A cognitive analysis of the word ’S

Dick Hudson
Manchester April 2009

Why a cognitive analysis?

• ‘Cognitive reality’ is the goal of analysis.
• Language is part of general cognition:
  – no Universal Grammar
  – no Modularity
• So language uses ordinary cognition:
  – categorisation
  – network structures
  – activation, etc.

Why “the word ’S’”? It has the distribution of a word, not a suffix:

• It combines with a whole phrase
  • [John and Mary]’s house, [someone else]’s glass
• It combines freely with any kind of word
  • [the man over there]’s name, [a guy I know]’s house
• So it’s not a case inflection.
• It belongs to a word class.
  – But which one?

So what kind of word is ’S’?

• It must be a determiner
  – *Cat died, but The/Mary’s cat died.
  – *The/a Mary’s cat died.
  – The/Mary’s old cat died, but *Old the/Mary’s cat died.
• More precisely, it’s a possessive pronoun
  – my/Mary’s/*the own cat
  – See you at mine/Mary’s [house]
  – a friend of mine/Mary’s

What are determiners?

• Pronouns, because most can occur alone:
  – We (linguists) deserve more attention.
  – Which (apple) do you want?
  – His (book) cost £5.
• Pronouns have an ordinary valency:
  – some allow a complement,
  – others require one (the, a, every)
  – most don’t allow one (who, me, each other)

What are pronouns?

• Nouns that don’t allow a determiner.
• So they “occur as head of a noun phrase”.
• Or better:
  – they depend like ordinary nouns
  – but not on determiners because they’re not common nouns
• So ’S is-a pronoun is-a noun.
The word taxonomy

- dependent → word
  - prep → comp
  - noun
    - pronoun
      - common
        - S → comp → *

So what? (1)

- In English, one way of signalling possession uses ‘S.
- This is a word, not a case suffix.
- It’s a determiner
  - i.e. a pronoun that has a complement
  - so it’s a noun.

Plan for the rest of the talk

- The syntax of ‘S
- The morphology of ‘S
- The semantics of ‘S
- The competition: OF
- How we use ‘S and OF
- How we learn and store ‘S

Possessors and subjects

- As in X-bar analyses, possessors with ‘S are structurally similar to subjects.
  - they precede the head
  - they can be raised
- They also have similar semantics
  - John’s denial of the charge; *the charge’s denial of John
  - John denied the charge; *the charge denied J
- So maybe ‘S possessors are subjects.

Why no phrases?

- Because they add nothing to the classification.
- Because ‘projectivity’ ensures adjacency.
- Because phrase boundaries aren’t needed here.
  - But they are needed e.g. in Welsh for soft mutation.
  - No universal ban on phrase boundaries.
So what? (2)

- The **possessed** is an optional complement of 'S.
- The **possessor** is an obligatory 'subject' of 'S.
- This is a very similar structure to \( S + V + C \).
- It may be possible to justify a direct dependency between the possessor and the possessed; if so,
  - possessor may be **subject** of possessed
  - this would be like 'raising'.

The **morphology** of 'S

- 'S is a clitic:
  - a separate word which is realised by an affix
- It’s like 'x, the clitic version of is
  - except that 'S has no 'strong' form.
  - 'S and BE: sg are also similar syntactically.
- The suffix that realizes 'S and BE:sg is \( \{s\} \)
  - which also realizes 'plural', Zwicky
  - hence the boys' (*boys's) heads

\{s\} realises 'S and BE: sg

Possessive pronouns

- Maybe MY = ME + 'S
  - realised jointly as \{my\} or \{mine\}
- Similarly, YOU + BE:pres is realised as \{you’re\}
  - NB irregular pronunciation /j  :/
- Maybe this explains why it’s hard to coordinate pronoun and noun:
  - ?John and my discussion

So what? (3)

- 'S is very like 'BE, 3sg.reduced':
  - it’s a clitic, realized by a suffix
  - it’s realised by the same suffix, \{s\}
    - which also realizes 'plural'
    - it has very similar syntax
- Maybe this similarity encouraged 'S to evolve as a separate word?

The **semantics** of 'S

- E’s elephant
  - definiteness
  - possessor
  - referent
  - referent
- elephant
  - sense
  - Elizabeth
  - s
  - s
The **definition** of ‘possessor’

```
possessor     'has'    possessed.
```

---

**The competition: OF**

- **OF** has the same meaning as ’S
- Though **not** in all cases:
  - OF not ’S: THINK OF, BOTTLE OF
  - ’S not OF: gerunds, AN HOUR’S TIME
- So Elizabeth’s elephant means **the same** as the elephant of Elizabeth

---

**Synonymy in a network**

```
E's elephant
```

---

**So what? (5)**

- Possessive ’S expresses the **same meaning** as possessive **OF**.
- So we have a **choice**.
- **How** do we choose?

---

**How we use ’S and OF**

- overall: OF > ’S
  - (contrast Old Eng: genitive > OF)
- human/animate subject: ’S > OF
- short subject: ’S > OF
- given subject: ’S > OF
- collocations (harm’s way): ’S > OF
An example of using ’S

- I want a word to refer to Nelly the Elephant – already known to you – ‘definite’
- I classify her as an elephant
- I identify her in relation to her owner, Elizabeth
- Elizabeth is known to you by name

Activating the words: ’S

An example of using OF

- As before, but you don’t know Elizabeth by name – you just know her as the lady at the next table.
- Target: words meaning ‘the elephant belonging to the lady at the next table’
- Result: the elephant of the lady at the next table

How do we choose OF or ’S?

- ‘possessor’ activates both ’S and OF
- ‘definite’ activates just ’S
- So ’S is favoured when possible
- But a long possessor overloads working memory – And especially so if it’s postmodified
- Then we prefer OF

Memory and dependency distance

- Working memory (WM) has a very limited capacity.
  - ‘phonological loop’ holds c. 2 seconds of sound
- Users like short words,
  - they leave WM faster
  - clitics involve fewer ‘word-forms’
- Users like short dependencies.
  - the words leave WM faster

Dependency distance
Clitic verbs also prefer short pronoun subjects

Labov 1969

- For processing reasons, we prefer
  - ‘S for short possessors
  - OF for long ones
- The preference is almost categorical for personal possessive pronouns

How we learn and store ‘S

- ‘S is favoured by human possessors:
  - human (Mary’s eyes > the eyes of Mary)
- Why has the language developed this way?
  - I don’t know
- How do users’ minds hold these trends?

How do we do it?

- Statistical biases in performance
  - reflect competence biases
  - reproduce these biases
  - producing a feedback effect
- How?
  - ‘Exemplar-based learning’: each token affects competence
  - Activation reflects frequency and recency

Exemplars and activation levels reflect usage

So what? (6)

So what? (7)

- Individual competence reflects our experience of usage
  - memorized tokens
  - activation levels sensitive to frequency
- Any tendency will tend to be reproduced through feedback.
  - Especially where choices exist.
Last ‘so what?’

- The diachronic development of ‘S may have been influenced by that of clitic verbs.
- Ordinary linguistics works reasonably well with the outlines of the analysis.
  - but these can be expressed in a cognitive network.
- The detailed patterns of usage require a cognitive analysis.

Thanks

- This talk is available at: www.phon.ucl.ac.uk/home/dick/talks.htm#man2
- For more information about Word Grammar:
  www.phon.ucl.ac.uk/home/dick/wg.htm