

# Plausibility considered as a research strategy:

## The Poverty of Plausibility

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### 1 Research question, context

Is the desideratum of plausibility in Cognitive Linguistics actually a bias which merits apprehension? If so, what could form a sound alternative to this strategy?

Cognitive Linguistics, as conceived by Langacker (1987) should strive for “naturalness in linguistic description,” or plausibility according to Lakoff and Johnson (1999). This constitutes a certain bias to account for the facts at hand, as opposed to, say, the desideratum that a theory provide a working demonstration or explanation of an ability, such as with computational models of language (Klein, 2005). <sup>2</sup>

Such approaches usually substitute wondrous abilities (eg., language understanding) with more general, yet equally unaccounted for primitives, such as intention-reading (Tomasello, 2003) and perceptual similarity for categorization (Lakof & Johnson, 1999). Humans ostensibly do, of course, read intentions, just as they understand language; but unless this ability can be modelled, introducing new primitives is mere hand waving. This is reminiscent of associationism (Locke, Hume, etc.) which is decomposable in three faculties: similarity, contiguity and detecting cause and effect. This is close to the way generalization is declared to work in cognitive grammar. Associationism seemed plausible

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<sup>2</sup>Interestingly, Klein (2005) explicitly mentions plausibility in its abstract:

[...] while the models in this work are not intended to be cognitively plausible, their effectiveness can inform the investigation of what biases are or are not needed in the human acquisition of language.

enough, but turned out to have no bearing on actual physiological processes aside from accurately describing (but not quite explaining) conditioning.

Cognitive linguistics also relies on Gestalt psychology, which suffers from similar problems:

“The physiological theory of the Gestaltists has fallen by the wayside, leaving us with a set of descriptive principles, but without a model of perceptual processing. Indeed, some of their ‘laws’ of perceptual organisation today sound vague and inadequate. What is meant by a ‘good’ or ‘simple’ shape, for example?” (Bruce et al., 1996) as quoted in Wikipedia article on Gestalt psychology.

## 2 Elaboration, projected contents

### 2.1 Plausibility as bias

In an obvious sense plausibility is a terrible bias. Would humanity have discovered lasers, X-rays and atom bombs if we held on to such a principle? Not to mention imaginary numbers, infinite dimensional (Hilbert) spaces and space-time curvature. Concepts accepted by science can be thoroughly implausible, yet especially such concepts have revolutionized our understanding of the world.

Language is of course another matter, being invented though not yet understood. Still, an insistence on dealing with the facts at hand instead of constructing an idealization is unwarranted. The facts present a very limited view of the actual workings of the phenomenon, being derived from introspection or hopelessly limited interpretations of neural activity. Dennett (2007) sums it up nicely:

“Anybody who thinks that philosophers have found a method of *grammatical* inquiry that is somehow immune to [...] the problems that can arise for that anthropological inquiry owes us an apologia explaining just how the trick is turned.” (emphasis in the original)

What ever happened to the venerable admonition that “appearances can be deceived”? The focus on overt phenomena is limiting.

Cognitive linguistics glorifies our common sense understanding of language. It seems to wholly depend on folk psychology being correct about the mental world. This is certainly not something to be taken for granted, as any physicalist understanding of the world should, arguably, contradict the existence of causal mental states (Feyerabend, 1963). Just as our folk physics and folk arithmetic proved to be radically false (or wanting, in any case), so could (should?) folk psychology.

With any complex process epiphenomena are bound to occur. Hofstadter (1979) gives the example of a computer system that crashes as soon as seven programs are running concurrently. This does not mean that to fix this problem one can simply go and look for instances of the number 7, be it in the code or in the structure of the hardware, the number 7 is simply an accidental, emergent property. Analogously, things like processing time for sentence comprehension are probably epiphenomena, which a linguistic theory need not account for. There is a methodology which happily abstracts over such side-effects, it is one of formal modelling.

### 2.2 Psychologism and the dismissal of formal methods

Cognitive linguistics brings with it a resurgence of psychologism, and with that an apprehension of anything formal. Langacker (1987, p. 440) has this to say about formal methods (relegated to a footnote!):

“If a language were regarded as a formal system, we could say that [structure] (S) is algorithmically derivable. I am not so much opposed to this way of viewing things as I

am concerned with giving it a plausible cognitive interpretation. Still, I would argue that a completely formal, algorithmic account of linguistic expression is achievable only at the expense of imposing arbitrary boundaries.”

Much of the plausibility-motivated theories rail against formal methods. This is a very unfortunate move, because formal methods can very well be adapted to new findings, and introduce much needed rigor and systematicity. Van Benthem (2008) argues cogently for maintaining both logic and psychologism:

“Advertising ‘mismatches’ between inferential predictions of logical systems, usually without proper attention to the modeling phase, and what is observed in experiments with human subjects seems entirely the wrong focus to me – not to mention the fact that it is silly and boring.”

Logic is about defining what is true, so it can be anything that is necessary to arrive at true propositions. Saying there is no logical structure to language is like saying language is not about anything in particular!

### 2.3 Philosophy as an afterthought?

For Langacker (1987), grammar consists of a pairing of utterances and their meanings (ie., a set of associations). Lakoff and Johnson (1999, p. 498) are more precise:

“The grammar of a language consists of the highly structured neural connections linking the conceptual and expressive (phonological) aspects of the brain”

Both of these definitions miss the point. These definitions amount to saying that the moon is made of bits because a computer image of the moon happens to consist of pixels. A particular representation of language, be it in the brain or in language use, does not constitute language in any useful (explanatory) sense. An implementation is not an algorithm, just as a cake is not a recipe. Perhaps psychologists can’t have their proverbial cake and explain it too!

Without a guiding principle as to what to look for, it is impossible to find something. Lakoff and Johnson (1999) insist on the necessity of doing away with what they call “a priori philosophy,” but what about plausibility? That seems a perfectly *a priori notion*, a bias that theories should conform to one’s preconceived worldview.

It seems that cognitive linguistics will be applicable to any kind of data, something which suggests unfalsifiability (just as the UG, incidentally). This means the Texas sharpshooter fallacy<sup>3</sup> is being invoked. It should be a universal requirement of linguistic theories to make testable predictions. For example, a theory might propose the most efficient strategy for learning a language. What is needed is a theory that does for language what David Marr did for visual perception:

“For Marr, no psychological study that is not based on prior abstract task-analysis can be more than mere anecdotal reportage or idle speculation.” (Boden, 1990)

Perhaps it is time for a Computational Positivism.<sup>4</sup> This is not meant to suggest a return to the Chomskian paradigm; developments like the Neural Theory of Language (Feldman, 2008) seem to

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<sup>3</sup>“the fallacy of selecting or adjusting a hypothesis after the data is collected, making it impossible to test the hypothesis fairly. Refers to the concept of firing shots at a barn door, drawing a circle around the best group and declaring that to be the target.” (Wikipedia, List of cognitive biases)

<sup>4</sup>Much to my dismay, a google search pointed out that this idea has already been coined (Narasimha, 2003); so much for creativity in the internet age. On the other hand, it is vindicating that the approach rests on solid historical foundations, viz. the desire to produce algorithms concordant with observation.

provide a more fertile ground, although it is unclear how formal such an approach can be.

### 3 Expected conclusion

The study of language is a difficult endeavour fraught with luring temptations and simplifications. A faithful method of keeping linguistics in check should be the requirement of providing demonstrable, computational theories, not a bias for plausibility (which is ill-defined and arbitrary). This has the added benefit that formal methods can be re-united with psycholinguistic considerations, bridging the gap between accounts of competence and empirical data of performance. The ultimate scope of formal and neural methods in explaining language remains to be demarcated.

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