Physical and Abstract in Linguistics:
a reply to Postal (2012) 'Chomsky's Foundational Admission'

Shanti Ulfsbjorninn
su1.blcu@gmail.com
Beijing Languages and Cultures University

Abstract

Postal (2012) claims that the biolinguistics framework is incompatible with the nature of natural language as elucidated by a selection of Chomsky's quotations. Postal claims that sentences and grammar are abstract objects in the platonic sense of forms, and as such it would constitute a category error to attempt to explain them with the physicalist framework of linguistic biology.

We will find that Postal's (2012) critique of the biolinguistics project is flawed for the following reasons: a) Contrary to his assertion, in order to know it is not necessary for a knower to know an object external to the knower. We know many objects which exist only in the mind (the taste of strawberries, beauty) and would have no objection to mental properties related to these being studied in line with evolutionary psychology. b) I think that according to Plato, a biologist should not even study gazelle, let alone language, because all study of the physical leads to the forms anyway, this is because the abstract forms are all that is real. c) Sentences are not forms in the platonic sense, at least in my understanding of the platonic sense of form: sentences should in fact be seen as extension rather than abstract objects, and, in any case, biolinguistics is not concerned with the status of sentences. d) Postal's definition of physical and abstract do not correspond with notions of physical and abstract in physics, so we should not use these concepts to limit biological application to linguistics.

On a general note, it appears to me that if Postal's biological criticism, if valid, would halt a lot of work on evolutionary psychology.

1. **Knowing requires a known object external to the self**

> "… the English root know denotes a binary relation between a knower and something known[1], and outside of doctrines like (2), knowledge without a thing known is unknown … For example A might know the square root of 169 and B might not. But that square root is 13 regardless of who knows it or whether anyone does. So knowledge of the square root of 169 and the integer 13 are distinct things ..." (Postal 2012:3)

The argument goes that in order to know something you need to have a knower and a known thing. Postal argues that the square root of 169 is 13 even if there is no knower to know it. On this view, 13 has always been the square root of 169, even when humans' knowledge of roots was limited to botany. The argument seems to be that this type of knowledge is sound because the known thing is an object which is mind-external. But is all knowledge of this type? Certainly not.

I, for instance, know the taste of things, and to know the taste of anything, say strawberries, one does not claim that the taster and taste are distinct things. Indeed, there is no 'taste' outside of the brain, because taste was an interaction between the strawberries composition and my brains and minds (I state these separately advisedly). So just because taste is purely mind internal, it would be ludicrous to say that I do not know it.

In fact, philosophers have a term, qualia, for things which are known and are predominantly or only (depending on the philosopher) 'introspectively accessible', products of the 'phenomenal aspects of our mental lives' (Stanford Philosophy Encyclopedia) (cf. Mary's room thought experiment Jackson 1982)[2].

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[1] The folk understanding of what the root 'know' means in 'English' need not correlate to what philosophers mean when they use the word 'know'.

[2] There are philosophers who think that qualia have or are mind-external (too). Indeed, for Plato the 'taste' of strawberry would be a *form*, which has its own existence outside of any experience of it, however, we doubt that Postal is such a committed Platonist.

In fact, we can go beyond knowing taste, we could even represent the phenomenal taste of strawberries. Crucially, a representation of a taste would not be the chemical formula of whatever esthers are in strawberries.

It is not even clear that the number 13 is a thing distinct from a knower. Take Russell's observation that:

> "It must have required many ages to discover that a brace of pheasants and a couple of days were both instances of the number two" (Russell 1912).

This use of the word 'discover' is somewhat confusing because the English root 'discover' usually requires *arriving at or finding a thing that exists outside of the self.* In 'discovering' a number one finds a commonality between things such as a brace of pheasants, and a couple of days: the only commonality between them is that they are grouped into a set of two things. There is no twoness within the objects, the twoness comes from the nature of the set itself.

But where is this set of two a set?

It hardly seems mind-independent to consider three ducks. Those three ducks you are considering are not the only three ducks in the universe. There are ducks everywhere. So how did you come to the set of three? They were close to you, in your line of vision, in your experience, but what of those ducks or their actions legitimates separating them from the other ducks that exist into this little set of three?

When we say: "There are three ducks", the pedant might answer 'no', there are many more ducks that exist. We might try again: "There are three ducks swimming right there", the pedant might reply, 'how big an area are you considering? and Why did you chose that area? and Did choosing that area have anything inherently to do with threeness?

When we say that: “There are three ducks”, we mean ‘consider that set of three ducks I made <not discovered, because there are no intrinsic sets of 3 ducks, your mind separated these ducks from the rest of ducks>.

Without minds there would be no groupings into sets because sets do not constitute objectively significant boundaries. Instead, almost any set of any object can be contemplated, but it was our minds that grouped these objects. So unlike Plato, we conclude that if there were no minds (and an apology is owed here to the ducks who are slandered as mindless), there would be no sets of ducks, there would just be ducks.

Numbers and tastes, unlike rocks and electricity are mind internal, meaning that without minds these things would cease to exist. Which is *not* to say that they are abstract objects.

Just because numbers and grammars only exist in minds does not mean they are abstract in the philosophical sense of: ‘[An object is abstract if and only] if it is non-spatial and causally inefficacious’ (Stanford Philosophical Encyclopedia).

Happiness or beauty for instance are not located in the objects which elicit happiness and feelings of beauty in humans, and happiness and beauty are not physical in the sense that they do not occupy time or space anywhere in the external world. So, in that sense, they would be abstract objects, but it is obviously wrong to say that issues surrounding these mind internal objects would be outside of the remit of study of evolutionary psychology bridges the gap between biology and minds (cf. Bloom (2010) for one well known example).

In fact, it may not even be true to argue that concepts such as happiness, beauty, numbers and grammars do not occupy time and space, as if somehow the mind/brain was outside of the universe.

I think I would have both Maddy’s (the philosopher of logical and mathematics) (1992), and Chomsky’s general agreement when I say that without minds

numbers and grammars only cease to exist because you have removed the domain of their existence. In that they are not without extension, it's just that without mind there is nothing to 'extend into'. This would be just like ridding the planet of water would signal the end of the existence of fish.

We would summarize the discussion up to this point as follows; grammars and numbers are not physical objects outside of the self, they are objects of the mind.

Being objects of the mind does not make them abstract objects in both senses of being located out of time and space because we know that mental dependent objects are studyable by evolutionary psychology, and to say something does not have a place in the universe of extension because when we destroy its domain of existence it is not there any more that is hardly surprising (where is the music on the cracked CD?).

Next we will show that grammars and sentences are not abstract objects in the platonic sense.

2. Platonic forms and mental objects

We have argued that grammars and numbers are mind internal, they may even be abstract, in some senses of the word, but they are certainly not abstract in a platonic way.

> "Katz's work not only rejected NCs psychological/biological conception of NL but developed the distinct platonist view that the elements NLs are composed of, sentences, are abstract not biological objects" (Postal 2012:4)

Plato's world view does not consist of abstract entities such as the concept of perfect circularity, or threeness in opposition to real physical objects such as giraffes and tables. His distinction, at least as far as I understand it, does not run along abstract forms vs. the real world lines because for Plato there was nothing real about the real world.

Plato did not believe that the real world contained lots of physical objects such as monk seals, which would be accessible to something like a biologist, while the abstract world of the forms would be left to the philosopher, far from it. For Plato there is only the philosopher, because the biologist (he would never have met one) would be wasting his time studying the ever changing, temporary, transient, confused, illusion of what appears to be the real world which was filled with physical stuff, and what can be found out about physical objects with the practices of biology? Nothing.

I think that Plato would have to have concluded that we can never *know* about any physical objects whilst thinking about them as physical objects. In this sense, by virtue of its metaphysics he was rather close to the skeptic (incidentally this may not be the majority opinion, but a Google search reveals that Vogt (forth.) explores the possibility in Belief and Truth: a skeptic reading of Plato).

Physical objects for Plato do not exist. Physical objects are just distant, pallid, extension of forms all confusingly lumped together. So all that all the furniture invoked in the discussions of so many philosophers only amounts to unfocused, temporary, constantly changing extension, which, looked at over time, flitters in and out of existence. So when biology studies the spleen, if it is getting at any truth at all, is accessing the realm of abstract forms, not 'doing well interpreting the physical'.

3. Are Sentences platonic forms?

So considering this discussion of Plato, is Postal's assertion really true that sentences are platonic forms? Take the following as his example (Postal 2012:5):

(1) Most rabbits have big ears

Postal asks:

> "Where in space is [1]? At what points in time did it begin and will it end? What is its mass? Is it subject to gravity? How can one destroy it? These

> questions, entirely appropriate for physical things, biological or not, make no more sense than their parallels for objects like the square root of 169 or Sibelius' 5th Symphony. Of course, utterances (or inscriptions of any kind) taken as *tokens* of sentences are physical objects or events, exist in space and time, require energy, and in general have the very properties which NL sentences lack. But NLs can certainly not be reconstructed in terms of tokens. An obvious reason is that any token ceases to exist at a certain point in time, but the sentence it is a token of does not."
>
> (Postal 2012:6)

The answer to where in space-time (1) is is answered. When I read the sentence, I looked at the written token, then processed it as a sentence, and derived its meaning. I can say quite honestly that I do not think I had ever seen that exact sentence before. So obviously this exact sentence had a beginning point in time in my brain. Not in others' brains, but then my copy of *Master and Marguerita* also has a unique publishing time and is in a unique place (a dusty box in my grandfather's loft) but like the sentence one also feels – well is it not shared in some sense? In some interesting senses yes, but it hardly meets the criteria for an abstract object like: 'terrorism'.

I also have no doubt, can there be reasonable doubt?, that syntactic construction of the sentence did require energy, exactly how much and how it was translated, I do not know, but to assert from this not knowing that the sentence used no energy because it is not extended in space-time is quite a leap.

To say that sentences are eternal (do not cease to exist at a certain point in time) is surely problematic. Is it different from 'most rabbits has big ears' or different to 'most Oryctolagus cuniculus have big ears', or 'most rabbits have large ears', are they all serviced by a singular platonic form? What about the Maremmano, 'I piu' dei conigli hanno gl'orecchi grandi'.

If many sentences share one platonic form one could ask: which form?, and: In what way is each sentence different to one another?

The answer would be in word order, in syllable structure, in the number of its parts, the differences, therefore, must lie in extension. Because one can ask this question of absolutely all sentences it means that individual sentences must have extension for Plato.

> "[…] if NL sentences are abstract objects, then necessarily NL grammars are as well'". (Postal 2012:4)

Staying on the topic of language specific differences, if natural language grammars are abstract objects and therefore not part of extension then why do grammars make such explicit reference to extension? Dictating word order and licit syllable structure types and so on.

Boeckx (2012) restates the biolinguistic and minimalist assumption (cf. the Universal Base Hypothesis) that at the narrow syntax all languages are identical. So there are no 'grammatical differences' between languages, however, parameters which encode language specific decision points on principles must be the domain of extension.

However, the question raised by Postal (2012) is ultimately not of any concern to a biolinguist, it is asking where the above *sentence* is located to someone who explicitly argues against the phrasebook style of learning is not how language learning and processing operates. On this point, it is worth quoting Fodor (1987) at length for a particularly vivid explanation of this point:

> "You can see the force of this if you compare learning a language the way we really do learn them with learning a language by memorizing an enormous phrase book. The present point isn't that phrase books are finite and can therefore exhaustively describe only nonproductive languages; that's true, but I've sworn off productivity arguments for the duration of this discussion, as explained above. The point that I'm now pushing is that you can learn any part of a phrase book without learning the rest. Hence, on

> the phrase book model, it would be perfectly possible to learn that uttering the form of words `Granny's cat is on Uncle Arthur's mat' is the way to say that Granny's cat is on Uncle Arthur's mat and yet have no idea how to say that it's raining (or, for that matter, how to say that Uncle Arthur's cat is on Granny's mat). I pause to rub this point in. I know – to a first approximation - how to say `Who does his mother love very much?' in Korean; viz., ki-iy emma-ka nuku-lil mewu saranna-ci? But since I did get this from a phrase book, it helps me not at all with saying anything else in Korean. In fact, I don't know how to say anything else in Korean; I have just shot my bolt."

On this view a sentence is nothing but an externalization procedure, which even if you believed in platonic forms in general, would require you to reject sentences as a platonic forms.

4. Postal's conception of physical and abstract

> "The reason is that physicists use abstract formal structures to characterize physical things, not abstract ones. The objects of description have temporal, spatial, causal, etc. properties. An object is abstract (if and) only if it fails to occupy anything like a determinate region of space (or spacetime)" (Postal 2012:7).

Postal's definition of physical seems to be extend to anything one can attribute the following truth conditions to:

p is in q	T
p is not in q	F
p is in elsewhere	F

Postal also claims that physics is successful even if it uses abstract structures exactly because it is modeling physical things not abstract things. However, as the Double Slit Experiment and the Uncertainty Principle shows that objects such as electrons and photons are expressed not in terms of fixed points in space at

fixed times, rather by probabilities, meaning that Postal's definition of physical and abstract are not helpful in describing modern physical phenomena. So to use this old conception of physical and abstract to justify not using biological notions in understanding linguistics would not seem prudent.

5. Conclusion

We will find that Postal's (2012) critique of the biolinguistics project is flawed for the following reasons: a) Contrary to his assertion, in order to know it is not necessary for a knower to know an object external to the knower. We know many objects which exist only in the mind (the taste of strawberries, beauty) and would have no objection to mental properties related to these being studied in line with evolutionary psychology. b) I think that according to Plato, a biologist should not even study gazelle, let alone language, because all study of the physical leads to the forms anyway, this is because the abstract forms are all that is real. c) Sentences are not forms in the platonic sense, at least in my understanding of the platonic sense of form: sentences should in fact be seen as extension rather than abstract objects, and, in any case, biolinguistics is not concerned with the status of sentences. d) Postal's definition of physical and abstract do not correspond with notions of physical and abstract in physics, so we should not use these concepts to limit biological application to linguistics.

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