



Realism vs. Conceptualism in Linguistics

Author(s): Jerrold J. Katz and Paul M. Postal

Reviewed work(s):

Source: *Linguistics and Philosophy*, Vol. 14, No. 5 (Oct., 1991), pp. 515-554

Published by: [Springer](#)

Stable URL: <http://www.jstor.org/stable/25001444>

Accessed: 13/05/2012 21:53

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REALISM VS. CONCEPTUALISM IN LINGUISTICS

Part A: The Appearance of and Justification for Linguistic Realism

1. BACKGROUND AND GOALS

The shift in linguistics from a nominalist view of natural languages (henceforth NLS) as (external) physical phenomena to a conceptualist view of them as (internal) psychological phenomena has greatly affected the field. Conceptualism has helped redefine the goals of linguistic investigation, broadened the factual basis for deciding among competing theories and placed linguistics among the natural sciences. After three decades of the dominance of conceptualism, linguistics is now widely seen as a branch of psychology/biology.

In the early eighties, conceptualism was challenged by a new view of NLS. This Platonist, or, as we say, realist, view takes NLS to be abstract objects, rather than concrete psychological or acoustic ones (as American structuralists had claimed); see Katz (1981, 1984) and Langendoen and Postal (1984, 1985). This view is the linguistic analog of logical and mathematical realism, which takes propositions and numbers to be abstract objects; see Quine (1953, p. 14). On a realist view, linguistics, like logic and mathematics, has no psychological goals, depends on no psychological data, and has no psychological status. And as in logic and mathematics, results can be of value in the natural sciences. But linguistics is an autonomous formal science with its own goals and domain of facts.¹

This paper examines and evaluates conceptualist responses to realism during recent years. These responses have clarified the conceptualist stand on various issues. We argue that, in the process of clarification, inconsistencies in conceptualism have emerged. Since N. Chomsky (henceforth C) is the architect of linguistic conceptualism, its principal proponent over the years and the major respondent to the realist challenge, this paper concentrates on his work. Insofar as C's responses are the development of fundamental conceptualist principles, our criticisms of his arguments apply to conceptualism generally and reveal basic problems in the position.

¹ We are aware that some philosophers and linguists think there are foundational positions distinct from nominalism, conceptualism and realism. Although we cannot deal with this issue here, every such putative alternative with which we are familiar reduces to one of the three standard ontological positions.

Independently of the conceptualist/realist controversy there is general agreement on a core of facts about the grammatical structure of sentences which linguistic theories have to account for. Linguistic realism does not challenge such facts, but raises the foundational question of what kind of fact a fact about the grammatical structure of a sentence is. To clarify what has and has not been called into question, we distinguish between *linguistics proper* and the *foundations of linguistics*.

Linguistics proper (see note 11) is concerned with constructing correct grammars of particular NLs and a true general grammatical theory for the entire range of NLs. The formulation of these theories is based on an open set of facts which form part of the domain of linguistics. Limiting attention to English, facts like (1)–(6) set the agenda for its grammatical description and, together with similar facts from other NLs, set the agenda for a theory of NL universals.

- (1) (a) and (b) are grammatical, while (c) and (d) are not (C, 1957, p. 15).
 - (a) Have you a book on modern music?
 - (b) The book seems interesting.
 - (c) *Read you a book on modern music?
 - (d) *The child seems sleeping.
- (2) The phrase *John* in (a) is the direct object of *please*, while the same phrase in (b) is the subject of that verb (C, 1964a, pp. 34–35).
 - (a) John is easy to please.
 - (b) John is eager to please.
- (3) The form *telegraph* has at least the distinct phonetic representations in (a)–(c) (C and Halle 1968, p. 11).
 - (a) teləgræf (in isolation)
 - (b) teləgræf (in the context – *ic*, i.e., *telegraphic*)
 - (c) təlegræf (in the context – *y*, i.e., *telegraphy*).
- (4) Parasitic gap cases involving an extracted NP are possible, as in (a), but parallel cases with an extracted PP are not, as in (b) (C, 1982a, p. 55),
 - (a) a book which I copied from without buying
 - (b) *a book from which I copied without buying
- (5) If (a) is true, then in virtue of NL so, necessarily, is (b) (C, 1988b, p. 8).
 - (a) John killed Bill.
 - (b) Bill is dead.

- (6) The proposition expressed in (a) is a truth of meaning independent of empirical fact (C, 1988c, pp. 33–34).
 (a) Whoever is persuaded to sing intends/decides to sing.

The foundations of linguistics is concerned with the nature of facts like (1)–(6). At the level of linguistics proper, there is no problem. They are facts about NL sentences, covering every aspect of sentential structure, viz., syntactic, morphological, phonological and semantic. They are revealed in the judgments that fluent speakers make about their structure. C (1986, p. 36) also takes this view. But things are less straightforward at the foundational level because different linguists hold different conceptions of facts like (1)–(6). Such facts can be expressed within different positions on the nature of linguistic reality. In this sense, facts in linguistics proper do not determine a unique position on linguistic reality.

The Bloomfieldian position, no doubt the dominant one in the United States in the mid to late 1950s when C's work was becoming known, claimed that linguistic reality is physical (see Bloomfield, 1936, p. 89). On this conception, facts about sentences are properly interpreted as about actual utterances, perhaps relativized to their physical setting with respect to other utterances and non-utterances. Considerable early work in generative grammar was devoted to refuting this position, and, concomitantly, to supporting the position that facts about sentence structure are facts about human psychology (see e.g., C, 1962, 1964a, 1964b, 1966; Lees, 1957; Postal, 1966a, 1966b, 1968). The controversy between these positions shows that even a great deal of knowledge about the structure of sentences in linguistics proper may yield no firm understanding of what kinds of things sentences are.

C's view that grammars and grammatical theory describe a psychological reality is the current orthodoxy in linguistics (see Huybregts, Koster and Riemsdijk, 1981, p. 1), Koster, Riemsdijk and Vergnaud, 1980). It has been accepted even by many linguists who disagree with C on other basic issues (see Botha, 1979; Bresnan, 1982; Foley and Van Valin, 1984, pp. 1–21; Johnson-Laird, 1982; Lakoff, 1972, p. 649; Langacker, 1982; McCawley, 1979, pp. 220–221; and Partee, 1979a, b). But the substantive question is whether conceptualism provides the best foundations for linguistics proper. To establish the superiority of any foundational position, one would have to show that it (i) provides a coherent account of the nature of the objects linguistics proper is about and (ii) offers a more adequate account than its rivals of all the facts in linguistics proper. (i) requires a consistent account of the foundations of linguistics. (ii) requires

that the account sacrifice a minimum of unchallenged facts in the domain of linguistics proper.

As judged by the standard in (ii), the foundational position of American structuralism was shown to be inadequate. But nothing from the mid 1950s up until the early years of this decade establishes the adequacy of conceptualism. This is simply an observation about the limits of the foundational discussions that took place, which were restricted to the relative merits of nominalist positions like Bloomfield's and conceptualist positions like C's. The restriction to these two positions during this period made it seem as if an argument *against* a nominalist position was necessarily an argument *for* a conceptualist one. But these two do not exhaust the range of foundational possibilities. Justifying conceptualism as the correct interpretation of linguistic reality would require establishing its superiority to *all* its rivals. That was not attempted before 1980, presumably because no one conceived that there might be another foundational position.

Thus the introduction of a realist position demonstrates that the adequacy of conceptualism had not been established. The possibility of construing NL sentences as abstract objects, that is, as things which, like numbers in mathematics, are not located in space-time, involved in causal interactions, or dependent for their existence on the human mind/brain, provides a *third* foundational view. Since the refutation of nominalism leaves open whether the correct interpretation of linguistic reality is psychological or abstract, it is incumbent on conceptualists and realists alike to provide independent arguments for their positions.

There has been no systematic conceptualist response to realist claims about the nature of NLs. But C at least has addressed these claims in some detail.² Part B of this paper collects all of the major objections that C has presented, in order to evaluate the overall conceptualist response to realism. We recognize that C's (sometimes fairly casual) remarks were not intended as a full-blown response, and that such might include other objections. We reply to these remarks because they constitute at present the entire conceptualist case against realism, and will no doubt continue to be influential in the foundations of linguistics.

2. THE EMERGENCE OF REALISM

The first presentation of generative grammar in C (1957) had a glaring limitation: it contained no semantic component and hence no account of

² Fodor (1985) involves little more than a statement of lack of interest; see Katz (1984).

the semantic properties and relations of NL sentences.³ Even though semantic notions, e.g., ambiguity, play a role in C's arguments in *Syntactic Structures*, mention of a theory of meaning is virtually confined to the context of criticisms of approaches which base syntactic rules on semantic concepts (see C, 1957, pp. 92–105). Historically, linguistic realism developed as a response to a paradox, inherent in conceptualism, which surfaced when the aforementioned limitation on generative grammar was overcome.

To make sense of the arguments for transformational generative grammar that employed semantic concepts, do justice to meaning in NLs, and explore the possibility that linguistic theory might provide a framework within which to clarify (philosophically) important semantic properties and relations like ambiguity, synonymy, meaningfulness and analyticity, it was necessary to formulate a theory of the semantic structure of NL sentences. Such a theory was developed in a series of works beginning with Katz and Fodor (1963). Unsurprisingly, this theory assumed a substantive relation between NLs and logic. Definitions of semantic properties like *analytic*, manifested in e.g., (6), and semantic relations like *analytic entailment*, holding between, e.g., (5a) and (5b), provide an account of one class of facts about logical implication. Since analytic entailments are valid, it seemed reasonable to suppose that the senses of NL sentences contain semantic information essential for a theory of implication. Without going as far as to suppose that sentence senses *are* themselves the objects between which implication relations obtain, this semantic theory assumed that senses provide at least part of the propositional information on the basis of which logical laws apply to NL sentences (see Katz, 1972, Chap. 4, Sect. 5).

This intensionalist assumption is a special case of a now widely shared view that the explanation of logical relations between NL sentences requires that *some* level of their grammatical structure provide the semantic information necessary for the application of logical laws to them. Intensionalists take that level to be the sense structure of sentences; extensionalists take it to be the level at which the referential apparatus of NLs is most transparently presented. So the supposition that sentential structure at *some* grammatical level is logically significant is now common to a wide range of semantic approaches. Thus, many who reject senses still assume an overlap between aspects of grammatical form and logical principles.

³ Thus C (1979, p. 141) recognizes: "When Fodor and Katz proposed integrating in the Standard Theory rules of semantic interpretation which associated semantic *representations* with syntactic structures, they had in mind something entirely different from what I had

However, acceptance of an overlap between the senses of NL sentences and logical objects involves linguists in foundational issues at least to the extent of committing them to a *common* ontological position for linguistics and logic. This overlap assumption confronts one with the following paradox. If senses are parts of the grammatical structure of sentences and if linguistics both deals with the grammatical structure of sentences and is psychological, then senses are psychological. But if senses are psychological, then the laws of logic are also psychological, since the ontological status of a law is determined by the nature of the objects to which it refers. Consequently, logic is psychological, contradicting the accepted view that logic is nonpsychological.

There are three ways out of this paradox. The first reneges on the semantics/logic overlap assumption, in effect denying both that logic applies to NL and that NL sentences have grammatical properties of significance for logic. This way out renders incomprehensible the fact that logical connections obtain between NL sentences, and ignores such evident features of NL sentences as quantifier scope, analytic entailment, contradictions, etc. Reneging on the overlap assumption would retreat to a position something like that in C (1957), where linguistic theory incorporates no semantic theory at all. This option unnecessarily sacrifices some of the subject matter of linguistics and all of its logical relevance.

A second resolution of the paradox is to follow C's lead in linguistics and also adopt a psychological conception of logic. But Frege's arguments against psychologism seem too compelling to contemplate defending such a conception of logic. Frege (1967, pp. 1–25) argues that logical laws could hardly be the laws of *necessary* connection that they are if they were psychological. If logical laws were 'laws of thought', that is, empirical laws about contingent things, they would be contingent and, like laws in the natural sciences, could possibly be false. But, being necessarily true, logical laws could not possibly be false.

The third and final way out of the paradox is to follow Frege's lead in logic and adopt a realist conception of linguistics. While C's arguments against nominalist varieties of structuralism preclude locating the reality of grammatical structure in external acoustic objects, and Frege's argument together with the overlap assumption provide a reason for not locating it in the psychology of human speakers, nothing so far excludes a realist view of sentences as abstract objects. C's generative arguments in favor

proposed . . . Their rules had an *intensional* character, which did not exist in *Syntactic Structures*, where no linguistic level of *semantic representation* was envisaged".

of conceptualism were directed only against nominalist alternatives like American structuralism.

The task of formulating a realist position began in Katz (1981), which argues that conceptualism embodies a mistake like the one C had diagnosed in American structuralism. That was the failure to distinguish between knowledge of an NL (competence) and the exercise of that knowledge (performance). Conceptualism's mistake is the parallel failure to draw the further distinction between knowledge of an NL and the object it is knowledge of, the NL itself. While lack of the former distinction leads to adulteration of grammars with extraneous factors like memory limitations, lack of the latter distinction leads to adulteration of grammars with extraneous factors reflecting particular features of information representation in the mind/brain (see Section 6). The latter adulteration makes everything about NL grammars a contingent matter of human psychology, reflecting whatever biological features the latter happens to have. Hence, there is no place for necessary connection in grammatical structure. But, given the realist distinction between knowledge of an NL and the NL which is known, semantic structure can involve necessary connection, that is, logical and not biological necessity. Thus, the grammatical structures of sentences can be specified in a way that renders the logical connections between them comprehensible.

Just as C's competence/performance distinction provided psychological foundations for linguistics, the distinction between linguistic knowledge and its object provided realist foundations. Katz (1981) develops the latter, showing how grammars can be interpreted in realist terms. The possibility of such an interpretation was already present in C (1957, p. 13): "a language [is] a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements" and the grammar of a language L is "a device that generates all of the grammatical sentences of L and none of the ungrammatical ones". Thus, a grammar of L is characterized essentially as an *explication* of the concept 'grammatical in L', whose construction proceeds by formulating rules to specify the clear cases of grammaticality and extending them to cover new clear cases as they arise. A system of explicit rules decides the status of unclear cases so long as it "is set up in the simplest way so that it includes the clear sentences and excludes the clear non-sentences" (C 1957, p. 14).

Given this notion of explication, the boundaries of an NL are fixed *in principle* by the sentences belonging to it. Any property or relation determined on the basis of the structure of these sentences is a feature of that NL. *In practice*, of course, accounts of the boundaries of particular

NLs are constantly revised in response to new clear cases, specific grammatical insights and new theoretical ideas. In these terms, questions about knowledge of an NL (competence) are sharply distinguished from questions about the NL, that is, the sentences themselves.

Realists acknowledge the legitimacy of questions about competence, just as conceptualists acknowledge the legitimacy of those about performance. But the study of competence is assigned to the empirical field of psycholinguistics rather than to the formal discipline of linguistics.

The distinction between knowledge and the NL which is known also dictates a realist conception of grammatical theory, distinct from the conception of it as a theory of the (innate) competence of a child learning an NL. Grammatical theory on the realist view is an explication of NL universals. It expresses the principles holding for all sentences of all NLs, as grammatical theory is traditionally thought of.

3. REALIST ARGUMENTS AGAINST CONCEPTUALISM

The introduction of a realist conception in the early 1980s⁴ radically altered the situation in the foundations of linguistics. Without conceptualist arguments against realism, the realist arguments against conceptualism would at worst lead to a standoff. But, if realism's supporting arguments have force, the absence of conceptualist arguments against realism would make the latter the position of choice. This section presents three supporting arguments.

The first argument, which we call the *Type Argument*, derives from the type/token ambiguity in terms like 'sentence', 'word', etc. As Peirce (1958, p. 423) put it: "There will ordinarily be about twenty 'the's on a page, and of course they count as twenty words. In another sense of the word 'word', however, there is but one 'the' in the English language; . . . it is impossible that this word should lie visibly on a page or be heard in any voice". Clearly, both NL grammars and grammatical theory are about sentences in the type sense. C's criticisms of American structuralism

⁴ Richard Montague advocated a realist approach to universal grammar, claiming that it should be pursued as a part of mathematics; see Thomason (1974). C (1980a, p. 30) dismisses this realist view, as expounded by Thomason, by focussing on an apparent disparagement of empirical research in its formulation and by implying that such mathematical criteria as 'depth of theorems' find no substance in the proposed alternative to his own psychological views. There is, of course, no connection between realism and any disparagement of empirical science; nor are realists committed to the view that linguistics as a formal field is entirely parallel to traditional mathematics. A position similar to Montague's is Lewis (1975), and a related position is advocated by H. Lieb in various works dating from the late 1960s; (see Lieb, 1983 for references).

showed the unacceptable consequences of assuming that grammars are about pieces of actual speech, sentence tokens. C showed that it is impossible to practice linguistics in a way consistent with the philosophical theory that linguistics is about tokens, or to construct procedures which, without illegitimately presupposing types at some step, inductively transmute tokens into types.

Consider the much cited example *Flying planes can be dangerous*. Generative grammarians who discussed the ambiguity of this sentence were not talking about tokens on their blackboards. If they had been, they would not have been talking about the same thing. But if different grammarians were talking about different things in such circumstances, grammar would lack a common subject matter.⁵ If generative grammarians were talking about the sentence type, that is, the same English sentence, then that sentence cannot appear on a page or be heard in anyone's voice. It can have no spatial, temporal or causal properties. Unlike its tokens, it can't occur next Christmas or be located in New York; nor can it break crystal or be caused by vocal tract movements. Moreover, the standard ontological definition of 'abstract object' is just 'something with no spatial, temporal or causal properties'. Since sentences lack all these properties, they are *by definition* abstract objects. Thus conceptualism is false.⁶

The second argument, which we call the *Necessity Argument*, derives from the third way out of the paradox in the previous section. The grounds for assuming an overlap between linguistics and logic together with Frege's reasons for rejecting psychologism in logic combine to bar conceptualism from being the required *uniform* ontological interpretation of logical and linguistic reality. As observed in connection with (5), the grammatical structure of NL sentences itself underwrites a class of valid linguistic entailments, namely, analytic entailments. These are cases of *necessary* connection. If (5a) is true, (5b) cannot be false. Thus any proper account of NL must explain how such necessity can arise from the semantic structures of the entailing and entailed sentences.

Such an account is found in e.g., Katz (1972, Chap. 4, Sect. 3) and Katz, Leacock and Ravin (1985). It explains the logical validity of the

⁵ Either one has to invoke types to collect the various chalk deposits on the various blackboards together as tokens of a fixed type, or, equivalently, one must say that the sentence being explained is a type. One cannot obtain a common subject matter by talking about the set of all the tokens of a sentence, since such a construction refers to sets, which are abstract objects, and also involves the notion of sentence type. For further criticisms of such a construction, see Quine (1987, pp. 216–219).

⁶ Bromberger (1989) tries to explain how linguistics can both be about sentences construed as types and about human psychology, but the attempt fails for a number of reasons; see Katz (1990, pp. 275–280).

analytic entailment from (5a) to (5b) in two steps. The first explicates the decompositional relation between the senses of *kill* and *die* and, on that basis, explicates the containment of the sense of (5b) in that of (5a). If the containment relation is part of the structure of those sentences in the type sense, that is, of those abstract objects, then the relation is immutable. The second step uses standard model-theoretic considerations to show that, because of this containment, there is no model on which (5a) is true but (5b) false.

There is no such explanation if sentences are interpreted as psychological objects. For then the semantic relation between (5a,b), arising from an aspect of the mind/brain, is contingent. In that case, the relation could be otherwise. So, on a model-theoretic evaluation of the inference from (5a) to (5b), there is a model on which (5a) is true but (5b) false. In this model, speakers' linguistic competence is at variance with the laws of semantically necessary truth.⁷ Hence conceptualism cannot explain the validity of inferences like that from (5a) to (5b).

The third argument, which we call the *Veil of Ignorance Argument*, derives from the realist distinction between knowledge of an NL and the NL itself. The fact that the conceptualist position takes a grammar of an NL to be about knowledge commits its adherents to an account of NLs which faithfully reflects whatever actual human linguistic knowledge turns out to be. Since conceptualists adopt their position before competence is understood, they acquire their commitment behind a veil of ignorance. Nonetheless, conceptualists must honor their commitment no matter what features human psychology is shown to have by empirical study.

Since it is a contingent matter what innate principles of NL acquisition are incorporated in the mind/brain, those principles could organize the child's linguistic experience in the form of a huge list of sentential paradigms which specify phonological, syntactic and semantic structure. An English speaker's mature competence would thus consist of a list of paradigms, one for each English sentence S_1, S_2, \dots, S_n , where n is so large that the list includes every sentence that could be encountered in linguistic experience. Consider a possible world in which neuroscience, having worked out the brain's learning program from its hardware, finds that some sentence S_n is the longest mental sentence in the human competence

⁷ To make this possibility concrete, imagine that the grammar of English determined by the language faculty associates the meaning 'die' with *kill* in 'short' sentences, but not in sentences longer than 10^{23} words. Then a sufficiently long coordination of the form 'X and (5a)' would not be mentally represented in such a way that the meaning of the last conjunct contained the meaning of (5b), and the entailment of 'X and (5b)' by 'X and (5a)' would, wrongly, not be determined by the mental sentence.

system. In this case, linguistic conceptualists would be committed to saying that there are only finitely many English sentences. Since the empirically true theory of linguistic competence predicts that the speaker-internal principles characterize no sentence longer than S_n , conceptualists would be committed to there being a longest English sentence in that possible world.

But, since linguists evaluate grammars on the basis of facts encountered in linguistic experience, the evaluation of grammars in the possible world would have to be identical to their evaluation in the actual world. Thus, actual linguistic practice shows that even for the possible world in question, linguists could not accept the conceptualist claim that there is a longest English sentence. Linguists must ignore the finite limitation on competence systems in constructing grammars, since, as scientists, they have to make standard inductions from their basic evidence. And a standard induction from the basic grammatical evidence about, say, coordination, projects the regularity that, for a sentence of any length, there is a longer one, formed by conjoining it with another under appropriate structural constraints. There are, for example, fully grammatical structures of which S_n is a proper part, e.g., 'Snow is white and S_n '. Therefore, the inductive conclusion that there is no longest English sentence is inconsistent with the conceptualist's claim that S_n is the longest English sentence. Since the grounding of the inductive conclusion is just standard scientific methodology, conceptualism must be abandoned.

Conceptualists cannot simply trust that the actual world differs relevantly from the possible one just sketched. Of course, it may. But the mere existence of this possible world suffices to show that the goal of characterizing an NL is independent of the goal of characterizing NL competence. This formulation of the Veil of Ignorance Argument is necessarily brief; for a fuller version, see Katz (1990, Chap. 7).

Part B: Chomsky's Reaction to Realism

4. CHOMSKY'S JUSTIFICATION FOR CONCEPTUALISM

With the emergence of realism, C went beyond his early arguments against nominalism to try to establish conceptualism's superiority to realism. Sections 5 and 6 examine every proconceptualist or antirealist remark of C's we have been able to find and show that they neither establish the viability of conceptualist foundations nor reveal any defect in realist ones.

In their 'open peer comments' on C (1980b), a short version of C

(1980a), Cummins and Harnish (1980) (henceforth C&H) express skepticism about C's psychological conception of linguistic reality: "Chomsky thinks there is a language faculty (LF) . . . [He] assumes that linguistics is about the LF, and this assumption is undefended and dubious" (C&H, 1980, p. 18). C's (1980c, p. 43) response runs like this. C&H *grant* that there is a valid empirical field of inquiry, call it LF-theory, which seeks to determine the nature of grammars and their innate determinants. C then says that it is no concern of his whether the study of LF-theory is called 'linguistics', which he claims is a purely terminological issue. The implication is that if others want to study something that is not empirical LF-theory, that is fine, but the psychological nature of NL study has been granted.

What is wrong with this response appears when C addresses C&H's claim that there has been no adequate defense for the view that talk about NL is about a psychological reality. They claimed: "If linguistics is about the mind, or one of its faculties – if it is about psychological states – then, of course, evidence for the truth of the theory is evidence of psychological reality. But linguistic evidence itself can't tell us whether linguistics is about the mind" (C&H, 1980, p. 18). C responded as follows: "Insofar as 'talk about language' is talk about these grammars, hence about LF, it is talk (not disguised) about psychological states, internal mechanisms, and so on . . . Their point, then, seems to be that talk about language need not adopt these concerns, which is no more interesting than the fact that talk about some range of physical data need not be concerned with determining true theories" (C, 1980c, p. 43). C has here made an unjustified leap from agreement on their being some psychological structures involved with NL knowledge and learning to the conclusion that talk about NLS is unconcerned with true theories if it is not *about* those structures. But the point of C&H's skepticism was that identification of linguistic theories with psychological ones is neither logically necessary nor adequately supported by C. Hence C begs the question at issue between realists and conceptualists which, C&H, in effect, raised.

C's mention of 'true theories' concludes that failure to interpret talk about NLS as about psychological structures abandons interest in true theories. This is as groundless as a claim that failure to interpret talk about real numbers as about psychological structures abandons interest in true (mathematical) theories. In linguistics, as in logic and mathematics, realists abandon interest in theories of *psychology*, without abandoning interest in true theories. Psychological theories are abandoned in order to pursue true theories of NLS, implication and numbers. Again C begs the

foundational question of what one is describing when one characterizes facts like (1)–(6).

As indicated at the outset, a core of facts defining grammatical study is generally assumed. C in effect stresses this himself: “In actual practice, linguistics as a discipline is characterized by attention to certain kinds of evidence that are, for the moment, readily accessible and informative: largely, the judgments of native speakers” (C, 1986, p. 36). This is just to say that linguistics is defined by the study of facts like (1)–(6). C makes the further point: “If a theory of language failed to account for these judgments, it would plainly be a failure; we *might*, in fact, conclude that it is not a theory of language, but rather of something else” (C, 1986, p. 37). We have only two quibbles: the emphasized hedge should be replaced by “would have to”, and to say a theory of NL must account for judgments is a simplification parallel to a claim that e.g., physical theory must account for meter readings. Rather, a theory of NLS must account for those NL properties which judgments reveal, just as physical theory must account for those physical effects which meters measure.⁸

If C’s appeal to the unquestioned existence of a psycholinguistic domain showed that *linguistic* objects are psychological, it would also show that mathematical and logical objects are psychological. But plainly it is fallacious to conclude from the mere *existence* of human knowledge of, or capacities with respect to, mathematical and logical objects that logic and mathematics are psychological studies. What, then, is the fallacy in C’s argument that linguistic objects are psychological?

We may assume that there is a domain of fact, A, instantiated by (1)–(6), studied in field A’ and a domain of fact, B, concerned with human linguistic knowledge, its development, the biological structures (LF) which determine it, etc., studied in field B’. Evidently, both domains A and B and fields A’ and B’ are characterized a priori in distinct ways. While A and B could turn out to be identical, they could also turn out to be distinct. Therefore, they cannot simply be *assumed* to be identical. C’s conceptualism thus incurs the burden of showing that A and B are identical. Realism, in contrast, must show that A and B are distinct, a burden taken up in Katz (1981, 1984). But despite C&H’s challenge to show that field A’ is *identical* to field B’, C just *stipulates* that the two domains and the two studies are the same, thus ignoring the burden of proof on his

⁸ There is no valid inference from the fact that linguistics depends on judgments, which are real psychological events involving some psychological faculty, to the conclusion that thereby linguistics is about the mind/brain. If this inference were valid, then, by parity of reasoning,

position. No one, including C, questions that field A' is linguistics. Hence, in context, what arises is not a terminological issue of what field B' is to be called. C's (1980c, p. 43) apparent liberalism about whether field B' is to be called 'linguistics' just masks the begged question of whether domains A and B and the fields which study them are identical.

Not only did C's (1980c) reply to C&H not discharge the burden of proof of showing that domain B is domain A, he has never since even attempted to meet it. This has led to two separate agendas in C's thinking:

- (7) "Generative grammar . . . is concerned with those aspects of form and meaning *that are determined by the "language faculty"*, which is understood to be a particular component of the human mind. The nature of this faculty is the subject matter of a general theory of linguistic structure that aims to discover the framework of principles and elements common to attainable human languages" (C, 1986, p. 3, emphasis ours).

C's earlier quoted remark makes it seem that he, like linguists generally, has a fundamental commitment to the view that grammatical research is defined by facts like (1)–(6). This assumes that, independent of particular theoretical ideas and foundational assumptions, there are clear cases which in part determine the boundaries of NL, a conclusion granted in another context by C himself:

- (8) ". . . he is overlooking the fact that we have certain antecedently clear cases of language, as distinct from maze running We cannot arbitrarily decide that 'language' is whatever meets some canons we propose" (C, 1975a, pp. 174–175).

But the emphasized portion of (7), if not the application of a double-standard, reveals a distinct agenda, which amounts exactly to limiting 'NL' to what meets a particular canon, in this case, *the conceptualist canon*. (7) makes explicit that the commitment of C's conceptualism is only to account for those aspects of NL determined by certain psychobiological structures. Despite its conflict with earlier quotes and (8), formulation (7) cannot be regarded as a lapse. As we shall see, it appeared in C's writings as long ago as 1980.

These two agendas create conflicting commitments. Logically, some, or even all of (1)–(6) could turn out *not* to be determined by the human mind/brain. The Veil of Ignorance Argument exploits this possibility.

one could infer that astronomy is about the mind/brain, since it depends on data revealed by human eyes.

The Necessity Argument shows that there is an actual case in which C's conceptualism faces incompatible requirements. To maintain the goal of (7) consistently, his view might in principle be forced to exclude any core linguistic facts, failing thereby to satisfy conditions (i) and (ii). Of course, some data pretheoretically taken to be linguistic facts can turn out to be nonlinguistic and thus *properly* excluded. But a position like (7) could force elimination of actual linguistic facts from the scope of linguistics. This conclusion cannot even be regarded as controversial, since it has been made explicit by C himself: "And if some attribute of a sentence that enters into logical inference turns out not to be provided by the best theory of grammar we can devise, we will conclude that this is not an element of the representations of meaning provided by grammatical competence" (C, 1980a, p. 65). "The fact that the conclusions may not conform to some a priori scheme or satisfy some specific need such as a codifying inference is, plainly, irrelevant to this empirical inquiry" (C, 1980a, p. 65).

C no doubt believed that only *semantic* facts ('logical inference') were at issue here. But nothing in agenda (7) is specifically linked to semantics. Just as it is possible that LF, if it exists, does not determine some or any semantic properties, LF might not determine some syntactic or phonological properties. C has failed to observe that the requirement of faithfulness to core facts is exactly an "a priori scheme". But the view that the domain of fact represented by (1)–(6) includes those properties of sentences which ground inference is no more a priori or dispensable than the view that this domain includes facts revealed by judgments of grammaticality, rhyme, etc. Since the Veil of Ignorance Argument applies to *any* grammatical property or relation, agenda (7) puts all of the content of linguistics proper at risk. A view like C's which is prepared to jettison some of these must be prepared to jettison them all.

Another form of the Veil of Ignorance Argument brings out a related but slightly different sort of conflict internal to C's views: "We might discover that there is no language faculty, but only some general modes of learning applied to language or anything else" (C, 1980a, p. 29). Imagine such a state of affairs where linguists construct simple, comprehensive formal grammars of NLs, on the basis of facts (1)–(6). But, if (7) is taken as the general manifesto of C's conceptualism, there is *nothing* for those grammars or linguistic theory in general to be about. However, even in this hypothetical situation, there would be something for grammars to be about, namely, facts like (1)–(6). Since *ex-hypothesi* there is no LF for the grammars to be about, this hypothetical situation demonstrates that grammars and linguistic theory could not, as (7) claims, be about LF.

In contrast, realism has a single agenda. If “the best theory of grammar we can devise” does not capture semantic facts unchallenged in linguistics proper, one can only conclude that the theory is *inadequate*. According to realism, linguistics proper characterizes all the grammatical properties of sentences. The foundational claim that sentences are abstract objects introduces no further agenda. Realism concurs with C’s claims that a theory which fails to account for linguistic judgments is “plainly a failure” and is “not a theory of language but rather of something else”. Realism provides a coherent overall account by separating the domains of psychological and acoustic phenomena from that of NLS, and by attributing to sentences a degree of abstractness that precludes any limit on the description of grammatical facts in linguistics proper.

The basic strategy underlying C’s response to C&H amounts to this: one emphasizes that there is an unquestioned domain of linguistic knowledge and a field which studies it, and, on this basis, one assumes that there is an asymmetrical burden of proof, that is, that conceptualism incurs none. C adopts this strategy in reaction to Soames (1984).

Soames agrees that there is a field of inquiry, call it “C(ognitive)-linguistics”, which would use this evidence to select G_1 over G_2 as the theory of language that is represented in the mind/brains of the members of this speech community. But he proposes that there is another discipline, call it “A(bstract)-linguistics”, which dismisses this evidence and regards G_1 and G_2 as equally well supported . . . There is no doubt that Sapir and Jakobson, among many others, would have followed the path of C-linguistics in such a case, selecting G_1 as the grammar . . . The burden of proof clearly falls on those who believe that alongside C-linguistics, . . . there is some point in developing the *new* discipline of A-linguistics, which not only differs from linguistics as it has actually been practiced by major figures in the field but also is radically different from anything known in the sciences. (C, 1986, p. 35, emphasis ours)

One sees here three lines of attack against Soames’ proposals.

One is the ‘burden of proof’ strategy already discussed. Nothing in these remarks addresses the flaw already pointed out in this strategy. Another line is an appeal to authorities, which requires no discussion. The third line claims that a realist linguistics would be novel for linguistics and for all of science.⁹ This assertion begs the same question as does the stipulation that domain A is domain B. C is required to give an argument that facts like (1)–(6) concern a psychological realm, just as realists are required to give one that they concern an abstract realm. Moreover, C’s claim that realist foundations would require a new linguistics is seen to be false once the distinction between linguistics proper and the foundations

⁹ The second claim in C’s criticism of Soames’ position is that realist linguistics would be the first example of a realist interpretation *in all science*. The tradition of realist interpretation in the mathematical sciences shows this to be false. But even if true, it would be irrelevant.

of linguistics is taken into account. This reveals that what is at stake is only the interpretation of the foundations of ongoing research into data like (1)–(6). Realist linguistics requires not a *new* field, but merely a *different interpretation of an existing one*. What could remain and what would have to be eliminated require specification, but most of what generative linguistics takes to be syntax, semantics, phonology, etc., would be preserved (see Katz, 1981, especially Chaps I and II).

5. CHOMSKY'S CRITICISMS OF REALISM

C makes three methodological criticisms of realism:

There is little point arguing about how to define the term "linguistics", but it is plain and uncontroversial that there is an area of investigation, let us call it "C-linguistics" (cognitive linguistics), which is concerned with the truth about the mind/brains of the people who speak C-English and C-Japanese, suitably idealized. This subject belongs strictly within the natural sciences in principle . . . C-linguistics raises no philosophical problems that do not arise for scientific inquiry quite generally." "The status of P-linguistics ("Platonic linguistics"), or of the study of E-language is quite different. Thus the advocates of P-linguistics have to *demonstrate* that in addition to the real entities C-English, C-Japanese, etc., and the real mind/brains of their speakers, there are abstract Platonic objects that they choose to delineate somehow and study. Whatever the merits of this claim – I see none – we may simply put the matter aside, noting that 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*. (1987a, pp. 34–35, all emphases ours)

First, realists no more have to *demonstrate* the existence of abstract objects to justify their study than conceptualists have to *demonstrate* the existence of LF to justify its study. All that can reasonably be required is that realists show that a better foundational account of the data which define linguistics proper can be given by assuming the existence of abstract objects than by not assuming them. This burden was taken up in Katz (1981, 1984) and Langendoen and Postal (1984).¹⁰

The second emphasized portion of the above quote misrepresents the realist position by implying that people construct abstract objects. This is an absurdity, since it is logically impossible to construct objects which have no origin and are not subject to causation.

The third emphasized portion says, in effect, that only *empirical* sciences

¹⁰ C's requirement that realists *demonstrate* a priori the existence of abstract objects is as baseless as behaviorist demands that mentalists demonstrate the existence of mental objects, demands which C has for years rightly dismissed as unreasonable. C's requirement instantiates the kind of "irrational" limitation on "admissible theory construction" unmotivated by the needs of explanation, which C (1987a, p. 11) himself criticizes behaviorists for. C's methodological attack involves only the double standard of imposing on realism requirements which he rejects for theory construction in general and conceptualism in particular.

study reality, and thus implicitly that logic, mathematics, theoretical computer science, etc., “have no relevance to the real world”. This again begs the question. The issue is whether sentences are abstract objects. Since sentences are real things, if they are abstract objects, as realism claims, the study of abstract objects is relevant to reality.

Since 1980, C’s accounts of his conceptualist position and attacks on realism explicitly reject NLs as collections of sentences understood as abstract objects. C refers to this notion of NL as ‘E-language’, a term intended to suggest, as he puts it (1987a, p. 32), that it is both extensional and external to human minds. We consider first C (1986, Chap. 2), which rejects E-languages.

The rationale of this rejection is as follows. If there are no E-languages, then there is, on the realist position, nothing for linguistics to be about, while its subject matter on the conceptualist position is supposedly guaranteed by the existence of linguistic knowledge and the mind/brain. Thus the rejection of E-language can be viewed as the negative aspect of a twofold strategy for justifying conceptualism against realism. Rejection of E-language is the primary objection to realism, while the strategy discussed above is the primary defense of conceptualism.

C (1986, p. 15) begins with pretheoretic, commonsense ideas of NL and distinguishes these from technical concepts putatively part of some science of NL. His first point is that the commonsense notion has a sociopolitical dimension on which German and Dutch are two separate NLs although some German dialects closely resemble dialects called ‘Dutch’ and are not mutually intelligible with others called ‘German’. Although meant to cast doubt on the notion NL, these sociological assessments have no relevance to the present controversy. Realists can accept or reject them as easily as conceptualists, since the notion ‘NL’ thereby rejected is entirely distinct from the realist notion of a collection of sentences regarded as abstract objects.

Moreover, it is unjustified for C (1986, p. 15) to claim: “Rather, all scientific approaches have simply abandoned these elements of what is called ‘language’ in common usage”, since he has not abandoned the notion ‘dialect’: “In some languages, sentences such as (3b) are quite acceptable; in others, less so. English dialects vary in this respect” (C, 1988c, 71n). The only difference between ‘dialect’ and ‘NL’ is that the former focuses on a narrower realm of distinct NLs than the broader sociopolitical reading of ‘NL’. The underlying fact is that there is an enormous range of distinct NLs, differing in various degrees along many dimensions.

Beyond dialects are idiolects, and beyond them, the NL of a person at

a specific time. So several distinct questions are involved in C's rejection of the commonsense notion of NL. One is whether linguistics can uncover purely linguistic principles (those not appealing to history or sociology) which categorize idiolects into groups corresponding to such terms as 'German'. A realist has no more reason to endorse or reject such categorizations than a conceptualist.

The further question of whether some notion of 'NL' related to 'idiolect' is central to linguistics arises in C (1986, p. 16). He claims that modern linguistics approaches questions of domain delineation by appealing to the idealization of a homogeneous speech community. The purpose of this idealization is to normalize differences between idiolects of different speakers, and of the same speaker over time. In realist terms, no such idealization need be appealed to, since NLs are taken to be real things, and the degree or number of differences between speakers of similar but distinct idiolects are not of direct concern. While the realist may speak informally of the grammatical properties of e.g., English, or some dialect of English (British English), or some similar idiolects of English (e.g., New England idiolects), this can be understood as a simplification designed to limit attention to certain properties assumed or known to hold for a range of distinct idiolects. But the realist stresses that e.g., British English, which allows well-formed sentences like *Give it me*, must cover actually distinct collections of sentences compared to American English, in which the expression is ill-formed. As one takes a progressively more fine-grained approach, more and more idiolects are seen to represent (partially) distinct NLs.

C (1986, p. 22) contrasts the notion of E-language with his own radically different conception, which reconstructs NL as a psychological object, not external to human minds. The technical notion, referred to as 'internalized language' (I-language), is characterized as follows:

Then for H to know L is for H to have a certain 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 are specific things in the world. (C, 1986, p. 23)

C's Chapter 2 contains eleven claims dismissing E-language in favor of I-language. We reply to each.

C claims:

One might argue that the status of the E-language is considerably more obscure than that of the set of rhyming pairs, since the latter is determined in a fairly definite way by the I-language whereas the bounds of E-language can be set one way or another, depending on some rather arbitrary decisions as to what it should include. (1986, p. 25)

But he gives no argument that the bounds of E-language are arbitrary, nor could he without showing that I-language bounds are also arbitrary. For determination of the boundaries of an NL, the separation of its sentences from non-sentences, is a matter of *linguistics proper*, and not the *foundations of linguistics*. What conceptualists and realists disagree about is not particular facts like (1)–(6), but what kind of facts they are.

Moreover, realist decisions about the boundaries of an NL and about the grammatical structure of its sentences are certainly principled. They are based on the principle that the boundaries of an NL and the grammatical structure of its sentences are determined by the simplest theory of that NL which accounts for the grammatical facts. This is, of course, just the conception of grammar justification espoused in C (1957).

Second, C (1986, p. 26) maintains: “There is no issue of correctness with regard to E-languages, however characterized, because E-languages are mere artifacts”. This makes the same claim as the previous quote, substituting “no issue of correctness” for “arbitrary”. The response is that essentially the same issue of correctness or artifactuality exists for both conceptualism and realism, since the issue falls in *linguistics proper*. If anything, conceptualism runs a risk of artifactuality (not found in realism), since the agenda expressed in (7) sanctions the dismissal of grammatical facts for ideological reasons.

C (1986, p. 27) claims that “. . . theories of E-languages, if sensible at all, have some different and more obscure status because there is no corresponding real world object”. C writes (e.g., 1983, pp. 156–157; 1987a, p. 35) as if he believes that ‘real-world’ covers only the physical world so that everything nonphysical is unreal. He never considers how this view can be made consistent with the ordinary view of mathematical objects, or even with everyday objects like Tchaikovsky’s 5th Symphony. Counting E-languages as unreal just because they are not biological, hence, physical, objects, is simply question begging.

C (1986, p. 34) asserts:

Clearly, there is some fact about the mind/brain that differentiates speakers of English from speakers of Japanese, and there is a truth about this matter, . . . But sets are not in the mind/brain and grammars can be chosen freely so long as they enumerate the E-language, so the study of E-language, however construed, does not seem to bear on the truth about speakers of English and Japanese; it is not even in principle, part of the natural sciences, and one might argue that it is a completely pointless pursuit, simply a matter of chasing after shadows.

There are six claims here:

- (9)(a) There is a fact about mind/brains that differentiates English speakers from Japanese speakers.
- (b) Sets are not in mind/brains.
- (c) Distinct but equivalent grammars of a fixed set can be 'chosen freely'.
- (d) Therefore, the study of E-language does not bear on the truth in (a).
- (e) The study of E-languages is not part of the natural sciences.
- (f) One might argue that the study of E-languages is a completely pointless pursuit, simply a matter of chasing after shadows.

(9a, b, c) seem correct, but the conclusion (9d) does not follow without the unargued supposition that the differentiating fact is nonrelational, that is, a fact involving only internal states of English and Japanese speakers. The realist position is that the fact in question is relational: certain internal states constitute knowledge *of* English, while others constitute knowledge *of* Japanese, where English and Japanese are E-languages. The realist claims that it is the fact that the knowledge is knowledge of English, on the one hand, and of Japanese, on the other, that differentiates English speakers from Japanese speakers. In supposing that the differentiating fact is *nonrelational*, C again begs the question.

(9e) is entirely correct, but yields no criticism of E-language or its study, since realism claims that grammatical study is not a natural science but a formal science like mathematics. C's view that this is a deficiency depends only on the assumption that it *must* be a natural science, which again begs the question. (9f) does not stand without (9d) and (9e) and has to be rejected in any case, since it would, by parity of reasoning, entail that the study of mathematics is a "completely pointless pursuit, simply a matter of chasing after shadows".

Fifthly, C (1986, p. 27) states: "To put it differently, E-language, however construed, is further removed from mechanisms than I-language, at a higher order of abstraction". As a criticism of E-languages, this remark is incoherent. If E-languages do not exist ("are not real-world objects"), then *they* cannot be "further removed" from anything, and no distance measure can relate *them* to (presumably psychological) mechanisms. And if they *do* exist, the realist claim is granted.

Next, C (1986, p. 28) asserts:

The shift of perspective from the technical concept E-language to the technical concept I-language taken as the object of inquiry is therefore a shift toward realism in two respects: toward the study of a real object rather than an artificial construct, and toward the study of what we really mean by 'a language' or 'knowledge of language' in informal usage.

The first respect just repeats the unsupported assertion that E-language is not real. The second is not really relevant to the issues between conceptualism and realism as C (1986, pp. 15–16, 27) comes close to recognizing. In any event, it is based on a clear misconception. The sole basis for C's claim is the view (C, 1986, p. 27) that when one speaks of a person knowing an NL, one does *not* mean that he or she knows an infinite set of sound/meaning pairs taken in extension, but rather knows "what makes sound and meaning relate to one another in a specific way". Again, C's claim rests on the illicit supposition that the fact in which knowledge of an NL consists is nonrelational. For if it is relational, in the sense described above, then knowing an NL does mean knowing an infinite set of sound/meaning pairs. We can take "knowledge of" to mean that the internal rules stand in a certain relation to the collection of sound/meaning pairs, that is, to E-English. It is, of course, hard to say what this relation consists in, because the 'knowledge of' relation is as complex as the 'exercise of' relation linking competence and performance.

C's position, based on a nonrelational view, is not well formulated. It seems to entail that people with *distinct* psychogrammars which happen to define the same pairings necessarily speak different NLs. This is criticized in Katz (1981, pp. 89–92). To formulate his position properly, C would have to define an equivalence relation over psychogrammars, a task that is, we contend, impossible without reference to E-languages.

Further, C (1986, p. 30) claims:

When we study, say, the language of arithmetic, we may take it to be a 'given' abstract object: an infinite class of sentences in some given notation. Certain expressions in this notation are well-formed sentences, others are not. "It is easy to see how one might take over from the study of formal languages the idea that the 'language' is somehow given as a set of sentences or sentence-meaning pairs, while the grammar is some characterization of this infinite set of objects . . ." The move is understandable, but misguided.

C misunderstands the realist's analogy to arithmetic, which compares the infinitude of sentences of an NL not to that of "the language of arithmetic", but rather, to that of numbers. The analogy is that the sentences of an NL, the objects that a grammar is about, are abstract objects like numbers, the objects that arithmetic sentences are about; see Katz (1981, p. 78).

C (1986, pp. 30–31) continues:

In the case of some formal system, say arithmetic (presumably the model in the mind) we assume the class of well-formed formulas in some notation to be 'given', and we select the 'grammar' (the rules of formation) as we please. But the E-language is not 'given'.

Here, too, the analogy is misunderstood. It is not the well-formed formulas

of some formalization of arithmetic that correspond to E-language sentences, but the numbers themselves. This confusion apart, any justification for speaking about e.g. a mathematician, logician, etc., being “given” some infinite collection of objects is equal justification for speaking about a linguist being “given” an infinite collection of sentences. Each type of research begins with a *finite* number of basic facts provided by intuition and generalizes to infinite collections. In logic, one begins with intuitions about implication relations, consistency relations, etc. These intuitions involve a finite, in fact extremely small, number of cases which are generalized to principles about all propositions. Correspondingly, linguistic research begins with a finite, in fact extremely small, number of intuitively given facts, and generalizes to principles about an infinite collection; see Langendoen and Postal (1984, Chap. 3). Since the parallel is perfect, C’s distinction between e.g., arithmetic and NLS assumes falsely that infinite collections are “given” in some (never specified) way in mathematics that they are not in linguistics. C’s criticism of E-language rests only on this illusory distinction.

C’s post-1981 writings contain only the following as a basis for rejecting the realist analogy to arithmetic:

- (a) The analogy to arithmetic is, however, quite unpersuasive. In the case of arithmetic, there is at least a certain initial plausibility to a Platonistic view insofar as the truths of arithmetic are what they are, independent of any facts of individual psychology, and we seem to discover these truths somewhat in the way that we discover facts about the physical world.
- (b) In the case of language, however, the corresponding position is wholly without merit. There is *no initial plausibility* to the idea that apart from the truths of grammar concerning the I-language and the truths of UG concerning S0 there is an additional domain of fact about P-language independent of any psychological states of individuals.
- (c) 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*. (C, 1986, p. 33, all emphases ours)

The hedged sketch of a realist view of mathematics in (a) seems to grant that arithmetical objects are real things which the mind discovers. But (b) denies the parallel for linguistic objects. Since C gives no reason for denying the parallel, this is a distinction without a difference. Moreover, taking the thesis that sentences exist as abstract objects to have “no initial plausibility” ignores the fact that substantial grounds, including the Necessity and Veil of Ignorance Arguments, were given for this view. Moreover, Section 2 provided grounds for going beyond a claim of plausibility to a conclusion of near triviality.

Contrary to (c), Chapter V of Katz (1981) sought to establish *precisely*

that regardless of the contingent properties of the human mind/brain, “there are truths of language that would still escape our grasp” (p. 24), specifically, the truth that analytic statements and entailments are necessary. As Section 2 spells out, the very development of a realist foundational position was driven by the need to solve a paradox which, in effect, arises internal to C’s conceptualism; see Section 6. The Necessity Argument is simply that paradox restated as an argument that facts like (5) and (6) escape the conceptualist’s grasp. Although ostensibly a response to, *inter alia*, Katz (1981, Chap. V), C ignores it.

C (1986, p. 33) continues the thought from C (1981, p. 7): “The shift of focus from language (an obscure and I believe ultimately unimportant notion) to grammar is essential *if we are to proceed towards assimilating the study of language to the natural sciences*” (emphasis ours). This assumes that it is a priori known that assimilation of linguistics to the natural sciences is a desideratum. Since C has not previously shown that facts like (1)–(6), which define the field, belong to a natural, as opposed to a formal, science, the remark is question begging.¹¹

C (1987a, p. 33) claims that there is a “deeper sense” of vagueness or indeterminacy in the concept E-language:

Consider what are sometimes called ‘semi-grammatical sentences’, such as the expression ‘the child seems sleeping’. Is this expression in the language or outside it? Either answer is unacceptable. An English speaker interprets it instantaneously in a perfectly definite way, quite differently from the way this expression would be interpreted by a monolingual speaker of Japanese. *Therefore*, the expression cannot simply be excluded from the set ‘E-English’, though it is plainly not well-formed, . . . But speakers of English and Japanese will also differ in how they interpret some sentence of Hindi. Therefore we conclude that all languages fall within English, a conclusion that makes no sense. (emphasis ours)

Since there is no dispute about the fact that ‘The child seems sleeping’ is ill-formed, it is not part of the collection of sentences which form the variant of English at issue at the level of linguistics proper. Therefore, realists say it is not part of the relevant E-language. C rejects this because of a claim that English speakers *interpret* it in a perfectly definite way, and differently from the way a monolingual speaker of Japanese would. Does C for this reason also deny that ‘The child seems sleeping’ is charac-

¹¹ More precisely, only the *core* of linguistics, the part concerned with constructing correct grammars and a correct general linguistic theory, is a formal science. This core is devoted to determining the nature of NLS. But well-established branches peripheral to the core, historical linguistics, sociolinguistics, etc., are genuinely empirical because they concern the relation between NLS and the people who know them. We hope to address these matters at a later time.

Note that computer science similarly has a dual nature: part of it studies physical objects (e.g., computer hardware) and part abstract objects (e.g., algorithms).

terized as ungrammatical by the I-language of English speakers? If he does, then his own claim that it is not well-formed states a fact which is unaccounted for by anything in his view of NL. And if he does not, why the double standard?

C fails to spell out any logical connection between the interpretability of an expression and its status as a sentence. Presumably, he is implicitly assuming that a *grammar* of an NL must characterize every expression that a speaker of that NL can interpret. Without some justification for this principle, there is no ground for the conclusion. Nonetheless, C provides no justification.

The alternative to C's implicit claim, on which the early work on semi-sentences was based (see Fodor and Katz, 1964, Section IV), says that one can use knowledge of some NL, Q, to pick likely analyses for certain expressions formed at least in part out of elements of Q, even where the expressions violate one or more of the principles of the grammar of Q. This still seems to be a reasonable psycholinguistic approach to the abilities in question, especially given that NLs are vast and complicated. Thus expressions can obey dozens of grammatical constraints, thereby enormously limiting their analysis and interpretation, while still violating one or more.

Viewed in this light, C's semi-sentence argument against E-language amounts to adoption of two unsupported speculations about human sentence processing. The first is that an adequate theory of the way speakers of Q interpret expressions deviating from a correct grammar of Q will be impossible if grammars draw a sharp line between sentence and nonsentence, that is, between being included or not in an NL. This is not only unsupported, but implausible. The second is that an adequate theory of this topic will be impossible if grammars draw no sentence/nonsentence distinction such that 'The child seems to be sleeping' is English but 'The child seems sleeping' is not. This speculation is expanded as follows:

In the very earliest work on generative grammar beginning over 30 years ago, I and others attempted to define concepts of 'semi-grammaticalness' that would deal with these facts, but these ideas were misconceived, irreparably, it appears. In my book *Aspects of the Theory of Syntax* in 1965, I therefore suggested a different approach. Universal grammar (in particular, its component that deals with phonetics) provides a class of possible expressions. A particular language, which constitutes the steady state of the language faculty for a particular speaker, assigns a structure of some sort to each of these expressions. Since I know English, my mind assigns a certain structure to 'the child is sleeping', 'the child seems sleeping', 'sleeping seems child the', and in fact, to expressions of Japanese and Hindi. Similarly, the mind of a monolingual Japanese speaker assigns a certain structure to each of these expressions, but not the structure that I assign to them. The manner of assignment of structure to an expression is what constitutes the language that we know. There is no clear way to identify

a set of expressions that constitute 'English' or 'Japanese', and no point in trying to do so, so it appears. (C, 1987a, p. 33)

Nothing in the factual assumptions C makes justifies the conclusion that there is a problem in drawing the boundary between English and non-English such that 'The child is sleeping' is in and 'The child seems sleeping' is out. He himself drew it this way, saying of the latter that "... it is plainly not well-formed" (C, 1987a, p. 33).

Since the predicates 'well-formed' and 'ill-formed' are *relational*, as shown by *Give it me*, which is well-formed in British English but not in American English, C would have to say that this expression is not well-formed in *American English*. But its being not well-formed in *American English* is a clear way of classifying it as outside the collection of expressions that constitute American English.

Moreover, C's claim that the earlier approach to semi-sentences was irreparably misconceived is unjustified. C presents no valid objection to the position in C (1964b, pp. 384–385). There C recognized that an account of the interpretation of semi-sentences involves an appeal to auxiliary hypotheses of a *nongrammatical* character, analogies, etc. There was no claim that the interpretability of semi-sentences per se casts doubt on the distinction between sentence and nonsentence, that is, between the *perfectly grammatical* and the not such.

The emptiness of C's semi-sentence based criticism of E-language is also shown by considerations C once used to defend generative grammar. Many expressions which C took to be well-formed, including center embeddings, were difficult or impossible to interpret. Didn't this falsify the grammars that generated them? C's reply (especially, 1965, pp. 10–15) distinguished between grammaticality and acceptability. That is, C appealed to auxiliary (nongrammatical) hypotheses. Given that not every (even short) well-formed expression is acceptable, C (1965, pp. 13–14) sketched certain extragrammatical hypotheses as the basis for an account of the facts. But the option of appealing to such hypotheses to account for the unacceptability of some grammatical expressions would encourage the use of auxiliary hypotheses to account for the ability to interpret certain expressions of an NL which violate some rules of a grammar of that NL. In the absence of any reason for denying that the earlier approach is applicable, there is no criticism of E-language based on semi-sentence interpretation.

Finally, the previous quotation seems to say that the mind of an English speaker assigns grammatical structures to expressions even though "there is no clear way to identify a set of expressions that constitute 'English'".

The implication is that, although there is no way to specify the set of English sentences so that expressions like ‘The child is sleeping’ but not like ‘The child seems sleeping’ are members, there is a way to specify their structure. This assumes that the notion of strong generative power makes sense for I-languages, but that of weak generative power does not. But the notion structure here must at least involve an assignment of expressions like ‘the child’ and ‘is sleeping’ to categories like NP and VP. In this case, the implication is hardly comprehensible. How can there be “no clear way to identify” the members of the category S, and “no point in trying to do so”, but yet be a way to identify the members of NP, VP, etc., and, presumably, a point in trying to do so? Since the ideas behind C’s earlier concept of semi-grammaticalness are applicable to every syntactic category, if those ideas were “misconceived, irreparably”, then the same approach C now takes to the category S must be taken to every other syntactic category. Hence, it would make no sense to talk of the speaker of an NL assigning structure to expressions.

Part C: Criticism of Conceptualism

6. THE STATUS OF CHOMSKY’S CONCEPTUALISM

This section argues that C’s attempt to construe linguistic reality psychologically involves a number of contradictions. The argument began in effect when we uncovered a conflict between C’s explicit acceptance of the goal of accounting fully for linguistic facts like (1)–(6) and his conceptualist agenda, which restricts grammars to a concern with facts about the mind/brain. The present section explains how essentially the same incompatible requirements for linguistics lead to explicit contradictions.

The Necessity Argument in Section 2 has premisses (10a, b).

- (10)(a) Conceptualism claims that NL is a feature of *contingent* human mind/brains;
- (b) There exist some analytic NL sentences which express *necessary* truths.

The following quotes show that C subscribes to (10a):

Rollin comes close to my own views . . . when he suggests that the innate structures I postulate are both contingent (in that a different organism might have different structures) (C, 1980c, p. 50)

. . . 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 (assumed fixed for the species), *each of which is a definite real-world object, situated in space-time and entering into causal relations* (C, 1983, pp. 156–157, emphasis ours).

Hence, C has specified that he views NL as a contingent phenomenon and has claimed that both the linguistic faculty and individual grammars are physical objects, entering into causal relations.

Moreover, C has repeatedly *emphasized* that there are analytic NL sentences which determine necessary truths and implications:

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. (C, 1977, p. 35)

Thus I agree with Katz that certain analytic connections exist among linguistic expressions, certain truths hold solely by virtue of linguistic facts: for instance, the relation between *I persuaded him to leave* and *He intends to leave*. (C, 1979, p. 145)

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. (C, 1988c, p. 33, emphases ours)

Since these passages assert premiss (10b), the contradiction in (11) arises within his conceptualism:¹²

(11)(a) Let S be an NL sentence such that both:

(i) Analytic(S)

(ii) True(S)¹³

¹² Not only has C *separately* granted premisses (10a, b), a single recent passage of his represents both: “Judgments concerning connections of meaning *determined by the language faculty itself* – in particular, *analytic connections* – appear to be as clear and replicable as any, . . . C (1988b, p. 8) (emphasis ours). C here makes explicit the view that such necessary connections are *due to the language faculty*, that is, to properties of a contingent organism.

¹³ It is important that semantic properties and relations classify into *expressional* and *non-expressional* (see Katz and Katz (1977) and subsequent publications). The former, e.g., ‘is ambiguous’, apply to expressions; it makes no sense to apply ‘is ambiguous’ to the sense of an expression. Nonexpressional properties apply to senses. Analyticity (truth, antonymy, etc.) is a non-expressional property. Of course, one sometimes finds ‘analytic’ applied to sentences with the necessary qualification “on a sense” – because, for example, of ambiguous sentences. This qualification is merely a way of indicating that the property applies to senses.

Given this distinction, one could allow that the connection between words and their senses is contingent and that it is a contingent question whether a sentence is analytic. This would have no effect on the argument in the text because ‘analytic’ applies to senses and not to the sentences which express them. Therefore, one could concede for the sake of argument that a necessarily true sentence could have expressed something other than what it in fact expresses without undermining the argument in the text.

In accord with these remarks, the occurrence of the symbol ‘S’ in the text argument is to be understood as referring to a sentence *on a sense*.

- (b) Since Analytic is a linguistic property (see the above quotes), and (10a) determines that every linguistic property is contingent,¹⁴ Analytic is contingent.¹⁵ Hence:
 (iii) Possible(Not(Analytic(S)))
- (c) The immediately preceding quotes 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 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:¹⁶
 (vii) Possible(Not(S))
- (g) But (vii) gives Not(Necessary(S)), which contradicts (iv).

To reject the reality of E-languages, C must also reject the reality of the corresponding notion of sentence, *E-sentence*. Given E-sentences, an E-language is trivially defined, since E-languages are just collections of sentences; see Langendoen and Postal (1984). Hence, conceding the notion E-sentence would grant the truth of realism. Moreover, granting the reality of E-sentences is incompatible with the conception of linguistic reality expressed in (10a).

Nonetheless, as hardly needs argument, C's linguistic work constantly appeals to 'sentence'; see (1)–(6) and the following typical remark: “In these sentences the pronoun *su* precedes *Juan* and *lo* precedes *el libro* (C, 1988c, p. 50). Therefore, while his conceptualism requires rejection of E-sentences, C obviously needs *some* concept of sentence. And his more theoretical statements indicate that he recognizes the reality of some

¹⁴ A proposition P is contingent if and only if both the propositions Possible(P) and Possible(Not(P)) are true.

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; see Katz (1972). The upshot is that C's conceptualism, which entails the contingency, is incoherent independent of statements endorsing analytically necessary truth. Analyticity is, of course, not unique among linguistic properties in being essential.

¹⁶ The deduction of (vii) from (vi) depends only on the equivalences Necessary(P) \equiv Not(Possible(Not(P))), Not(Not(P)) \equiv P, and Possible(Possible(P)) \equiv Possible(P).

notion of sentence and specify what he takes this reality to be: "But, as distinct from sentences, which exist in mental representation and are realized in behavior" (C, 1987a, p. 44); see also C, 1988a, p. 17). For C, then, sentences are real things, but mental things, existing in human minds. The same conclusion follows from C's claim that grammars generate mental representations of sentences (1980a, p. 143; 1981b, pp. 5, 9).

Clearly, sentences in this sense, call them *I-sentences*, must be related to C's notion of grammars, and they are in such remarks as:

The I-language is what the [linguist's] grammar purports to describe: a system represented in the mind/brain, ultimately in physical mechanisms that are now largely unknown, and is in this sense *internalized*; a system that is *intensional* in that it may be regarded as a specific function considered in intension – that is, a specific characterization of a function in the mathematical sense – which assigns a status to a vast range of physical events" (C, 1987a, p. 37)

According to this, I-languages are functions in the mathematical sense, which assign status to things, including sentences (presumably, I-sentences). Moreover, I-languages are generative grammars as understood throughout the tradition of linguistics initiated by C's work, as characterized in, e.g., C (1965, p. 9). It cannot be claimed that C has in the interim *abandoned* this 1965 position, since recent comments associate C's current use of 'generate' with exactly the same ideas:

I have suggested elsewhere that we refer to the generative procedure, the abstract version of Humboldt's 'process of generation', as an I-language, where 'I' is to suggest 'internalized' (in the mind/brain) and 'intensional' (a specific characterization, in intension, of a certain function that enumerates (generates) structural descriptions. (C, 1988a, p. 6)

Taken together, though, and combined with already quoted statements of C's, these claims reveal a contradiction in C's position, which consists in equivocating over whether I-languages are abstract, mathematical objects, or physical objects. One term of the equivocation is to define an I-grammar as "a characterization of a function in the mathematical sense". The other term claims that I-languages are physical objects existing in space-time and entering into causal relations. On the former term of the equivocation, I-languages are analogs of computer *programs*; they are software. On the latter, they are analogs of physical states of computers which instantiate programs. They are then hardware. But they can't be *both*:

- (12) Let G be an arbitrary I-language in C's sense.
 (a) According to C's longstanding position, G is a generative grammar.

- (b) Then G is *by definition* a set of strings of symbols.
- (c) As C himself stressed in the quote above from C (1986, p. 34), “sets are not in the mind”.
- (d) It follows from (c) that G is not in the mind.
- (e) But C’s conceptualism states that an I-language is a “definite real-world object, situated in space-time”, and C (1986, p. 22) gives the space-time location as in the mind.
- (f) (e) contradicts (d).¹⁷

Essentially the same contradiction is pointed out by George (1987:157–158), who observes:

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.

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 therefore is 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

¹⁷ The contradiction exhibited in (12) is neither eliminated nor mitigated by the reiterated claim, e.g., C (1986, pp. 23, 39, 40; 1987, p. 27; 1988a, pp. 2–3), that, for pragmatic reasons, his linguistics studies I-grammars *in abstraction from the physical mechanisms that embody them*. No research strategy can cancel statements which attribute physical reality to I-grammars.

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).¹⁸ 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.

C seems to think that the abstract character of I-languages can be made consistent with his conception of linguistics as an empirical study of concrete objects:

I-languages are in the mind (abstracted from states of the mind/brain, as explained) in the same (appropriate) sense in which we speak of neural nets as components of the mind – or, for that matter, in much the same sense in which we say that this thing in front of me contains molecules of benzene with carbon and hydrogen atoms arranged in a particular (abstract) manner, exhibiting certain properties, and so on. (C, 1987b, p. 182)

The fallacy here is to assume that someone's mere pragmatic *decision* is capable of determining the ontological status of real entities (see note 17). C assumes that a decision to study some concrete object (the human brain) in abstraction from certain of its physical properties somehow transforms the concrete object into an abstract one. The fallacy is brought out by the example C himself cites. Carbon and hydrogen atoms are concrete entities with spatial, temporal and causal properties, e.g., samples of benzene. Such atoms are not parts of molecules in the abstract sense in which a set's members are elements of it, but in the physical sense in which a finger is a part of a hand.

C apparently confuses different uses of the word 'abstract'. One can speak of 'abstracting' a theory involving entities like atoms from such liquid concreta. But a physical compound like benzene is not made up of abstracta but of concrete atoms, which can even be *seen*. But it is, of course, nonsense to speak of seeing abstract objects. What results from the kind of abstraction relating samples of benzene to accounts in terms of molecules of carbon and hydrogen atoms is chemistry, an empirical theory of concrete entities, and not e.g., set theory, a formal theory of

¹⁸ C offers no reason to think that realism cannot be formulated coherently.

abstract entities. Thus, contrary to what C implies, there is no relevant analogy between abstracting a theory involving atoms and chemical bonds from the properties of physical substances and a conception which takes minds to be abstract entities 'abstracted' from concrete brains.¹⁹ C's response to George's correct recognition of a contradiction in his view of I-languages is, therefore, just an equally contradictory appeal to minds as abstract objects, an appeal supported by no more than a pun on the word 'abstract'.

C's emphasis on I-languages as systems of internalized rules can obscure the fact that his overall conceptualism requires two further related notions: *I-sentence* and *I-language*^N. The need for the latter appears from the following claims: "But they arise as soon as we face seriously the task of accounting explicitly for the unbounded range of sentence structures in a particular language" (C, 1983, p. 164). "Human language has the extremely unusual, possibly unique, property of discrete infinity" (C, 1988c, p. 169). An I-language^N is the infinite range of sentence structures taken as output of an I-language, each such structure being an I-sentence. Although I-language^N and I-sentence are not explicitly distinguished by C, they are as important for his position as I-language itself. For only these notions link finite I-languages (psychogrammars) to individual linguistic objects. That is, to talk about the subject matter of linguistics proper, C must reconstruct 'sentence' in terms of I-sentence.

We have not challenged the existence of I-languages, although we claim, of course, that their study is properly part of psychology, not linguistics. But the notion I-language^N must be challenged since it is inconsistent (see Langendoen and Postal (1984, pp. 131–132)):

- (13)(a) If I-English^N is an arbitrary I-language^N, then:
- (i) According to C (1983, pp. 156–157), the component sentences of I-English^N are concrete psychological entities in speakers' mind/ brains.
 - (ii) According to the quotes immediately above, I-English^N contains infinitely many I-sentences.
- (b) And mind/brains are finite objects:
 "... the grammar itself is finite, represented in a finite brain"
 (C, 1980a, p. 221).
- (c) Given (b), (i) limits the content of I-English^N to a finite number

¹⁹ A similar conflation in the use of 'abstract' found in Higginbotham (1983) was pointed out in Katz (1984, pp. 45–46, n18). See also Katz (1990, Chap. 7).

of I-sentences because an infinite number of I-sentences includes some too large to be “represented in a finite brain”.

(d) But (c) contradicts (ii).

Hence I-English^N cannot exist.

A possible reply is suggested by C's comparison of his view of linguistics to the intuitionist view of mathematics: “. . . if you take an intuitionist view of mathematics, . . . then mathematical objects do not have the existence imputed to them in the classical view. Instead, there are mathematical objects because we have succeeded in constructing them. From this perspective mathematics becomes the study of mental constructions of a certain type. One could perhaps take the intuitionist view of mathematics as being not unlike the linguistic view of grammar” (C, 1982b, p. 16). In this spirit, C might say that, just as intuitionists take the existence of numbers to rest on the mathematician's construction of them, conceptualists take the existence of sentences to rest on the speaker's construction of them. Hence, conceptualists could construe I-English^N as only a *potential* infinity, not an *actual* infinity. C might thus say that argument (13) only establishes that there is no actual infinity of I-sentences for English, but it does not rule out I-English^N as a potential infinity (of I-sentences).

If C's conceptualism maintains its claim that I-sentences are concrete psychological entities, then some are too big ever to occur in any speaker's mind/brain and are therefore only potential sentences, which are not concrete psychological entities. Something capable in principle of being a concrete psychological entity, but incapable in fact of being such, is *not* a concrete psychological entity. If, however, conceptualism is revised in analogy to standard intuitionism, it must provide a *satisfactory* explanation of what it means to say ‘constructible in principle’. This, however, does not seem possible.²⁰

The contradiction about the nature of sentences in C's conceptualism infects his conception of *knowledge* of NL. What could this conception be in C's terms? His answer is: “What is knowledge of language? Answer: language is a computational system, a rule system of some sort. Knowledge of language is knowledge of this rule system” (C, 1987a, p. 67). Taken literally, knowledge of a rule system R itself, rather than of objects that R characterizes, would involve knowing, e.g., that ‘Rule *x* begins with symbol A, is six symbols long, R contains *n* rules, etc.’. Such information fails to correspond to knowledge of NL, since speakers do not have

²⁰ See Langendoen and Postal (1984, Chap. 6) for further detail and Katz (1990, Chap. 7) for discussion of intuitionism.

intuitive knowledge of this sort and such facts are not what anyone refers to when speaking about knowledge of NL. Rather, people know sentence properties like (1)–(6). Further, as (C, 1986, p. 30) agrees, *distinct* grammars, mentally represented or not, can characterize the same collection of linguistic objects. And knowledge of some aspect of one such grammar is not necessarily knowledge of some aspect of another. Even more simply, C states both that knowledge of NL is infinite (see above quotes) and that a psychogrammar is finite (C, 1980a, p. 221). But, as such, knowledge of a finite psychogrammar cannot be knowledge of something *infinite*. So taking knowledge of NL to be knowledge of a psychogrammar is only a confused way of talking about knowledge of *the objects the psychogrammar specifies*.

Therefore, making sense of C's answer requires a claim that a psychogrammar provides knowledge of NL sentence properties, reducing his position to a masked assertion that knowledge of NL is knowledge of I-sentences. Hence, to satisfy both C's conceptualism and his view that knowledge of NL is unbounded requires reference to knowledge of an I-language^N. But (13) shows there are no I-language^Ns; consequently, there is no knowledge of them.

Since the collection of known objects cannot be identified with an I-language^N, consistent theorizing about knowledge of NL entails recognition of a domain of sentences not reducible to I-sentences. This yields the very E-language notion C claims to have expelled from linguistics.

7. THE COSTS OF CONSISTENCY

The contradictions in Section 6 can be eliminated, but at a cost almost as damaging as the contradictions themselves. The first contradiction was that all grammatical and grammatically determined properties are contingent but some are necessary. For this contradiction, the required reformulation is straightforward. C must deny that there are facts like (5) and (6) in linguistics proper, that is, he would have to repudiate his many recent endorsements of analyticity. This would return to C's (1957; 1975a, pp. 41–42; 1977, pp. 36–37; 1979, p. 141) earlier position, namely, that the semantic structure underlying analyticity and analytic entailment either doesn't exist or is not part of sentence-grammar. The second contradiction was that grammars are physical objects, hence have spatial location, but are also sets (generative grammars), and hence lack spatial location. The required reformulation in this case is that conceptualism must limit itself to the hardware interpretation of both grammars and sentences. For the software interpretation is tantamount to realism. But to limit himself to

a hardware interpretation and at the same time provide general concepts for the grammars required in linguistics proper, C would have to adopt a program for reducing linguistic types to constructions out of mental tokens. The third contradiction is that sentential objects exist in mind/brains, hence are finite in number, but are also infinite in number. Here C has to accept the claim that NLs are finite.

Consider the cost of such reformulations. In the first case, there is an immediate violation of foundational condition (ii) of Section 1 because the reformulation, unlike its realist rival, excludes semantic facts from linguistics proper. Moreover, as observed, the fallback position, that of C (1957), on which grammatical structures have no semantic aspect, is one that most current linguists would find unacceptable. In the second case, there can be no grammars as mathematical objects, as sets of strings of symbols, nor any recursive enumeration, etc. Both grammars and sentences must be regarded as concrete structures in mind/ brains. This requirement to reduce linguistic types to tokens is just the American structuralist requirement to construct grammatical categories on the basis of operations on speech tokens. In the third case, there is also a violation of (ii), since a consistent conceptualism must ignore the fact that NL sentence formation is unbounded in several different ways, e.g., coordination, successive complement embeddings, etc., while its realist alternative in principle imposes no obstacle to accounting for such facts in linguistics proper. Thus, eliminating the contradictions from C's conceptualism is a pyrrhic victory because the cost is so high that the resulting position remains clearly inferior to its realist alternative.

8. CONCLUSION

We have reached four major conclusions concerning the controversy between realism and C's conceptualism: the arguments for realism in previous publications have never been satisfactorily addressed; C's pro-conceptualist arguments have no force; C's antirealist arguments also lack force and C's conceptualism is plagued by several distinct but related contradictions. Clearly, a position for which there are no arguments, which has no satisfactory criticisms of its major alternative, which has no rebuttal to that alternative's criticisms and which, finally, is internally inconsistent must be rejected in favor of the alternative.

Can some other form of conceptualism escape the defects of C's version? We claim not. The realist criticisms of C's conceptualism and its internal

contradictions rest on assumptions shared by every form of conceptualism. For the essence of conceptualism is the idea that NL is an aspect of the human mind/brain and hence that linguistic theories are about psychology. First, the defects revealed by criticisms of C's conceptualism such as the Necessity, Type and Veil of Ignorance Arguments, etc., depend only on this idea. Second, the contradictions in C's conceptualism reflect a theoretical tension found in other versions of conceptualism as well. It arises as follows. The goal of linguistics proper is to account for the infinite range of facts about sentences, which are types. This leads to construing grammars as formal mathematical theories of abstract objects. But conceptualist ideology concerning the foundations of linguistics leads to construing grammars as empirical psychological theories of concrete objects. This tension creates the internal contradictions. They are clearly manifested in C's writings because he has been explicit about foundational issues. However, since the defects and tensions in C's conceptualism are inherent in all forms, the conclusions we have established for C's position hold for conceptualism generally.

C's criticism of American structuralism showed that its nominalist foundations preclude adequate theories at the level of linguistics proper. He established that no procedures for analyzing the utterances of a corpus could provide the abstract grammatical categories for those theories, and that such categories themselves could not be regarded as segments of utterances, classes of segments, sequences of classes, etc. Reflecting on the difference between the taxonomic approach and his own generative one, C (1975b, pp. 31–32) says: "Two approaches to the specific problem of defining the nature of syntactic categories were thus counterposed: a constructive, taxonomic approach and an alternative . . . concerned essentially with the properties of a completed solution", one in which such categories "would be elements in various abstract systems of representation". This alternative approach to linguistics proper required alternative foundations, and C accordingly advocated supplanting the nominalist foundations of American structuralism with conceptualist ones. But the latter can no more successfully account for the nature of abstract grammatical categories than the former. C was right to propose an approach "concerned essentially with the properties of a completed solution" to the problem of defining grammatical categories, but wrong to believe that conceptualism provides adequate foundations for that approach. An ontology based on concrete psychological/neurological reality ultimately offers no relevant advantage over one based on concrete acoustic reality. The new approach requires an ontology not based on anything concrete, which only realism provides.

ACKNOWLEDGMENTS

We would like to thank Gerald Gazdar, James Higginbotham, David E. Johnson, Arnold Koslow, Hans-Heinrich Lieb, Yuji Nishiyama, Francis J. Pelletier, Warren Plath, Scott Soames, Hao Wang and anonymous readers for useful suggestions on earlier versions of this study. Special appreciation goes to Virginia V. Valian for extensive comments.

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Graduate Center

City University of New York

New York, New York, U.S.A. 10036

JJKGC@CUNYVM

Thomas J. Watson Research Center

IBM

Yorktown Heights, New York, U.S.A. 10598

POSTAL@WATSON.IBM.COM