Metaphoric lexical-semantic capacity in the erection of a cognitive platform for humanity during the Paleolithic.

La Chapelle Aux Saints, 1908

Photo: Don Hitchcock, donsmaps.com

Ralph Stearley, Calvin College
Organization

Introduction

The role of the lexicon: semantic capacity

Role of metaphor in theological (and other) language

The artifact record of metaphoricity

Paleoneurology of metaphoricity

Tentative conclusions
Introduction
Approaches to assessing cognition

Primate behavior:
--in the wild
--in captivity

Comparative neurobiology & Paleoneurology

Theoretical ecology

Artifact construction demands:
--sensorimotor
--planning
--aesthetic

Language universals & acquisition
The Role of the Lexicon: Semantic Capacity
“Syntactocentrism”
(Ray Jackendoff, 2002, Foundations of Language)

The “revised extended standard theory”:
(N. Chomsky, Reflections on Language, 1975)

Phrase structure rules — Lexicon

Deep structure

Transformational component

Phonology — Surface Structure — Semantic representation

“The faculty of language: what is it, who has it, and how did it evolve?”

“We hypothesize that FLN only includes recursion and is the only uniquely human component of the faculty of language.” (abstract)
Syntactocentrism in paleoanthropology

--Influence of Noam Chomsky

--Common assumption that language novelty primarily results from syntax/ recursion.

--Identification of Broca’s area on fossil brain endocasts.

--Connection between hierarchical language parsing & hierarchical tool manufacture

Raymond Dart and Taung infant
The “tripartite theory”
(Jackendoff, 2002, *Foundations of Language*)

Phonological
formation
rules

Syntactic
formation
rules

Conceptual
formation
rules

Phonological
structures

Syntactic
structures

Conceptual
structures

Interfaces to
hearing &
vocalization

PS-SS
interface
rules

SS-CS
interface
rules

PS-CS interface
rules

Interfaces to
perception &
action

Jackendoff: *lexical items are integrated into and distributed across interface rules*
The lexicon: some aspects of cognitive neurobiology/psychology

- Lexical items are not always the same as our common conception, “word” e.g., “red herring”; “higgledy-piggledy”; “blue spruce”.

- Impairments often affect classes of words, e.g., manufactured objects or living things.

- Situated in distributed neural networks. Association areas near the confluence of the parietal, occipital, and temporal lobes are highly significant.

- Lexical items include syntactic tags, e.g., verb cases

- Phonological system must rapidly identify lexical items during word retrieval/speech production; and during speech comprehension.

- Sentence context provides necessary clues to determining features of word which are active during comprehension.
The lexicon

- “Gaining the ability use words may have been the single most important step in the evolution of language. Without words, neither syntax nor phonology would have had any reason to exist, but single words would be useful all by themselves.” --Burling, 2005, p. 128.

- “The most astonishing thing about the modern lexicon is its sheer bulk”. p. 133

Most adult humans have a working vocabulary of 50,000 to 60,000+ words

This provides enormous scope for semanticity.

The distributed context of lexical items naturally supports (learned) metaphors
The Role of Metaphor in Theological (and other) Language
Summa Theologiae I, Question 13
The Names of God

Article 3: “It seems that no name is said of God properly:

1) Every name we say of God is taken from creatures, as was said earlier. But creaturely names are said of God metaphorically, as when we say that God is a rock, or a lion, or something else of this kind. Therefore, all the names said of God are said metaphorically…

(Aquinas shortly will dissect and qualify this assertion)
Praise God in Heaven above

We look forward to Jesus’s 2nd coming

The synodical meeting was bathed in prayer
Lexical biases toward polysemy & metaphor

From Lakoff & Johnson, 1980. *Metaphors We Live By.* Ideas are:

1) **Food.** There are too many facts here for me to digest them all. I just can’t swallow that claim. That argument smells fishy. Now there’s a theory you can really sink your teeth into.

2) **Commodities.** It’s important how you package your ideas. He won’t buy that. That idea won’t sell. There is always a market for good ideas. That’s a worthless idea.

3) **Cutting instruments.** That’s an incisive idea. That cuts right to the heart of the matter. That was a cutting remark. He’s sharp. He has a razor wit. He has a keen mind. She cut his argument to ribbons.

4) **Money.** Let me put in my two cents’ worth. He’s rich in ideas. That book is a treasure trove of ideas. He has a wealth of ideas.
Metaphor and learning
BUT…

Kim Sterelny, 2012
*The Evolved Apprentice*

John Hoffecker, 2011:
*Landscapes of the Mind*

Henshilwood & d’Errico, 2013, eds.:
*HomoSymbolicus: The Dawn of Language, Imagination, and Spirituality*

--None of these include “metaphor” in index; only the 3rd includes “semantics”
The Artifact Record of Metaphoricity
Pondering...

The “Lion-Man”. Circa 30,000 yrs. “Therianthrope” sculpture...
1939 discovery, Stadel Cave, Lonental, Swabian Alb.

– Totemistic?
  (Mithen, 1996, *The Prehistory of the Mind*)

– Shamanistic?
  (Lewis-Williams, 2002, *The Mind in the Cave*)

– *Anthropomorphized lion, or lionized human??*
“The Sorceror”, cave of Les Trois Freres, Ariege, French Pyrenees. Magdalenian, circa 12,000 yrs. B. P.
Horus
Son of Isis, patron god of Egypt

Temple of Horus at Edfu, Egypt

Minotaur

National Archaeological Museum of Athens

Source for both images: Wikipedia Commons
It can be argued readily that polytheism had its roots in totemism and shamanism. The symbolic contingencies leading to the transition from the totemic-shamanistic to the polytheistic system are attributed to the interplay of newly emerging phenomena; an increased preponderance for conceptual thinking effected a decline in the use of visual imagery in cognitive processes, in turn, leading to an intensified reliance on metaphor and analogs in conceptualization.”

I would like to suggest something more foundational…
What is really going on, cognitively?

Literature often assures “shamanistic”

I would claim this object is fundamentally *metaphoric*

--its further significance is debatable

A “minimally-counterintuitive” (MCI) object?
(P. Boyer, J. Barrett)

The “lion-man”, Stadel, Germany circa 30,000 B.P.
Great Human Diasporas

Australia: by 60,000 yrs before the present
Artifacts from Still Bay levels, Blombos Cave, S. Africa
Paleoneurology of Metaphoricity
Human brain’s language pathways

Source: OpenStax College, the Mental Status Exam, Connexions Web site. http://cnx.org/content/m46650/1.3/, June 4, 2013
Human brain’s language pathways

Diffusion Tensor Imaging (DTI) Tomography

Analysis of the arcuate fasciculus—major tract connecting temporal and inferior frontal language cortices.

[Conference presentation: Included figure from Glasser and Rilling, *Cerebral Cortex Advance Access*, Feb. 14, 2008]
Phylogenetic vs. ontogenetic expansion in brain regions: macaque vs. human

A. Regional evolutionary cortical expansion

B. Human postnatal cortical expansion

C. Correlation map of A & B.

The lexicon: paleoneurological correlates?

[Conference presentation
Included images of brain endocasts of ZhokoudianV and Taung infant]
Some Tentative Conclusions

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5. If conclusion 4 holds, the earliest form of religion could be theistic, rather than presumed shamanism etc.
Thanks to:

Justin Barrett, Fuller Seminary
& members of “Cognitive Science of Religion and Christianity” seminar, Calvin College
Josh Moritz, GTU Berkeley
“It is a great matter to observe propriety in these several modes of expression, as also in compound words, strange (or rare) words, and so forth. But the greatest thing by far is have a command of metaphor. This alone cannot be imparted by another; it is the mark of genius, for to make good metaphors implies an eye for resemblances”

Poetics, Part 22, translated by S.H. Butcher