

A cognitive analysis of the word 'S

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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.

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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?

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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*

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What are **determiners**?

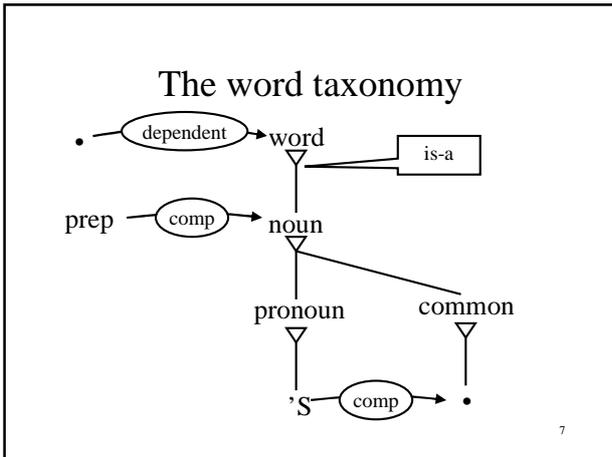
- **Pronouns**, because most can occur alone:
 - We (linguists) deserve more attention.
 - Which (apple) do you want?
 - His (book) cost £5.
- Pronouns have an ordinary **valency**:
 - some **allow** a complement,
 - others **require** one (*the, a, every*)
 - most **don't allow** one (*who, me, each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

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What are **pronouns**?

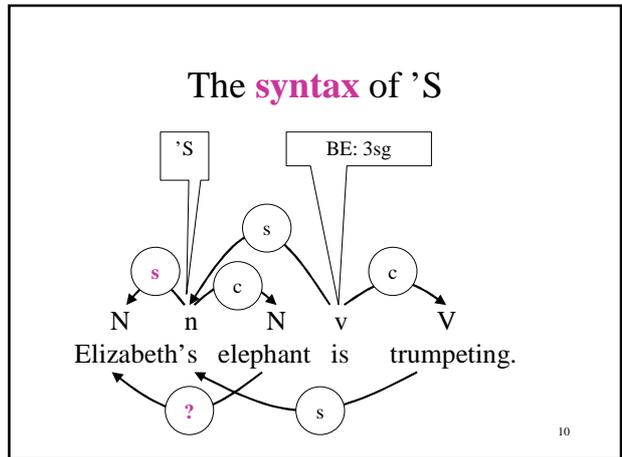
- **Nouns** that don't allow a determiner.
- So they "occur as head of a noun phrase".
- Or better:
 - they depend like ordinary nouns
 - but not on determiners because they're not common nouns
- So 'S **is-a** pronoun is-a noun.

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- ### 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**.
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- ### 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
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- ### 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.
- Cambridge GEL

- ### 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.
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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'**.

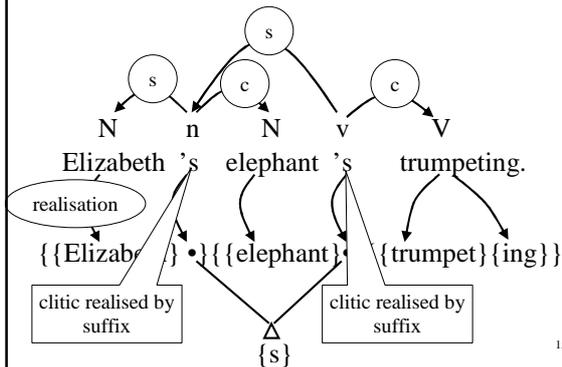
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The morphology of 'S

- 'S is a **clitic**:
 - a separate **word** which is realised by an **affix**
- It's like **'s**, 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*)

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{s} realises 'S and BE: sg



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Possessive pronouns

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

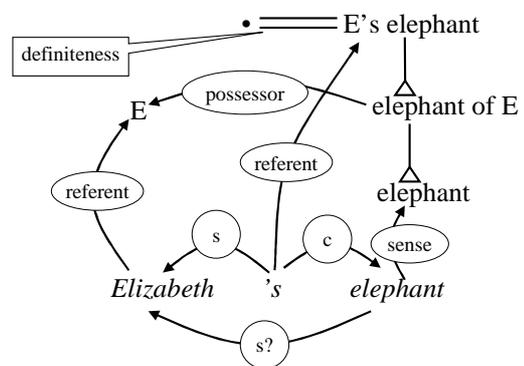
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So what? (3)

- 'S is **very like** 'BE, 3sg, reduced':
 - it's a **clitic**, realized by a suffix
 - it's realized 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?

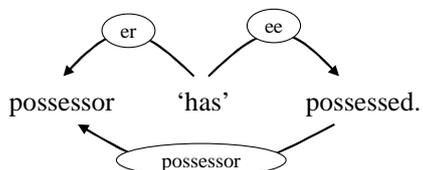
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The semantics of 'S



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The definition of 'possessor'



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So what? (4)

- 'S indicates a **syntactic** relation 'subject' corresponding to **semantic** 'possessor'.
- '(Possessor x)=y' entails 'y has x'
– this can be **defined** in the network
- 'S also signals **definiteness**.
- But 'S has **other** uses
– e.g. with gerunds.

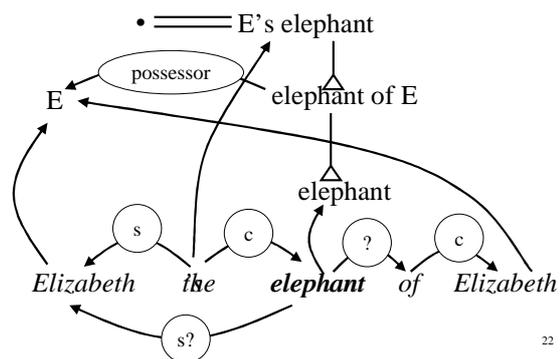
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The competition: OF

- **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*

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Synonymy in a network



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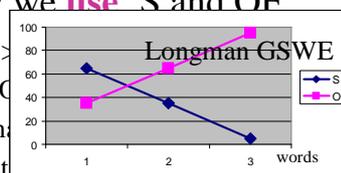
So what? (5)

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

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How we use 'S and OF

- overall: OF > 'S
– (contrast C)
- human/anim:
- short subject
- given subject: 'S > OF
- collocations (*harm's way*): 'S > OF



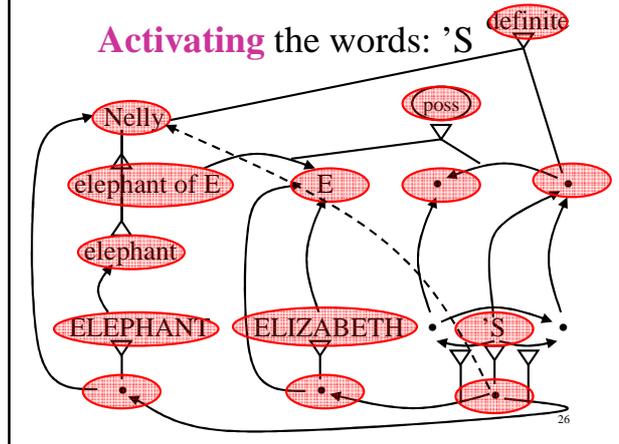
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An example of using 'S

- 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

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Activating the words: 'S



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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*

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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**

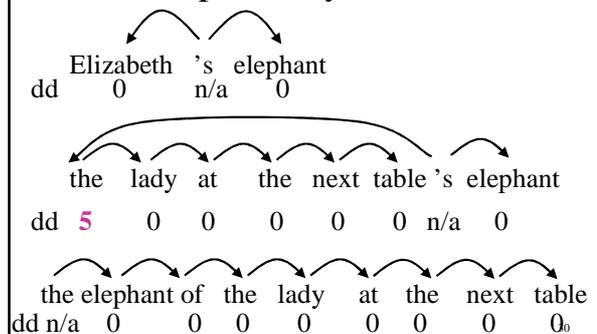
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Memory and dependency distance

- **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

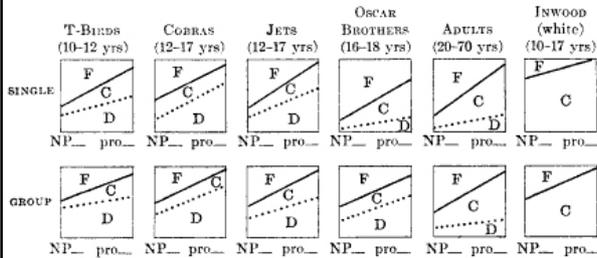
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Dependency distance



Clitic **verbs** also prefer short pronoun subjects

Labov 1969



So what? (6)

- For processing reasons, we prefer
 - 'S for **short** possessors
 - OF for long ones
- The preference is almost categorical for personal possessive **pronouns**
 - his book, but *the book of him.

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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?

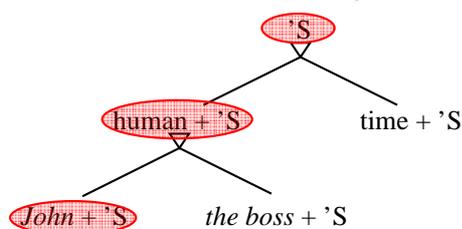
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How do we do it?

- 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

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Exemplars and **activation** levels reflect usage



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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.

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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.

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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

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