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Between Linguistics and Philosophy of Language: The Debate on Chomsky's Notion of "Knowledge of Language"

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Résumé :
Chomsky's notion of "knowledge of language" has given rise to much debate, with the participation of not only linguists, but also philosophers and cognitive scientists. Furthermore, Kripke's (1982) interpretation of Wittgenstein, while dealing with generative grammar only in a marginal way, helped to undermine the notion of "following a rule by an individual", which underlay the notion of "knowledge of language" in Chomsky's sense.

Chomsky's answer has been that his theory of language and its knowledge is perfectly consistent with the standards of any scientific theory. Skeptical objections in the style of Kripke or Wittgenstein can apply to any kind of science: then, if you accept them, you cannot do science; if you want to do science, they cannot be taken into account.

In my view, Chomsky's answers to his critics are fairly convincing; this does not mean, however, that all the problems are solved. For example, the issue of the "psychological reality of grammar", hotly debated between the 1960s and the 1970s, and quickly dismissed by Chomsky by stating that a psychologically real theory is simply a true theory, should probably be reconsidered.

Mots-clés :
Chomsky, Kripke, knowledge, psychological reality, representation

1. INTRODUCTION

A lively debate between Chomsky on the one hand and several philosophers (of language, but also philosophers of science) on the other started with the appearance of *Aspects of the Theory of Syntax* (Chomsky 1965), where one can read statements like the following one: "linguistic theory is mentalistic, since it is concerned with discovering a mental reality underlying actual behavior" (Chomsky 1965, p. 4). Then a question automatically arose: what constitutes this "mental reality"? And, even more radically: how can such a "mental reality" be proved to exist? These are essentially the questions about which the debate we have alluded to developed. This debate went through various stages: possibly, its first systematic documentation is the second part of Hook (1969), where one can read both Chomsky's presentations and those of his critics (Goodman, T. Nagel and Quine, among others); subsequently, several other scholars intervened in the debate (e.g., Dummett or Searle), raising similar and other objections to Chomsky's "mentalist" view of language. Chomsky answered many such objections in some of his books of the 1970s and of the 1980s (Chomsky 1975, 1980, 1986) and returned to the issue in Chomsky (2000).

In what follows, I will mainly focus on the debate as it is dealt with in chapter 4 of Chomsky (1986), where the MIT linguist defends his own view of "knowledge of language", especially answering some objections by Dummett. In this same chapter, he also discusses some conclusions drawn by Kripke (1982) about the notion of "private language", following and developing Wittgenstein's view on the issue: Kripke's arguments are not directed against Chomsky's view of language and knowledge of language (except for some marginal remarks, as will be seen), but, if they were shown to be tenable, they would undermine the whole theoretical construction of generative grammar, as Chomsky himself (1986, p. 226) suggests. I will therefore examine Chomsky's answers to Kripke and Dummett and I will try to give an assessment of the debate. Anticipating this assessment, I must say that I find Chomsky's answers essentially convincing; this does not mean, however, that the issue of what "knowledge of language" is has really found a completely satisfactory answer. I will deal with this problem in the final part of this paper, also referring to some suggestions by a cognitive scientist (Pylyshyn 1980; 1984).

2. CHOMSKY'S VIEW OF "LANGUAGE" AND "KNOWLEDGE OF LANGUAGE"

Since the main reference of the present paper is the debate between Chomsky and the philosophers of language as it is presented in Chomsky (1986), I will start by presenting Chomsky's statements about the notions of "language" and "knowledge of language" that can be found in this same work. As will be seen, such statements, while being essentially consistent with the views held by Chomsky in the previous periods of his scientific work, nevertheless introduce some important modifications, which apparently are only of a terminological nature, but actually help to clarify some earlier discussions.

According to Chomsky (1986, p. 3), the inquiry into "knowledge of language" has to answer "three basic questions":

- What constitutes knowledge of language?
- How is knowledge of language acquired?
- How is knowledge of language put to use?

In Chomsky (1986, p. 3-4), their answers are sketched as follows:

The answer to the first question is given by a particular generative grammar, a theory concerned with the state of the mind/brain of the person who knows a particular language. The answer to the second is given by a specification of U[niversal] G[rammar] along with an account of the ways in which its principles interact with experience to yield a particular language; UG is a theory of the "initial state" of the language faculty, prior to any linguistic experience. The answer to the third question would be a theory of how the knowledge of language attained enters into the expression of thought and the understanding of presented specimens of language, and, derivatively, into communication and other special uses of language.

Some years later Chomsky (1991) dubbed questions (i)-(iii), respectively, "Humboldt's problem", "Plato's problem" and "Descartes's problem". Actually, as will be seen, Chomsky proposes a solution only for "Humboldt's problem" and "Plato's problem", while he maintains that a scientific treatment of "Descartes's problem" is essentially unavailable.

An essential condition for the solution of all the problems listed above is, in each case, a sharper definition of the notion of "language". To attain this goal, Chomsky introduced in his 1986 book a very important terminological, but also conceptual, innovation with respect to his previous work, namely the distinction between "E(xternalized) Language" (*E-Language*) and "I(nternalized) Language" (*I-Language*):

> […] David Lewis […] defines a language as a pairing of sentences and meanings […] over an infinite range […]. Let us refer to such technical concepts as instances of "externalized language" (E-language), in the sense that the construct is understood independently of the properties of the mind/brain. (Chomsky 1986, p. 19-20)

> The I[nternalized] language […] is some element of the mind of the person who knows the language, acquired by the learner, and used by the speaker-hearer (*ib*., p. 22). [C1]

This polysemy of the term "language" has brought about various misunderstandings of the generative theory, which certainly was not concerned with the same kind of "language" to which other linguistic schools devoted their research. Chomsky (1986, p. 29 ff.) recognizes that some of the studies in generative grammar have also contributed to the confusion, especially from the point of view of terminology: e.g., "the term «language» has regularly been used for E-language in the sense of a set of well-formed sentences, more or less along the lines of Bloomfield's definition of «language» as a «totality of utterances»" (*ibid*.). He also judges the choice of the term "grammar" not particularly happy to denote both linguistic theory and the object of this theory as well, namely I-language (cf. *ibid*.). Furthermore, the study of formal systems, which was one of the intellectual strands from which generative grammar developed, suggested a misleading equation between formal systems such as arithmetic on the one hand and language (in the sense of "E-language") on the other (*ibid*., p. 30-1). Many people have therefore considered it fundamental to develop a mechanism that can generate all and only the sentences of natural language, without worrying about the features of this mechanism from the point of view of language acquisition: an emblematic case is represented by Quine, who considers meaningless the problem of choosing the "correct" grammar between two or more that generate the same language (in the sense of "E-language"). For Chomsky, however, the interest lies not so much in the identification of the produced language, as in the "realistic" definition of the mechanism that can produce it, namely "I-language". In subsequent works, Chomsky has further defined the features of I-language, stating that "I" means *internal*, *individual* and *intensional* ("that is, the actual formulation of the generative principles, not the set it enumerates", Chomsky 2006, p. 175). Summarizing this discussion, we can observe that the notion of "I-language" allows Chomsky to get rid of some equivocations brought about by his earlier terminological choices (cf. Chomsky 1965): firstly, the "systematic ambiguity" of the term "grammar" is eliminated, since it now only denotes the linguist's theory, and not the speaker's mental representation as well, which is dubbed "I-language"; secondly, the "individual" character of I-language renders the notions of "ideal speaker-hearer" and "homogeneous linguistic community" (both postulated in Chomsky 1965) superfluous. Of course, the individual character of I-language raises the problem of how communication between different individuals is possible; Chomsky's answer is very straight: "I can understand Jones, within limits, because my I-language is not too different from his" (Chomsky 2000, p. 72-3). Hence, there is no need to postulate a super-individual entity to account for

communication, such as Saussure's notion of *langue*, which the Geneva linguist defined as follows:

> La langue […] est un trésor déposé par la pratique de la parole dans les sujets appartenant à la même communauté, un système grammatical existant virtuellement dans chaque cerveau, ou plus exactement dans les cerveaux d'un ensemble d'individus; car la langue n'est complète dans aucun, elle n'existe parfaitement que dans la masse. (Saussure 1922, p. 30)

Even Saussure therefore defines *langue* as a psychological phenomenon, which, however, has not only an individual, but also a social component, which is the crucial one. As is well-known, Chomsky (1965, p. 4) explicitly related his distinction of competence vs. performance to Saussure's one of *langue* vs. *parole*, with the qualification that "it is necessary to reject his [namely, Saussure's] concept of langue as merely a systematic inventory of items and to return rather to the Humboldtian conception of underlying competence as a system of generative processes". In the case of Saussure's *langue* vs. Chomsky's I-language, the difference would rather lie in the contrast between social vs. individual. Hence another problem arises: is it really possible to account for linguistic communication without assuming a social entity, or, at least, a kind of "public language"? Saussure would give a negative answer; other linguists more or less contemporary to him gave however a positive one; indeed, they maintained that the postulation of a super-individual entity is an essentially ungrounded move.

3. A HISTORICAL DIGRESSION: THE ISSUE OF THE SOCIAL VS. THE INDIVIDUAL IN THE ANALYSIS OF LANGUAGE

The German linguist Hermann Paul (1846-1921) was one of the firmest adversaries of the idea that "a social mind" is necessary to account for social phenomena, included language: "in my view, there can only exist an individual psychology" (Paul 1910, p. 364). According to him, "the task of linguistics" is to offer a solution to the following five problems: 1) the way in which linguistic activity takes place; 2) language learning; 3) language change; 4) the splitting of languages into dialects; 5) language origin. "Such problems – Paul continues - are not isolated from each other, but they are strictly connected. They all share a common feature: to solve them, one thing is chiefly necessary, i.e. the careful observation of the mutual communication between different individuals" (*ibid*., my translation). Paul's position seems therefore share a substantive part with Chomsky's, but there is an important difference between the two scholars (for a systematic confrontation between them I refer to Graffi 1995): as has just been seen, Paul, unlike Chomsky, does take into account "the mutual communication between different individuals", namely the activity of the

different speakers in a linguistic community. This activity brings about what Paul calls "linguistic usage" (*Sprachusus*), which is a kind of average drawn from the comparison of single linguistic organisms (Paul 1920, p. 29) and which excludes those aspects of individual linguistic activity which are not shared by a plurality of speakers.

Another linguist of the first decades of the 20th century who speaks against the postulation of a super-individual entity to account for linguistic communication is the former student and editor of Saussure himself, namely Albert Sechehaye (1870-1946), who wrote, among other things:

> L'agent des phénomènes de psychologie collective n'est que la somme des agents qui produisent isolément les phénomènes de psychologie individuelle. (Sechehaye 1908, p. 97)
>
> Nous ne croyons pas que la conception sociologique de la langue nous oblige à admettre l'existence de cette langue en soi, dont le sujet, en dehors des individus parlants, est inimaginable. (Sechehaye 1933, p. 65)

The historical settings of Paul and Sechehaye, on the one hand, and of Chomsky, on the other, are of course very different: the former were both especially critical of the approach to psychology held by the German psychologist Wilhelm Wundt (1832-1920), who was highly authoritative in their time, and who pleaded for an "ethnopsychology" (*Völkerpsychologie*), which should be added to individual psychology in order to account for social and cultural phenomena, namely, as well as language, also myth, custom, and so on. Clearly, the constructs of ethnopsychology are completely out of date, and they should bother neither us nor Chomsky: nevertheless, the problem remains of how accounting for the fact that language, being treated as a psychological phenomenon, is essentially individual, while at the same time allowing for communication between different individuals. In other words, what makes it possible that a certain group of people can mutually understand each other, although their I-languages are necessarily different, while such mutual understanding is impossible outside of this group? Chomsky (1986, p. 15; although the argument often occurs throughout his works) stresses that "language" (in the sense of "E-language") "has a crucial sociopolitical dimension": we speak of "Chinese language" and "Chinese dialects", but the speakers of such different "dialects" often do not understand each other; in contrast, we normally refer to German and Dutch as two "languages", but people on both sides of the Dutch/German borders speak "dialects" of these two "languages" which are mutually intelligible. Chomsky is surely right about this: but what are the limits within which two languages (in the sense of "I-languages") are mutually intelligible, and beyond which they no longer are? Paul's notion of "linguistic usage" is an attempt to answer this question, which one could call "Paul's problem". Chomsky does not even mention "Paul's problem": he is only interested in language as a cognitive phenomenon, not as a communicative one.

4. THE "PSYCHOLOGICAL REALITY OF LINGUISTICS"

In fact, Chomsky (2006 [1968], p. 1) explicitly states that "linguistics is a particular branch of cognitive psychology" and that "linguistics is simply that part of psychology that is concerned with one specific class of steady states, the cognitive structures employed in speaking and understanding" (Chomsky 1975, p. 160). These statements have also been the subject of a lively debate, which, as often occurs, has seen Chomsky and several of his critics on opposite sides. A first, substantive, confirmation of Chomsky's approach seemed to be provided by the so-called "Derivational Theory of Complexity" (DTC), worked out during the 1960s especially by George A. Miller and his coworkers. In a nutshell, DTC maintained that the process of the perception of a sentence would be more difficult (and therefore longer) depending on the number of transformations needed to generate its surface structure from its deep structure. Hence a passive sentence would require more time to be processed than the corresponding active one, but less time than the corresponding passive-negative, and so on. The results of the first experiments seemed to corroborate DTC. Later work, however, showed that 1) some transformationally derived sentences are processed faster than the corresponding untransformed ones and that 2) the greater complexity of a given sentence type with respect to another is not due to the greater number of transformations, but to other reasons, e.g., the difficulty for a speaker to imagine a non-existing state of affairs, which renders a negative sentence more complex than the corresponding affirmative one. The failure of DTC led some Chomsky's followers to abandon his "standard theory": e.g., from such a failure Bresnan (1978, p. 2) drew the conclusion that standard theory was "psychologically unrealistic" and began to work out an alternative linguistic theory (Lexical Functional Grammar). On the contrary, the failure of DTC did not especially worry Chomsky, possibly because he considered it to be irrelevant: the implicit assumption of DTC was that linguistic competence and linguistic performance are isomorphic, which is not necessarily true. Hence, if the judgments of native speakers and the overall deductive structure of the theory spoke in favor of a transformational analysis, there was no reason, in Chomsky's view, to give it up. Chomsky's conclusion was that the problem of the "psychological reality of linguistic theory" simply does not exist; linguistic theories are not "psychologically real" or "psychologically unreal", but they are true or false:

> The question is: what is 'psychological reality', as distinct from 'truth, in a certain domain'? […] I am not convinced that there is such a distinction". (Chomsky 1980, p. 107)
>
> […] the question of psychological reality is no more and no less sensible in principle than the question of the physical reality of the physicist's theoretical constructions. (*id*., p. 192)

Hence there would be no differences in the requisites that a cognitive theory (such as linguistics when it deals with "I-language") or a physical one, such as any naturalistic theory, must satisfy. I'll come back later (section 7) on this whole equation between cognitive disciplines and natural ones.

5. KRIPKE AND DUMMETT VS. CHOMSKY

As has been hinted above, Kripke's (1982) book only devotes some marginal remarks to generative grammar: its aim is to reconsider Wittgenstein's (1953) arguments against so-called "private language", in order to show that they not only apply to the expression of states such as "feeling pain", etc., but to any notion of "following a rule" which is based only on the subjective reports. Kripke's conclusions, at any rate, apply to any kind of explanation in terms of "individual psychology", hence also to Chomsky's notion of "knowing a language". As Kripke (1982, p. 14) remarks, Wittgenstein's position is essentially behavioristic hence it contrasts not only with generative grammar, but also with any cognitive approach to the mind: Wittgenstein's behaviorism, however, is not a premise (as it is with Quine), but "it is to be argued as a conclusion".

According to Kripke's reconstruction, Wittgenstein's argument against private language is formed by a "skeptical paradox", followed by a "skeptical conclusion". The "skeptical paradox" runs as follows.

> Let me suppose, for example, that '68 + 57' is a computation that I never performed before. […]
>
> I perform the computation, obtaining, of course, the answer '125'. I am confident, perhaps after checking my work, that '125' is the correct answer. […]
>
> Now suppose I encounter a bizarre sceptic. This sceptic questions my certainty about my answer […]. Perhaps, he suggests, as I used the term 'plus' in the past, the answer I have intended for '68 + 57' should have been '5'! […] In the past I gave myself only a finite number of examples instantiating this function. All, we have supposed, involved numbers smaller than 57. So perhaps in the past I used 'plus' and '+' to denote a function which I will call 'quus' and symbolize by '⊕'. It is defined by:
>
> $$x \oplus y = x + y \text{ if } x, y \text{ is } < 57$$
> $$= 5, \text{ otherwise.}$$
>
> The sceptic claims (or feigns to claim) that I am now misinterpreting my own previous usage. By 'plus', he says, I *always meant* 'quus'; now, under the influence of some insane frenzy, or a bout of LSD, I have to misinterpret my own previous usage.
>
> Ridiculous and fantastic though it is, the sceptic's hypothesis is not logically impossible (Kripke 1982, p. 9).

In a nutshell, Wittgenstein's (according to Kripke) "skeptical paradox" amounts to saying that we can never be sure that our behavior conforms to a given rule, even if it apparently does. In other words, there is no basis for assuming that, if I behaved in a given way in the past, I will always do the same in the future. According to Kripke, there is no way of solving this skeptical paradox by preserving the usual interpretation of "rule" as something which is tacitly followed by the individual.

This conclusion also applies to "competence" as conceived in Chomsky's framework (remember that Kripke writes before the appearance of the notion of I-language). Kripke says:

> […] given the skeptical nature of Wittgenstein's solution to his problem (as this solution is explained below), it is clear that if Wittgenstein's standpoint is accepted, the notion of 'competence' will be seen in a light radically different from the way it implicitly is seen in much of the literature of linguistics. For *if* statements attributing rule-following are neither to be regarded as stating facts, nor to be thought of as *explaining* our behavior […], it would seem that the *use* of the ideas of rules and of competence in linguistics needs serious reconsideration, even if these notions are not rendered 'meaningless'. (Kripke 1982, p. 31, fn. 22)

What is the "skeptical solution" proposed by Wittgenstein to his "skeptical paradox", according to Kripke:

> […] the answer is that, if one person is considered in isolation, the notion of a rule as guiding the person who adopts it can have *no* substantive content. […]
> The situation is very different if we widen our gaze from consideration of the rule follower alone and allow ourselves to consider him as interacting with a wider community. (Kripke 1982, p. 89).

Therefore, we can say that someone "follows a rule" only if her/his behavior agrees with the behavior of the community which surrounds her/him. Of course, this also applies to the notion of "following a linguistic rule" and hence renders any approach to language in terms of individual psychology impossible in principle. As Kripke remarks about generative (which he still calls "transformational") grammar:

> Modern transformational linguistics, inasmuch as it explains all my specific utterances by my 'grasp' of syntactic and semantic rules generating infinitely many sentences with their interpretation, seems to me to give an explanation of the type Wittgenstein would not permit. (Kripke 1982, p. 97, fn. 77)

Kripke's criticism of generative grammar can be summarized as follows: any approach to language in terms of individual psychology is impossible in principle; therefore, the generative view of language as "I-language", where "I" stands for "internal" and "individual" (and also for "intensional", as we have seen, but this is irrelevant in the present context), is untenable.

Let's now turn to Dummett's criticism of Chomsky: it is mainly directed against Chomsky's assumption that knowledge of language is a kind of "unconscious knowledge". Dummett was certainly not the only one who raised objections against such assumptions; I have chosen him as a representative of this whole set of philosophers mainly for practical reasons, among them that Chomsky (1986) devotes several pages to answer the criticisms that Dummett (1981) directed against one of his previous books (Chomsky 1980). Dummett writes:

> There are two principal issues with which the book [Chomsky 1980] is concerned and to which its author repeatedly returns. […] We are born with a propensity to speak one out of a restricted range of possible languages. […] This thesis is of philosophical interest, because of its bearing on the concept of learning: but it is in itself an evidently empirical thesis, with no very great philosophical consequences. As such, it is very much subordinate to the other thesis on which Chomsky lays great stress in this book: namely, that mastery of a language consists of unconscious knowledge. I will concentrate exclusively on this latter thesis.

One has to keep in mind that Chomsky considers knowledge of language as a kind of "knowing that", not of "knowing how", to employ the terminological distinction made famous by Ryle (1949). As a consequence, Chomsky assumes that knowledge of language is a form of "knowledge that" (hence not a practical ability, such as riding a bicycle, which would be an instance of "knowledge how") which is at the same time of an unconscious nature. This position is untenable, according to Dummett:

> There are two distinct positions entailing a denial of explanatory power to Chomsky's theory. One is: there can be no such thing as unconscious knowledge; a speaker does not know the system of rules governing the language, but merely acts as would someone who knew those rules and could apply them sufficiently rapidly. The other is: one may legitimately describe a speaker as unconsciously knowing the rules governing the language, but, in doing so, one is saying no more than that he speaks, and responds to the speech of others, in accordance with those rules: hence no *hypothesis* has been advanced, nor any *explanation* given. The difference between these positions is of little interest to Chomsky. He repudiates both: his theory is an explanatory hypothesis, not a systematization of facts open to view.

Dummett also brings into question the alleged "psychological nature" of knowledge of language according to Chomsky:

> Chomsky's assumption is that our knowledge of our mother tongue is 'represented somehow in our minds, ultimately in our brains, in structures that we can hope to characterize abstractly, and in principle quite concretely, in terms of physical mechanisms'. […] Unconscious knowledge is thus a physiological state, presumably a state of the brain: in locating it 'in our minds',

> we are acknowledging the purely abstract character of the account which is the best we can at present give of it. […] A characterization of some physiological system is not, however, qualified as psychological merely by being abstract or schematic: i.e. by omitting to specify the actual mechanisms involved. What gives Chomsky's theory its psychological character is its use of psychological terms like 'computation' and 'knowledge of a rule'.

In other words, Dummett says that Chomsky attempts to save his notion of "unconscious knowledge" by linking it to the hypothesis that there must be some "physical mechanisms" which would implement it, but the nature of these mechanisms is unclear. The problem of the "psychological reality of grammar" surfaces again, though this time raised from a purely theoretical point of view.

Dummett concludes as follows about Chomsky's notion of knowledge of language:

> Knowledge of a language does not resemble an ordinary practical skill: one who cannot ski may perfectly well know what it is to ski, whereas one who does not know Spanish does not know what it is to speak Spanish, and would be unable to tell for sure whether others were speaking Spanish or not. A good deal of conscious knowledge is required for the knowledge of a language, as Chomsky himself remarks. […] It is on the basis of such knowledge that we say what we do: for speech is ordinarily a highly conscious activity, an activity of rational agents with purposes and intentions.
>
> For reasons such as these, Chomsky is almost certainly right in treating knowledge of language as a genuine instance of knowledge, as well as in holding practical knowledge, properly so called, to have a large theoretical component. That does not entitle him, however, to dismiss the problems that then arise by declaring such knowledge inaccessible: for one thing, we need an account of how unconscious knowledge issues in conscious knowledge.

Therefore, Dummett's basic criticism is that Chomsky's notions of "knowledge of language" and of "linguistics as a branch of psychology" are essentially groundless.

6. CHOMSKY'S ANSWER: THE "METHODOLOGICAL NATURALISM"

It has been already said that the target of Kripke's "Wittgensteinian skepticism" was not, or was only marginally, generative grammar: however, its conclusion that an approach to language in terms of individual psychology is untenable was so threatening for the whole construction of generative grammar that it is well understandable that Chomsky devoted some pages of his 1986 book to answering it. Chomsky (1986, p. 226) starts by distinguishing two cases in which it can be asked if a person "is following a rule": the first concerns "my doing as a person in ordinary

life", and the second "my doing so as a scientist seeking to discover the truth about language faculty". In the first case, Chomsky (*ibid*.) goes on,

> Because attribution of rule following requires reference to the practices of a community, there can be no "private language". There is no substance or sense to the idea of a person following a rule privately. It seems that the "individual psychology" framework of generative grammar is undermined.

However, this conclusion is unsound, according to Chomsky. Referring to the passage by Kripke (1982: 89) quoted above, that rejected the possibility of "considering a person in isolation", Chomsky (1986, p. 232-3) remarks that "isolation"

> […] must be understood as referring not to an individual whose behavior is unique but to someone "considered in isolation" in the sense that he is not considered as a person, like us. But now the argument against private language is defanged. We consider Robinson Crusoe to be a person, like us.

Also on this point Chomsky shows some striking similarities with Hermann Paul. The German linguist rejected "ethnopsychology" (see above: section 3), but at the same time he had to account for the reciprocal understanding between different individuals. His solution of the problem lay in what I have elsewhere (Graffi 2001, p. 46) called "the assumption of the constitutional uniformity of individuals":

> Everything that we believe to know about the representation of another individual only rests on conclusions which have been drawn about our own. We further presuppose that the mind of the other is in the same relationship with the external world as our own mind, that the same physical impressions bring about in it the same representations as in our own, and that such representations connect with each other in the same way. (Paul 1920, p. 15, my translation)

The fact that all humans essentially share the same nature, although they obviously differ from each other in their individual features, is what renders a scientific investigation of humans possible. Then, this same fact also accounts for the second case listed by Chomsky about "following a rule", namely the "doing so as a scientist":

> What about our conclusions, as scientists, that Jones is following the rule R? […] We then try (in principle) to construct a complete theory, the best one we can, of relevant aspects of how Jones is constructed – of the kind of "machine" he is, if one likes. […]
>
> This theory is about Jones's capacities and how they are realized, these being facts about Jones. At the same time it is a theory about persons, the category to which we take Jones to belong as an empirical assumption. […]
>
> This approach is not immune to general skeptical arguments – inductive uncertainty, Hilary Putnam's antirealist arguments, and others. But these are not

> relevant here, because they bear on science more generally. (Chomsky 1986, p. 236-7)

Chomsky's modelling of linguistics on "hard" empirical sciences is also the leading thread of his answer to Dummett's (and others') objections concerning his notion of "knowledge of language". He clearly restates that language is a case of propositional knowledge (namely, "knowing that"):

> Knowledge of language involves (perhaps entails) standard examples of propositional knowledge: knowledge that in the word *pin*, /p/ is aspirated, while in *spin* it is not; that the pronoun may be referentially dependent on *the men* in (9i), but not in the identical phrase in (9ii), and so forth:
>
> (9i) I wonder who [the men expected to see them]
>
> (9ii) [the men expected to see them]
>
> (Chomsky 1986, p. 265-6)

In (9i), *the men* and *them* can refer to the same set of individuals: in (9ii), they cannot (here and in what follows, I reproduce Chomsky's original numbering). In Chomsky's wording, *them* can be "referentially dependent" on *the men* in the first sentence, but not in the second. Let's now take a glance to Chomsky's explanation of this contrast.

In the theoretical framework of Chomsky (1986), (9i) and (9ii) would have the abstract representations (10i) and (10ii), respectively (these representations would be partly different in more recent models, but this is irrelevant for our topic):

(10i) I wonder who $[_{S1}$ the men expected $[_{S2}$ *e* to see them]

(10ii) the men expected $[_{S1}$ PRO to see them]

In (10i), the symbol *e* ("empty") indicates the position from which the pronoun *who* has been moved by the transformation of "*wh*-movement". In (10ii), the symbol PRO indicates the understood subject of the infinitival clause: it has the same reference as the subject of the main clause, *the men* (it is "referentially dependent" on it).

The key to explaining the contrast is the so-called "Binding Principle B", namely the second of the three principles which describe the possibilities vs. the impossibilities of "referential dependence" between the three different kinds of Noun Phrases ("anaphors", "pronominals" and "R(eferring)-expressions") within the sentence (for more details on the "Binding Theory", cf. e.g. Chomsky 1986: 164-204). The "Binding Principle" (B) states:

"Pronominals are free in a local domain".

"Free" means "not referentially dependent"; a "local domain" is (roughly) the simple clause. Let's now consider the sentences (10) again. In (10i), the pronominal *them* is free in its local domain (S_2): therefore, it may be referentially dependent on *the men*, which is outside S_2. In (10ii), the

understood subject PRO is referentially dependent on the subject of the main clause, i.e. *the men*; but PRO is also in the same local domain as *them* (S_1); therefore, *them* may not be referentially dependent on *the men*. Chomsky comments:

> Suppose our best theory asserts that speakers know the facts of referential dependence in these cases because their language provides the representations (10i) and (10ii) for (9i) and (9ii) […]
>
> (9i) I wonder who [the men expected to see them]
>
> (9ii) [the men expected to see them]
>
> (10i) I wonder who [the men expected [*e* to see them]
>
> (10ii) the men expected [PRO to see them]
>
> Should we then say that the person who "has" this language "knows the binding theory principles" and so forth? […] a positive answer seems consistent with normal usage. (Chomsky 1986, p. 267)

Hence, the facts that speakers of English invariably recognize the contrast between (9i) and (9ii) is a proof that they have the representations (10i) and (10ii) and know (in the sense of "knowing that") the Binding Principle B as well. Chomsky concludes that

> Thus, according to the theory that Dummett finds problematic or unintelligible, a person has unconscious knowledge of the principles of binding theory, and from these and others discussed, it follows by comparisons similar to straight deduction that in (9i) the pronoun *them* may be referentially dependent on *the men* whereas in (9ii) it may not […]. That this is so is conscious knowledge, among the numerous consequences of principles of U[niversal] G[rammar], which are surely not accessible to consciousness. […]
>
> We do not, of course, have a clear account, or any account at all, of why certain elements of our knowledge are accessible to consciousness whereas others are not, or of how knowledge, conscious or unconscious, is manifested in actual behavior. (Chomsky 1986, p. 270)

Knowledge of language would therefore contain some elements which are unconscious, but easily traceable to consciousness, on the one hand, and some other elements which are inaccessible to consciousness, on the other. For these latter, Chomsky, resorting to a terminological distinction introduced in Chomsky (1975), prefers to speak of "cognizing" instead of "knowing": "«cognizing» would appear to have the properties of knowledge in the ordinary sense of the term, apart from, perhaps, accessibility to consciousness" (Chomsky 1986, p. 268).

In a nutshell, Chomsky's answer to Kripke is that the investigation of I-language is legitimate since we assume that all humans are essentially like us; his answer to Dummett is that "unconscious knowledge" of rules and principles can be shown to exist and that it provides an adequate explanation of the speakers' I-language(s). These two answers share the same feature. I-language can (and must) be investigated as any natural

object: "methodological naturalism". This attitude is described by Chomsky in the following terms:

> A "naturalistic approach" to the mind investigates mental aspects of the world as we do any others, seeking to construct intelligible explanatory theories, with the hope of eventual integration with the "core" natural sciences. […] Naturalism, so understood, should be uncontroversial […]. I think that the opposite has been true, a curious feature of recent intellectual history. Explanatory theories of mind have been proposed, notably in the study of language. They have been seriously challenged, not for violating the canons of methodological naturalism (which they seem to observe, reasonably well), but on other grounds: "philosophical grounds", which are alleged to show that they are dubious, perhaps outrageous, irrespective of success by the normal criteria of science; or perhaps that they are successful, but do not deal with "the mind" and "the mental". (Chomsky 2000, p. 76-7)

"Philosophical objections" such as those by Kripke or Dummett would therefore be caused by an unwarranted "dualism" which considers the investigation of the "physical" and of the "mental" as two radically different enterprises. For Chomsky, on the other hand, they have to follow exactly the same paths, namely the working out of hypotheses and their checking against empirical facts, such as the speakers' intuition.

7. MENTAL PHENOMENA VS. PHYSICAL PHENOMENA

In my view, "methodological naturalism" is unobjectionable. However, it is merely a *methodological* choice: mental as well as natural phenomena are to be dealt with in the same way. Nevertheless, one could ask if these two kinds of phenomena are exactly the same also from an *ontological* point of view. Chomsky himself traces a boundary between phenomena that can be described in terms of cause and effect (hence, in "naturalistic" terms) and those which cannot:

> Is behavior governed or guided by these "rules", as we call them? Do the rules we postulate play what some call "a causal rule" in behavior? Do the principles formulated in UG concerning the initial state S_0 have "causal efficacy" in bringing about the attained state S_L?
>
> […] if R is a constituent element of the initial state determined by our best theory, and invoking R is part of our best account of why the attained state has such-and-such properties that then enter into behavior, we are entitled to propose that R has "causal efficacy" in producing these consequences. (Chomsky 1986, p. 244)

The principles of Universal Grammar have therefore a "causal" role in bringing about our steady state, our "knowledge of language". Such principles, however, do not have any causal role as far as our linguistic

behavior is concerned: "Our behavior is not «caused» by our knowledge, or by the rules and principles that constitute it." (Chomsky 1986, p. 260). "Naturalistic" explanations, therefore, only apply in accounting for the acquisition of language (S_0) and its knowledge (S_L); they cannot apply in explaining language use. This is the reason why I said earlier (section 2) that Chomsky gives two quite different answers to "Humboldt's problem" and to "Plato's problem", on the one hand, and to "Descartes's problem", on the other. This different treatment of language acquisition and knowledge vs. language use is connected to the question of intentionality, which Chomsky recognizes as "staying beyond" any naturalistic explanation:

> […] intentional phenomena relate to people and what they do as viewed from the standpoint of human interests and unreflective thought, and thus will not (so viewed) fall within naturalistic theory, which seeks to set such factors aside. (Chomsky 2000, p. 22)
>
> Naturalistic inquiry will always fall short of intentionality. (*ib*., p. 45)

So far so good. But now a further problem arises: what is the exact nature of "knowledge of language"? The problem is no longer that raised by Dummett, namely the relationship between conscious and unconscious knowledge, but rather the role of the notion of "representation" in the treatment of physical vs. mental phenomena. A cognitive scientist (who, by the way, agrees with Chomsky on many points) writes the following:

> If there is any validity to the view that at least some human behavior is rational, then the systematicity of people's behavior in those cases will be stateable only when their actions are described in what I refer to as *cognitive* or *intentional* terms. (Pylyshyn 1984, p. 10)
>
> I do examine one aspect of intentionality because it is closely related to the notion of *representation*, a notion which plays a fundamental role in cognitive explanation. (Pylyshyn 1984, p. 21)
>
> While we do not assume that planets have a symbolic representation of their orbits (or of the laws governing their trajectory), we *do* claim that the appropriate explanation of cognitive processes must appeal to the organism's use of rules and explicit symbolic representations. The distinction between behavior being governed by symbolic representations and behavior being merely exhibited by a device in virtue of the causal structure of that device is one of the most fundamental distinctions in cognitive science. (Pylyshyn 1980, p. 120)

In Pylyshyn's framework, the notion of representation is strictly connected to that of intentionality and does not apply to physical phenomena. Hence one could assume that it only enters into phenomena of language use, not of language acquisition and of knowledge of language.

This position seems to fully coincide with Chomsky's one, who explicitly takes it into account:

> […] the cognitive system involved in the use of language is "cognitively penetrable" in the sense of Pylyshyn (1984) and other current work; that is our goals, beliefs, expectations, and so forth clearly enter into our decision to use the rules in one way or another, and principles of rational inference and the like may also play a role in these decisions […].
>
> But while the system of language use is cognitive penetrable in this sense, the system of principles of S_0 presumably is not; it merely functions as a kind of automatism. […]
>
> There is a distinction to be made between cognitive impenetrable systems that constitute what Pylyshyn (1984) calls "functional architecture" and systems that involve reference to goals, beliefs, and so forth, and perhaps inference of one sort or another. (Chomsky 1986, p. 261-2)

The notions of "functional architecture" and "cognitive penetrability" are defined as follows by Pylyshyn:

> By "functional architecture" I mean those basic information-processing mechanisms of a system for which a nonrepresentational or nonsemantic account is sufficient. The operation of the functional architecture might be explained in physical or biological terms, or it might simply be characterized in functional terms when the relevant biological mechanisms are not known (Pylyshyn 1984, p. xvi).
>
> Consequently, the input-output behavior of the hypothesized, primitive operations of the functional architecture must not depend in certain and specific ways on goals and beliefs, hence, on conditions which, there is independent reason to think, change the organism's goals and beliefs; the behavior must be what I refer to be *cognitively impenetrable* (*ib*., p. 113-114).

Chomsky (1986, p. 262) states that "most of our discussion so far has been at the «symbolic level», not the «semantic intentional level»" (where the first level stands for "functional architecture"). Up to this point, his position and that of Pylyshyn still seem to coincide: causal (or "naturalistic") explanations apply to the functional architecture, not to the semantic-intentional level. The scholars diverge, however, on the extension that has to be assigned to the notion of representation; according to Chomsky (1986: 263), "it seems that at each level we are entitled to postulate rules and representations, and to hold that these are involved in language use, when «best theory» considerations of the sort discussed lead to this conclusion", while "Pylyshyn argues in contrast that we can speak of rules and representations only at the semantic-intentional level. The conclusion seems to me unsound, in fact hardly more than a dubious terminological proposal" (*ib*., p. 274, fn. 21).

Chomsky seems therefore to extend the scope of the notion of representation not only to the intentional domain, but also to the mental domains which are to be described in causal, naturalistic terms. One could

ask, however, what is the meaning of "representation" in these latter domains. If representation is simply synonymous with true description, then the question would be a purely terminological one, but Chomsky rejects this interpretation; if it means something different, then it is necessary to specify what exactly it means, and why it comes into play in cognitive sciences, while it plays no role in natural ones. The problem of the "psychologically reality of grammar" again surfaces. In a volume devoted to "the Chomskyan turn", we can read:

> Chomsky (1980, p. 197) argues that we are justified in attributing psychological reality to the constructs postulated by a grammar true of the speaker/hearer. In effect, the psychological reality of these constructs is assumed to be inherited from that of the grammar. But this assumption seems arguable. […]
>
> Suppose, for example, that the best "theory" of my present location on the Earth's surface includes a statement to the effect that I am presently located at 40 degrees 30.25 minutes North latitude, 74 degrees 26.04 minutes West longitude. Whatever the existential commitments of that theory, it is surely *not* committed to the existence of a certain quantity of something called "latitude" or "longitude". […] The point here is a very general one: in determining the existential commitments of a theory, we must distinguish the *theoretical magnitudes* to which the theory *is* existentially committed from the representational constructs to which the theory is *not* existentially committed and which serve only to specify the theoretical magnitudes. (Matthews 1991, p. 195-6)

In my view, Chomsky's insistence on the existence of representations also on the level which Pylyshyn calls functional architecture is a case of such an "existential commitment": the notion of representation is a key one in accounting for any kind of mental phenomena, be they penetrable (again in Pylyshyn's sense) or not. Hence, although there is no methodological difference between the science of mental phenomena vs. the science of physical ones, the kinds of phenomena are ontologically different. Furthermore, this difference is not related to the presence vs. absence of intentionality: some mental phenomena are intentional, while others are not.

Of course, the "existential commitment" must also show that mental representations actually exist. Chomsky's answer, in this case, would be direct: since the representations postulated by the theory undoubtedly play a role in our linguistic behavior (see the case of "Binding Principle B" discussed above), this a sufficient proof of their existence. This does not seem, however, a fully satisfactory answer: even Kepler's laws or geographical coordinates truly "represent" the motion of planets or the position on the Earth's surface, but nobody would maintain that planets have an internal representation of Kepler's laws or the Earth's surface of latitude and longitude. One would ask, therefore, for a more "substantial" proof: this could be given by an updating of the Derivational Theory of Complexity (a suggestion which I heard from Luigi Rizzi, during a workshop held at IUSS Pavia, Nov. 2013) or by an implementation in

neurolinguistic terms of the abstract model of generative grammar, along the lines traced by Moro (2008; 2013). This matter, of course, would deserve a much deeper treatment.

8. SOME CLOSING WORDS

The occasion of the present paper was to answer the question of what distinguishes philosophy of language from linguistics. I have tried to answer it by showing how a linguist, namely Chomsky, answered some objections raised against his theory by two philosophers of language, viz. Kripke and Dummett. We have seen that Kripke's skepticism raises a fundamental issue (the legitimacy of the individual analysis of an apparently social phenomenon), which, however, does not invalidate the generative grammar model. The solution lies in what Chomsky calls "methodological naturalism": this attitude can also adequately answer Dummett's objections to Chomsky's view of "knowledge of language". Nevertheless, "methodological naturalism" itself is not free of difficulties, as has been seen in the last section. Kripke's and Dummett's objections stimulated us to investigate these difficulties: philosophy of language asks questions about language; linguistics attempts to solve them.

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