Typology of spatial representation
Lecture 4: Motion events

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SYNOPSIS

- Situating today’s lecture
- The macro-event property in motion
- Path in language and cognition
- War of the Talmy Triads
- Summary
SITUATING TODAY’S LECTURE

- the course: overview

Figure 1.1. A classification of spatial concepts
SYNOPSIS

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- Summary
THE MACRO-EVENT PROPERTY IN MOTION

- typologists and their intuitions about events

“(...) true SVC structures and covert coordination structures seem to feel different to native speakers. The covert coordination tends to be perceived as a sequence of distinct events, whereas the SVC is perceived as a single event(...)” (Baker 1989: 547; emphasis JB)

“An SVC consists of more than one verb, but the SVC is conceived of as describing a single action.” (Dixon 2006: 339; emphasis JB)

“Although two or more verbs are present, the sentence is interpreted as referring to a single action rather than a series of related actions. Although the action may involve several different motions there is no possibility of a temporal break between these and they cannot be performed, for example, with different purposes in mind.” (Sebba 1987: 112; emphasis JB)

- but what is a “single action/event”?

- and how do we know that a linguistic expression is a description of a “single action/event”? 
what individuates events?

objects -- domain: space

- parts located together in space

events -- domain: time

- subevents located together in time

**Figure 2.1.** History of an *endurant*

- space
- comes into existence
- ceases to exist
- "time slice" - does not define a merological part

**Figure 2.2.** History of a *perdurant*

- space
- begins
- ends
- "time slice" - does define a subevent

**Figure 2.2.** History of a *perdurant*
the problem of upper bounds in mereology

in the endurant domain: shape permanence and *common fate*

the legs are part of the table

the table is part of the kitchen furniture

but that’s not the same sense of ‘part’

I can move part of the kitchen furniture, leaving the rest behind

and that rest can still be referred to as *kitchen furniture*
the problem of upper bounds in mereology (cont.)

in the perdurant domain: ???

- e.g., this class is a part of the course I’m teaching
  - which in turn is a part of my career
    - which in turn is a part of my life
      - which is a part of the history of the universe
  - and the course is also a part of you guys’ lifes
the problem of upper bounds in mereology (cont.)

the events in (2.1) can always be understood as part of the same “journey”

(2.1) a. Floyd left Nijmegen. He passed through Moers and then reached Düsseldorf

b. Floyd went from Nijmegen to Düsseldorf, passing through Moers on the way

c. Floyd went from Nijmegen to Düsseldorf via Moers

cf. Casati & Varzi 1999 on mereology
a possible criterion: the “describability” of the event by particular constructions

problem: that would render the above quotes circular

since it is precisely constructions of event descriptions that are supposed to be distinguished here

wanted: a measure of event segmentation

that is sensitive to the syntax of event-denoting constructions

but applicable across languages regardless of construction type
the solution: the **macro-event property**

- a property of construction types
  - that assesses the semantic event representations a construction type can encode
  - on the basis of its compatibility with those expressions
    - that are directly sensitive to the properties that individuate perdurants
      - i.e., temporal expressions – expressions of location in time, duration, and boundaries in time
the MEP applies to constructions that package the parts of an event so tightly

- they don’t permit temporal modifiers/operators (adverbials, temporal clauses, tenses) to scope out subevents

(2.2) a. Floyd left Nijmegen at 11:00am. He passed through Moers at noon and reached Düsseldorf at 12:30pm.

b. #Floyd went from Nijmegen at 11:00am to Düsseldorf at 12:30pm via Moers at noon.

c. On Wednesday, Floyd went from Nijmegen to Düsseldorf via Moers

- caveat

- the MEP is a mapping property of constructions

- not a semantic property - no ontological category of ‘macro-event’ is assumed
defining the MEP

(2.3) **Macro-Event Property (MEP) (informally):** An event-denoting construction has the MEP iff it combines only with those time-positional or durational modifiers that have scope over all subevents it entails.

(2.4) **Macro-Event Property (MEP) (formally):** A construction $C$ that encodes a (Neo-)Davidsonian event description $\exists e. P(e)$ (‘There is an event $e$ of type/property $P$’) has the MEP iff $C$ has no constituent $C'$ that describes a proper subevent $e'$ of $e$ such that $C'$ is compatible with time-positional modifiers that locate the runtime of $e'$, but not that of the larger event $e$. (Bohnemeyer & Van Valin 2017: 147)

(2.4) describes the conditions under which a construction $C$ has the MEP:

- $C$ encodes a description $P$ of some event $e$.
- if $C$ has any constituent $C'$ that encodes a part (‘subevent’) $e'$ of $e$,
  - then if $C'$ is compatible with time-positional modifiers,
  - then these modifiers should not merely locate $e'$, but some larger event, such as all of $e$
differences vis-a-vis the original definition in Bohnemeyer et al (2017)

(2.4) excludes from consideration constituents that take their own temporal modifiers

but do not describe subevents

such as the relative clause in (2.5)

(2.5)  *On Monday, Sally read the letter that Floyd had written on Sunday*

(2.4) does not exclude from the MEP constructions that allow subevent modification

as long as the modifier is not a constituent of the description of the relevant subevent

(2.6)  *Floyd drove from Rochester to Buffalo at noon*

(2.6) has a reading under which *at noon* refers to the departure
typological research applying the MEP

- semantic typology: using the MEP as a heuristic to study
  - the segmentation of motion events across languages: Bohnemeyer 2003; Bohnemeyer et al. 2007
  - the segmentation of causal chains across languages: Bohnemeyer et al. 2010

- the goal: explore crosslinguistic variation and universals
  - in what kinds of complex events can be encoded by constructions that have the MEP

- the syntax-semantics interface: in search of the “macro-event phrase”
  - is there a construction or syntactic unit that is associated w/ the MEP across languages? -> Bohnemeyer & Van Valin 2017
now: Bohnemeyer et al 2007

stimuli

E(vent)COM(plexity): 74 short animated video clips covering

- complex causal chains; complex transfer events;
  and complex motion scenarios

- a field questionnaire covering additional scenarios and suggesting tools for semantic analysis

method

- elicitation of preferred descriptions and range of possible descriptions

- entailment tests to ensure that all subevents are encoded

- time adverbials (etc.) to test for MEP
sample (in most populations, 3-5 speakers were tested)

Table 2.1, The language sample drawn on by Bohnemeyer et al (2007: 510)
the etic grid: path semantics pace Jackendoff 1983 (cf. Lecture 3)

<table>
<thead>
<tr>
<th>Path type</th>
<th>Path function</th>
<th>Corresponding subevent</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>bounded paths</td>
<td>FROM (source)</td>
<td>departure</td>
<td>from the entrance; off the roof; out of the kitchen</td>
</tr>
<tr>
<td></td>
<td>TO (goal)</td>
<td>arrival</td>
<td>to the entrance; onto the roof; into the kitchen</td>
</tr>
<tr>
<td>routes</td>
<td>VIA (route)</td>
<td>passing</td>
<td>past the entrance; across/over the roof; through the kitchen</td>
</tr>
<tr>
<td>directions</td>
<td>TOWARD; AWAY-FROM</td>
<td>any phase of motion oriented in a frame of reference</td>
<td>towards the entrance; north(bound); down; upriver; left(ward)</td>
</tr>
</tbody>
</table>

Table 2.2. Path functions and subevent decomposition
motion paths: lexicalization

Talmy’s (2000) typology of motion event “framing”

- two basic types by locus of path encoding
  - Satellite(-S)-framed languages: path information outside main verb root

(2.7) The ball rolled out of the box

(2.8) Sharik vy-kati/lsja iz karobki
RUS ball out-rolled out box:GEN
`The ball rolled out of the box’
Talmy’s typology (cont.)

- **Verb(-V)-framed** languages:
  path information in main verb root...

(2.9) Le=bòola=o’ h-**hóok’** ich le=kàaha=o’
YUC DEF=ball=D2 PRV-exit(B3SG) in DEF=box=D2
`The ball, it exited (lit. in) the box’

- ...or both in and outside the main verb stem

(2.10) La pelota **salió** de la caja
SPA the ball **exited** from the box
`The ball exited from the box’
findings: three types

Figure 2.3. The three segmentation types
type I: MEP constructions allow integration of departure, passing, and arrival

- S-framed languages are type-I
  - such as Dutch, Marquesan, or Tiriyó - or English, for that matter

(2.11) Kau wewe-pisi enee-ja-n wewe-pəe əema-tae kanawa-pona
TIR cow wood-DIM bring-PRES-EV wood-from path-along vehicle-toward
‘The cow is bringing the little stick from the tree along the path to the vehicle’

(2.12) a. Floyd went from Nijmegen to Düsseldorf at 12:30pm via Moers at noon.

b. On Wednesday, Floyd went from Nijmegen to Düsseldorf via Moers.
there are also type-I languages that use multi-verb constructions to integrate MEP expressions (Ewe, Lao)

the path segments are distributed across VPs in this case

(2.13) Circle lá **mil tsó** blutɔ gbɔ le mɔ-a dzí
EWE [circle DEF roll from blue place LOC road-DEF on]$_{VP}$

‘The circle rolls from the blue place on the road...’

tó xɔ-a ŋú yi dé triangle lá gbɔ
[pass house-DEF skin]$_{VP}$ [go ALL triangle DEF place]$_{VP}$

‘...passing the side of the house going to the triangle.’

Figure 2.4. First frame of ECOM B5
to “time” individual subevents, a more complex construction with directional particles is required (Ameka ms.)

(2.14) Circle lá *mil tsó* blutɔ gbɔ le mó-a dzí

EWE [circle DEF roll from blue place LOC road-DEF on

le ga enyí me yá tó xɔ-a ηú le ga as jéke me

[DIR pass house-DEF skin at.nine]

hé yá dɔ triangle lá gbɔ le ga ewó me.

[DIR DIR arrive triangle DEF place at.ten]

‘The circle rolls from the blue place on the road at eight passing the house at nine, arriving at the triangle at ten.’
type-II languages are verb-framed

but ‘double-marking’

i.e., path distinctions are to some extent reflected on the ground phrase

double-marking permits syntactic integration of subevents/path functions not lexicalized in the verb

to the extent the verb is semantically compatible with that

e.g., -made in (2.15) adds a goal, framed as bounding the extension of the path, to the source of *iru* ‘go’
it is generally not possible to integrate route paths in such languages w/o adding further verbal projections

and this generally loses the MEP

(2.16)

(San+ji-ni)  
three+o’clock-LOC  
ki-no  
tokoro-o shuppatsu+shi-te,

JPN

(yo+ji-ni)  
four+o’clock-LOC  
kawa-o  
watat-te,

(yo+ji-ni)  
five+o’clock-LOC  
ie-ni  
tsui-ta.

‘Leaving the tree (at three), crossing the river (at four), [someone] arrived at the house (at five).’
an exception: the verb describes a route path  
and the beginning and end location of the passing event 
happen to coincide with the source and goal locations

(2.17) a. #Jon-wa Bei Burijji-o Paro Aruto-\textit{kara} Baakurei-\textit{ni} watat-ta.
John-TOP Bay Bridge-ACC Palo Alto-ABL Berkeley-DAT cross-PAST
intended: ‘John crossed the Bay Bridge from Palo Alto to Berkeley.’

b. Jon-wa Bei Burijji-o San Furanshisuko-\textit{kara}
John-TOP Bay Bridge-ACC San Francisco-ABL
Ookurando-\textit{ni} watat-ta.
Oakland-DAT cross-PAST
‘John crossed the Bay Bridge from San Francisco to Oakland.’

(Matsumoto 1996: 269)
Type-III languages are purely verb-framed

- they express path exclusively in verbs (but see below!)

- ground phrases are path-neutral

(2.18) K-uy=òok'-ol ich le=nah=o’.
YUC IMPF-A.3=enter-INC in DEF=house=D2
‘(S)he entered the house.’

(2.19) K-u=héok’-ol ich le=nah=o’.
YUC IMPF-A.3=exit-INC in DEF=house=D2
‘(S)he exited from the house.’

- in Yucatec, the ground phrase encodes place functions, but not path functions (cf. Lecture 3)
as a result, change of location with respect to every single ground is encoded by a separate verb

The ball rolled from the square past the house to the triangle.

H luk’ ti’ le kwadràado, káah máan ti’ le naho’, káah k’uch ti’ le triangulo’.

‘It left (at) the square, and it passed (at) the house, and it arrived at the triangle.’

Figure 2.6. Information packaging in English and Yucatec motion descriptions: informal comparison
each verbal projection then is its own macro-event description

with no multi-verb construction to integrate them

(2.20) (...)hun-p’éel chan áasul ba’l k-u=p’áat-al
YUC [one-CL.IN small blue thing IMPF-A3=await-INC
‘(...)a little blue thing, it remains’

\[t-u=xùul \quad \text{le}=\text{tu’x} \quad h\text{-}luk’ \quad \text{le}=\text{chan} \quad \text{ba’l} \]
PREP-A3=end DEF=where PRV-leave(B3SG)DEF=small thing
‘at the end where the little thing left’

\[\text{chak}=o’; \quad k-u=\text{bin} \quad u=\text{balak’}=e’; \quad k-u=ts’o’k\text{-}ol=e’, \]
red(B3SG)=D2 [IMPF-A3=go A3=roll=TOP] [IMPF-A3=end-INC=TOP]
‘that’s red; it goes rolling; and then,’

\[k-u=\text{máan} \quad y=\text{iknal} \quad \text{hun-p’éel} \quad \text{chan} \quad \text{ba’l} \quad \text{chak} \quad \text{xan}=e’; \]
[IMPF-A.3=pass A3=at one-CL.IN small thing red(B.3.SG) also=TOP]
‘it passes by a little thing that’s also red;’

\[k-u=ts’o’k\text{-}ol=e’, \quad k-u=k’uch-ul \quad \ldots \]
[IMPF-A.=end=TOP] [IMPF-A.3=arrive-INC
‘and then, it arrives (…’)

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THE MACRO-EVENT PROPERTY IN MOTION (CONT.)

Figure 2.6. ECOM B5 schematically
possible universal constraints: the **Argument Uniqueness Constraint**

- consider first the biunique assignment of thematic roles
  - first postulated by Fillmore 1968
  - more recent formulations include the **Biuniqueness Condition** (Bresnan 1980)
  - and the **Theta-Criterion** (Chomsky 1981)

- unsurprisingly, path phrases in motion event descriptions are sensitive to this constraint

(2.21) a. *The ball rolls from the rock across the tracks to the hills.*
   b. *The ball rolls from the rock .... to the hills to the hole.*

(2.22) *Sally walked out of the library from the reception to the entrance.*
(2.23) *Sally went to Nijmegen home.*
the Argument Uniqueness Constraint (cont.)

- this constraint does not apply to expressions that lack the MEP
- consider again co-ordination inside a VP

(2.24)

a. ?Sally walked **out** of the library **from** the reception **to** the entrance.

b. Sally walked **out** of the library **and (then) from** the reception **to** the entrance.

(2.25)

a. ?Sally **went to** Nijmegen **home**.

b. Sally **went to** Nijmegen **and (then) home**.
the Argument Uniqueness Constraint (cont.)

in Ewe, simple serial verb constructions that have the MEP obey biunique mapping

(2.26) Kofi vá afi sia gé ɖé afé-a me.
EWE [Kofi come place this] [drop ALL house-DEF in]

‘Kofi came here entered the house.’

but the more complex constructions involving ‘modal’ particles, which lack the MEP, do not!

(2.27) Kofi vá afi sia vá gé ɖé afé-a me.
EWE [Kofi come place this] [MOD drop ALL house-DEF in]

‘Kofi came here entered the house.’
the Argument Uniqueness Constraint (cont.)

- in Japanese, simple single-verb clauses obey biunique mapping
  
- but converb constructions which lack the MEP do not!

(2.28)  a.    #le-ni  gakko-ni  it-ta.
  JPN [+MEP] house-DAT school-DAT go-PAST
  ‘(Someone) went to the house to school.’

  b.    le-ni  it-te  gakko-ni  it-ta.
  [-MEP]  [house-DAT go-CON]  [school-LOC go-PAST]
  ‘Having gone to the house, (someone) went to school.’
the Argument Uniqueness Constraint (cont.)

- why is it that specifically macro-event expressions obey biunique linking?

- because event representations are individuated by the thematic roles they entail (Carlson 1998)!
  - two agent/theme/goal roles
    - \( \Rightarrow \) two macro-event representations

- Bohnemeyer & Van Valin (2017) argue for a revised formulation of the AUC
  - which accords causees in causative constructions a special exceptional status
possible constraints: the Macro-event Linking Principle

- a constraint on the interpretation of Path phrases in macro-event expressions

  - that is not accounted for by the biuniqueness constraint

(2.29) a. Sally walked [past the barn]$_t1$ [to the mill]$_t2$.
b. Sally walked [to the mill]$_t2$ [past the barn]$_t1$.
c. Sally walked to the mill and later past the barn.

(2.30) a. Sally walked [out of the house]$_t1$ [into the garden]$_t2$.
b. Sally walked [into the garden]$_t2$ [out of the house]$_t1$.
c. Sally walked into the garden and later out of the house.

- aside from a set of subevents

  - a macro-event expression also entails a set of semantic relations

    - of causality, event order, etc.
the Macro-event Linking Principle (cont.)

- **the Macro-event Linking Principle** restricts the subevents that can be referred to by a macro-event expression and their thematic relations to those across which these semantic relations obtain.
possible constraints: the Referential Uniqueness Constraint

it appears to be extremely awkward to refer to the same ground more than once within the same macro-event expression

(2.31) a.  ?Floyd went from [the tree]$_i$ to [the tree/it]$_i$.
  b.  Floyd went from the first tree to the second tree.

(2.32) a.  #Sally went into [the tunnel]$_i$ out (of [the tunnel/it]$_i$).
  b.  Sally went out (of the house) into the tunnel.

(2.33) a.  ?Sally walked over [the bridge]$_i$ under [the bridge/it]$_i$ to the hill.
  b.  Sally walked over the bridge under the arch to the hill.

such expressions become more acceptable once the MEP is lifted

(2.31) a’.  ?Floyd went first from [the tree]$_i$ and (then) to it$_i$.
(2.32) a’.  Sally went into the tunnel and out (again).
(2.33) a’.  She walked over the bridge, then under it, and to the hill.
possible constraints: the **Unique Vector Constraint**

- the explicit encoding of changes in direction requires multiple macro-event expressions
  
  - ‘direction’ here refers to a type of path function defined with respect to a ground that

  “does not fall on the path, but would if the path were extended some unspecified distance” (Jackendoff 1983: 165)

- as specified by expressions such as *toward, away from, up, left, and north*
The Unique Vector Constraint (cont.)

Consider a description of ECOM C6 in Ewe

(2.34) Circle lá liá rectangle lá
EWE [circle DEF climb rectangle DEF]

hé dj tó anyi gbɔ yi
[CON descend pass ground place go]

da-liá triangle lá
[CON-climb triangle DEF]

vá êó é ta-me.
[CON arrive 3SG peak-LOC]

‘The circle climbed the rectangle, descended passed the ground, climbed the triangle, came arrived at the top.’

Figure 2.8. ECOM C6 First frame
the **Unique Vector Constraint** (cont.)

and in Dutch

> Figure 2.8. *ECOM C6 schematically*

(2.35) ... **en rolt dan naar rechts richting** een groen driehoekje DUT [and rolls then to the right towards a green triangle wat daar ligt, **en** het balletje **rolt tegen** het driehoekje which there lies] [and the little ball rolls against the triangle op naar boven **en** komt op de bovenkant up to the top] [and comes van het groene driehoekje tot stilstand. of the green triangle to a standstill]
the **Unique Vector Constraint** (cont.)

- this principle does not simply fall out from the general constraints on thematic relations
  - assume, with Jackendoff 1983, two path functions for the encoding of directions: TOWARD and AWAY-FROM
  - biunique assignment alone does not explain why the scenario in Figure 2.9 is described by (2.36a) but not by (2.36b)
  - whereas Figure 2.10 is described by (2.36b), but not (2.36a)

(2.36)  

a. *F moved away from A toward B*

b. *F moved away from A and then toward B*

![Figure 2.9. Two collinear Direction vectors](image1)

![Figure 2.10. Two non-collinear Direction vectors](image2)
SYNOPSIS

- Situating today’s lecture
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PATH IN LANGUAGE AND COGNITION

- how much spatial information gets represented in spoken/written language?

- example: motion paths
English: encoding of source, route, and goal as ‘path functions’

- assigned to descriptions of reference entities (grounds)

(3.1) The ball rolled from the tree past the pond to the hill

Figure 3.2. Referential grounds and path functions
how much spatial information is represented in the mind?

- assumption I: at least two systems of internal representation in central cognition
  - one symbolic, with algebraic structures similar to those of natural language syntax, and directly interfacing with it
  - one iconic and image-schematic, directly interfacing with the perceptual systems
    - such as Jackendoff’s Spatial Structure (SpS)

Figure 3.3. Mental architecture according to Jackendoff 2002
assumption II: the representation of spatial information at SpS is much richer than that at CS

- iconic systems have an inherent advantage over symbolic ones when it comes to encoding space

```
FROM ([Place AT ([Thing TREE)])]
VIA ([Place AT ([Thing LAKE)])]
TO ([Place AT ([Thing HILL)])]
```

**Figure 3.4. Aspects of path information codable at CS vs. SpS**
assumption III: any kind of spatial information encoded at CS must also be interpreted at SpS

because as spatial information, it must by definition be interpretable to the visual system and the motor systems

whereas the opposite does not hold: e.g., a great deal of shape and manner-of-motion information is apparently not interpreted at CS

questions

what information is encoded at SpS only and what information is duplicated at CS?

which aspects of SpS and CS are used for spatial memory and reasoning and which merely serve as conduits to the peripheral systems, i.e., language, perception, and motor representations?

to what extent is the division of labor between CS and SpS universal and to what extent does it vary with language and culture?
Jackendoff’s (1983) position

- path functions must be encoded at CS
  - argument I: cognitive necessity
    - this argument became obsolete with the addition of SpS to central cognition in Jackendoff 1987
  - argument II: linguistic necessity – path functions must be encoded at CS because they are expressed in English
    - Jackendoff recognizes the possible alternative of a state change semantics for motion descriptions
      - e.g., Miller & Johnson-Laird 1976; Dowty 1979

(3.2) a. The ball rolled to the hill
b. \[ \text{Event GO ([Thing BALL], [Path TO ([Place AT ([Thing HILL])])])} \]
c. \[ \text{Event INCH ([State BELOC ([Thing BALL], [Place AT ([Thing HILL])])])} \]
Jackendoff’s (1983) position (cont.)

a state change semantics is independently motivated for other event descriptions

(3.3)  a. *The ball split*

    [Event INCH ([State BE IDENT ([Thing BALL], [AT IDENT ([Property SPLIT])])])]

b. [Event INCH ([State BE IDENT ([Thing BALL], [AT IDENT ([Property SPLIT])])])]

but Jackendoff rejects a state change semantics as insufficient for English motion descriptions - see below for the evidence

path functions in fact are a core component of CS

this is entailed by the **Thematic Relations Hypothesis**

*Thematic Relations Hypothesis* (TRH): In any semantic field of [EVENTS] and [STATES], the principal event-, state-, path-, and place-functions are a subset of those used for the analysis of spatial location and motion. Fields differ in only three possible ways:

- what sorts of entities may appear as theme;
- what sorts of entities may appear as reference objects;
- what kind of relation assumes the role played by location in the field of spatial expressions.

(Jackendoff 1983: 188; emphasis JB)

as such their encoding at CS is presumably innate and universal
Jackendoff’s arguments for path encoding at CS

route path functions aren’t easily decomposable in state change terms

(3.4) a. The eagle soared across the canyon
     b. The train went through the tunnel
     c. The expedition crossed the river
     d. The horse jumped over the fence

Bohnemeyer (2010): a similar point can be made for complex paths in which both source and goal (and/or via) are specified

(3.5) The ball rolled from the tree to the hill

this does not appear to happen in state change descriptions unless motion metaphors are involved

(3.6) The lights went from green to red
Jackendoff’s arguments for path encoding at CS (cont.)

**Fictive Motion** metaphors (Talmy 1996, 2000) involve path functions in state descriptions

(3.7) a. *The highway extends from Denver to Indianapolis*
    b. *The house faces away from the mountains*
    c. *The firehouse is across the street from the library*

(Jackendoff 1983: 167-172)

I take these to robustly demonstrate path semantics in English motion descriptions

but as shown in Bohnemeyer (2010), they do not carry over to Yucatec
background on Yucatec

- Yucatecan branch of Mayan
  - along w/ Lakandón, Itzá, Mopan
- 759,000 speakers age 5+ in Mexico in 2005
  - http://www.inegi.gob.mx
- polysynthetic
- verb-initial, “VOS”
- split-intransitive
  - or ‘active-inactive’
- field work JB since 1991
the argument advanced in Bohnemeyer (2010)

Jackendoff’s arguments for path semantics are convincing for English

however, they do not carry over to Yucatec

Yucatec motion descriptions systematically have a state change semantics

conjecture, supported by indirect evidence: Yucatec speakers do not encode path at CS

- relying instead on SpS for reasoning about motion

implication: path functions are not universals of CS

- what by the TRH is a core component of CS may nevertheless be language-specific
the argument advanced in Bohnemeyer (2010) (cont.)

- direct evidence against path semantics in Yucatec
  - path-neutral ground phrases
  - motion descriptions compatible with non-figure-motion scenarios
- Jackendoff’s arguments and Yucatec
  - motion involving route grounds underspecified
  - no composition of complex path functions
  - no fictive motion metaphors
- conjecture: no encoding of path functions at CS
- plausibility argument: thinking for speaking
- indirect evidence: no spatial metaphors for temporal connectives
- indirect evidence: widespread L1 transfer in motion descriptions in L2 Spanish
- direct evidence against path semantics in Maya
- path-neutral ground phrases
  - ground phrase: the argument/oblique that dominates the ground-denoting nominal (cf. Lecture 3)
- in Indo-European languages the ground phrase encodes locative and path functions
- this holds for S-framed and V-framed languages alike

S-framed: English

(3.8) a. The cart *is* in the box
b. The cart *went* into the box
c. The cart *went* out of the box

V-framed: Spanish

(3.9) a. El carro *estaba* en la caja
b. El carro *entró* en la caja
c. El carro *salió* de la caja
in contrast, Yucatec ground phrases are path-neutral

they encode merely place functions

(Bohnemeyer & Stolz 2006; Bohnemeyer 2010)

(3.10) a. Le=kàaro=o’ ti’=yàan ich / ti’ le=kàaha=o’
DEF=cart=D2 PREP=EXIST(B3SG) in / PREP DEF=box=D2
‘The cart, it is in the box’

b. Le=kàaro=o’ h-òok ich / ti’ le=kàaha=o’
DEF=cart=D2 PRV-enter(B3SG) in / PREP DEF=box=D2
‘The cart, it entered (lit. in) the box’

c. Le=kàaro=o’ h-hóok’ ich / ti’ le=kàaha=o’
DEF=cart=D2 PRV-exit(B3SG) in / PREP DEF=box=D2
‘The cart, it exited [lit. in] the box’

so if there is path encoding in Yucatec, it has to happen exclusively in the verb root

but the evidence from non-figure-motion scenarios shows that this is not the case either
Yucatec motion descriptions are compatible with non-figure-motion scenarios

- location change verbs that do not entail motion of the figure/theme were first described by Kita 1999 for Japanese *hairu* ‘enter’ and *deru* ‘exit’
- in Yucatec, the same phenomenon arguably generalizes to all verbs of ‘inherently directed motion’ (Levin 1993)

- out of context, (3.11) would be infelicitous as a description of this scenario:

\[(3.11) \text{#Le}=\text{bòola}=\text{o'} \quad \text{h-òok} \quad \text{te}=\text{sìirkulo}=\text{o'}.\]

DEF=ball=D2 PRV-enter(B3SG) PREP:DET=circle=D2

‘The ball, it entered the circle.’ (ENTER_EXIT 03 EMB)
Yucatec motion descriptions are compatible with non-figure-motion scenarios (cont.)

but (3.11) is not semantically in contradiction w/ Figure 3.6

it merely triggers a strong implicature to figure motion

and this implicature may be blocked or cancelled in context

\[ (3.12) \quad H=\text{tàal} \quad \text{le=àaro} \quad y=\text{iknal} \quad \text{le=bòola=o'}; \]
\[ \text{PRV=come(B3SG) DEF=ring} \quad A3=at \quad \text{DEF=ball=D2} \]
\[ \text{le=bòola=o'} \quad h=\text{òok-ih}. \]
\[ \text{DET=ball=D2} \quad \text{PRV=enter-B3SG} \]

‘The ring came to the ball; the ball, it entered.’

(ENTER_EXIT 03 SBM)
Yucatec motion descriptions are compatible with non-figure-motion scenarios (cont.)

another example: change of location in the vertical

Figure 3.7. First and last frame of FIGURE_GROUND 14

(3.13) Le=chan tàabla=o’ h=péek-nah-ih, káa=h=na’k

DEF=DIM plank=D2 PRV=move-CMP-B3SG káa=PRV=ascend(B3SG)

le=chan kanìika y=éetel che’ te’l y=óokol=o’.

DEF=DIM marble A3=with wood there A3=on=D2

‘The little plank, it moved, (and) the little marble and the tree ascended there on top.’ (FIGURE_GROUND 14 EMB)
final example: teleportation across an obstacle

(3.14) Káa=h=sáat=e’,
CON=PRV=lose/ACAUS (B3SG)=TOP
‘(When/and) (the ball) vanished,’

káa=h=ka’=chíik-pah=e’
CON=PRV=REP=appear-SPONT(B3SG)=TOP
‘(and) it reappeared, on the other side’

le=pak’ màah-a’n yàan=o’.
DEF=wall pass:_CMP-RES(B3SG) EXIST(B3SG)=D2
‘of the wall it was(, having) passed.’ (PATH 06 RMC)
compatibility w/ such scenarios suggests

location change verbs do not entail motion of the figure along a path (or even motion of any entity)

not all location change verbs are compatible with non-figure-motion scenarios

data suggest a cline of acceptability

the source of this cline seems to be that the verbs on the right presuppose stationary grounds

\[
\begin{align*}
\text{hóok} \text{‘exit'} & \quad \text{ôok} \text{‘enter'} \\
\text{na’k} \text{‘ascend'} & \\
\text{em} \text{‘descend'} \\
\text{líik} \text{‘rise'} \\
\text{lúub} \text{‘fall'} \\
\text{máan} \text{‘pass'} \\
\text{bin} \text{‘go'} \\
\text{tàal} \text{‘come'} \\
\text{luk} \text{‘leave'} \\
\text{k’uch} \text{‘arrive'} \\
\text{u’l} \text{‘return'}
\end{align*}
\]

Figure 3.9. Acceptability of location change roots w/ non-figure motion scenarios
Jackendoff’s arguments and Yucatec

- location change involves a locative state plus some description of how it changes during the event
  - routes cannot without “oversimplification” be reduced in this manner
  - but Yucatec descriptions of location change involving routes seem to show just this oversimplification
  - one single location change root - máan ‘pass’ - is used to describe location change vis-à-vis all route grounds

(3.15) Túun       **bin**  u=balak’=e’,
PROG:A.3  go    A3=roll=TOP
‘(The ball) was going rolling,
káa=h-máan       t-u=bèel   le=trèen=o’ ...
CON=PRV-pass(B3SG) PREP-A3=way  DET=train=D2
‘(and) it passed along/across/over the railroad tracks...’ (MLand M1 NMP & RMC)
Jackendoff’s arguments and Yucatec (cont.)

a possible state change decomposition for máan ‘pass’

(3.16) \[ \text{Event INCH ([State BE LOC ([Thing \ ]], [Place PAST ([Thing \ ])]))] \]

no composition of complex path functions

\[ \text{cf. Bohnemeyer et al 2007 for details} \]

(today’s first study)
Jackendoff’s arguments and Yucatec (cont.)

- English metaphors that cannot be rendered with the change of location verbs aren’t expressed in Yucatec
  - so it may be more appropriate to speak of ‘fictive change of location’ in Yucatec – cf. Matsumoto 1996 for Japanese
  - example: no ‘line of sight’ or ‘sensory path’ metaphors

(3.17) Káa=t-a=pakat-ah  te=béentanah=o’,

CON=PRV-A2=look.at-CMP(B3SG)  PREP:DET=window=D2

káa=t-aw=il-ah  ba’x yàan  ich le=nah=o’.

CON=PRV-A2=see-CMP(B3SG)  what  EXIST(B3SG)  in  DEF=house=D2

‘[When/and then] you looked (lit. at it) at the window, [when/and then] you saw what was in the house.’
• conjecture: no path encoding at CS
  – just because path functions aren’t expressed in Yucatec does not mean they are not encoded at CS
  • in the mind of Yucatec speakers
  – a plausibility argument: thinking for speaking
    – along the lines of Slobin (1996, 2003)
  • assumption (Jackendoff): CS encodes linguistic meaning
  • it follows that a Yucatec observer of an event who derives a CS representation with a path semantics
    – would be unable to express this representation linguistically without first translating it into a state change representation
  • so the presence of path functions in the CS of Mayan would actually present an obstacle to event description
– indirect evidence: no spatial metaphors for temporal connectives

• it has often been suggested that temporal connectives such as *after* and *before* are based on path metaphors
  – e.g., Clark 1973; Traugott 1978

  – e.g., instead of (3.14), one gets (3.15):

(3.18) *Everyday after Pedro writes a letter, he smokes a cigarette*

(3.19) \[
\begin{align*}
\text{Pedro} &= \text{e’ sáansamal = e’} & \text{le} &= \text{k-u=ts’o’k-ol} \\
\text{Pedro} &= \text{TOP RED: tomorrow=TOP} & \text{DET} &= \text{IMPF-A3=end-INC} \\
\text{u} &= \text{ts’íib-t-ik} & \text{hun-péel} &= \text{kàarta=o’}, \\
\text{A.3} &= \text{write-APP-INC(B3SG)} & \text{one-CL.IN} &= \text{letter=D2} \\
\text{k-u} &= \text{ts’u’ts’-ik} & \text{hun-péel} &= \text{chamal}. \\
\text{IMPF-A3} &= \text{suck-INC(B3SG)} & \text{one-CL.IN} &= \text{cigarette} \\
\end{align*}
\]

‘Pedro, every day, it being finished his writing a letter, he smokes a cigarette.’
— anecdotal evidence: widespread L1 transfer in motion descriptions in L2 Spanish

• L1-Yucatec speakers often use ground phrases in Spanish utterances Yucatecan-style, i.e., path-neutrally
  — see Bohnemeyer & Romero Méndez 2009
    for experimental data confirming these patterns

(3.20) a. ¿Dónde vienes?
L2SPA where come:PRS:2SG
   ‘Where do you come?’ [intended: ‘where from?’]

b. ¿De dónde vienes?
L1SPA from where come:PRS:2SG
   ‘Where do you come from?’

(3.21) a. El ratón salió en su agujero.
L2SPA the rat exit:PAST:3SG in its hole
   ‘The mouse came out in its hole.’ [intended: ‘of its hole’]

b. El ratón salió de su agujero.
L1SPA the mouse exit:PAST:3SG from its hole
   ‘The mouse came out of its hole.’ (Lehmann 1992: 626)
interim summary
– direct evidence for the absence of path encoding in Yucatec
– indirect evidence for the absence of path encoding in the CS of Yucatec speakers
SYNOPSIS

- Situating today’s lecture
- The macro-event property in motion
- Path in language and cognition
- War of the Talmy Triads
- Summary
WAR OF THE TALMY TRIADS

- do patterns of linguistic encoding influence the categorization of motion events?
- reasons to think they might
  - since speakers of S-framed languages encode manner more routinely in their linguistic descriptions
  - they may be expected to also pay more attention to manner of motion when they attend to and memorize motion events
- one may even wonder whether manner of motion is a natural conceptual category for speakers of V languages
- to the same extent as for speakers of S-framed languages
do patterns of linguistic encoding influence the categorization of motion events? (cont.)

- reasons to think they might not
  - if it is the case that the mind encodes spatial information in a special representational system
  - that system may be so far removed from language as to be impervious to its impact
  - e.g., consider Jackendoff’s (1987, 1996, 1997) proposal

- however, empirical evidence of language-specific variation in spatial cognition has in fact been reported in other domains
  - e.g., Bowerman & Choi 2003; Levinson 2003; Pederson et al. 1998

**Figure 4.1. Mental architecture according to Jackendoff 2002**
triad designs

- standard paradigm in categorization research
- forced choice as to which of two variants is identical to / different from / more (dis)similar to a target display
- applied to the issue at hand: pit a same-path-different-manner variant against a different-path-same-manner variant
  - which of the two variants is more similar to the target?
  - are native speakers of S-framed languages more likely to pick same-manner variants than are speakers of V-framed languages?
- triad designs in research on possible effects of motion framing on motion categorization have been used prior to our study by a number of scholars
  - Finkbeiner et al 2002; Gennari et al 2002; Loucks & Pederson 2010; Papafragou et al 2002; *inter alia*
previous studies: Papafragou et al. 2002

two populations: native speakers of AE and Greek

findings: participants in both populations would choose same-path variants in about 50% of trials and same-manner variants in about 50% of trials

i.o.w., categorization choices were not significantly different from chance in either population

problems

Greek may not be the best example of a V-framed language

(4.1) O vatrahos pidai sto domatiao
GRE the frog is jumping into the room
`The frog is jumping into the room’ (Papafragou et al. 2002: 204)

stimulus scenes were presented in sequences of stills rather than dynamically

only eight triads
previous studies: Gennari et al. 2002

- two populations: native speakers of AE and Argentinean Spanish
- three conditions
  - “Naming first”: participants describe the targets before their similarity judgments are recorded
  - “Free encoding”: participants merely watch the targets before their similarity judgments are recorded
  - “Shadow”: participants repeat nonsense syllables while watching the target – then their similarity judgments are recorded
- findings
  - significant interaction between language and condition
    - language had a significant effect only under Naming-first
      - here, Spanish speakers show a significantly stronger bias in favor of same-path choices than do English speakers
    - suggests a subvocal rehearsal effect
previous studies: Gennari et al. 2002 (cont.)

problems

many of the manner variants in the stimuli differ from the target primarily in actions performed

by external causers

e.g., drag vs. carry a stool, kick vs. slide a ball to a box, kick vs. roll a ball into a box, roll vs. put a can into a box, etc.

but scenes that differ in this regard differ in quite a bit more than merely manner of motion
previous studies: Finkbeiner et al 2002

- four populations
  - monolingual AE speakers
  - L1-Spanish speakers bilingual in English (U of AZ grad students)
  - L1-Japanese speakers bilingual in English (U of AZ grad students)
  - monolingual Japanese speakers

- two conditions: variants presented simultaneously with vs. after the target
previous studies: Finkbeiner et al. 2002 (cont.)

results

- participants in all four populations picked same-manner variants more often than same-path variants

under memory recall

- the monolingual English speakers showed a significantly stronger manner bias than the other three groups

however this effect evaporated when targets and variants were presented simultaneously

suggests an effect from language onto recall memory

- possibly, though not necessarily, via subvocal rehearsal
### previous studies: summary

**Table 4.1.** Some “Talmy Triads” studies in comparison

<table>
<thead>
<tr>
<th>Study</th>
<th>Populations</th>
<th>Findings</th>
<th>Evidence consistent w/ LoT effect</th>
<th>Evidence of subvocal rehearsal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bohnemeyer et al 2006</td>
<td>Dutch; German; Polish; Tiriyó (Carib)</td>
<td>Some groups</td>
<td>No</td>
<td>Not tested</td>
</tr>
<tr>
<td></td>
<td>Basque; Catalan; French; Hindi; Italian; Japanese Spanish; Tamil; Turkish; Yucatec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finkbeiner et al 2002</td>
<td>English</td>
<td>Some groups</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Gennari et al 2002</td>
<td>English</td>
<td>Some groups</td>
<td>One group</td>
<td></td>
</tr>
<tr>
<td>Loucks &amp; Pederson 2010</td>
<td>English</td>
<td>Yes</td>
<td>No</td>
<td>Not tested</td>
</tr>
<tr>
<td>Papafragou et al 2002</td>
<td>English</td>
<td>No</td>
<td>Yes</td>
<td>Not tested</td>
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<tr>
<td></td>
<td>Greek</td>
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</tbody>
</table>
goals of our study

- a larger and typologically broader sample of languages

- since S-framing vs. V-framing isn’t really just a binary distinction

- systematic cross-tabulation of manner and path types

- to study the effects of individual manner and path types

- since one possible explanation for the discrepancies in the findings of the previous studies

- is differences in the stimuli they employed
2D animations (Macromedia Director)

- Finkbeiner et al.: 3D animations (3D Studio Max)
- Gennari et al., Papafragou et al.: videos/stills of real events
  - the goal of combining every path type with every manner type renders animation the only viable option

6 path types

- from a tree to a rock; from a rock to a tree
- out of a cave into a hut; out of a hut into a cave
- up a ramp; down a ramp

4 manner types

- rolling, sliding, spinning, and bouncing
realization of the resulting 24 basic triad types was further varied to counterbalance for
- placement of the ground objects on the left/right
- movement of the figure to the left/right
  • e.g., each of the four manner types of the figure exiting the cave and entering the hut had 2 variants...
    » hut left, cave right, figure moves to the left
    » hut right, cave left, figure moves to the right
  - ...matched by 2 variants of a scene in which the figure exits the hut and enters the cave
    » hut left, cave right, figure moves to the right
    » hut right, cave left, figure moves to the left
- the six possible manner contrasts
  • roll vs. slide, roll vs. spin, roll vs. bounce, slide vs. spin, slide vs. bounce, spin vs. bounce
this generated 72 triads, which were distributed over 6 lists
– so that every participant saw 12 target triads

the 12 target triads each participant watched were masked in a set of 38 fillers
– these fillers pitting, in various ways, event identity against participant identity
  • fillers were likewise counterbalanced for direction etc.

every participant watched a total of 50 triads
– and per language, 12 participants were tested
  • this small number being a concession to the difficulties of finding larger numbers of suitable participants
    – in some of our collaborators’ field sites
War of the talmy triads (cont.)

• single condition
  – variants were presented subsequent to targets
    • as in Finkbeiner et al.’s memory recall condition

• training items
  – every participant watched a set of five training triads
    • designed to introduce the structure of the triads and the concept
      of recording similarity judgments with them
      – an appropriate expression of the concept of similarity was determined in each
        language on the basis of a questionnaire

• procedure
  – participants would watch a triad
    • then record their judgment
      – by pointing to the screen they judged to show the variant that was more
        similar to the target
  – participants were asked to record their response
    immediately after the variants stopped playing
  – after they had been tested with the entire set of triads
    • descriptions of nine target clips were recorded from each
      participant
sample

- 7 S-languages
  - Dutch, English, Estonian, German, Polish, Russian and Tiriyó

- 12 V-languages
  - Basque, Catalan, French, Hindi, Italian, Jalonke, Japanese, Spanish, Tamil, Tidore, Turkish and Yukatek

- we tested 12 adult native speakers of each language
results

- Individual variation drowns out variation by type dramatically.
- Monte Carlo simulations suggest we still might not have found a typology effect had we tested 80 populations.
- Participants’ response to the first trial is highly predictive of their subsequent performance - much more so than type.
interpretation

a conceivable explanation for the huge amount of individual variation

it is simply not the case that we have a stable preference for categorizing motion in terms of manner or path

the relative salience of these and other factors depends on the context (i.e., is task-specific)

a methodological lesson for Whorfian studies

studies that sample just two or three populations run a high risk of finding spurious effects
SYNOPSIS

- Situating today’s lecture
- The macro-event property in motion
- Path in language and cognition
- War of the Talmy Triads

- Summary
Summary

- Event segmentation cannot be captured in terms of lexicalization alone.
  - Unlike the domains of the classic studies of the Cognitive Anthropologists.
  - Since events aren’t encoded by single lexical items.
- A semantic typology of event segmentation requires a criterion that:
  - Is sensitive to differences in syntactic packaging.
  - But applicable crosslinguistically regardless of construction types.
the Macro-Event Property (MEP) fits the bill

- it assesses the event construal of a construction in terms of the temporal operators the construction is compatible with
  - the construction has the MEP if temporal operators necessarily have scope over all subevents

- the typological studies carried out to date with the MEP have shown that semantic event segmentation varies with
  - lexicalization
  - the availability of certain event-denoting constructions

- yet, these studies have also confirmed
  - the extent of the crosslinguistic variation in event segmentation diagnosed in Pawley 1987
constraints on form-to-meaning mapping

- such as unique assignment of thematic relations

emerge as being sensitive to the MEP

suggesting the MEP is in fact a property of natural language structure itself

- rather than merely an ad hoc criterion of semantic typology
motion is systematically framed as state change in Yucatec

path functions are not encoded

- evidence: path-neutral ground phrases; compatibility with non-figure-motion scenarios
- Jackendoff’s arguments for the necessity of a path semantics for English do not apply to Yucatec
  - no fictive motion metaphors; descriptions of motion with respect to route grounds are drastically underspecified
- indirect evidence for absence of path functions from the CS of Yucatec speakers
  - lack of temporal connectives expected to be based on path metaphors
implications for the architecture of cognition

- the encoding of path information at CS, as opposed to SpS, may be language-specific
  - via the Thematic Relations Hypothesis, this entails language-specificity of a core component of CS

implications for language evolution

- Jackendoff’s (2002: 231-264 and elsewhere) scenario
  - CS predates language, is shared among all higher animals
  - language evolves as a system of external representations for CS
- language-specificity of core parts of CS supports an alternative scenario
  - on which CS coevolved with language as an interface between language and SpS
forced-choice binary categorization decisions of motion events pitting path against manner show variation

- by language, in the general direction predicted by typology
- with satellite framing boosting categorization by manner
- but much more so by participant - so much more so that a hypothetical typology effect is drowned out
- and could at become significant in a super-large sample
a conceivable explanation for the huge amount of individual variation

- it is simply not the case that we have a stable preference for categorizing motion in terms of manner or path

- the relative salience of these and other factors depends on the context (i.e., is task-specific)

- a methodological lesson for Whorfian studies

- studies that sample just two or three populations run a high risk of finding spurious effects
PREVIEW: LECTURE 5

- reference frames in language and cognition
- reading: Bohnemeyer & O’Meara (2012)/Bohnemeyer (2012b)
- on Canvas shortly
References


Bowerman, M. & E. Pederson (ms.). Cross-linguistic perspectives on topological spatial relations. Manuscript, Max Planck Institute for Psycholinguistics.


References (cont.)


Thanks!