Overview

- research questions
- Yucatec
- findings I: picture book
- findings II: Chunches I
- conclusions

Research questions

- **meronyms** - object-part designators
- **artifacts**
  - Indo-European languages: labeling by function
  - Mesoamerican (MA) languages: labeling by form

![Figure 1. Categorizing parts by function vs. form](image)

English  | Yucatec Maya
---|---
blade | mikan 'its foot/leg'
handle /hilt | vs 'its front'

Research questions (cont.)

- Indo-European languages likewise have a general-purpose meronymic system
  - the 'front'/back/left/right/top/bottom' (FBLRTB) system
  - but these terms are generally assigned by function and/or presuppose canonical vertical orientation
  - e.g., none of them is readily applicable to a knife

![Figure 1. Categorizing parts by function vs. form](image)

Research questions (cont.)

- **meronyms** in Mesoamerica: productivity
  - used across large heterogeneous classes of objects
  - labeling any arbitrary geometrically defined part of any arbitrary object
    - cf. MacLaury 1989 for Ayoquesco Zapotec and Levinson 1994 for Tenejapa Tseltal (Mayan)

![Figure 2. Productivity of MA meronyms: some uses of mikan 'its back' in Tseltal (Levinson 1994: 412)](image)

Research questions (cont.)

- what makes this productivity possible?
  - two proposals
    - **global analogies** (MacLaury)
    - **shape-analytical algorithms** (Levinson)
Yucatec object meronymy

• MacLaury: Ayoquesco Zapotec meronymy operates on global analogical mapping
  – a set of seven body part terms are freely extended to non-human bodies and inanimates

Figure 3. Meronyms in Ayoquesco Zapotec (adapted from MacLaury 1989)

• Levinson: the case against global analogy in Tseltal
  – all parts may be named non-uniquely
    • so any object can have an arbitrary number
  – parts are named 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 ‘buttoks’, etc.
  – the place of the labeled part in the structure of the object varies across classes of objects

Figure 4. S=pat ’its back’ revisited: Apparent body part analogies in Tzeltal (Levinson 1994: 811)

• Levinson’s alternative
  – meronymy operates on shape-analytical algorithms
    – starting point: visual analysis of the object’s outline
      • segmenting it into volumes based on curvature discontinuities
      • and assigning axes to these volumes
        – that generate them following Marr’s (1982) theory of shape recognition

Figure 5. Segmentations by Analy

• Levinson’s algorithm and body part terms
  – the algorithm governs applications of body part terms to animate as much as to inanimate entities
    – hence, there is no semantic transfer involved
  – even the ‘buttoks’ of a person are just the less convex end of the generating axis of the torso

Figure 6. Generating the uses of s=pat ’its back’ in Tseltal (Levinson 1994: 811)

Meronymy in Mesoamerica (cont.)

• meronymy in spatial reference
  – in many Mesoamerican languages, meronyms are one of two major resources for reference to spatial regions
    • the other being geocentric terms such as ‘uphill’ and ‘south’
      – the following examples from Juchiteco Zapotec and Yucatec Maya illustrate the first possibility

(1.1) Dxi 'ba za ichi yoo raised over cloud head house
     ‘The cloud is over the house’ (Pérez-Báez 2012: 128)

(1.2) ...h-ḍal \ m=balak' y=oök'ol le=pak'=o’ PRV-come(B3SG) A3=roll A3-top DET=brickwork=O2
     ‘...it came rolling on the wall’
Yucatec object meronymy  
J. Bohnemeyer  
Meronymy Across Languages, UNAM, 9/27/2013

Research questions (cont.)

• questions

  – to what extent is it really possible across MA languages to label arbitrary parts generatively?

  – what is the distribution of global analogical mapping and shape-analytical algorithms across MA?

  – do these really exclude one another, as Levinson claims, or can they co-exist in one meronymy?

  – are the shape-based algorithms really non-metaphorical?

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=mlen10&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: Xaxley

    – a village of about 800 people in the municipal district of Felipe Carrillo Puerto in Quintana Roo

Yucatec (cont.)

  – the Novel Objects aka “Chunches”

    – referential communication tasks targeting reference to parts and placement descriptions w/ parts

      » in each trial, one participant has an object with bits of play dough attached to various parts in front of them

      » and the other an identical copy of the object w/o the play dough

      » the first speaker instructs the second speaker to put the play dough on the correct parts, identifying the parts in the process

      » ran with five pairs of Yucatec speakers

    » five men and five women in their thirties through sixties

Overview

• research questions

  Yucatec

    • findings I: picture book

    • findings II: Chunches I

    • conclusions

• the data

  – picture book

    • pictures of humans, animals, and plants

    • a set of artifacts

      » some customary in MA culture

      » some Western, with parts commonly identified functionally in Spanish especially where the Spanish labels for these deviate from the labels predicted by geometry

    • elicitation of part segmentation, part descriptors, and locative descriptions

    » ran with 7 Yucatec speakers

      » six men and one woman in their thirties through sixties

Overview (cont.)
• Possession by descriptors of multi-volume entities require.

Table 2: Yucatec meronym names and their properties

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• Productivity of body part terms.
Yucatec object meronymy

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Findings I: picture book (cont.)

- the above classification is not exhaustive
- some further highly productive meronyms which I haven’t been able to place
  - hōol ‘hole’, ‘aperture’
    - like a volume term, it can possess surface terms and projects a topological region
    - but it isn’t a body part term, is fully productive, and does not trigger hedges when applied to the Novel Objects
  - ba’pāach ‘surrounding envelope’, ‘environ’
    - largely a hyponym of pāach ‘back’ – the kind of pāach that surrounds the entire object
  - yāam ‘interstice’
    - a surface term in every other respect except it does not project an oriented spatial region

Findings II: Chunches (placement)

- the Chunches – single-volume objects
  - volume meronyms in blue; surface meronyms in red; extreme (= point/edge) meronyms in green; functional meronyms in orange

Findings II: Chunches (placement) (cont.)

- evidence for differences in productivity
  - between volume meronyms and other meronyms
    - assignment of volume meronyms frequently involved similes and hedges
  - (5.8) le-ch'en bōol bōo yāam pā'ol ‘the little sphere is as if it had four legs (lit. four were its legs)’
  - (5.9) le-mahe nā' bōol bōo mahe nā' pā'ol ‘it’s little leg-like things, ...’
  - (5.10) ko’x dē bōol hōol mahe nā' bōo bōo mahe nā' pā'ol ‘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

Findings II: Chunches (placement) (cont.)
Yucatec object meronymy

J. Bohnemeyer

Meronymy Across Languages, UNAM, 9/27/2013

Findings II: Chunches (placement) (cont.)

Findings II: Chunches (placement) (cont.)

– asked to name inanimate objects that have, e.g., ‘heads’ or ‘bellies’
  • speakers quickly run out of examples
  • there is a great deal of variation in these judgments
    – contrasting with a striking uniformity in surface labeling
  • in contrast, surface and extreme meronyms are assigned to an indefinitely large set of entities

Findings II: Chunches (placement) (cont.)

– interpretation of the productivity data
  • volume meronyms designate body parts
    – their use outside the body domain is metaphorical and conventional
  • surface and edge/point meronyms designate geometric properties
    – they apply non-metaphorically to any arbitrary entity that has the relevant properties

Findings II: Chunches (placement) (cont.)

– volume meronyms, too, are assigned independently of the object’s overall structure
  • and they are likewise 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’, etc.
  • in addition, volume terms, like surface terms, are assigned locally, not globally

Findings II: Chunches (placement) (cont.)

– an inventory of the types of strategies used
  • by the Yucatec participants to label the parts
    – geometrical lexical meronyms: inalienably possessed relational noun, can be possessed by a volume term
      • cannot be possessed by a person or animal (exception: pàach ‘back’)
    – human/animal body part term: inalienably possessed relational noun, can possess a surface term
      • can be possessed by a person or animal and does not occur with hedges in that case
      • but may occur with hedges when applied to inanimate objects

Findings II: Chunches (placement) (cont.)

– use of lexical meronyms
  • i.e., terms that lexicalize part-whole relations

  – overall, the Yucatec speakers used lexical meronyms in reference to 54.7% of the parts

Figure 19. Local assignment of volume terms: flashlight

Figure 20. Non-unique surface labeling: cross-section of an object with two 'backs'

Figure 21. Non-unique surface labeling: two sides of the same coin

Figure 22. Non-unique surface labeling: cross-section of an object with two 'backs'

Figure 23. Local assignment of volume terms: flashlight

Figure 24. An inventory of part-whole relations
Yucatec object meronomy

Findings II: Churches (placement)

- plant body part term: inalienably possessed relational noun, can possess a surface term
  - can be possessed by a plant and does not occur with hedges in that case
    - examples: ‘trunk’, ‘bifurcation/crotch’
  - function-based lexical meronyms: ‘its entrance’, ‘its division’ - mostly Spanish loans
- descriptors derived from shape terms
  - inalienably possessed relational noun derived from a noun or stative predicate describing shapes and/or surface textures

- discussion

  - meronym assignment is algorithmic and local
    - for surfaces, curvatures extremes, and volumes alike
  - yet, while the labeling of surfaces and edges/points is fully productive and non-metaphorical
    - the labeling of volume parts is conventional and appears to be explicitly metaphorical
  - Levinson’s conjecture that algorithmic mapping is inherently non-metaphorical is thus invalid
  - local algorithmic mappings and global analogical mappings may be parts of a single process
    - Pérez Béez 2012 reports additional evidence for this hypothesis from Juchitán Zapotec

- comparisons

  - Yucatec vs. English
    - both surface/extreme and volume terms appear to be used more productively than in English
    - English has non-unique assignment of volume terms, but not of surface terms
      - Yucatec allows non-unique assignment of both
  - Yucatec vs. Levinson’s account of Tseltal
    - only geometric (surface/extreme) meronyms are assigned fully generatively in Yucatec
    - both body part terms and geometric meronyms appear to be assigned algorithmically in Yucatec
    - however, the assignment of body part terms to inanimate objects shows evidence of metaphoricity

- distributions of these strategies

  - counting páach ‘back’ as a surface = geo term
  - counting páach ‘back’ as a volume = body part term

- distributions of these strategies (cont.)
Yucatec object meronymy

J. Bohnemeyer

Meronomy Across Languages, UNAM, 9/27/2013

Findings II: Churches (placement) (cont.)

– Yucatec vs. MacLaury’s account of Ayoquesco Zapotec
  • Ayoquesco and some other Zapotec varieties appear to differ radically from both Mayan and Indo-European
  – in that they appear to lack geometric meronyms altogether, relying instead fully on body part terms for reference to parts and regions
  • global analogical mapping clearly plays a lesser role in Yucatec and Tzeltal than it does in Zapotec according to MacLaury
  – however, the precise role of analogical mapping calls for much more in-depth examination in all four languages

Conclusions

• Yucatec, like other Mesoamerican languages, has a highly productive shape-based meronymy

• unlike (Ayoquesco) Zapotecan meronyms, not all Yucatec meronyms are body part terms
  – terms for volume parts are body part terms
  – terms for surfaces and curvature extremes have abstract geometrical meanings

• the assignment of Yucatec meronyms is local and algorithmic
  – like that of Tzeltal meronyms
  – and unlike that of Zapotecan meronyms according to MacLaury and Levinson

References


References (cont.)


