated preposition: ‘exit through’ – ‘pass by’ – direct oneself to’. This is required by the fact that Spanish requires each change of path to be expressed by a verb when the change is telic (Aske, 1989) or boundary-crossing (Slobin & Hoiting, 1994), or moving with relation to the earth’s gravity (Talmy, 2000b).
Verb-framed languages provide a set of path verbs, whereas satellite-framed languages provide a set of path elements that lie outside of the verb. Accordingly, path elements can be stacked with a single verb in satellite-framed languages, while such stacking is only possible in verb-framed languages under particular circumstances, such as mentioning source, goal, and perhaps a way-station along a path between two points. Thus it is possible in a verb-framed language to ‘go from X to Y’ or even ‘from X along Y to Z’, but not ‘out of X into Y’, where special path verbs are required for each path component.

These facts have been well documented for a number of languages of the two types, beginning with Talmy’s original proposal. But there is no obvious reason for similar patterns to be found with regard to verbs of looking, since there is no set of specialized verbs for visual paths, as there is for physical paths—that is, there are no verbs with composite meanings such as ‘look+exit’. Furthermore, an act of looking doesn’t bring about a change of locative state of the fictive agent or of the gaze as an extended entity. That is (at least from the point of view of an English speaker), when I look into another room, my gaze is still anchored at my eyes, and has not left me and achieved a new state of containment on the other side of the threshold. But if my dog goes into that room, he is no longer here at my side, but there, having crossed the boundary. That is, boundary-crossing is a change of state event for physical motion, but not for visual motion. Thus, to put (3) in a visual frame, it should be possible to say the equivalent in Spanish of ‘I looked out the kitchen door, past the animal pens, towards Jasón’s house’.

Matsumoto (2001) has explicitly proposed that verb-framed languages should not differ from satellite-framed languages in the domain of visual paths, because they are not constrained by path verbs in this domain. This is also what I had expected, based on the phenomenology of an active perceiver who sends a self-anchored probe out into the world. On the basis of expressions of visual paths (“the fictive motion of emanation”) in English, Spanish, Hindi, Japanese, Korean, and Thai, Matsumoto notes that verb-framed languages do not provide a set of distinct visual path verbs comparable to physical path verbs such as ‘enter/exit’, ‘ascend/descend’, and the like. That is, as noted above, there are no verbs that conflate ‘look’ with ‘in’ or ‘peer’ with ‘out’. As a consequence, all types of languages are forced to use path expressions (adpositions, particles, directional adverbs, etc.) in combination with verbs of looking, such as the Spanish example in (1a). Matsumoto concludes:

The verb-framed nature of verb-framed languages tends to be lost in the description of … fictive motion of emanation. This is partly because of the grammatical difference between adposition/particles and verbs; the latter has an elaborated set of grammatical functions, while

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6 I have found only one instance of a language that has visual path verbs. Klein (1981) reports that Toba, a Guayan language of Argentina, has a set of vision verbs that, like other path verbs, are inherently marked for directionality, e.g., lye ‘look outward’, wa ‘look inward’, sa:t ‘look up at something moving’. She comments: “…the notion of the direction of the eyes appears to be equivalent in the mind of the native speaker to the notion of direction of a person’s legs across space” (p. 234).
the former does not, allowing flexibility in describing … emanation. (Matsumoto, 2001, handout p. 9)

This is certainly true with regard to the frame element of Direction. In verb-framed languages ‘enter’ and ‘ascend’, for example, require individual path verbs; however, the directions of entering and ascending are readily expressed by a verb of looking plus a directional adverb or a directional phrase, such as the following examples from Spanish and Turkish:

<table>
<thead>
<tr>
<th>look – enter</th>
<th>Spanish</th>
<th>Turkish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mirar adentro</td>
<td>içine bakmak</td>
</tr>
<tr>
<td></td>
<td>look inside</td>
<td>inside:DAT look</td>
</tr>
<tr>
<td></td>
<td>mirar en el agujero</td>
<td>deliğin içine bakmak</td>
</tr>
<tr>
<td></td>
<td>look in the hole</td>
<td>hole.POSS inside:DAT look</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>look – ascend</th>
<th>Spanish</th>
<th>Turkish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mirar para arriba</td>
<td>yukarı bakmak</td>
</tr>
<tr>
<td></td>
<td>look toward up</td>
<td>upwards look</td>
</tr>
</tbody>
</table>

No specialized path verb is required (or available), so we might expect that thinking for speaking about physical paths would be irrelevant here. Furthermore, Matsumoto’s proposal also suggests that languages of different types should not differ in “flexibility” in describing visual paths. Yet we know that, in the domain of physical motion, languages differ in the range and specificity of path-describing forms, as well as in means for combining individual path segments into complex expressions. In addition, there are strong habits, or stylistic preferences in each language for a particular level of analysis and degree of specificity in describing motion events, and, indeed, events in general. Consider example (3) once again. In English it is common to describe paths with several segments, either with a single verb or with several verbs. The Spanish translation shows that such descriptions, using several verbs, are possible in Spanish, but text analysis (Slobin, 1996b) reveals that extended descriptions of this sort are exceptionally rare. That is, there is a Spanish “narrative style” that prefers to limit the number of ground elements in path depictions, as well as the number of separate clauses used to describe a trajectory. I have proposed that this style is due to the necessity in Spanish to use separate verbs for individual path segments, in contrast to the possibility in English of using a series of verb particles and prepositional phrases with a single verb. Although these lexicalization patterns do not apply to the description of visual paths, the narrative habit may still hold sway. Informally, I have ascertained that Spanish speakers do not accept literal Spanish translations of sentences such as I looked out the kitchen door, past the animal pens, towards Jasón’s house, or Look through the window past the buildings to the Bay. That is, they reject the use of the single verb mirar ‘look’ with such series of path segments. This judgment can be checked by searching for evidence that satellite-framed texts show a greater incidence of complex visual paths than verb-framed texts, even though the constraints on the use of types of path verbs do not apply in this domain. Let us begin with two satellite-framed languages, English and Russian, and go on to two verb-framed languages, Spanish and Turkish.

3.1. English

As already noted, complex visual paths occur in English. The constructions are the same as those used in describing physical paths. The analysis makes use of only parts of the FrameNet PERCEPTION_ACTIVE frame. Because the relevant cross-typological issue is the

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7 Examples from English are drawn from the British National Corpus (BNC), newspapers, and novels. Examples from other languages are drawn from various online corpora. There are no numerical findings presented here because of differing sizes of available corpora, ease of searching, and time limitations. Thus these data, while suggestive, can only be considered preliminary.
reference to landmarks, I will exclude expressions with \textit{Direction} only and no \textit{Ground} elements, such as the bare \textit{look up} and its equivalents across languages. In the following discussion, I’ll use the term \textit{ground elements} or \textit{grounds} to designate only the frame elements \textit{Location of Perceiver} (source) and \textit{Direction} (path) when a specific physical location is mentioned. And I will not count expression of \textit{Phenomenon} (goal), since it does not contribute to the complexity of the visual path—that is, there is always a goal of perception in the examples considered here. Thus, in these terms, there is one ground element in \textit{look out of the window} and \textit{look out of the window at her}, and there are two ground elements in \textit{look out of the window} (and) \textit{across the garden}. In expressions such as \textit{look towards/to the garden}, I count \textit{garden} as a ground, because of the choice of the directional \textit{towards/to} rather than the default goal preposition \textit{at}, or equivalent default expressions in the other languages. The role of ground elements in an extended definition of Path is discussed in detail in Section 4.1.

There is no problem for English—in either physical or visual motion descriptions—to include several grounds on the way to a goal, and to include boundary-crossing and gravity-centered segments in a single clause or gapped construction. Consider the following examples in the visual domain:

(4) Burun looked \textit{past Zurachina, out into the courtyard}.

(5) Isabel … looked \textit{over Alida’s head and out of the sitting room window} …

(6) As we look to the left, we \textit{look down along the curve of the Orion arm inward toward the center of the spiral and the center of our galaxy.}

Nevertheless, visual path expressions do not match the complexity of physical path expressions. This is because trajectories of gaze are necessarily limited in comparison to trajectories of physical movement: one can only see so far without then moving one’s body to see further. I have found no examples of visual paths with more than two grounds in any language\footnote{Example (7) has three ground references, but two of them refer to the same point: \textit{the center of the spiral} and \textit{the center of our galaxy}. This is the most complex visual path I have found thus far.}, while paths with more segments and grounds readily occur in physical path descriptions, where the moving body is not constrained by a fixed length of path. In English, such extended descriptions with a single verb of motion readily include boundary-crossing events, such as (7) with the manner verb \textit{chase} and three grounds (table, hall, door) and (8), with a vast quantity of grounds and path vectors associated with the manner verbs \textit{plunge} and \textit{tilt}.

(7) She chased him three times \textit{around the table, then up through the front hall and out of the door}. (Carson McCullers, \textit{The member of the wedding}.)

(8) There is in the Midlands a single-line tramway system which boldly leaves the country town and plunges off into the black, industrial countryside, \textit{up hill and down dale, through the long, ugly villages of workmen’s houses, over canals and railways, past churches perched high and nobly over the smoke and shadows, through stark, grimy cold little market-places, tilting away in a rush past cinemas and shops down to the hollow where the collieries are, then up again, past a little rural church, under the ash trees, on in a rush to the terminus} … (D. H. Lawrence, \textit{England, my England}).

To conclude, with regard to English, \textit{look} occurs in the same types of frames as motion verbs like \textit{go}, but with realworld constraints on the extent of visual paths in comparison with physical paths.
3.2. Russian

There are two verbs of looking in Russian, *smotret’* and *gljanut’*, roughly corresponding to English *look* (ignoring aspectual alternations in Russian). They both indicate the goal of looking with the preposition *na* ‘on’ plus an accusative noun. In addition, *gljanut’* can occur with path satellites in the form of prefixes. For example:

(9)  *smotret’/gljanut’ v okno*  
look.INF in window.ACC

(10)  *vy-gljanut’ iz okna*  
out-look.INF from window:GEN

(11)  *vy-gljanut’ iz za štory*  
out-look from -behind curtain:GEN

In (11) the path prefix *vy- ‘out’* combines with the complex preposition *iz-za ‘from-behind’* to depict a path that crosses a boundary (‘out’) along with specification of the location of the perceiver (‘behind curtain’). However, unlike English, I have found no examples of complex paths with two explicit ground elements. (I will return to the issue of complex paths in Section 4.1, after presenting the range of data for the four languages.)

Differences in path complexity may be due to an intra-typological difference between English and Russian on the morphological level, based on the fact that English satellites are separable verb particles, whereas in Russian they are verb prefixes. Thus it is possible to stack satellites in English, as in Talmy’s famous *come right back down out from up in there* (Talmy, 1985, p. 102). Although it is possible to stack prepositional phrases of path in Russian, regardless of boundary crossing, prefixes cannot be stacked. Consider two examples from Dostoevsky’s *Brothers Karamazov*. In (12) a single non-prefixed verb carries the moving figure through several path segments; however in (13), as in a verb-framed language, successive verbs have to be introduced in order to carry each new path prefix.

(12)  Štabs-kapitan stremitel’no kinulsja čerez seni v izbu k xozjaevam…  
‘The junior captain quickly dashed, through the entry-way, into the hut, to the owners…’

(13)  … on obezal bol’šim kriukom, čerez pereulok, dom Fedora Pavloviča, probežal Dmitrovskuyu ulicu, perebežal potom mостik i prjamo popal v uedinennyj pereulok…  
‘… he ran around in a big detour, through/past the lane, the house of Fyodor Pavlovich, ran along Dmitrovsky Street, then ran across the little bridge and fell directly into the secluded lane …’

Note that the English translation of (13) sounds awkward with the repetitions of *ran around, ran along, and ran across*, though the construction is not awkward in Russian. Note, too, that the first instance of *bežal ‘ran’,* with the prefix *o-*, carries the figure along in relation to two

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9 My choice of verbs of looking in other languages is determined by the FrameNet PERCEPTION_ACTIVE frame. In English, Russian, Spanish, and Turkish, variants of ‘see’ do not completely fit this frame. I have also excluded verbs of manner of looking, such as *peek, peep, peer, glimpse, glare*, and the like, because the goal of this chapter is to broadly explore the range of path expressions rather than distinctions of manner. It is interesting to note, however, that English and Russian seem to have more verbs of manner of looking than Spanish and Turkish, paralleling the differences between satellite- and verb-framed languages with regard to the diversity of manner of physical motion verbs (Slobin, 2003).
grounds, the lane and the house. Examples like (12) and (13) are vanishingly rare in verb-framed languages like Spanish and Turkish; they are found in Russian, but not with the frequency of comparable forms in English. These two Russian scenarios go beyond what can be predicated of visual paths, so it’s not clear whether the infrequency of complex visual paths in a (small) Russian sample can be attributed to a narrative style that disfavors highly complex paths in descriptions of physical movement. On the face of it, there should be equivalents of constructions like (5), (6), and (7) in Russian, but I haven’t found any yet. In any event, it seems clear that more than satellite-framed typology is at play in influencing the use of path expressions—both physical and visual.

3.3. Spanish

In the domain of physical motion, Spanish writers overwhelmingly mention only one ground, and never mention more than two (Slobin, 1996b). The same is true of visual motion. The vast majority of corpus examples are simple directional expressions, as (14) or (15), though sometimes with a boundary-crossing adverb, as in (16). The only explicit boundary-crossing situation is looking through a window, as in (17).

(14)  *Miraron hacia la escalera.*
‘They looked toward the staircase.’

(15)  *Me mira desde el jardín.*
‘She looks at me from the garden.’

(16)  *Mira directamente hacia fuera del disco …*
‘He looks directly towards outside of the disco …’

(17)  (a)  … mira por la ventana …
‘she looks through the window …’
(b)  … mira a través de las ventanillas del auto …
‘… she looks across/through the windows of the car …’

On the basis of limited evidence, it would appear that Spanish speakers treat visual paths with the same circumspection as physical paths, with the additional possibility of using directional adverbs for boundary-crossing scenarios. I suggested above that it should be possible to say the equivalent in Spanish of ‘I looked out the kitchen door, past the animal pens, towards Jasón’s house’. Perhaps it is—but native speakers do not seem to think so, and I have found no such examples in Spanish narratives, written or oral, or in online Spanish corpora from novels and newspapers. Thus it appears that thinking for speaking in Spanish—regardless whether the domain is physical or visual—directs attention only to simple paths and whatever grounds are necessary to anchor those paths, with little additional elaboration.

3.4. Turkish

The situation in Turkish is essentially the same as in Spanish. There are mainly simple directional expressions, as in (18), with occasional mention of source, but no mention of two or more grounds. Boundary-crossing expressions occur with adverbs (19), mainly with regard to windows (20).

(18)  … çevredeki tepeler -e doğru bak -inca …
‘… when looking straight at the surrounding hills …’
(19) Merakla kafasını uzatıp içerive bakıyor …

‘Curiously, extending his head, he looks inside …’

(20) … pencere -den dışarı bak-t.

‘… he looked out from the window.’

Again, as in Spanish, visual paths, like physical paths, are presented with little elaboration. The only feature that is not typical of verb-framing is the use of boundary-crossing adverbials, used in place of the path verbs that are not available for visual descriptions.

4. FRAMING TYPOLOGY AND VISUAL PATH EXPRESSIONS

4.1. What constitutes path complexity?

In order to better understand the differences in path expressions between the satellite- and verb-framed languages in this sample, it is useful to make use of Talmy’s Path and Ground properties (Talmy, 2000b, 2000d, 2003, personal communication November 15, 2003). The following components are relevant to visual paths:

- **Vector**: “The Vector comprises the basic types of arrival, traversal, and departure that a Figural schema can execute with respect to a Ground schema” (Talmy, 2000d, p. 53). There is a small, possibly universal set of Vectors of motion, of which the following are applicable to visual paths: MOVE TO, MOVE FROM, MOVE FROM-TO, MOVE VIA, MOVE ALONG, MOVE ALENGTH.

- **Conformation**: “The Conformation component of the Path is a geometric complex that relates the fundamental Ground schema within a Motion-aspect formula to the schema for a full Ground object” (Talmy, 2000d, p. 54). The relevant Conformations for visual paths are found in the geometry of enclosures, lines, and planes—that is, the configurations that are involved in boundary-crossing (into, out of, across, through).

- **Deixis**: “The Deictic component of Path typically has only the two member notions ‘toward the speaker’ and ‘in a direction other than toward the speaker’” (Talmy, 2000d, p. 56).

- **Earth-grid Displacement**: This component relates Path directedness to earth-based geometry: up-down, over, north-south-east west, and other absolute, earth-based coordinates (Talmy, 2000b, pp. 201-203).

Note that these are **concurrent** components of Path. For example, a Figure can move to a point at the interior of an enclosure, down from a point toward the speaker, etc.

With regard to visual paths in the data, all four of the languages under study use variants of ‘look’ with a single Path component and a Ground object, such as ‘look from X’ (Vector), ‘look across X’ (Conformation), and ‘look behind X’ (Deixis). Furthermore, all four languages can mention two Ground objects if the Vector is MOVE FROM-TO: ‘look from X to Y’. All four languages can also mention one Ground when combining one Vector and one Conformation component, such as ‘look into’ (MOVE TO + A POINT AT THE INSIDE OF AN ENCLOSURE).
Table 3.
Degrees of Path Complexity in Satellite- and Verb-framed Languages

<table>
<thead>
<tr>
<th>Path Complexity</th>
<th>Satellite-framed (English, Russian)</th>
<th>Verb-framed (Spanish, Turkish)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Vector + 1 Ground</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>1 Conformation + 1 Ground</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>1 Deictic + 1 Ground</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Vector FROM-TO + 2 Ground</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>1 Earth-grid + 1 Ground</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>2 Conformations + 1 Ground</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>2 Conformations + 2 Ground</td>
<td>√</td>
<td>a</td>
</tr>
<tr>
<td>1 Earth-grid + 1 Conformation + 1 Ground</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>1 Conformation + 1 Deictic + 1 Ground</td>
<td>√</td>
<td></td>
</tr>
</tbody>
</table>

^English only

However, this seems to represent the limit of combinatorial possibilities for the two verb-framed languages, as summarized in Table 3. The two satellite-framed languages demonstrate more combinatorial possibilities. In both English and Russian, Earth-grid Displacement occurs with a Ground object, such as ‘look down at X’. And these satellite-framed languages have a range of more complex combinations. There are expressions with two Conformation components and one Ground, such as ‘look out into’. In the English data there are also combinations of two Conformation components with two Grounds, such as ‘look past X into Y’. In both English and Russian there are complex visual Paths with an Earth-grid component and a Conformation component, such as ‘look down into’, as well as combinations of Conformation and Deixis, such as ‘look out from behind X’.

It is striking that the set of visual paths available to Spanish and Turkish seems to match the set of Path verbs in those languages, e.g., ‘look into’ matches ‘enter’, ‘look out’ matches ‘exit’, ‘look through’ matches ‘cross’. Just as these languages cannot combine two verbs in a single phrase, such as ‘exit enter’, they cannot express ‘look out into’ as a complex visual Path. This must remain a tentative and speculative proposal, however, until much more data are systematically examined. The interim conclusion is that in the domain of visual motion—even though visual Path verbs are not available in Spanish and Turkish—the patterns of thinking for speaking about physical Paths carry over into conceptualizations of visual Paths—at least as far as complex paths are concerned. But, as suggested in the next Section, there is more to the story.

4.2. Conceptualizations of visual paths in verb-framed languages: Additional considerations

After completing the interim summary presented above, I had occasion to present these ideas to linguists who are native speakers of Spanish and French—two Romance verb-framed languages.10 Their responses suggest that I may have been functioning with a satellite-framed

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10 Text searches of French revealed uses of the verb regarder ‘look’ that are parallel to the uses of Spanish mirar reported above. However, Stephanie Pourcel (personal communication, July 24, 2003) has suggested that spoken French may allow a greater range of complexity in clauses using regarder.
speaker’s “thinking for theorizing.” Consider a scene from the “frog story” (presented in Section 5.2. as part of the discussion of child language). A boy is looking into a hole in a tree. My satellite-framed mental image is a visual path that goes from the boy’s eyes into the interior of the hole—that is, a Vector that moves forward and a Conformation component that is at the inside of an enclosure. Romance-language speakers, however, may have a rather different conceptualization. Enrique Palancar, a Spanish cognitive linguist, reports (Palancar, personal communication, November 19, 2002):

There is no salient container schema in mirar en el agujero [=look in the hole]. The phrase is presenting the location where the event occurs.

A French cognitive linguist, Stephane Robert, makes the same observation (Robert, personal communication, November 5, 2002):

For me, regarder dans le trou [=look in the hole] does not express a movement (and therefore does not express a path): It is static. The prepositional complement governed by the perception verb expresses most of the time the ‘locus’, the region on which the activity of perception is exerted. Surely regarder dans un trou for me supposes a movement of the eyes toward the hole, but the path of the gaze is present only as a backgrounded and unspecified component. The path can be inferred, but it is not profiled by the linguistic expression.

It would seem, then, that Spanish and French do not fully adhere to the FrameNet schema of PERCEPTION_ACTION, because the frame element of Direction seems to be absent, or at least not an explicit part of the linguistic expression. That is, the expressions consist of a Perceiver-Agentive along with what might be characterized as a Location of Phenomenon. However, this seeming deviation from the expected crosslinguistic (or universal) pattern of fictive motion may be due to morphological factors, and the languages might provide other construction types that adhere to the FrameNet schema. Note that the locative prepositions in the examples from Palancar and Robert do not distinguish between static location and translocation. That is, prepositions like Spanish en and French dans only indicate a general locative relation, leaving it to the verbal construction and real-world information to fill in interpretations of location versus motion. Compare, for example, Spanish estar en el agujero ‘to be located in the hole’ and meter algo en el agujero ‘insert something in the hole’. It may be that the prepositions have a default interpretation of static location that carries over to visual verbs, contributing to the conceptualizations reported for Spanish and French.

English in is similarly vague, though we have recourse to into for explicit specification of a motion interpretation. Russian clearly distinguishes the two meanings by casemarking, using the LOCATIVE for static location, e.g., byt’ v duple ‘to be in hole:LOCATIVE’, and the ACCUSATIVE for directed motion, položit’ v duplo ‘put in hole:ACCUSATIVE’. What would happen in a verb-framed language with casemarking? Turkish provides such an example, allowing for the visual path conceptualizations that are available in English and Russian. Compare: delik-te vardi hole-LOCATIVE was’ [=it was in the hole] and deliğ-ı koy hole-DATIVE put’ [=put it into the hole]. In both Russian (satellite-framed) and Turkish (verb-framed) the case used with equivalents of ‘look’ provides directional meaning in phrases accompanying motion verbs (ACCUSATIVE in Russian, DATIVE in Turkish), indicating that visual paths are conceived of in the same way as paths of physical motion—that is, motion directed toward a goal. David Wilkins (personal communication, November 2, 2002) makes a similar observation about casemarking and visual paths in a very different sort of verb-framed language—the Australian aboriginal language Arrernte. In that language, the verb meaning ‘see/look’ takes the same case frame as verbs like ‘put’—[ERGATIVE, DATIVE, ACCUSATIVE]—using the DATIVE to mark the endpoint of putting an object as well as the endpoint of a path of vision.
I would suggest, then, that the reported conceptualizations for Spanish and French may be based on the absence of some means of grammatically distinguishing static location and direction, rather than on verb-framed typology. In fact, an additional observation indicates that Spanish and French conceptualizations of the verbs *mirar* and *regarder* may not disconfirm the general pattern of fictive motion explored in this chapter. These two languages provide an additional expressive device that seems to be the preferred means of describing visual paths—namely, predicating visual path of a nominal entity meaning ‘a gaze’ or ‘a look’: *la mirada* in Spanish and *le regard* in French. That is, a fictive object moves along a path, thus retaining the widespread pattern of fictive motion discussed at the outset of this chapter. These nouns occur with great frequency in text searches—but as representing a fictive object or an object of the agent’s manipulation, rather than the movement of the agent. Palancar describes the Spanish pattern as follows (personal communication, November 19, 2002):

> When you want to convey path you use causative motion with nouns that depict gaze—*mirada, vista, vistazo*, etc.—and you make them move. For example [from a Spanish magazine]: *mi mirada recorría el encanto del telón* [=my gaze traveled over the charm of the curtain].

Similarly, Stephane Robert reports for French (personal communication, November 5, 2002):

> If you want to express the path of look, you go more naturally through another construction with a verb of movement combined with the noun *regard*: *porter ses regards sur* [=carry one’s gazes over], *plonger ses regards dans* [=plunge ones gazes in]. These expressions seem to me much more natural for expressing the movement and the path of look.

By means of such constructions, verb-framed languages lacking casemarking still adhere to the FrameNet schema of PERCEPTION_ACTIVE, but using different devices. FrameNet defines Perceiver-Agentive as “the being who performs some action in order to have a perceptual experience.” In the case of Spanish and French, the action is to project an object, the “gaze,” into space. FrameNet defines Direction as “the path-like expression that describes how the perceiver’s attention is directed during the act of perception.” The path-like expressions are motion verbs along with prepositional phrases and nouns indicating places.

Again, it remains to more thorough research to determine the range of Path complexity that is possible with these nominal forms in Spanish and French. An example of translation from English to French, discussed in a comparative syntax of the two languages (Guillemin-Flescher, 1981, p. 386) demonstrates the considerable complexity that is available in French when using the noun *regard*:

(22)

a. **ENGLISH ORIGINAL.** He looked at her once hard, his expression empty, and then beyond her out across the meadow, beyond the four oaks and the black distant tree line into the vacant afternoon sky.


‘Impassive, he *placed* on her a single hard look which, beyond the meadow, the four oaks and the black tree line at the horizon, *went to lose itself* in the emptiness of the afternoon sky.’

Note however, that although the French version presents a fairly complex visual path, the English combination of two Conformation components, *out across*, has disappeared; the French ‘look’ simply ‘goes beyond’. The example suggests that it would be fruitful to
analyze “nominal look” expressions in terms of Talmy’s collection of Path components and their combinations.

5. VISUAL PATHS IN CHILD LANGUAGE

Language-learning children acquire both Path systems in the early years—physical path and visual path expressions. In the following section, we examine CHILDES and frog-story data in the same set of languages. The data indicate that the basic patterns discussed above are in place during the preschool period, with elaboration of the system continuing through childhood. Comparable to developmental investigations of other spatial domains (Bowerman, 1996a, 1996b; Bowerman & Choi, 2001; Choi, 1997; Choi & Bowerman, 1991), children’s mastery of language-specific path expressions play an important role in the development of thinking for speaking. As Bowerman (1996a) has pointed out, acquisition of semantic patterns is an important cognitive task in development:

I have argued that the existence of crosslinguistic variation in the semantic packaging of spatial notions creates a complex learning problem for the child (p. 425). … Regardless of whether the semantic categories of our language play a role in fundamental cognitive activities like perceiving, problem solving, and remembering, we must still learn them in order to speak our native language fluently (p. 404).

5.1. Caregiver and Child Speech in English

Conversations between English-speaking caregivers and their preschool-age children contain a variety of path expressions with the verb look. Table 4 summarizes instances of look with a path expression in the CHILDES corpora of Sachs (Naomi), Brown (Adam, Eve, Sarah), uczaj (Walt), Bloom (Allison), Clark (Shem), Howe (several children), and Wells (several children), representing many tens of thousands of utterances in the age range from 18 months to 4 years. However, although descriptions of physical motion in these corpora have many paths with multiple components and grounds, in both adult and child speech, the instances with look are restricted to a single Path component with no Ground (e.g., look inside) or only one Ground (e.g., look under your chapter). The only example of a somewhat more elaborated path is a child’s description of medical equipment: you look down through your throat. Early speech corpora in other languages remain to be examined; however, the frog story corpora (Berman & Slobin, 1994; Strömqvist & Verhoeven, 2004) provide ample data from children of age 3 and older.

Table 4.
Path Expressions with look in CHILDES corpora

<table>
<thead>
<tr>
<th>Path</th>
<th>Caregiver</th>
<th>Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>inside</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>inside X</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>in X</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>through X</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>outside</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>out X</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>under X</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>behind X</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>up</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>down</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>down through</td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>
5.2. Visual Paths in Frog Stories

There are five scenes in *Frog, where are you?* (Mayer, 1969) that clearly depict acts of looking. These present a nice variety of visual paths:

1. The boy and the dog look into the jar at their pet frog.
2. The boy looks down into the hole of a ground creature.
3. The boy looks into a deep hole in a tree.
4. The boy and dog look out of a window.
5. The boy and dog look over a log.

In each of the four languages, the basic expressions are in place in the 3- to 4-year-old age group, and clearly productive in the 5- to 6-year-old age group. At the same time, data from each language reveal developing attention to language-specific factors.

5.2.1. Looking in jars and holes

- In English, if one says *look in/into/inside* the hole/jar, the feature of containment is highlighted. Young children use these forms for scenes 1–3. In addition, some children seem to pay attention to the directionality and extent of the visual path: the hole in the ground is often marked by *down the hole*, while the hole in the tree is often marked by *through the hole*. This is consistent with adult English-speakers’ Path components, as discussed above.

- Russian is similar, with an additional morphological factor. Consider the distinction between PATH-FUNCTION and PLACE-FUNCTION (Jackendoff, 1983). Casemarking on Ground nominals distinguishes between directed motion (ACCUSATIVE) and location (LOCATIVE), e.g., *v bank-ú ‘in jar-ACC’ (=into the jar) versus v bank-e ‘in jar-LOC (=located in the jar). Cases are salient noun suffixes and are acquired relatively early in Russian (Gvozdev, 1949; Slobin, 1966). The youngest children use the appropriate preposition, *v ‘in’, and mark the jar or the hole with accusative case, indicating that it is the goal of the visual path. The children provide no further details. However, the casemarking makes it clear that preschoolers conceive of visual paths as directed motion.

- Spanish provides a general locative preposition, *en*, neutral with regard to containment/support and location/direction. This is the only form used for looking in the jar, probably because a jar is a canonical container and nothing more need be specified. Holes allow for more perspectives, and while speakers of all ages use *en* for looking in a hole, there are also attempts to be more specific about entrance into a container. Spanish uses a specialized path verb, *entrar ‘enter’*, for such scenes in the realm of physical motion. However, many narrators, beginning in the 3–4-year-old age range, use a directional adverb, *adentro or para adentro ‘toward inside’, although such boundary-crossing adverbs are dispreferred with verbs of physical motion. In
addition, with reference to the tree hole, beginning with age 5 children also use the preposition *por* ‘through’, highlighting a visual path that moves some distance into a tunnel-like space, as noted above for English. These preschool productions suggest that—contrary to the intuitions of Palancar—children may conceive of vision as following a path all the way to its goal. That is, the (possibly) universal metaphor seems to be in place for these scenes.

- The Turkish dative, in its directional sense, is neutral with regard to characteristics of the goal object. The language lacks the minimal directional distinction marked by the Spanish prepositions *en* ‘in/on’ versus *a* ‘to’. Thus *deliğ-e bak* ‘hole-DAT look’ can mean either ‘look at the hole’ or ‘look into the hole’. The choice depends on how one conceives of the default nature of a hole as an object of attention. Precision can be added by a locative nominal (postposition), as shown in Table 1: *deliğ-in iç-in-e bak* ‘hole-GEN interior-POSS-DAT look’ (=look inside the hole). From the youngest ages, narrators make use of both options for the hole scenes, and there is no further elaboration with age. By contrast, *içine* ‘inside’ is unfailingly provided in reference to the jar, since the dative alone would have to mean ‘look at the jar’. The morphological markers used by Turkish preschoolers seem to show that they have access to the concept of fictive motion in the domain of vision, comparable to the use of casemarkers in Russian.

### 5.2.2. Looking out of a window

Narrators in all four languages, from the youngest ages, command the basic forms for a path of exiting. Although Spanish and Turkish use a directional verb for physical exiting or traversing a boundary frame, frog story narrators use a basic preposition (Spanish *por* ‘through’) or casemarker (Turkish –*TAn ABLATIVE*) for this gaze description. Again, verb-framed characteristics are absent in visual path expressions. In addition, Turkish 5-year-olds often add a directional adverb, as also found in the adult corpora examined above: *pencere-den dışart-ya* ‘window-ABL outside-DAT’ (=from the window outwards). English continues to show its attention to path details: by age 5 narrators frequently say *look out through the window*, in contrast to simply *look out the window*. As in the adult corpora discussed above, English shows greater combinatorial possibilities for Path components.

### 5.2.3. Looking over a log

This is the most complex visual path in the frog story, and it receives a range of descriptions. Young narrators in all four languages use terms for ‘over’ or ‘behind’ in basic visual path clauses. Consistent with the data presented above, English narrators show the most Path elaboration, as in the following examples, with ages in parentheses: *over the other side of the log* (3–4), *over to the other side of the log* (8–10), *around over the log* (adult).

### 6. THE DEVELOPMENT OF THINKING FOR SPEAKING

In sum, children easily acquire the use of directional expressions for descriptions of visual paths in these four languages. Spanish- and Turkish-speaking children freely make use of boundary-crossing adverbs to indicate inward or outward gaze direction, although this is not the dominant means of expression with regard to physical paths. Use of directional adverbs for boundary-crossing visual paths in Spanish and Turkish indicates some separation between linguistic expression of the domains of physical and visual motion, with exploration of a somewhat greater range of expressions in the visual domain. English-speaking children, by contrast, often elaborate Paths, adding adverbs of directionality such as *down* and *around*. Note, too, that children learning Russian and Turkish use casemarking to distinguish between the path function and the place function of looking. English- and Spanish-speaking children
are often vague about this distinction, suggesting that they do not find it necessary to go beyond the available linguistic means of description.

Crosslinguistic comparisons of child language in a particular domain, such as the use of path constructions to talk about vision, highlight the role of linguistic filtering and packaging of concepts. I offer this small study in response to the challenge that Melissa Bowerman posed to our field two decades ago:

Only by studying how children approach language systems that differ in their organization of what is, at a deep level, the “same” conceptual material can we begin to discover how language-learners construct a highly structured and language-specific meaning system from their nonlinguistic understanding of daily experience. I hope research of the coming years will pay more attention to this central and fascinating problem of language acquisition.
(Bowerman, 1985, p. 1314)

7. CONCLUSIONS

In conclusion, although visual paths are treated, across languages, as if they were physical paths, the conceptualization of visual path is filtered through language-specific semantic structures and habits of thinking for speaking. Crosslinguistic differences are especially evident with regard to the complexity of visual paths. Speakers of two verb-framed languages, Spanish and Turkish, analyze visual paths into fewer components than speakers of two satellite-framed languages, English and Russian. These differences may be attributable to habits of thinking for speaking that are established for the encoding of physical motion events. Complex paths in such languages require separate path verbs for individual path components, and although there are no visual path verbs in those languages, conceptual patterns may carry over from the domain of physical motion to domains of fictive motion. However, there is some additional evidence that speakers of Spanish (and also French) have recourse to other means of encoding visual paths, using a nominal element meaning ‘a look’ that can move through space. Therefore a thorough study of conceptual parallels between physical and visual space requires much more detailed examination of the range of available construction types, and in a larger and more systematic data base. However, although much more work is needed before definitive conclusions can be drawn, this preliminary exploration demonstrates a possible universality of conceptions of fictive motion, shaped by linguistic resources and thinking for speaking that vary with language typology.

Appendix: Glossary of grammatical abbreviations

ACC – accusative
ART – article
DAT – dative
DEF.ART – definite article
GEN – genitive
INDEF.ART – indefinite article
INF – infinitive
NONFIN – nonfinite
POSS – possessive
References


