

# Chomsky's Foundational Admission

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## 1. Background

For half a century, Noam Chomsky (NC) has advocated a foundational position about the nature of natural language (NL) and the concomitant character which linguistic research must assume because of that nature. Passages about linguistic ontology may well make up more than half of NC's linguistic writings.<sup>1</sup>

While his foundational view has modestly evolved over that period and its terminological framing has partly changed, its essence has not. Moreover, NC has successfully convinced a multitude of linguists and nonlinguists alike of the soundness of his overall conceptual framework.

This position assumes that NL is a psychological property of human nature, in more recent times characterized further as a biological property, leading to the current *biolinguistics* terminology. Typical statements of the position are seen in (1):

(1)a. Chomsky (1983: 156-157)

“In contrast, a mentally represented grammar and UG are real objects, part of the physical world, where we understand mental states and representations to be physically encoded in some manner. Statements about particular grammars or about UG are true or false statements about steady states attained or the initial state...each of which is a definite real-world object situated in space-time and

entering into causal relations. UG, given experience, becomes a particular grammar.”

b. Chomsky (1986: 3)

“UG may be regarded as a characterization of the genetically determined language faculty. One may think of this faculty as a ‘language acquisition device,’ an innate component of the human mind that yields a particular language through interaction with presented experience, a device that converts experience into a system of knowledge attained: knowledge of one or another language.”

c. Chomsky (1987a: 6)

“Linguistics, so conceived, is part of cognitive psychology, ultimately human biology. More specifically, I will assume that one of the ‘mental organs’ of the human mind/brain is a *language faculty* which allows various possible specific realizations, the specific human languages.”

An important aspect of NC’s foundational position is explicit in (2):

(2) Chomsky (1972: 169 n3)

*“Since the language has no objective existence apart from its mental representation, we need not distinguish between ‘system of beliefs’ and ‘knowledge’ in this case.”* (emphasis mine: PMP)

Given that, as in (1), NC stipulates that the goal of his linguistics is to account for the child’s development of knowledge of NL, (2) reveals that his foundational position denies any distinction between NL and knowledge of NL since NL putatively does not

exist independently of linguistic knowledge. This view underlies NC's (1986: 33-36, 49-50) dismissal of the platonist view of NL advocated in e.g. Katz (1981), to which I return.

Statements like (2) are, minimally, confusing, since the English root *know* denotes a binary relation between a knower and something known, 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, as are drinkable whiskey and undrinkable knowledge of whiskey, etc. Moreover, the same defect holds of NC's 1972 use of the term *mental representation* since *represent* also denotes a binary relation, one between thing and thing represented. But according to (2) the representation doesn't represent anything.

Terminology aside, NC gave no argument for claim (2), which was merely part of a footnote and, tellingly, provided no references to any such argument. And, to the best of my knowledge, NC has never since even attempted to provide any argument for it. So the assertion in (2) was and remains simply question-begging. NC's view of the nature of NL entirely ignored, for instance, the position that NL sentences are abstract objects like numbers, sets, symphonies, etc. People have knowledge of these things too without that motivating argument-free claims that such things themselves are mental or nondistinct from knowledge of them.

One might assume that doctrine (2) required no justification because it was unchallenged. Ironically, one could actually argue that it was challenged by NC himself; see (15a, b) below. That aside, even such a weak and defensive justification for a supposed rational view would have long since vanished since NC's psychological/biological position was explicitly challenged at length in Katz (1981, 1984, 1990, 1996, 1998, 2004). Thus from 1981 on, claim (2) unquestionably required a justification and defense. <sup>2</sup>

Katz's work not only rejected NC's psychological/biological conception of NL but developed the distinct platonist view that the elements NLs are composed of, sentences, are abstract not biological objects. Moreover, NLs, taken as certain classes of sentences, are clearly abstract objects and hence not biological entities. NL sentences share, under Katz's view, the ontology of mathematical objects, e.g. numbers, logical objects, e.g. propositions, musical objects, e.g. songs, etc. If NLs and NL sentences are abstract not physical (biological) objects, then NC's ontological position asserted without argument in (2) is entirely mistaken. Note that if NL sentences are abstract objects, then necessarily NL grammars are as well.

What has NC said to justify his views in the face of the challenge represented by Katz's work and that of a few others? To the best of my knowledge, the only material precluding the answer 'nothing' consists of the few remarks in Chomsky (1986: 33-34, 49-50), (1987a: 34-5) and (1987b). One need not here address those in detail for two reasons. First, every aspect of them was debunked in Katz and Postal (1991), to which NC has

never replied. And, second, the present paper is mostly independent of what was in those works. But below I do touch on some of NC's responses.

## 2. Incoherence

Katz's work not only developed a position sharply distinguishing between NL and knowledge of NL, he argued for the superiority of that view, as did Katz and Postal (1991), Langendoen and Postal (1984: chapter 6), Postal (2003; 2004: chapter 11; 2009). But, logically, efforts to show the superiority of a platonist view of NL to NC's biolinguistic one were unnecessary because on purely internal grounds, NC's foundational position is untenable regardless of the superiority of *any* other position. That holds since it is *incoherent* and so fails to qualify even as a rational candidate for the proper view of NL ontology.

The reason for the incoherence of NC's foundational position is that despite claims like (1) and (2), which take NL to be a biological thing, the nature of NL sentences has always forced NC to describe them in a way incompatible with their being biological; see section 3 for further details. Anything biological would exist in time and space, would have a cause, could cause things, would be destructible, would have mass or energy, etc., as NC alludes to in (1a). But NL sentences have no *physical* properties at all.

Take for instance:

(3) Most rabbits have big ears.

Where in space is (3)? 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' 5<sup>th</sup> 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.<sup>3</sup> 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.

While pre-2012 statements by NC only very rarely (see again (15a, b) *explicitly* state the abstract nature of NL sentences just stressed, everything in his actual linguistic practice and *nonfoundational* theorizing has nonetheless always embodied that abstract nature. His views have uniformly posited that NL sentences have one or another kind of set-theoretically defined structures. This is clear in older statements like (4a) and is entirely explicit, for instance, in more recent invocations of Merge, defined set-theoretically:

(4)a. Chomsky and Lasnik (1995: 34)

“Each level is a symbolic system, consisting of atomic elements (primes) and objects constructed out from them by concatenation and other operations. We take these objects to be phrase markers in the familiar sense.”

b. Chomsky (2005: 11).

“An elementary fact about the language faculty is that it is a system of discrete infinity. Any such system is based on a primitive operation that takes  $n$  objects

already constructed, and constructs from them a new object: in the simplest case, the set of these  $n$  objects. Call that operation Merge.”

All the elements mentioned in (4a) are abstracta, either primitives or set-theoretically defined. There is no hint of anything biological or physical. Since sets are abstract objects, lacking temporal, spatial, causal, etc. properties, according to NC’s (4b), set-theoretical structure is not only part of NL but central to it.

NC has, however, obscured the ontological issues by implying that his use of set-theoretical apparatus is parallel to e.g. physicists’ use of various pieces of abstract mathematical apparatus to describe physical phenomena and so is entirely unproblematic. But this is thoroughly untrue.

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. But within NC’s set-theoretical-based linguistics, not just the descriptive statements are set-theoretical. The objects described, NL sentences *themselves*, are invariably (rightly) taken as set-theoretical. The set-theoretical structures referenced in e.g. (4a, b) are not descriptions of anything biological. Rather, NC’s various statements that a certain sentence  $S$  has a specific syntactic tree structure (a kind of graph, a subtype of set), as alluded to in (4a), is a claim that the particular tree structure is (part of)  $S$  itself. This entirely fails to parallel using e.g. real numbers to describe physical phenomena. Such descriptions do not claim physical phenomena are, or are composed of, real

numbers. But since S is taken to be a set-theoretical object, it cannot coherently be taken as some physical thing described in terms of set-theoretic notions.

Nonetheless, the latter is in effect claimed in many of NC's remarks like e.g. (1a) and:

(5) Chomsky (1987b: 181)

“Taking a grammar to be a theory of the I-language, the statements of a grammar are statements of the theory of mind about the I-language, hence statements about structures of the brain formulated at a certain level of abstraction from mechanisms. These structures [of the brain] are specific things in the world, with their specific properties’, which we discuss at this abstract level.”

But since brain structures are not set-theoretical, claims like (5) cannot be consistently paired with a set-based linguistics exemplified in (4a, b), and NC has never had any other (see (16) below for his own statement to this effect). Physical structures cannot generate sets and set-theoretical objects cannot generate physical things. Claiming they can involves fatal equivocation on the term *generate*. NC's conclusion to the contrary is in general based on his talk of ‘abstraction from mechanisms’, an approach which inevitably fails for several reasons.

First, bridging the physical status/explicit set-theoretical NL status gap via appeal to abstraction is unsustainable since e.g. (5) is unrelated to any research realities. Specifically, NC has not ever had at time relevant, reliable information about the brain, as he himself has repeatedly pointed out:

(6)a. Chomsky (1986: 39)



“So little is now known about the relevant aspects of the brain that we can barely even speculate about what the connections might be.”

b. Chomsky (2007: 2, fn 4)

“There are other third factor elements as well, among them properties of the human brain that determine what cognitive systems can exist, though too little is yet known about these to draw specific conclusions about the design of FL.”

See similar remarks in Chomsky (1987a: 36; 2012b: 8). But given (6), none of NC’s claims about NL grammar could represent abstractions from brain facts; one can hardly abstract from things *one knows nothing about*. Relevantly, I am unaware of specific descriptions by NC of what his purported processes of abstraction have consisted of in detail. Nor can one have any clue of what discoveries about brains could falsify anything in NC’s linguistics (if, as a platonist position claims, NL sentences and grammars are set-theoretical, no brain discovery can falsify any properly linguistic claims).

Abstraction normally involves ignoring certain properties, as in this description of actual physical abstraction:

(7)

[http://arthur.shumwaysmith.com/life/content/physics\\_and\\_its\\_mathematical\\_abstractions](http://arthur.shumwaysmith.com/life/content/physics_and_its_mathematical_abstractions)

“Down in the trenches of modern science, when I was working on electronic structure calculations for materials in the early 1990s, we were quite aware of at least some of our abstractions and their unreality. To simplify calculations enough to get practical results for real materials a large number of approximations are essential. The silicon atom has 14 electrons, for example, but for low-energy

processes the central 10 electrons of the core don't participate. To a very good approximation they just stay in their lowest energy atomic states even when neighboring atoms are just tenths of a nanometer apart. So for our calculations we would replace the 'nucleus + 14 electrons' of the real atom by a 'pseudonucleus + 4 electrons', with a 'pseudopotential' replacing the original nuclear potential and accounting for the various interactions between core and valence electrons. But that meant that when you looked at the density of electrons that came out of our calculations, you had to remember that the abstraction was missing core electrons, so those numbers could not be correct unless you were outside the core distance from the nucleus."

Clearly, nothing in NC's talk of abstraction corresponds to the procedure in (7). For that to have been the case, there would have to have been, counterfactually, a set of known brain properties some of which are ignored in NC's set-theoretical linguistics, properties corresponding to the existence of the ten ignored electrons in (7). But nothing in e.g. (4a) bears any relation to that.

Second, independently and more fundamentally, no conceptual move by any researcher and no decision about formulation can affect the ontological status of NLs or NL sentences. Abstracting away from certain features of physical things within a theory formation process cannot alter their physical nature. No process of abstraction could lead from something biological to set-theoretical characterizations like (4a). As in (7), abstraction just involves ignoring certain physical realities for certain purposes. So NC's invocation of abstraction instantiates the category mistake of appealing to an impossible

transformation of physical things into abstract ones. Overall then, NC's attempts to bridge the gap between his naturalist linguistic ontology and his nonphysical linguistics fail totally *and in principle*.

NC's abstraction defense of his incompatible set-theoretic and physical assumptions about NLs reached its apotheosis of incoherence in Chomsky (1987b). At issue were the remarks:

(8) George (1987: 157-158)

“As such, an I-language is of course ‘an abstract entity’, as Chomsky asserts (C 22). The confusion arises because Chomsky also declares that an I-language ‘is some element of the mind of the person who knows the language’ (C 22) and consequently that statements about I-language are really ‘about actual states of the mind/brain and their components’ (C 26/7). Now whatever they are, abstract objects are not constituents of the minds or brains of speakers and so I-languages are not states of human brains. I-languages are not in the physical world, although the particular brain states that can be abstractly characterized as knowledge of them are.”

The confusions in NC's response to George's sound observations were previously characterized:

(9) Katz and Postal (1991: 545-546)

“C's reply to George resketches the framework of C (1986), and claims: ‘Here I understand talk about the mind to be talk about the brain undertaken at a certain level of abstraction from (as yet unknown) mechanisms’ (C, 1987b, p. 178). Then

C seemingly accepts George's claim about I languages: 'It is quite true that I-languages are not parts of brains; rather, they are components of the mind, in the sense explained: That is, they are elements of the theory of mind, abstracted from states of knowledge as explained' (C, 1987b, p. 182). But, of course, if, as the former quote claims and is implied in C's pervasive 'mind/brain' terminology, 'talk about the mind' is 'talk about the brain', then, as George observed, to claim that I-languages are elements of minds is to claim, contrary to the latter quote, that they *are* elements of brains.

C further characterizes his view by saying: 'In short, to oversimplify slightly... I understand the mind to be a system of abstract entities, and it is therefore not problematic to say that one of its components is an abstract entity' (C, 1987b, p. 182). This passage claims that I-languages are abstract entities which are parts of minds, but that this is unproblematic because minds themselves are abstract entities. Not only does this flatly contradict numerous previous statements of C's, but, since I-languages as abstract entities could only specify sentences which are also abstract entities, it grants the truth of realism.

However, C has not converted to realism, for the same page contains the statement: 'The issue of so-called 'Platonistic linguistics' does not arise in this connection, as George suggests; I see no value to that enterprise, or even any way to formulate it coherently' (C, 1987b, p. 182). Here C both adopts a position which implies that NL sentences are abstract objects and rejects the foundational view which maintains that they are, involving himself in a further contradiction.

He claims that the objects linguistics is about (being abstract) have no temporal limits, have no causal properties and exist necessarily, but also that those objects (being mental) have temporal limits, have causal properties and do not exist necessarily.”<sup>4</sup>

Among the outright contradictions revealed in NC’s remarks quoted in (9), striking is the explicit appeal to an incoherent notion of entities supposedly *both* abstract and mental/physical. This could indicate a failure on NC’s part to really grasp the meaning of *abstract object*. Quotes (22a, b) below further support this possibility.

From the outset then, when combined with NC’s foundational position as expressed in (1) and (2), the nonphysical reality of NL sentences required him to systematically state that he was doing something he was not. While his incredibly numerous repetitions of his foundational doctrine claim that he has been pursuing linguistic research as part of the natural scientific study of human biology (see e.g. (14)), his actual statements about linguistic structures deal exclusively with elements in the realm of abstract objects. And that is required to permit any characterization of the abstracta represented by NL sentences and classes of such. Unsurprisingly then, despite the thousands of pages NC has published, he has cited not a single aspect of any sentence which could be regarded as biological, or which could be given any interpretation in brain (function) terms. While purportedly describing knowledge of NL, NC has at best offered accounts of NL itself. The only ‘solutions’ NC has ever offered to the logical incompatibility between an officially naturalistic approach to NL sentences and grammars and an actual set-

theoretical one were his impotent appeals to researcher abstraction and to an incoherent concept of abstract entity.

The fundamental equivocation in NC's position is highlighted by NC's claim seen in e.g (4b) that NLs are (discretely) *infinite*.<sup>5</sup> Compare this to his assertion, represented in (1c), that NL represents a biological organ. A real organ, e.g. a lung, is finite along every dimension including the temporal one and everything it does or produces is finite. So if NL were an aspect of brains, it too would be finite and the output of sentences (granting counterfactually that it makes sense to take organ outputs as sentences) would be as well.

The resulting incoherence of claiming that NL is both biological and infinite has been pointed out repeatedly; see Langendoen and Postal (1984: 131-136), Katz and Postal (1991: 547-548), Postal (2004: 300-301; 2009: 251-256). It is, I suggest, no accident that NC has never publicly addressed these criticisms.

Consider though NC's reaction on the one occasion I know of where he was challenged in person about his joint claims that NL is biological but infinite. At issue is a question raised by an unidentified attendee after the lecture represented by Chomsky (2000a). The full question and answer were:

(10) Chomsky (2000a: 62-63)

“*QUESTION*: Infinite use of finite means; doesn't it entail an inconsistency? Isn't the model of an infinite potential in, a finite organ inherently inconsistent?”

*CHOMSKY*: That was the problem until about a century ago. It did look like an inconsistency. One of the important discoveries of modern mathematics is that it isn't an inconsistency. There is a perfectly coherent sense to notion of infinite use of finite means. That is what ended up being the theory of computability, recursive function theory and so on. It is a big discovery of modern mathematics which clarified traditional ideas. There have been sort of intuitive ideas like this around but they really became clarified quite recently-not really until almost mid-century. So, yes, it looks like an inconsistency but it simply isn't. There's a very simple account of it that is not inconsistent. I can't go into it any further here.”

NC's response was simply duplicitous since the statement that 'there is a perfectly coherent sense to the notion of infinite use of finite means' was a nonsequitur. Recursive functions are set-theoretical objects and their existence thus implies nothing about brains having infinite outputs. What NC needed to show but obviously could not was *not* how an abstract system could recursively enumerate a nonfinite collection of abstracta, which had in no way been questioned. His burden was to demonstrate how *every* element enumerated by such a system *could be biological*, part of a specific aspect of the physical world. Instead, NC just refused to respond to the questioner's actual a propos and entirely distinct point.

The incoherent idea that NL is both biological and infinite cannot be reconciled via appeal to *potential* infinity, as in various NC statements, e.g.:

(11) Hauser, Chomsky and Fitch (2002: 1571),

“All approaches agree that a core property of FLN is recursion, attributed to narrow syntax...FLN takes a finite set of elements and yields a potentially infinite array of discrete expressions. This capacity of FLN yields discrete infinity (a property that also characterizes the natural numbers).”

This view implicitly grants that since minds/brains are finite objects, a mental grammar can only yield a finite output of mental/biological things. But the assumption is that NL is nonetheless infinite since the biological system encodes a recursive procedure (in the way a physical computer encodes algorithms) which, *if* given enough time, computing space, energy, etc. would yield an infinite output.

While no doubt such encoding is possible for brain structures, the appeal to potential infinity as a defense of the view that NL is *both* biological and infinite fails because it *necessarily* equivocates on the nature of the elements taken to be infinite in number. Under a biolinguistic view (see (1a)), linguistic entities are real aspects of the physical universe, although many are future aspects. But the potential infinity thesis must accept implicitly that almost every one of the infinite class of sentences which could be in one to one correspondence with the class of integers not only is not an aspect of the physical universe, past, present or future, but cannot be because of the limitations imposed by a finite brain. The potential infinity terminology then just represents a disguised way of accepting that linguistic entities are *not* biological. That is, despite NC's repeated denigration of platonist linguistic views, the 'potentially' infinite view again as in (9), *surreptitiously* adopts a platonist view of NL sentences by recognizing that NL sentences



are not actual parts of the physical world (specifically, the brain and its functioning). Appeal to potential infinity can then only be part of biolinguistics under pain of incoherence.

The criticism just stated is not at all circumvented in a rare passage where NC can be interpreted as attempting to indicate how NL can be both physical and infinite. Without using the term *potentially infinite*, this spells out rather explicitly the ideas involved:

(12) Chomsky (2004: 41-42)

“It is the wrong approach because even though we have a finite brain, that brain is really more like the control system for an infinite computer.” “We are like a Turing machine in the sense that although we have a finite control unit for a brain, nevertheless we can use indefinite amounts of memory that are given to us externally to perform more and more complicated computations.” “The control unit of a Turing machine also is a finite automaton, but what makes the Turing machine not finite is the fact that the control unit interacts with something outside, namely memory, to enable it to carry out its computations with access, in principle, to an unbounded memory. At this level of description, we are like that.” “We can go on indefinitely, if we just have more and more time, and memory, and so on.”

But (12) fails to justify any conclusion that NLs are both biological and infinite because at the key point, it invokes the phrases *in principle* and *unbounded memory*. The former in effect shifts the discussion to abstract objects, not biological objects like brains and

computers. And the latter denotes something physically counterfactual as far as either brains or computers are concerned. Analogously, the claim ‘we can go on indefinitely’ is then subordinated to the counterfactual ‘if we just have more and more time’. Alas we do not, so we can’t go on indefinitely and what is biological is entirely finite as is the lifetime work of any computer or all the computers ever to be built.

The logic of the preceding discussion of infinity is entirely unoriginal. Its essence is clearly seen in Bell and Machover (1977). After defining the notion *Unlimited Register Ideal Machine* (URIM), these authors say:

(13) Bell and Machover (1977: 232)

“Even so, the amount of information that can be stored in URIM, albeit finite, is *unbounded*. It is precisely this that makes URIM a purely *ideal* machine, which cannot be realized physically. Every real computer has a finite storage capacity and can therefore only store a bounded amount of information. True, the storage capacity of some real computers can be expanded in case of need by bringing in new auxiliary memory units (e.g., on magnetic tape); but even this has its practical limitations and cannot go on indefinitely.”

In Bell and Machover’s terms then, NC’s discussion of NLs as both biological and infinite simply confuses an ideal machine, analogous to URIM, an abstract object, with a machine, the human brain, every aspect of which is physical.

Despite his constant appeal to the infinitude of NLs, NC has repeatedly described his linguistics as being in effect part of empirical natural science, as in: <sup>6</sup>

(14) Chomsky (2009: 5)

“The biolinguistic perspective developed within this framework, taking the faculty of language to be a ‘mental organ’, where the term ‘mental’ simply refers to certain aspects of the world, to be studied in the same way as chemical, optical, electrical, and other aspects.”<sup>8</sup>

See also Chomsky (2000b: 106). But as *inter alia* the discussion of infinity shows, his linguistics hasn’t been part of natural science and no real linguistics can be because neither NL sentences nor the classes of them forming NLs are any more natural world objects than integers or classes of them. That’s exactly why they can be infinite in number.

Despite his repeated denigration of a platonist view of NL (see e.g. (9)), in reality, NC’s linguistics turns out then to be exactly as platonist as Katz’s view of linguistics modulo two important differences. First, NC has of course refused to *explicitly* acknowledge the platonist character of his actual linguistics. Relevantly though, this has as it were occasionally seeped out. Specifically, despite (2) from Chomsky (1972: 169), the following two quotes stating the abstract character of linguistic structures appear in the same work as (2):

(15)a. Chomsky (1972: 30)

“If this approach is correct in general, then a person who knows a specific language has control of a grammar that *generates*...the infinite set of potential deep structures, maps them onto associated surface structures, and determines the semantic and phonetic interpretations of these abstract objects.”

b. Chomsky (1972: 104)

“In this sense, we may say that the grammar of a language generates an infinite set of ‘structural descriptions,’ each structural description being an abstract object of some sort that determines a particular sound, a particular meaning, and whatever formal properties and configurations serve to mediate the relation between sound and meaning.”

So twice in the same volume where his note in (2) states that NL is entirely mental, NC states that NL objects are abstract objects. Despite the extraordinary mass of writing NC has done on the subject, he clearly has never had a well-grounded, coherent view of the nature of the foundations of NL.

The second obvious difference between Katz’s platonist views of NL structure and NCs’ is that the latter has, while ironically appending to it here and there some antiplatonist remarks, added to the platonist realities an unreal naturalistic foundational view, rendering his overall position demonstrably incoherent.

The fundamental incoherence of NC’s foundational position just gone over has been accompanied by less central incoherence. See the appendix for one example.

### **3. The Admission**

Despite previously ignoring claims that his linguistic ontology was incoherent, NC turns out to have recently admitted it, although hardly in an explicit or scholarly way. That possibly shocking claim follows from the existence of passage (16):

(16) Chomsky (2012a: 91) (all emphases and inserted numberings <n> are mine: PMP)

“<1> *In the work that I’ve done since *The Logical Structure of Linguistic Theory* – which just assumes set theory – I would think that in a biolinguistic framework you have to explain what that means. <2> *We don’t have sets in our heads.* So you have to know that when we develop a theory about our thinking, about our computation, internal processing and so on in terms of sets, that it’s going to have to be translated into some terms that are neurologically realizable. I don’t know how helpful pure nominalism will be, but there is a gap there that the nominalistic enterprise is focused on. It’s a gap that has to be overcome. <3> *There are a lot of promissory notes there when you talk about a generative grammar as being based on an operation of Merge that forms sets, and so on and so forth. <4> That’s something metaphorical, and the metaphor has to be spelled out someday.*” <5> “*if we want a productive theory-constructive [effort], we’re going to have to relax our stringent criteria and <6> accept things that we know don’t make any sense, and <7> hope that some day somebody will make some sense out of them – like sets.*”*

Numbered assertion (16<1>) indicates NC’s recognition of his own reliance on set-theoretical apparatus, as stressed in section 2, that is, recognizes a career long de facto assumption that NL sentences are abstract objects, not biological entities. Assertion (16<2>) in effect reiterates the point in (16<1>) by denying the locus of NL sentences is biological. *In isolation*, (16<1>) and (16<2>) are coherent and entirely consistent with the position of e.g. Katz’s platonist work cited earlier. But of course they contradict (1)

and (2) above and a multitude of other NC statements which not only say or entail NL sentences are in the mind but only there. And since NC's linguistics systematically takes sentences as set-theoretical objects, the inference of contradiction is inescapable.

The contradiction in NC's biolinguistic ontology can be derived more precisely:

(17)a. sentences are set-theoretical objects (from e.g. the definition of Merge in (4b));

b. sets are not in the mind (from (16<2> ));

c. sentences are not in the mind (from (17a, b))

d. sentences are in the mind, in fact, only there (from (1a), (2), and many other statements).

e. (17d) contradicts (17c).

Moreover, this contradiction does not arise in some peripheral layer of NC's position. Given his decades long repetition that NL is a kind of organ, the incoherence is unavoidably central to his biolinguistic view.

Contradiction (17) depends on no specific properties of the notion Merge beyond its set-theoretical, hence abstract nature. While (17) derives the fundamental contradiction in NC's foundational view from the properties of *sentences*, a parallel contradiction is easily derived from the nature of *grammars*, as previously shown in Katz and Postal (1991: 544-545). The basis for this is seen in NC's remark in (1b) that: "UG, given experience, becomes a particular grammar." *Experience* denotes something physical, while a grammar, according to current NC views, is at heart the set-theoretical Merge and in any

view is some kind of abstract object. So the claim incoherently entails that something physical can determine something set-theoretical.

Claim (16<3>) reiterates that NC's grammatical views have always involved talking about NL sentences in set-theoretical terms, but (16<4>) now declares astonishingly that this multidecade long appeal was (although this was hitherto undisclosed), all along just *metaphor*, nothing literal. Moreover, use of this metaphor supposedly just amounts to a promissory note needing to be made sense of in the future. That aspect of the admission is though entirely false; any scan of NC's linguistic works, e.g. any of (4), (5), (6), any page of e.g. Chomsky (1977) etc., reveals there is nothing metaphorical about such writings.

Further, it would have throughout been impossible for NC's actually nonbiological accounts of NL sentences to be metaphorical accounts of biological facts, since, parallel to my earlier remarks about abstraction, metaphorical analogies require some knowledge of what one is analogizing about. One can metaphorically characterize intellectual arguments as wars, because one has some knowledge of arguments and wars. But as admitted in (7), at no stage has NC or anyone else had any knowledge of *relevant* brain properties permitting rational assumption that his set-theoretical accounts corresponded to anything cerebral.

More fundamentally, nothing justifies assuming that the structure or functioning of a physical system has more than the most elementary correspondence to some abstract

structures coded in that system. The world of computational machinery shows the contrary. One can represent programs in different kinds of hardware. If some new type of chip functioning on physical principles different than those of silicon chips were utilized, high level programs would be unaffected. During the 1980s IBM developed such a distinct computer technology, one based on so-called josephson junctions; see: <http://www.sciencemag.org/content/222/4623/492.citation>. From the structure of computer programs, one can then infer very little directly about physical systems which code them or conversely. And the analog holds for NL sentences and brains. Overall then, NC's claim that his abstract linguistics was a metaphorical account of something biological cannot be taken seriously.

Of course, position (16) is entirely *inconsistent* with that quoted in (9). Whereas the latter claimed abstract entities were real parts of the mind, (16) abandons that smokescreen for NC's positions and in effect admits that every aspect of NC's actual NL description and theorizing has always been abstract, as (16a, b) already illustrate.

In (16<5>) readers learn that 'our stringent criteria', unspecified, are going to have to be relaxed.<sup>8</sup> Statement (16<6>/<7>) asserts that we must accept things that don't make sense, adding the hope that someday someone will clear things up. Combined then, (16<1>-<7>) admit in effect just the incoherence alluded to in the previous section. In (16), NC finally arrives at the conclusion in Langendoen and Postal (1984: chapter 6), Katz and Postal (1991), Postal (2004: chapter 11; 2009), works he has never responded to in print, namely, that *his own foundational ontology makes no sense*. NC grants in (16) that



his physical and set-theoretical claims are incompatible and recognizes further knowing of no way to make sense of his dualistic linguistic views. Moreover, (16) includes no assertion like those in (5) and (9) that some process of abstraction can make sense of it all. But the abandonment of the claim that minds are abstract entities (seen in (9)) and of the claim that the set-theoretical aspect is just abstraction from a physical reality are totally inexplicit.

Statement (16<7>) adds that sets themselves make no sense. Since set-theory is one of the jewels of modern formal study, and is central to modern views of mathematics and logic, it would be hard to exaggerate the sheer irresponsibility and cluelessness of such a remark. Compare:

(18)a. Barwise and Etchemendy (1987: vii)

“Historically, the set-theoretic and semantic paradoxes have had an enormous impact in logic. On the one hand, the set-theoretic paradoxes discovered in the early twentieth century created a climate in which work in logic, metamathematics, and foundations could flourish, and led directly to many of our present day concerns. On the other hand, diagonal constructions similar to those involved in several of the paradoxes provided us with of the most basic tools of logic...diagonal constructions gave us Cantor’s Theorem in set theory, the undecidability of the halting problem in recursion theory and Gödel’s Incompleteness Theorems in proof theory.”

b. Barwise and Moss (1996: 5)

“Set theory has a dual role in mathematics. In pure mathematics, it is the place where questions about infinity are studied. Although this is a fascinating study of permanent interest, it does not account for the importance of set theory in applied areas. There the importance stems from the fact that set theory provides an incredibly versatile toolbox for building mathematical models of various phenomenon.”

c. Halmos (1960: v)

“Every mathematician agrees that every mathematician must know some set theory.”

According to NC, the phenomena for which set theory provides uneliminable tools include NLs, Merge now being for him the core of NL grammar. But:

(19)a. Sets make no sense; (from (16)<6>/<7>)

b. Therefore, Merge makes no sense; (from definition of Merge)

So NC’s denigration of sets treats his own grammatical framework as senseless.

In sum, NC’s baseless and unargued remark about sets, motivated entirely by the desire to put a happy face on his incoherence in (16<7>), is laughable.

Great thinkers too make mistakes, and very rarely even fall into contradiction. One notes in this connection principle V in the *Grundgesetze* of Gottlob Frege, one of the towering figures in the history of logic. As is well-known, Bertrand Russell pointed out to Frege that this crucial principle of his work led to contradiction:

(20) From: [wikipedia.org/wiki/Gottlob\\_Frege](https://en.wikipedia.org/wiki/Gottlob_Frege)

“In a famous episode, Bertrand Russell wrote to Frege, just as Vol. 2 of the *Grundgesetze* was about to go to press in 1903, showing that Russell's paradox could be derived from Frege's Basic Law V. It is easy to define the relation of *membership* of a set or extension in Frege's system; Russell then drew attention to ‘the set of things  $x$  that are such that  $x$  is not a member of  $x$ ’. The system of the *Grundgesetze* entails that the set thus characterised *both is and is not* a member of itself, and is thus inconsistent. Frege wrote a hasty, last-minute Appendix to Vol. 2, deriving the contradiction and proposing to eliminate it by modifying Basic Law V. Frege opened the Appendix with the exceptionally honest comment: ‘Hardly anything more unfortunate can befall a scientific writer than to have one of the foundations of his edifice shaken after the work is finished. This was the position I was placed in by a letter of Mr. Bertrand Russell, just when the printing of this volume was nearing its completion.’ (This letter and Frege's reply are translated in Jean van Heijenoort 1967.)”

Naturally, Frege recognized the need to alter his assumptions in such a way that the contradiction, which came to be called *Russell's paradox*, was avoided. This was in accord with relevant standards in any real inquiry, as nicely characterized as follows:

(21) Quine and Ullian (1978)

“When a set of beliefs has accumulated to the point of contradiction, find the smallest selection of them you can that still involves contradiction; for instance, [1] through [4]. For we can be sure that we are going to have to drop some of the beliefs in that subset, whatever else we do.”

So if NC has, as in (16), recognized his error, all to the good, right, even if three decades late? Unfortunately, not at all. Unlike Frege, when faced with the inconsistency of his assumptions, NC still refuses to take the only rational step open to him, that in (21). His actual suggestion, (16<5>-<7>) reveal, is to abandon neither of his logically incompatible views of NL but merely to claim one must ‘relax our stringent criteria’.

What criteria supposedly need relaxing? Clearly, that demanding that any intellectual framework must, minimally, be logically consistent. In (16), NC advocates continued acceptance of his contradictory ideas defended only by the mere hope that some unspecified future research will resolve their incoherence.<sup>9</sup> So, where Frege’s rational reaction to the discovery of the inconsistency in his system serves as a model of how to proceed in such a case, NC’s irrational reaction to that in his foundational position serves as a primer of how not to.<sup>10</sup>

The contradiction in NC’s biolinguistics is in principle resolvable in two distinct ways: either by abandoning the explicit ontology-defining claim that NL is a property of human nature or by eliminating appeal to set-theoretical apparatus and rejecting associated claims about the class of sentences being infinite, etc. But only abandonment of the biolinguistic superstructure is feasible. The other alternative would not only essentially eliminate all of NC’s and other linguists’ actual linguistic ideas, e.g. currently for him, all talk of Merge, etc., it leaves no prospect for building any alternative linguistic framework. This is an excellent measure of the scope of NC’s ontological mistakes.

Relevant to NC's contradictory foundational position is the repeated bizarre claim:

(22)a. Chomsky (1986: 33)

“Of course, one can construct abstract entities at will.”

b. Chomsky (1987a: 35)

“People may study whatever abstract object they construct, as a form of mathematics. The matter has no empirical relevance, no relevance to the real world.”

These remarks seek to dismiss a platonist view of linguistic foundations by suggesting that abstract objects have no determinate reality, and thus are roughly on the order of fairy tales. And the second adds an unargued, hence question-begging denial that abstract objects are an aspect of reality. This recalls the claim in Chomsky (1999) that NL sentences are not real, a preposterous view discussed at length in Postal (2004: chapter 11; 2009). The term *preposterous* here is judiciously chosen. How could it fail to be preposterous to claim that the essence of NL is Merge, which accounts for the fact that NLS involve infinite classes of sentences, while claiming that sentences are not real!

Taken literally, the remarks in (22) could, like those cited in (9), suggest a lack of comprehension on NC's part of what abstract entities are. Since they are not part of the physical world, cannot enter into causal relations, etc., the notion of *constructing them* makes no sense, as indicated in Katz and Postal (1991: 331). But a seemingly more indulgent reading of (22) as just saying that any purported specification of some abstract entity E actually defines one, no matter how E is characterized, still yields nonsense. It

fails to distinguish for example between existent triangles and nonexistent round squares, fails to allow for the nonexistence of any largest prime number and, amazingly, ignores the major development in the history of logic and mathematics already alluded to, the discovery of *Russell's paradox*. This determined that, the expression 'the set of all x such that x is not a member of x' cannot denote any entity. So, contrary to NC's claim, just as one cannot 'construct' a round square or a largest integer, one cannot 'construct' an abstract entity which is a set V consisting of all x such that x are not members of themselves. There can be no such V because if V *were* a member of V, then it would *not* be a member of V and if V were *not* a member of V then it *would* be a member of V. Either logical possibility leads to contradiction.

Discussion of Russell's paradox is standard in accounts of set theory, introductory or not, even in those targeted specifically at linguists like McCawley (1981: 141-142) and Partee, ter Meulen and Wall (1993: 7-8), and even in those aimed at the general public, as Quine (1987: 93-96). See also Halmos (1960: 6-7) and Potter (2004: 25-27). NC's failure to ever deal with such issues is a measure of the lack of seriousness of his ontological claims already indicated by the question-begging in (2), his play-acting response in (9), his claim that sentences are not real, etc.

In the context of NC's now implicitly admitted irrationality, one might profitably compare his position to that in Katz's work cited earlier. The latter explicated an approach which inter alia avoids any incoherence like that undermining NC linguistic foundations by simply not incorporating the false claim that NL sentences are biological

elements and recognizing their abstract status. Given that, the morass of the unargued (2) is avoided and one can distinguish, as in every other domain, between X and knowledge of X, in this case, where X is NL. There is then no barrier to recognizing their inevitable distinctness. Moreover, one can *coherently* take NL sentences to be abstract entities naturally characterizable as set-theoretical objects. These are unproblematically capable of being infinite in number because they are independent of the constraints of the physical universe and, in particular, of the even narrower ones of brains. There is no need for nonsense, metaphor or setting aside the law of contradiction. These considerations do not show that a platonist view is correct. But they do reveal further why NC's view cannot even be taken seriously, since it cannot be argued that there is no existing alternative to what his (16) rightly characterizes as nonsense.

#### **4. Two Specific Implications**

NC's largely contentless rejection of Katz's platonist view of NL included:

(23) Chomsky (1986: 33)

“Knowing everything about the mind/brain, a Platonist would argue, we still have no basis for determining the truths of arithmetic or set theory, but there is not the slightest reason to suppose that there are truths of language that would still escape our grasp.”

As with the claim in (2), NC provided no argument for assertion (23), which was further question-begging.

Moreover, to see that (23) is entirely wrong, assume some version of Ross's (1967 [1986]) Coordinate Structure Constraint (CSC) is a true condition on all NLs. Then, accepting for argument NC's idea that NL sentences have a set structure formed by Merge, the CSC makes a certain claim K about every class Q of NL sentences forming a full NL, where each member sentence of Q is, according to NC, a Merge-formed set. Hence each Q is a class of abstract objects. K is then the claim that no member sentence of any Q manifests certain kinds of relations between elements external to coordinate structures and other elements/positions internal to those structures. But claim K is not entailed by any properties of minds/brains/linguistic organs or indeed by anything physical. This is as impossible and for the same reason as deriving the logical principle Modus Ponens from physical theory. K is a claim about abstract objects and is compatible with any physical state of affairs whatever.

In general then, (23) is the direct opposite of the case since *no* truth about NLs (more generally, about any set-theoretical objects) as such could follow from even the most complete and perfect specification of the nature of minds/brains. The claim to the contrary is just another variant of NC's fundamental confusion between NL sentences/NLs and biological matters including knowledge of NL; see the discussion of the Veil of Ignorance argument in Katz and Postal (1991).

A second implication of previous sections relates to NC's recent year expansion of his biolinguistic ideas to talk about the evolution of language, as in:

(24) Chomsky (2007a: 10)



“These considerations provide a very simple thesis about a core part of the evolution of language, one that has to be assumed at a minimum, so it would seem, by any approach that satisfies the basic empirical requirement of accounting for the fact that the outcome of this process is the shared human property UG. At the minimum, some rewiring of the brain, presumably a small mutation or a by-product of some other change, provided Merge and undeletable EF (unbounded Merge), yielding an infinite range of expressions.”

But for reasons implicit in what precedes, remark (24) is incoherent as well. Merge is a set-theoretical operation, the resulting sets being constituents constitutive of NL sentences. Therefore, for fundamental reasons biological evolution/mutations could not possibly yield them. Namely, not being present in the realm of space/time coordinates and physical properties, nothing that happens in the causal world can affect sets. When in a more or less linguistic mode per se, NC describes Merge as set-theoretical; but in contexts like (24) he without warning takes it to be the historical result of physical events, thereby falling into further incoherence.

## **5. Ethics**

One need hardly linger over the devastating implications of previous sections for evaluation of the *intellectual* standards operative in NCs foundational work about linguistics. What about *ethical* standards? These have been trashed in NC’s work in a way which is arguably even worse.

That conclusion stands *inter alia* (see e.g. Levine and Postal, 2004) on the following. The admission in (15), published only in 2012, actually dates, according to McGilvray, who conducted the interview leading to it (see Chomsky, 2012a: 3-4) from a conversation with NC in 2004, shortly after an invited lecture NC gave at the 2004 Linguistic Society of America meeting in Boston. There was no mention in the lecture (which I happened to attend) or in its published version, Chomsky (2005), of the incoherence of the foundational position, as there had, as far as I know, been none in decades before starting at least in 1972. Rather, in work after work, lecture after lecture, interview after interview, NC presented his foundational position as not only coherent but as the serious scientific approach to NL study, often expressing disdain for any other view; see (25).

And yet within an obscure 2004 interview by a nonlinguist he nonetheless admitted that the foundational view was nonsensical, with no hint that this conclusion was a sudden 2004 realization on his part. Given NC's well-founded reputation as being an very smart man, it is beyond belief that he had not for years previously been aware of the incoherent character of his position, which, moreover, had been, as I have observed, argued in great detail in Langendoen and Postal (1984) and Katz and Postal (1991)?

Further, subsequent to the 2004 interview containing the admission, NC has once more published works (e.g. Chomsky, 2005, 2007a, 2007b) advocating the incoherent position, *again with no indication of its falsehood*. This history of dishonesty is, the (2004) admission aside, apparently unbroken up to the present as Chomsky (2012b) continues in that vein with no hint of the problems admitted in (16).

Compare too the admission in (16) with these prior threadbare attempts to justify his biolinguistic view.

(25)a. Chomsky (1999: 41)

“It is hard to imagine an approach to language that does not adopt such conceptions, at least tacitly. So we discover, I think, even when it is strenuously denied.”

b. Chomsky (2001: 1)

“A stronger thesis is that the biolinguistic approach has a kind of privileged status, in that every constructive approach to human language and its use presupposes it, or something similar, at least tacitly.”

Since ‘such conceptions’ in (25a) represents his biolinguistic view, the position is defended by an unargued implication that any other approach is almost unimaginable. And (25b) again displays an unsupported and contentless suggestion that his ‘privileged’ approach is unavoidable.

What NC has, of course only implicitly, then admitted *inter alia* in (16), is that all such remarks were essentially dishonest propaganda inserted to disguise the fact that his unsupportable foundational position is the exact opposite of necessary, inevitable or privileged.

So what I take to then be really inevitable is the conclusion that for decades NC has been *scamming* the linguistics profession as well as many interested in NL outside of it,

exploiting his extraordinary influence and notoriety to spread a false foundational doctrine. Since NC has beyond question been the most influential person in the field of linguistics over the decades at issue, the intellectual harm that his bad faith has engendered and no doubt continues to engender would be hard to exaggerate.

## **6. Manufacture of Consent**

The question inevitably arises as to how NC has been able to get away with it. How in an age with unparalleled educational levels, massive availability of information (even before the internet), world-wide strong interest in NL, could NC over multiple decades so successfully establish within much of contemporary linguistics an incoherent foundational position (whose incoherence had been demonstrated in professional publications) and whose incoherence he himself occasionally made explicit, as in (15)? How is it that simple truths available in the formal literature like that in Bell and Machover's (13) have had no visible impact in linguistics? Serious investigation of such issues is impossible here.

I conclude though with a relevant anecdote. After his team's 1958 World Series victory, New York Yankees manager Casey Stengel allowed modestly that 'I couldn't have done it without my players.' Well, NC's propagation of his incoherent foundational view over decades in a so-called science also couldn't have succeeded without his 'players'. And the forces, decisions, relationships, etc. which permitted NC, in his words (see Herman and Chomsky, 1988), to *manufacture the consent* of various followers who served as proselytizers for his incoherent doctrines will have to be central to attempts to illuminate

how, implausibly, literal nonsense became the dominant conceptual framework of so much modern linguistics.

## **7. Appendix: The Analyticity Contradiction**

As quotes (26a, b) cited in Katz and Postal (1991) show, NC has claimed (and as far as I know has not since denied) that NL's nature itself determines certain necessary truths:

(26)a. Chomsky (1977: 35)

“The relations between ‘murder’ and ‘assassinate’, or ‘uncle’ and ‘male’, or ‘cheerful’ and ‘unhappy’, ought to be expressible in terms that are not drawn from the theory of syntactic forms and categories or the world of fact and belief. There are no possible worlds in which someone was assassinated but not murdered, an uncle but not male, cheerful but unhappy. The necessary falsehood of ‘I found a female uncle’ is not a matter of syntax or fact or belief.”

b. Chomsky (1988c: 33)

“The statement that to persuade John to do something is to cause him to intend or decide to do that thing is necessarily true. It is true by virtue of the meaning of its terms, independently of any facts; it is an ‘analytic truth’ in technical jargon.”

And, of course, his ontology requires that it is contingent human nature which determines the necessary connections he takes to be represented by the analyticity property referenced in (25). He has made that explicit:

(27) Chomsky (1988b: 8) (emphasis mine: PMP)

“Judgments concerning connections of meaning *determined by the language faculty itself* - in particular, analytic connections - appear to be as clear and replicable as any.”

But the combination of NC’s ontological views with analytic connection necessity yields a contradiction, as seen in the following trivial modification of an earlier proof:

(28) Katz and Postal (1991: 542-543)

(a) Let S be an NL sentence such that both: (i) Analytic(S) (ii) True(S);

(b) Since Analytic is a linguistic property, and NCs ontology (see e.g. (2)) determines that every linguistic property is contingent, Analytic is contingent. Hence: (iii) Possible(Not(Analytic(S)));

(c) Quotes (26a, b) determine: (iv) Necessary(S);

(d) Moreover, one quote claims that analytic truths ‘hold solely by virtue of linguistic facts’. That is, S is necessarily true in virtue of, and only in virtue of, having the linguistic property Analytic. Its necessity in NC’s terms is independent of the factors determining the necessity of, e.g., logical or mathematical truths. Therefore: (v) If Possible(Not(Analytic(S))), then Possible(Not(Necessary (S)));

(e) (iii) and (v), by Modus Ponens, give: (vi) Possible(Not(Necessary(S)));

(f) And (vi) gives: (vii) Possible(Not(S));

(g) But (vii) gives Not(Necessary(S)), which contradicts (iv).

Certain aspects of this proof were explicated as follows:

(29) Katz and Postal (1991: 543, notes 14, 16)

a. A proposition P is contingent if and only if both the propositions Possible(P) and Possible(Not(P)) are true.

b. The deduction of (vii) from (vi) in (28) depends only on the equivalences Necessary(P)  $\equiv$  Not (Possible(Not(P))), Not(Not(P))  $\equiv$  P, and Possible(Possible(P))  $\equiv$  Possible(P).

Combined with his ontology, NC's view of analytic statements thus yields the absurd consequence that there are propositions P which are necessarily true only as a function of a *contingent* human faculty of language (F), as any fact about NL is under NC's foundational assumptions.<sup>12</sup> The contradiction just discussed is much less central to NC's biolinguistic viewpoint than those discussed earlier. It could be eliminated merely by rejecting the idea that analytic cases involve NL-based necessity. That position would at first glance seem at least consistent and hence preferable. But as previously observed:

(30) Katz and Postal (1991: 543, note 15)

“The notion that analyticity is a contingent property is hardly coherent. How could an analytic sense be that sense in a possible world and not be analytic in that world? Analyticity is an essential property, since an analytic sense could not be the sense it is without manifesting the appropriate containment relation which instantiates analyticity.” The upshot is that [N]C's conceptualism, which entails the contingency, is incoherent independent of statements endorsing analytically necessary truth.”

Of course, alternatively, NC could in the same vein as (16) say instead that analyticity is nonsense. But he hasn't bothered. In any event, the contradiction remains as blatant and unrepaired in 2012 as it was decades ago.

Again, the operative question is how has he gotten away with it?



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## Footnotes

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1 Earlier volumes like Chomsky (1975) were already mostly devoted to his foundational view and many later volumes like Chomsky (2002) are totally devoted to that.

2 Actually, earlier than Katz's explicitly platonist work, Richard Montague (1974a, 1974b) had assumed a platonist view

(i) Davis and Gillon (2004: 20n):

“Montague explicitly rejects a mentalist ontology for language. He holds that natural languages can be treated as formal languages and that the syntax and semantics for natural languages are branches of mathematics.”

Katz's work was notable though in formulating a platonic position as a detailed, explicit alternative to NC's mentalist view.

One should also recall that Cummins and Soames (1980) observed the failure of NC to justify his claim that NL was a psychological phenomenon. NC's response in the same volume lacked real content, as supported in Katz and Postal (1991: 526-527).

3 NC's position necessarily interprets sentences as *brain-internal tokens*, since anything going on the brain shares the key ontological properties of e.g. utterances in having

specific space/time coordinates, causal properties, etc. Thus his position suffers from all the problems involved in reconstructing sentences in terms of the noises which are their standard brain-external tokens; see Katz and Postal (1991), Katz (1996).

4 NC's quoted claim casting doubt on the possibility of formulating a platonist position coherently has never been supported by any argument.

5 NC has relentlessly repeated the infinite claim, probably most of the times he has advanced his foundational view. Chomsky (1957: 13; 1965: 4; 1977: 32; 2000a: 3; 2002: 46, 50; 2005: 11) provide a tiny sample.

6 An occasional remark by NC at least hints at some recognition of the nonnaturalistic status of *actual* ongoing linguistics, e.g.:

(i) Chomsky (1986: 27)

“Linguistics will be incorporated within the natural sciences insofar as mechanisms are discovered that have the properties revealed in these more abstract studies; indeed, one would expect that these studies will be a necessary step toward serious investigation of mechanisms.”

The general tenor here and the future reference of the second word in (i) are plausibly interpreted as an admission that NC's 1986 linguistics was not actually natural science. But the implication is that it could somehow develop into that, a view embodying the category mistake discussed at length in the text.

7 Independently of the foundational questions at issue in the present article, the idea that NC's linguistic product qualifies as empirical science is simply surreal. NC seems to apply no conceptions of sampling, verification, validation of data, testing of hypotheses, etc. Consider:

(i) Chomsky (2000a: 72)

“So there we have a parametric difference, a property of tense that yields Holmberg's generalization and this is going to make it look as if some language have overt movement and others don't, but they all have.”

In this prose, typical of the volume, readers are told that *all* NLs have overt movement. But NC offers absolutely no evidence to ground such a generalization. No reputable science journal would publish such unsupported speculations.

The same utter lack of scientific seriousness is also seen in:

(ii) Chomsky (2000b: 4)

“Similarly, no child has to learn that there are three and four word sentences, but no three-and-a half-word sentences, and they go on forever; it is always possible to construct a more complex one, with a definite form and meaning.”

Where is the empirical evidence about learning three and four word sentences? Where are the grounds for the in fact physical impossibility (recall that for NC everything linguistic is physical) of sentences ‘that go on forever’? What is the factual basis for the possibility of always constructing a more complex one, when human nature guarantees the contrary? Like (i), claims like (ii) are more make-believe than science.

Compare:

(iii) Chomsky (2012a: 105).

“So sure study it [=language evolution] to the extent you can, but sensible - knowing when you're talking and producing serious science and when you're



gesturing rhetorically to a general public who you are misleading. Those are important distinctions and I think if we make those distinctions, a lot of this literature pretty much disappears.”

8 Given that, according to NC himself, these ‘strict criteria’ were compatible with forty years plus of his supposedly talking in metaphors without previously admitting he was doing that, how could ‘relaxing criteria’ in (16) mean anything distinct from ignoring the law of noncontradiction?

9 NC’s invocation of the need to pursue logical nonsense does not represent appeal to a nonstandard logical view called *dialetheism*; see e.g. Priest, Beal and Armour-Garb (2004). NC does not say his contradictory ontology represents a *true* contradiction, which, if such things existed, might be unproblematic. He recognizes in (16) that his conflicting assumptions create a dreadful conceptual problem but nonetheless refuses to take the only possible step to eliminate it.

10 The irrationality of NC’s approach to linguistic ontology is massively ironic, given that he has repeatedly preached his own rationality:

(i) Chomsky (1988a: 696)

“...working in a science is useful because you somehow learn...what evidence and argument and rationality are.”

(ii) Chomsky (2002: 102)

“The recognition that that’s the way science ought to go if we want understanding, or the way that any kind of rational inquiry ought to go.”

And then there is this from a recent encomium:

(iii) Smith (2005: 179)

“Chomsky says that he knows of no argument for irrationality: ‘[Reason] is all we have,’ and that he tries ‘consciously to avoid irrational belief.’”

11 Relevant to the text argument is that, as Katz’s (2004: 175) revised view of analyticity indicated, analytic statements do not necessarily have truth values in a given model. Their actual necessity property which is beyond the grasp of anything about human nature is being secured against falsehood. They only have a truth value in a model if their denotational presuppositions are met in that model. The literal reading of the analytic (ia) then lacks a truth value for any world because there are no round squares in any possible world, while (ib) does represent a necessary truth:

- (i) Round squares are round.
- (ii) Round figures are round.