

## Concepts, Language, and Human Brain

Ana M. Suárez

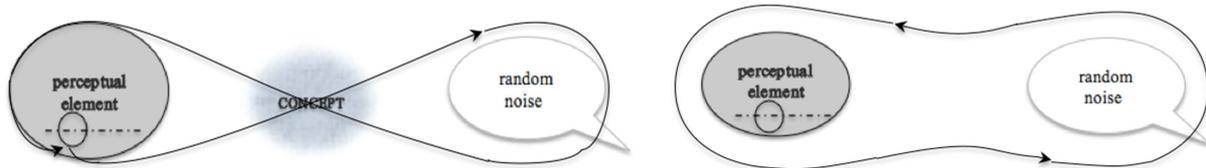
*Universidad Autónoma de Madrid*

Studies on the relation between language and human cognition have agreed on two interrelated assumptions: (i) *some* concepts are innate; (ii) language creates *some* concepts. Developmental psychology has provided arguments to support (i), such as the possession of concepts in human babies, as shown by their behaviour (Carey 2009); however, the extensive focus on Merge within the field of linguistics has left (ii) unaddressed in theoretical terms. Consistent with this, cognitive science has been mostly considering Recursion as the ‘only uniquely human component’ of the faculty of language (Hauser, Chomsky & Fitch 2002) and taking the conceptual basis which underlies that operation as a construct that predated the emergence of language. The reason is twofold: the idea that language is required to create concepts (however this happens) appears to be impugned by the mere fact that we share with animals the same mental unit ‘concept’; but more worryingly, we still lack a clear definition of what a *concept* is (Laurence & Margolis 2012, 291) since it’s entirely unclear how an innate (i.e., ‘psychologically primitive’) cognitive structure can be learned too—what Samuels’ (2002) *Fundamental Conceptual Constraint* on nativism precisely rules out. Here I pursue an alternative which I argue it stimulates a more systematic debate about concepts that stops relying on deeply-rooted assumptions on the matter. In particular, I will argue (a) that language creates every concept, and (b) that concepts are not mere philosophical units, but neural entities, the outcome of an electrical activity triggered within the human brain.

My hypothesis for the emergence of genuinely human concepts focuses on comparative psychology. By contrasting the relationship between cognition and linguistic skills, it has been reported that rudimentary (human-like) symbolic capabilities in linguistically-trained great apes have not been followed by the production of protolanguage (non-recursive language, Bickerton 1990) in the wild state; furthermore, there are convincing reasons to reject primate calls as the precursors of the earliest words (cf. Tallerman 2011). Given these discontinuities, here I explore a different viewpoint by positing that the concepts (/symbols) to which calls attach must differ *qualitatively* (rather than merely quantitatively, Hurford 2007) from those attached to human words—in line with their externalizations. Since (part of) our thought is unattainable for non-human primates, the emergence of language, I suggest, triggered simultaneously a new kind of cognitive symbol—the first ‘uniquely human component’—, non apprehensible, unless in captive situations and with no small effort, by any other species.

My proposal builds partially on Hinzen’s (2006 *et seq.*) Un-Cartesian theory, according to which distinctively human thought surfaces together with the computational engine of language (Narrow Syntax); nonetheless, and here resides my slight departure, the bootstrapped constituents which make up this part of human thought lack any kind of grammatical implementation: in my view they are concepts with no particular, language-specific category, so allowing a constraint-free (but still contentful), and therefore universal (language of) thought. In evolutionary terms, the appearance of the first words, I suggest, brought with it the emergence of the first human concepts; descriptively, the comprehension, and later conventionalization, of the first word-like noises (‘proto-words’), which our ancestors initially uttered to refer to perceptual elements, simultaneously brought with them the creation of their corresponding *concepts* into the human mind.

Fleshing out this model further, I will argue that the different trajectories of this round trip (the output/input sound pattern—expressed/understood meaning) have a neurological counterpart with specifically human perisylvian networks, whose morphology exhibits a specific enlargement in the parieto-occipital-temporal region not registered in other species. Consequently, the process underlying primate calls as well as artificial mappings in captive environments must follow, I hypothesize, a different neural pathway, specifically one which lacks an ‘intersection’ through which to create concepts *at will*.



—abstraction of the neural pathways underlying: (left) the emergence of words triggering the emergence of concepts; (right) the production of primate alarm calls—

If this picture is correct, the systematicity of human thought finds its place within the brain: a neural circuit turns our conceptual precursors, restricted combinatorially, into (a) free combinable units (‘conjunctive concepts’, in the sense of Pietroski 2007), (b) voluntarily accesible, and susceptible of (c) increasing massively and (d) becoming more complex semantically, as language develops. Further technical details will allow me to extract these and other minimal requirements of human *concepts* from the specific arrangement of the above neurological pathways. Its plausibility, at least, should make linguists and cognitive scientists reconsider where our mental phylogenetic split really began and whether to still treat recursion as the fundamental attribute of the faculty of language.

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