Overview

- semantic typology
- the Levinson-Gleitman debate
- the MesoSpace project
- evidence from Yucatec
- the meronymy-allocentrism pattern
- conclusions

Semantic typology

- (non)linguistic categorization

Semantic typology (cont.)

- languages as engines for the generation of external representations

Semantic typology (cont.)

- language specificity in linguistic representations
Semantic typology (cont.)

• one more example: spatial relations in English, Dutch, Berber, and Spanish

Figure 9. The support-containment continuum in English adpositions (Bowerman & Pederson ms.)

Figure 10. The support-containment continuum in Dutch adpositions (Bowerman & Pederson ms.)

Figure 11. The support-containment continuum in Berber adpositions (Bowerman & Pederson ms.)

Figure 12. The support-containment continuum in Spanish adpositions (Bowerman & Pederson ms.)

Semantic typology (cont.)

• linguistic categorization of a given stimulus
  – the representation of that stimulus in a particular language

• semantic typology is the cross-linguistic study of linguistic categorization
  – using methods of language typology, the "bottom-up" = inductive study of language universals

• the Big Question
  – what properties of linguistic categorization vary across languages and what are universal?

• corollary
  – to the extent that there is variation
    • what determines the type of representation that occurs in a particular language?

Semantic typology (cont.)

do English speakers find the relation between the picture and the wall more similar to the relation between the band aid and the leg than Dutch speakers?

Semantic typology (cont.)

do Berber speakers consider the relation between the apple and the twig more similar to that between the apple and the bowl than Dutch or English speakers?

Semantic typology (cont.)

do Spanish speakers find the relation between the cup and the table more similar to that between the apple and the bowl than do Dutch, English, or Berber speakers?

Semantic typology (cont.)

• the Nijmegen approach to semantic typology
  – start from a tentative determination of parameters of variation, based on previous studies
  – construct an etic grid
    • a possibility space created by a few independent notional dimensions
      – in which every categorized stimulus can be located as a data point
    • e.g., a network of nuclear-family genealogical relations is used as etic grid in studies of kinship terminology
      – following a method pioneered by L. H. Morgan (1871)
    • Berlin & Kay’s (1969) seminal study of color terminologies famously used the Munsell color chart
      – a matrix of 40 hues by eight brightness values, realized in 320 color chips – cf. day 4
      – this approach was pioneered by Brown & Lenneberg 1954
Semantic typology (cont.)
- encode the "cells" of the grid exhaustively in sets of nonlinguistic stimulus items
- collect preferred descriptions and ranges of possible descriptions
  - in a typologically broadly varied sample of unrelated languages
  - with multiple speakers per language according to a standardized protocol
- try alternative elicitation procedures
  - aimed at exploring the full referential potential of language-particular expressions in the target domain
  - including referential communication tasks
- perform semantic analyses
  - to filter out pragmatically generated meaning components
    - and isolate senses or "intensions"

Semantic typology (cont.)
- use statistical techniques to analyze correlations
- formulate implicational generalizations
  - e.g., If a language has a basic color term for brown
    then it also has basic color terms for black, white, red, green, yellow, and blue (Berlin & Kay 1969)
- If a language uses observer-centered ("relative") frames in a given domain of spatial reference
  then it also uses object-centered ("intrinsic") frames in the same domain (Pederson et al. 1998)
- If a language has a pre- or postposition that expresses contact ("ON")
  then it also has a pre- or post-position that expresses inclusion/containment ("IN") (Levinson & Meira 2003)

- three large-scale reference studies to date
  - Pederson et al. 1998 on spatial frames of reference
  - Levinson & Meira 2003 on "topological" spatial relations
  - Bohnemeyer et al. 2007 on the segmentation of motion events

• goals of semantic typology
  - an empirical inquiry into the interface between language and cognition
  - look at how supposedly universal domains of cognition are represented across languages
    - to what extent is linguistic encoding constrained by universals of cognitive representation?
    - how much leeway do languages have for variation in semantic construal?
  - sort out the real universals from Euro-centrisms and Anglo-centrisms
  - improve semantic theory
    - reevaluate test prepositions
  - pave the way for serious research on the LRH
  - illuminate the mechanisms of form-to-meaning mapping
    - and the mapping between linguistic and internal representations
  - other "windows" in the language-cognition interface
    - language acquisition, sign language, co-speech gesture, language processing

The Levinson-Gleitman debate
• background: spatial frames of reference (FoRs)

The Levinson-Gleitman debate (cont.)
• surprise, surprise: cross-linguistic variation!

Table 1. Distribution of the three types of spatial FoRs

<table>
<thead>
<tr>
<th>Language</th>
<th>Intrinsic</th>
<th>Absolute</th>
<th>Relative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayan</td>
<td>+</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Guugu Yimithir</td>
<td>—</td>
<td>+</td>
<td>—</td>
</tr>
<tr>
<td>Tzeltal</td>
<td>+</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Japanese</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>English</td>
<td>+</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>Yukatek</td>
<td>+</td>
<td>+</td>
<td>—</td>
</tr>
<tr>
<td>Kategad</td>
<td>+</td>
<td>+</td>
<td>—</td>
</tr>
</tbody>
</table>

- primary differences not in lexicon, but in domains of usage
- e.g., English: cardinal directions mostly in geographic space only
- Tzeltal etc.: no uses of relative FoR z-e-e-o! nada! rien!

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The Levinson-Gleitman debate (cont.)

- predicted effects on internal cognition
  - it's difficult to translate a locative relation from one FoR into another
  - suppose you memorize the cat as being left of the car
    - it's difficult to talk about this in terms of cardinal directions
    - unless you happen to also memorize where you were with respect to the car in cardinal terms

- so people remember everything they might want to talk about in a FoR appropriate to their language

- observed effects
  - experiment: recall memory under 180° rotation
    - Animals in a Row task
      - note this is just one out of a battery of experiments!
      - step I: memorize a row of toy animals
      - step II: rotate 180° to face second table
      - step III: choose the row that matches the first one

- further evidence
  - additional recall memory experiments on color chips rather than toy animals
  - additional recall memory experiments on paths rather than static configurations ("maze" tasks)
  - experiments on transitivity inferences under rotation
    - linguistically relative populations prefer relative solutions on all these tasks
    - while linguistically absolute ones prefer absolute solutions
  - experiments on "dead reckoning" skills
    - measured by the accuracy of pointing to a familiar location after having been brought to an unfamiliar one
  - linguistically absolute populations are shown to have far superior dead reckoning skills to those of relative ones
  - Levinson et al.'s interpretation: Whorfian effect!

- Li & Gleitman 2002: culture, rather than language, as the driving force
  - rather than evidence of language influencing cognition
    - the co-variation reported in Pederson et al. (etc.) is the result of cultural biases and predilections
    - different cultures adapt to different topographies and differences in "social cohesion"
    - as a result, different populations prefer different FoRs in both discourse and internal cognition

Perhaps it is the habitual linguistic practice in these communities that determines the relevant modes of thought, as Levinson seems to imply in the quotation above. On the other hand, it could be that cultural difference is a kind of cognitive trait that influences the prominence and frequency of use. Perhaps both such mechanisms are at work with, in Whorf's words, "language and culture constantly influencing each other." (Li & Gleitman 2002: 268)
• Li & Gleitman’s hypothesis
  • independently of language, people have innate knowledge of the 3 FoRs and are capable of using them
  • there are cultural biases of FoR use that have to do with the environment and modes of production
  • these influence language use and internal cognition alike
  – culture is arguably a straw man here
  • the real point is to trivialize the differences Pederson et al. found as rather more shallow and easily mutable

The Levinson-Gleitman debate (cont.)

• Li & Gleitman’s experiments
  – American college students outdoors ⇒ ?absolute?
  • supposition: Maybe Levinson et al. tested their “absolute” subjects in the big outdoors
  – while their “relative” ones were tested indoors?
  • Levinson et al. (2002) fail to replicate this with Dutch college students
  – the use of local landmarks such as buildings instantiates intrinsic, not absolute, FoRs on Levinson’s classification
    – however such landmark-based FoRs do share important logical properties with absolute FoRs!
  – American college students indoors with a landmark cue (a toy duck pond!) ⇒ ?absolute?
  • Levinson et al. (2002) show
    – participants’ performance under this condition involves memorizing the array intrinsically wrt. the toy pond
  – bottom line: Li & Gleitman failed to demonstrate that American college students use absolute FoRs
  • in table top space

The Levinson-Gleitman debate (cont.)

– deconstruction
  • the use of one’s own body as both ‘anchor’ of a FoR and referential ground involves intrinsic, not relative, FoRs
  • it is only the projection onto an external ground that makes egocentric reference relative in Levinson 1996
  • Danziger (in press) proposes the term direct for the intrinsic use of the observer’s body as ground
  • of course, LA&P’s “geocentric” condition likewise involved an intrinsic FoR, not an absolute one, as they thought
  – bottom line
  • just as Li & Gleitman failed to show that American college students use absolute FoRs in table top space...
  • ...so LA&P failed to show that Tenejapan speakers use relative FoRs

The Levinson-Gleitman debate (cont.)

• new work: Li, Abarbanell, & Papafragou 2005
  – claim: Tenejapans when given an appropriate task can be induced to memorize stuff in a relative FoR
  – method (experiment I)
    • picture-to-picture matching: view a card with two dots
      – then rotate and select an identical copy on a second table
    • the participants rotate holding the original card in a box
    • “geocentric” condition: the box rotates w/ the participants
      – “geocentric” condition: the participants maintain the orientation of the box in the room
  – findings: no significant difference b/w conditions
  – LA&P’s interpretation
    • “correct” responses in the “geocentric” condition require use of a relative FoR
      – therefore, the outcome shows that Tzeltal speakers are just as good at reasoning in absolute and relative FoRs

The Levinson-Gleitman debate (cont.)

• thus, as Majid et al. 2004 point out, there is no evidence of ecology or modes of production predicting FoR bias

Table 3. Frames of reference and ecological determinism (Majid et al. 2004: 112)

– one possible exception: literacy – but see Levinson 2003
The MesoSpace project

- NSF award #BCS-0723694 “Spatial language and cognition in Mesoamerica”
- 15 field workers
- 13 MA languages
  - Mayan
    - Chol (J. Vázquez)
    - Q’eqchi’ (E. Mateo Toledo)
    - Tzeltal (G. Polian)
    - Yucatec (J. Bohmeyer)
  - Mixe-Zoquean
    - Ayui Mixe (R. Romero Méndez)
    - Soteapanec (S. Gutiérrez Morales)
    - Tepecáin Zoque (R. Zavala Maldonado)
  - Otomanguean
    - Otomi (E. Palancar)
  - Zapotec
    - San Lucas Quiché
    - Zapotec (G. Pérez Báez)
    - Tarascan
    - Purepecha (A. Capistrán)
    - Totonacan
    - Huasteca Tepehua (S. Smythe Kung)
    - Ute-Aztecan
    - Cora (V. Vázquez)
    - Papajapan Nawat (V. Peralta)

- why MA
  - spatial frames of reference
    - conceptual coordinate systems used to define orientation-dependent place functions (Jackendoff 1983)
  - productive meronymy affording reference to arbitrary parts of arbitrary objects
    - attested in Mixtec, Purepecha, Totonac, Trique, Tzeltal, Tzotzil, Yucatec, Zapotec

- according to MacLaury, these are global analogical domain mappings from the geometry of the human body
  - into that of the animal or plant body or object
  - as described by Structure Mapping Theory (Gentner 1983)
    - accounts of meronymy in other Otomanguean languages have made similar assumptions and are compatible with MacLaury’s
      - e.g., Sinha & Jensen de López 2000 and Pérez-Báez in press for other Zapotecan varieties
  - MacLaury 1994 rejects global analogical mapping for Tenejapan Tzeltal on the basis of three properties
    - all parts are named non-uniquely
      - so any object can have an arbitrary number of ‘legs’, ‘noises’, ‘heads’, ‘backs’, etc.
    - parts are named in first approximation on the basis of shape, regardless of place in the structure of the object
      - so ‘arms’ can be assigned growing out of ‘heads’, ‘noises’ out of ‘buttocks’, etc.

- 3 controls
  - Seri (C. O’Meara)
  - Sumu (E. Beneditco)
  - Mexican Spanish (R. Romero Méndez)

- 2 (interrelated) domains
  - meronyms – labels for parts of entities
    - including, but not restricted to, body part metaphors

- how does this work – what makes this productivity and regularity possible?
  - two proposals – global analogies (MacLaury) vs. shape-analytical algorithms (Levinson)
  - MacLaury 1989 argues Ayoquesco Zapotec meronymy to operate on global analogical mapping
    - Ayoquesco has a set of seven body part terms that are freely extended to non-human bodies and inanimates
  - Levinson instead proposes an algorithm
    - that starts from the visual analysis of the outline of the object
      - segmenting it into volumes based on curvature discontinuities
      - and assigning axes to these volumes that generate them as generalized cones
    - following Marr’s (1982) theory of shape recognition
    - the parts on the ends of the axes of each volume are then labeled on the basis of their shape
    - the algorithm accounts for the meaning of body part terms as much as for their uses with inanimate objects
      - which on Levinson’s analysis are non-metaphorical
      - e.g., the ‘buttocks’ are really the less convex end of the generating axis of the main volume
meronymy as the primary lexical resource for spatial reference – few/no adpositions/case markers
• including, e.g., in all of the above languages
• when realized as relational nouns, meronyms are used in locative/motion descriptions as follows
  – they are possessed by the ground-denoting nominal (the noun referring to the entity serving as reference point)
  – the resulting possessed nominal either is the ground phrase (the phrase denoting the place projected from the ground object)
  + or combines with a semantically pale adposition to form it
  – the following examples from Juchiteco Zapotec and Yucatec Maya illustrate the first possibility

* (3.1)

Dx'il`ba za ike yoo

– relative FoRs play a minor or no role
• attested for Huave, Mopan, Olutec, Totonac, Tzeltal, Tzotzil, and Yucatec
– the MA *sprachbund* and specifically the evidence for calquing of meronyms
  • cf. Kaufman 1973; Campbell 1979; Campbell, Kaufman, & Smith-Stark 1986; Smith-Stark 1994
– the cultural uniformity and topographic and ecological diversity of the MA area
  • to distinguish between possible linguistic and cultural factors influencing spatial cognition
    – in response to Li & Gleitman 2002

• 2 big research questions
– does the availability of productive geometrical meronym systems bias FoR selection?
  • hypothesis: meronymies favor the use of allocentric (intrinsic, geomorphic, or absolute) over egocentric FoRs
– does a possible effect of meronym terminology on FoR use extend to non-linguistic cognition?
  • hypothesis: speakers of languages w/ productive meronymies tend to be allocentric thinkers

• oodles of smaller research questions
  – how much spatial information is represented in language?
  – to what extent do languages differ in the expression of geometrical and functional object structure?

• a set of plastic objects of unfamiliar shapes
  – to be used in referential communication tasks on part identification and localization wrt. parts
• the Ball & Chair (B&C) pictures
  – 4 x 12 photographs of configurations of a ball and chair to be matched in referential communication

– recall memory task: New Animals
  – a near-identical replication of the Animals In A Row (AIAR) design
    • of Levinson 1996 and Pederson et al. 1998
  – recall memory task: New Animals
    – a near-identical replication of the Animals In A Row (AIAR) design
      • of Levinson 1996 and Pederson et al. 1998

  – minor differences: the toy animals used; the number of trials; ...
  – big drawback: no intrinsic response pattern
    • during pilots in Buffalo, we tried to engineer one
      – but all our attempts would push all participants towards using intrinsic FoRs
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Evidence from Yucatec

- the largest member of the Yucatecan branch of the Mayan language family
  - spoken by 759,000 people in the Mexican states of Campeche, Quintana Roo, and Yucatán
  - 2005 Census data show a decline by more than 40,000 speakers age five or older since 2000 (http://www.inegi.gob.mx/.../ept.asp?t=mien10&c=3337)
  - and approximately 5,000 people in the Cayo District of Belize (Gordon Ed. 2005)
- polysynthetic, purely head-marking, VOS, split-intransitive
- the field site: Yaxley
  - a village of about 800 people in the municipal district of Felipe Carrillo Puerto in Quintana Roo

Evidence from Yucatec (cont.)

- Yucatec meronymy involves a critical distinction between three semi-autonomous subsystems
  - for the labeling of surfaces, volumes, and curvature extremes (edges, corners, tips, etc.)
  - volume meronyms, but not surface and extreme meronyms
  - can possess other meronyms

<table>
<thead>
<tr>
<th>volume</th>
<th>surface</th>
<th>extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>hol</td>
<td>pool</td>
<td>aanal</td>
</tr>
<tr>
<td>punt</td>
<td>ixa</td>
<td>tu'k</td>
</tr>
<tr>
<td>chun</td>
<td>ichil</td>
<td>ku'al</td>
</tr>
<tr>
<td>it'</td>
<td>oolok</td>
<td>xuul</td>
</tr>
<tr>
<td>k'al</td>
<td>pasch</td>
<td>ku'ab</td>
</tr>
<tr>
<td>k'ab</td>
<td>ta'an</td>
<td>nak'</td>
</tr>
<tr>
<td>ts'el</td>
<td>bok</td>
<td>xbel</td>
</tr>
<tr>
<td>xbak'</td>
<td>xikin</td>
<td>...</td>
</tr>
</tbody>
</table>

Table 4. Yucatec meronym classes

Evidence from Yucatec (cont.)

- only the subsystems for surface and curvature extreme naming are fully productive
  - volume naming shares many traits with the algorithm described by Levinson
    - yet, it is much more restricted with unfamiliar objects
    - and often explicitly metaphorical

Table 5. Yucatec meronym classes and their properties

Evidence from Yucatec (cont.)

- volume meronyms are not nearly as productive as surface meronyms
  - during the Novel Objects sessions, body part terms played only a relatively minor role
    - except for pàach 'back'
  - objects 3 and 5-7 were said to have 'legs'
  - and 7 in addition for some speakers also has 'arms' and even a 'belly' and a 'head'
  - although the latter two assignments seem to be based on a local comparison to bottle gourds

Evidence from Yucatec (cont.)

- assignment of volume meronyms frequently involved similes and hedges
  - Ko'x a'lik u=k'ab
    HORT say-INC(B3SG) A3=arm(B3SG)
    'Let's say (it's) his arm'
  - there is no evidence whatever that the assignment of surface meronyms was considered metaphorical
    - I expect the use of similes and hedges with surface meronyms to be anomalous - but didn't test this
  - asked to name inanimate objects that have, e.g., 'heads' or 'bellies'
    - speakers quickly ran out of examples

Evidence from Yucatec (cont.)

- in contrast, surface meronyms were used liberally in reference to all Churches
  - Ko'x a'lik u=k'ab
    HORT say-INC(B3SG) A3=arm(B3SG)
    'Let's say (it's) his arm'
  - there is no evidence whatever that the assignment of surface meronyms was considered metaphorical
    - I expect the use of similes and hedges with surface meronyms to be anomalous - but didn't test this
  - asked to name inanimate objects that have, e.g., 'heads' or 'bellies'
    - speakers quickly ran out of examples
– there is a great deal of variation in these judgments
  • contrasting with a striking uniformity in surface labeling
  • at the same time, there are important parallels to the algorithm Levinson proposed for Tzeltal
    – volume meronyms are assigned independently of the object’s overall structure
      • e.g., a flashlight can be viewed as a ‘leg’ with a ‘head’ on one end and an ‘anus’ on the other
    – volume meronyms are assigned non-uniquely
      • objects can have multiple ‘heads’...
        – e.g., hills with multiple tops
        – the ‘head’ of a village is its entrance, or the first house one passes when entering the village proper
        - and a village can have as many of those as it has roads leading into it
      • …and certainly an arbitrary number of ‘arms’, ‘legs’, ‘ears’

– only surface meronyms project spatial regions that can be referenced in intrinsic or relative FoRs
  • volumes and extremes only occur as arguments of topological (i.e., orientation-free) place functions

Evidence from Yucatec (cont.)

– the evidence from volume meronyms suggests
  • that a shape-analytical algorithm as described by Levinson is not necessarily non-metaphorical
  • shape-analytical algorithmic mapping may be merely a different kind of metaphorical mapping

– surface meronyms are assigned fully productively
  • but, except for páach ‘back’, cannot be assigned to humans or animals
  • but only to parts of their bodies – suggesting surface meronyms are not body part terms
  – the assignment of surface meronyms is likewise algorithmic, but based on a distinct algorithm
    • see the Appendix for details

Evidence from Yucatec (cont.)

• FoRs in discourse: Ball & Chair
  – all five pairs of speakers used the relative FoR
    – but not necessarily the terms for ‘left’ and ‘right’; see below
  • whereas only the first two dyads - the all-male dyads - used the absolute FoR
  – the third pair used it once
  – this in line with previous reports (Bohnemeyer & Stolz 2006; Le Guen ms.)
  – for the task of locating the Ball vis-à-vis the Chair, the intrinsic FoR is the most important
    • for all five pairs of speakers
    • this is likewise as predicted by previous work

Evidence from Yucatec (cont.)

– for the task of orienting the Chair
  • intrinsic FoRs in a narrow sense play no role here
  • the most important type of FoR is the direct (Danziger in press), where anchor and ground is the observer’s body
  – this, however, is treated as intrinsic reference in Levinson 1996
    (5.2) Tu’x
    $u=nak-tal$
    máak=o’
    estée
    HESIT PREP:A2=front turn(MIDDLE-INC(B3SG))
    ‘The back (lit. where one leans against), uh, it’s turned towards your front.’
  • use of cardinal direction terms could be a ‘genderlect’ phenomenon in Yucatec
    • Bohnemeyer & Stolz 2006, Le Guen ms., and the present study all find a strong gender bias

Evidence from Yucatec (cont.)

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Table 6. Surface meronyms and the expression of place functions

Evidence from Yucatec (cont.)
Evidence from Yucatec (cont.)

- “referential promiscuity”
  - use of all types of FoRs in table-top space is customary in the community
  - all adult speakers are extremely versatile and switching between different FoRs
    • and combining multiple FoRs in a single description

\[(5.3)\]

| T-u=tséel, te=x-ts'íik te-estée-le=chik'in =o' PREP-A3=side PREP:DET=F-left |
|-----------------------------|----------------|-----------------|-----------------|----------------|
| hun-p'éel bòola druy=kah-a'n (... one-CL.IN ball On (the Chair's) side, on the west, there is a ball, it is suspended (…)) |

- predictions for New Animals task
  - based on evidence from a battery of tasks
    • conducted with a substantially larger population of participants (57)
    • he points out that the cardinal directions play a role in ritual practice and horticulture
    • that isn’t quite reflected in their use in everyday linguistic interactions
    - however, this does not explain the uniformity of the responses across the adult population

- interpreting the response types
  - the “absolute” response type is produced by absolute, geocentric, and landmark-based FoRs
  - and by coincidence

\[\text{Table 8 - Cross-tabulation of participants (N = 16) by age group, gender, and predominant response type (at least three trials have to instantiate a particular type in order for that type to qualify as the predominant type for the participant; “mixed” means there was no dominant type)}\]

- non-aligned responses are “relative” in terms of facing direction and “absolute” in terms of order
  - or vice versa
  - each variant occurred five times
  - the frequency of mixed, unidirectional, and non-aligned responses could be a reflex of intrinsic use
  - there is no obvious effect of age or gender
  - the “relative” response type is more marked and the “absolute” one more frequent
  - and widespread
    - than the B&C data predict on a Whorfian account
  - but: there are arguably no clear “Whorfian” predictions for Yucatec
    - due to its “referential promiscuity” and the role of the intrinsic FoR

Table 9 - Break down by trial. Unidirectional responders’ responses are mixed in as “absolute” or “relative” since they are not manifest at the trial level

- Le Guen (ms.) finds the same discrepancy
  - based on evidence from a battery of tasks
    • conducted with a substantially larger population of participants (57)
    • he points out that the cardinal directions play a role in ritual practice and horticulture
    • that isn’t quite reflected in their use in everyday linguistic interactions
    - however, this does not explain the uniformity of the responses across the adult population

- FoRs in recall memory: New Animals
  - “relative” responses are produced by relative and direct FoRs - and by coincidence
  - intrinsic FoRs (in the narrow sense) are compatible with both response types
  - “unidirectional” means the participant lined the animals up in the same direction in every trial

Table 10 - Predictions for New Animals

- the “relative” response type is produced by absolute, geocentric, and landmark-based FoRs
  - and by coincidence

Evidence from Yucatec (cont.)

- predictions for New Animals task
  - based on evidence from a battery of tasks
  - conducted with a substantially larger population of participants (57)
  - he points out that the cardinal directions play a role in ritual practice and horticulture
  - that isn’t quite reflected in their use in everyday linguistic interactions
  - however, this does not explain the uniformity of the responses across the adult population

- Le Guen’s account predict a strong gender effect in the non-linguistic data
  - comparable to that in the linguistic data
  - contrary to fact

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The meronymy-allocentrism pattern
- the evidence from Yucatec supports
  - the hypothesis that productive geometrical meronymies disfavor the use of relative FoRs
- the data from the other 15 languages of the sample point in the same direction
  - to the extent that they have been coded and analyzed
- but *why* would there be a connection b/w meronymy and FoRs?
  - productive geometrical meronymies *afford* the consistent use of intrinsic frames of reference
    - b/c the ability to consistently use intrinsic FoRs entails the ability to consistently reference object geometry
  - and/or object function

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- the Levinson-Gleitman debate
- the MesoSpace project
- evidence from Yucatec
- the meronymy-allocentrism pattern
  - conclusions

Conclusions

- spatial frames of reference (FoRs)
  - conceptual coordinate systems used to identify places, orientations, and directions
    - in discourse and in internal cognition
- the Levinson-Gleitman debate
  - different populations prefer different FoRs for the same task and domain
  - population-specific preferences for particular types of FoRs in discourse and internal cognition align
  - Levinson (1996, 2003, *inter alia*), Pederson et al. 1998, etc.: the alignment is a Whorfian effect
  - Li & Gleitman 2002; Li, Abarbanell, & Papafragou 2005, etc.: the alignment is caused by culture
    - cultural factors drive biases in FoR selection
    - in both discourse and internal cognition

Conclusions (cont.)

- the MesoSpace project
  - a collaborative study of the semantic typology of space in 13 Mesoamerican (MA) languages
    - plus three non-Mesoamerican controls spoken in the same region
  - focusing on two domain, spatial FoRs and *meronymies*
  - with a view towards exploring their connection
    - and towards advancing the Levinson-Gleitman debate on two fronts
      - effects of variation in toponomy, ecology, modes of production/subsistence, education and literacy
      - the possible existence of purely linguistic factors influencing FoR selection – especially the availability of productive meronymies
- meronyms – object-part descriptors
  - many MA languages have highly productive meronymies
    - whose use is governed by object geometry
• evidence from Yucatec
  – Yucatec has a productive geometric meronymy
    – like Temucap Tzeltal and Ayoyupec Zapotec
  • supporting the hypothesis that such meronymies are an areal feature of Mesoamerican languages
  – Yucatec meronymy has traits not attested in previously studied systems
    • in particular, the division into subsystems for volumes, surfaces, and curvature extremes
  – the (fully productive) surface terms are not (used as) body part terms (except for *pāach 'back')
  – volume labeling has all the signature traits of the algorithm Levinson described for Tzeltal
    • and yet is not fully productive and frequently involves hedges and similes
  • algorithmic mapping is not necessarily non-metaphorical!

Conclusions (cont.)

References


