CONFRONTING PHILOSOPHICAL OBJECTIONS TO CHOMSKYAN LINGUISTICS

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ABSTRACT

In this paper I consider some of the most prominent philosophical challenges to the viability of Chomskyan linguistics. The challenges in question are generated by the work of Quine, Kripke and Crispin Wright. I respond to these challenges by developing an account of rule representation that appeals to the lower level causal workings of a particular component of the mind-brain that plays a fundamental role in grounding our linguistic capacities. This account draws upon various elements of Chomsky's core commitments. These include his modularity thesis, his view that the language faculty owes its status as such to its relations to other in-head systems, his general conception of the relationship between the mind and the brain, and his nativist conception of language acquisition.

Key words: Chomsky, modularity, representation, nativism, ceteris paribus laws.

Introduction

Despite its massive influence within linguistics and cognitive science many philosophers have been exercised by the worry that there is something deeply problematic with Chomskyan linguistics.[1] In this paper I will examine and attempt to answer what are to **my mind** three of the most interesting and important philosophical objections to Chomsky's work. The objections in question are due, respectively, to W.V. Quine, Saul Kripke and Crispin Wright. My response rests upon an account of rule representation that places substantial emphasis on the causal factors underlying our linguistic abilities and is motivated by the scientific ambitions of Chomsky's work, his commitment to the modularity thesis and his nativist conception of language acquisition.

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[1] Examples of prominent philosophers who have directly taken issue with Chomsky's core commitments include Putnam 1967, Baker & Hacker 1984, Searle 1990, Dummett 1989, Devitt & Sterelny 1987 and Devitt 2003.

1. Quine and Kripke's objections

According to Chomsky rules are central to an individual's language: when an individual knows a language there are a whole battery of rules that constitute her language, rules that she knows and draws upon in language production and comprehension.[2] Chomsky characterises the knowledge in question is a species of propositional rather than ability knowledge and it is typically unconscious or tacit (Chomsky 1980). There is nothing more to an individual's language than the rules that she knows. Consequently, in seeking to describe an individual's language and explain its acquisition, the linguist is engaging in cognitive psychology.[3] For such an engagement in cognitive psychology to have any point there would have to be a fact of the matter as to what rules were known by the individual and thus constituted her language. What Quine and Kripke's arguments suggest is that there is no such fact of the matter so that Chomsky is searching for facts where there are no facts to be found. I will examine these arguments in turn beginning with Quine's.

Quine's argument runs as follows (Quine 1972). There are cases where it makes perfect sense to attribute to an individual speaker of a given language knowledge of a particular body of rules (a grammar) and identify those rules as the ones that she draws upon in language production and comprehension. Consider two groups of Danish children who have learnt English in different ways. Members of the first group have been taught traditional schoolroom grammar which they explicitly consult in constructing sentences of English. Members of the second group have been taught Jesperson's grammar which they explicitly consult in constructing sentences of English. These rival grammars are extensionally equivalent and equally fit the linguistic behaviour and dispositions of all the children. Nevertheless, the first group of children are guided by one grammar consisting of a particular body of rules and the second are guided by another grammar consisting of a different body of rules. Hence, it is perfectly legitimate to prefer one account of the grammar of the first group and a different account of that of the second group. But, argues Quine, in the case of a typical child whose first language is English, there is no such case of being guided by a particular grammar. Such speakers are unable to state any rules of the language that they speak; at best a particular grammar fits the linguistic behaviour and dispositions of the child. But there will always be distinct grammars that equally fit their linguistic behaviour and dispositions, grammars that

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[2]   With the advent of government and binding theory and the development of the principles and parameters approach rules were replaced by principles in Chomsky's theorising (Chomsky 1981; Chomsky 1986). This is because, for Chomsky, talk of rules carries with it connotations of specificity to particular languages. If knowing a language involved representing rules in this sense then it would be difficult to see how a child could acquire knowledge of her language. Hence, a linguistic theory that talked of rules would not meet the condition of explanatory adequacy, that is, the condition of explaining language acquisition. For the purposes of this paper nothing hangs on this change as principles are a species of rules, namely, rules of great generality that Pinker dubs 'super rules' (Pinker 1994). Accordingly, unless otherwise indicated, I will use the term 'rule' to cover both rules and principles in Chomsky's narrow sense of those terms.

[3]   For an early and classic statement of this psychologistic view of linguistics, Chomsky 1965, Ch. 1.

are extensionally equivalent. There can be no grounds for saying of any one of these grammars that it is *the* grammar of the child's language or that the linguistic theory that attributes this grammar to the child is *the* correct theory of the child's language. If this is right then there are clearly going to be rival accounts of the rules of any individual's language that are equally legitimate even when all the potentially relevant facts about the individual are known. Consequently, there is no fact of the matter as to what particular body of rules belongs to a typical individual's language, as to what grammar is true of her language.

The second argument is due to Kripke and can be described as follows (Kripke 1982). Suppose that an individual intends to use the symbol '+' to denote a particular mathematical function and so intends her use of this symbol to be governed by a rule corresponding to that function. The rule is such that she should answer any question of the form 'what is x + y?' by specifying the number that is the value of the function for the arguments x, y. At any point in her history she will have applied this rule only finitely many times. Moreover, being a finite creature, she will be disposed to give answers to only finitely many questions of this form. Suppose that up to a particular point in time she has always given the sum of x and y in answer to every problem of the form 'what is x + y?' that she has encountered but that none of these problems were such that the value of either x or y was greater than 56. She then encounters the problem 'what is 57 + 68?' and answers '125.' Is that answer correct? Is it in accord with the rule that she intended to follow in her use of '+'? If the rule is the addition rule (that is the rule such that one should give the sum of x and y as the answer) then her answer is correct. But there will be some other rule (the quaddition rule) that equally fits her past behaviour but requires her to give the answer '5' to this new problem. Which of these two rules has she been intending to follow? Which of them is the rule governing her use of '+'? According to Kripke, there is no fact of the matter as to whether or not she intended to follow the addition rule; her past behaviour and conscious mental states are consistent with an intention to follow this rule but are equally consistent with an intention to follow some other rule. Appeal to her dispositions won't settle the issue. Her dispositions might serve to undermine the claim that she intended to follow the quaddition rule. But as her dispositions are finite and the demands of rules such as the addition rule are infinite, both the addition rule and some distinct quaddition like rule will equally fit her dispositions.

Although Kripke focuses on a mathematical example, one can easily envisage an analogue involving the kinds of rules that Chomsky is concerned with. Suppose that a linguist claims that a particular rule is (tacitly or non-consciously) known by a particular language user and so belongs to her language. Given the infinite demands of such rules (that is, given the fact that they typically have implications for the grammaticality or otherwise of infinitely many distinct combinations of words of the language to which they belong) if the postulated rule fits the language user's history of behaviour, her conscious mental states and her dispositions to behave, then so will some other non-

equivalent rule. So there can there be no fact of the matter as to whether the postulated rule rather than some other competing rule is known by the language user and so belongs to her language.

Chomsky has engaged with both Quine and Kripke suggesting that he takes their arguments very seriously indeed. However, I do not think that Chomsky's responses directly confront the arguments as I have described them. With respect to Quine, his tendency has been to interpret Quine as doing little more than making the point that linguistic theories are underdetermined by observable evidence. Chomsky is willing to concede this point but thinks that this does nothing to undermine linguistics as scientific theories are generally underdetermined in this way.[4] I think that this is to misunderstand Quine's argument. For, he is not making a point about the epistemic plight of the linguist, the point that she does not have conclusive evidence as to which of the competing linguistic theories is true, as to which collection of rules belongs to the language of the target individuals. Rather, his point is that there is no fact of the matter as to which of the competing theories is true, as to which collection of rules belongs to the language of the target individuals. Thus, Quine's argument bears more in common with his thesis of the indeterminacy of radical translation (Quine 1960) than it does with the so called Duhem-Quine thesis (Duhem 1982; Quine 1951).

With respect to Kripke, Chomsky's response focuses not so much on the argument for rule scepticism but on the attempted sceptical solution to the problem of rule following, a solution that places substantial emphasis on the role of the community.[5] Consequently a direct response to Quine and Kripke's objections is needed and in the remainder of this paper I shall attempt to develop such a response.

An important point to be made concerns Chomsky's talk of knowledge. He frequently says that the rules belonging to an individual's language are items of (propositional) knowledge, albeit unconscious or tacit knowledge. However, in the face of philosophical objections he is prepared to drop talk of knowledge, for example, by replacing it with talk of cognizing rules. Accordingly, I don't think that Chomsky need be committed to the claim that we know rules of the kind that he postulates in the sense of the term 'know' that philosophers normally operate with. Rather, his commitment is that determinate rules are represented within us where representing a particular rule is a psychological state that can differ in salient respects from a state of knowledge.[6] Thus, the rules that constitute an individual's language are represented within her mind but she is not typically conscious of these rules. Consequently, the task becomes that of

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[4]   For example, see Chomsky 2000, Ch 4.

[5]   See Chomsky 1986, Ch 4.

[6]   Here is a typical expression of this view: "Evidently, each language is the interplay of two factors: the initial state and the course of experience. We can think of the initial state as a 'language acquisition device' that takes experience as input and gives the language as an 'output' – an 'output' that is internally represented in the mind/brain", Chomsky 2000, p 4.

giving an account of how a determinate rule can be represented within an individual's mind that survives Quine and Kripke's objections.

It might be thought that producing such an account of rule representation would require producing a naturalistic theory that appealed only to scientifically respectable properties that resided at a level lower than the psychological or linguistic.[7] Even assuming that there would have to be a true naturalistic theory of this kind for a Chomskyan linguistic theory to be true,[8] it is not incumbent on us to produce such a theory. This has to do with Chomsky's repeated insistence that linguistics should be treated no less charitably than any other science. To be guilty of methodological dualism is to operate with double standards by making demands of one science (linguistics, in particular) that one doesn't make of other more established sciences. Now very few scientists, be they geologists, biologists, or whatever, would be in a position to present a relevant naturalistic theory in order to defend their scientific claims but no-one would dream of questioning the legitimacy of their endeavours for that reason alone. Thus, an inability to present a naturalist theory in the case of linguistics does not in and of itself undermine the scientific legitimacy of delivering a particular theory as to what rules are represented in an individual's mind/brain.

The most significant consequence of not needing a naturalistic theory is that we can legitimately appeal to psychological and linguistic phenomena in responding to the challenge of Quine and Kripke so long as the reality of those phenomena is not a matter of controversy. Indeed, there are many psychological and linguistic facts the reality of which most philosophers would concede. Here are some examples. Most human individuals have mastery of a language and know the meanings and sounds of many words and expressions of the language that they have mastered. Individuals routinely make correct judgements as to the grammaticality of expressions composed of words of their language. There are syntactic generalisations true of languages that their speakers typically satisfy: for, example, in English the head of a phrase comes before its complement and speakers of English typically produce sentences that satisfy this generalisation and reject as ungrammatical sentences that they encounter that do not.[9]

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[7]   Such a theory would be the analogue of the naturalistic theories of content that Jerry Fodor has attempted to develop (Fodor 1987; Fodor 1990).

[8]   This is an assumption that I doubt that Chomsky would endorse given his opposition to physicalism. Chomsky (Chomsky 2000) argues that physicalism is an incoherent doctrine as a result of Newton's destruction of Cartesian contact mechanics. For discussion see Lycan 2003, Strawson 2003, Poland 2003 and Chomsky 2003.

[9]   To endorse the view that it is legitimate to appeal to non-controversial linguistic and psychological phenomena might be seen as problematic in the context of the discussion of Kripke as his scepticism is intended to range so far as to undermine the idea that there are any determinate facts concerning what we mean by our words. My answer to this worry is to point out that my concern is specifically with the viability of linguistic theories that many philosophers who are not generally sceptically inclined find problematic. This entitles me to take for granted phenomena the reality of which they would not ordinarily be inclined to question, such as those described above. This might involve engaging with an argument that isn't quite what Kripke had in mind. Hence, it might be more accurate to talk of an objection inspired or suggested by Kripke rather than Kripke's objection. However, for ease of exposition I shall continue to talk of Kripke's objection. The justification for not directly engaging with Kripke's radical scepticism is that if such scepticism is a problem for the Chomskyan then it is a problem for everyone. If

2. *The goal of linguistics*

What is needed then is an account of how a determinate rule of the kind that Chomsky postulates could be represented in the mind/brain of an individual. I don't think that Chomsky has fully developed such an account. In response to the related issue as to what it is for a rule to be psychologically real Chomsky has tended to reply that it is just a matter of the truth of the linguistic theory that attributes the rule.[10] I sympathise with those psychologists and philosophers[11] who complain that Chomsky might do more to tell us what is involved in a linguistic theory's being true or how rules could be represented in the mind/brain. However, I do not think that the situation is hopeless and prominent elements of Chomsky's output do provide suggestions that can be developed in such a way as to provide the required account of rule representation. To see this it is necessary to take a more detailed look at Chomsky's core commitments.

From the Chomskyan perspective the goal of linguistics is to uncover the workings of the language faculty. The language faculty is a distinct component of the mind/brain that plays a fundamental role in knowing and acquiring language and is implicated in language production and comprehension. Chomsky (Chomsky 1980) compares the language faculty to other components of the mind/brain such as the visual system and with organs of the body such as the heart and the liver (indeed, he sometimes calls the language faculty a mental organ). Taking these comparisons seriously suggests that Chomsky is committed to a modularity theory akin to that of Fodor (Fodor 1983) according to which the language faculty is a distinct causal mechanism located in the brain that plays a fundamental role in language processing.[12]

Consider the heart, a distinct component of the body whose defining function is to pump blood around the body and so deliver oxygen to other organs. The heart couldn't perform this function unless it was suitably connected to other organs. Something could be intrinsically just like my heart without being a heart because it was hooked up to other bodily organs in fundamentally different ways. Nevertheless, we can study the heart in relative isolation from other bodily organs seeking to discover how it works and so performs its defining function. Something similar is true of the language faculty as conceived by Chomsky. The language faculty interacts with other systems of the mind/brain such as thought, perception and articulatory systems and owes its status as

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a way were found of dealing with such a scepticism so as to vindicate our commonsense assumptions about language and the mind, then that response could combined with the account of rule representation I shall develop to constitute a complete defence of Chomsky against Kripke's radical scepticism.

[10] For example, Chomsky identifies a "claim for the psychological reality" of the posits of a particular linguistic theory with a claim for the "truth of a certain theory". Chomsky 1980, p. 191.

[11] For example, Pylyshyn 1991 and Rey 2003a; Rey 2003b.

[12] This involves rejecting Fodor's (Fodor 1981; Fodor 2000) own reading of Chomsky according to which his version of the modularity thesis is not an architectural one but the idea that speakers of a language have a particular, largely innate, body of knowledge or beliefs specifically about language that they draw upon in language production and comprehension. For an interesting discussion of Fodor's reading of Chomsky see Collins (Collins 2004).

the language faculty to its relations with those systems. Similarly, Chomsky describes an individual's language as a state of her language faculty (and, thus, a state of her brain). This brain state would not be a language were it not for the connections that it bears to components of the mind/brain distinct from the language faculty.[13]

If the task of linguistics is to uncover the workings of the language faculty then the question arises as to the precise function of the language faculty. For Chomsky, when it has reached a mature state, the language faculty's function is to generate expressions from the lexical items belonging to the individual's language by means of the operations of merger and move.[14] The expressions so generated have two components, a sound and a meaning. Thus, the language faculty works to effect a particular pairing of sounds and meanings. When the language faculty operates so as to produce an expression, that expression is an internal phenomenon that resides at the interface between the language faculty and related systems concerned with thought and articulation. In particular, the expression consists of a pair of representations: an LF (Logical Form) representation that resides at the interface with the thought system, and a PF (Phonetic Form) representation that resides at the interface with the articulatory system. Chomsky sometimes describes such representations as instructions. For example, a PF representation is an instruction to the articulatory system to produce a particular sound. Reflecting the above point that the language faculty is a language faculty (and its state a language) only insofar as it is appropriately related to other systems of the mind/brain, an internal phenomenon is an expression (a particular pairing of an LF and a PF representation) only insofar as it is appropriately related to other systems of the mind/brain. Such a relationship might involve having a particular causal impact on such systems so that, for example, a particular LF representation owes its status as such because it causes the articulatory system to produce a particular sound.

Chomsky's systematic use of the term 'mind/brain' and his comparison of the language faculty with bodily organs reflects a general view of the relationship between the mind and the brain that can be described in the following terms. The mind and the brain are not two distinct systems. To describe an individual's mind is to describe her brain in mental terms; it is to describe her brain at a higher level of abstraction than the neuroscientist does. Alternatively, to describe the brain in neuroscientific terms is to describe the mind at a lower level of abstraction than the psychologist does. Thus, the language faculty is ultimately a component of the brain and the rules represented within it are somehow physically realised in the brain. Hence, "A person who speaks a language has developed a certain system of knowledge, represented somehow in the mind and, ultimately, in the brain in some physical configuration" (Chomsky 1988, p. 3).

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[13] See Chomsky 2000, p. 27 for a particularly clear expression of such views.

[14] Merger is the operation of concatenating lexical items and movement is the operation of moving an element of an expression from one place in the expression to another.

So the task of linguistics is to uncover the way in which the language faculty, a system housed in the brain, generates expressions. If we combine this with the idea that engaging in this task involves specifying a body of rules represented in the language faculty then the implication is as follows: the rules represented in an individual's language faculty is a matter of the way in which that faculty generates the expressions of her language.

3. Rule representation

The claim that the rules represented in the language faculty is a matter of the way in which that faculty generates expressions suggests two things. First, that there are rules that fit the behaviour of the language faculty. In order for a particular rule to fit the behaviour of the language faculty that system must be capable of behaving in accord with the rule in question, say producing expressions permitted by the rule. Moreover, the language faculty must not be capable of behaving in conflict will the rule, for example, of producing an expression not permitted by the rule.

Considered against the background of Chomsky's views concerning the relationship between the mind and the brain, the second point has to do with how the expression generating behaviour is grounded by lower level processes. As the language faculty is a component of the brain whenever that faculty produces an expression a causal process will take place that can be described both in linguistic terms and in terms that reside at a level lower than the linguistic (for example, in neural terms). Describing the workings of an individual's language faculty in linguistic terms involves describing the workings of a component of her brain at a higher level of abstraction than the neuroscientist does. In effect, the linguist's task it to describe the workings of the brain in terms of its linguistic significance. Consequently, which linguistic descriptions are true will be bound up with, and constrained by, which lower level neural descriptions are true. What all this suggests is that for an individual's language faculty to represent a rule not only must the rule fit its behaviour. But, in addition, all instances of behaviour covered by the rule that the system engages in must exhibit a salient similarity from the lower level perspective. In other words, there must be a common lower level causal process going on whenever the system behaves in accord with the rule.

To see how this applies to the linguistic case consider the following example. A prominent hypothesis within the principles and parameters approach that emerged in the 1980s is that it is a rule of English that the head of a phrase comes before its complement. Suppose that this rule is represented in the language faculty of English speakers. Then, whenever the language faculty of an English speaker produces an expression, it will consist of phrases where the head comes before its complement. In addition, all expressions will have this characteristic as the result of the workings of a common lower level causal process. To claim that the head first rule is represented in an individual's

language faculty is therefore to make a substantial explanatory move. For it is to tell us that the expressions produced by her language faculty have a salient characteristic and it is to tell us, in abstract terms, how those expressions are generated and why they have that salient characteristic.

The explanatory significance of the claim that the head first rule is represented can be seen by contrasting it with an alternative hypothesis. According to the alternative hypothesis, the individual has several distinct rules represented in her language faculty that together ensure that any expression produced will consist of phrases where the head comes before its complement. These rules include the rule that in a noun phrase the noun comes before its complement, the rule that in a verb phrase the verb comes before its complement, the rule that in a prepositional phrase the preposition comes before its complement, and so on. An implication of this hypothesis is that distinct lower level processes are implicated in the construction of different types of phrases so that there is no single, general explanation as to why heads precede their complements. Rather, that general feature of expressions is to be explained as a product of several distinct and independent lower level processes. Hence, the alternative hypothesis offers a contrasting account of the workings of the language faculty.

Generalised, the idea is this. The task of linguistics is to explain how the language faculty works in generating expressions. The linguist does this by specifying a body of rules for generating expressions that are represented in the language faculty. Such an attribution of rules implies that those rules fit the language faculty's expression generating behaviour and provides an abstract account of the lower level causal basis of this behaviour. This account is abstract because it does not tell us anything about the specific nature of this causal basis. For example, it does not provide any neural details of the workings of the language faculty. This leaves the way open for an incorporation of linguistics into neuroscience when these neural details are uncovered, something that Chomsky sees as the ultimate goal of linguistics.

None of this implies that linguistics reduces to neuroscience for two reasons. First, we should expect the rules represented in the language faculty to be multiply realisable so that individuals whose brains were physically quite different could still share a language. Second, because the language faculty's status as such depends upon its relationship to other subsystems of the mind/brain, in principle something could be just like the human language faculty from the neuroscientific perspective without representing any linguistic rules at all. This would be the case if the subsystem in question drove locomotion rather than being connected to modules concerned with thought and articulation.

In suggesting that the manner in which the language faculty represents rules should be seen as a species of representation that is to be understood in causal terms, I have committed myself to the idea that there is a complex two way relationship between the output of the language faculty (understood to include its effect on modules concerned

with thought and articulation) and its internal workings. On the one hand, the identity of the rules internal to the language faculty partly depends on properties of the expressions that it produces that are independent of the precise workings of that faculty. That is to say, on properties that competing linguists could attribute to expressions whilst holding divergent views of the language faculty's internal workings. For example, for the head first rule to be represented it is necessary that the language faculty generally produces expressions which consist of phrases where the head comes before its complement.[15] On the other hand, some salient properties of expressions are directly determined by the workings of the language faculty so that it is necessary for the language faculty to work in a particular way from the lower level perspective in order for expressions to have that property. To see this consider the following. Typically an expression will be the product of the application of more than one rule so that more than one distinct lower level process will have been involved in its generation. The fine-grained syntactic structure of the expression (as represented by a linguist's tree diagram) will be an interaction effect of these lower level processes. So, the extent to which two distinct expressions share a common syntactic structure partly depends on the extent to which they were generated by means of the interaction of common lower level processes. Once generated an expression is subject to further processing as when an element is moved from one place to another in the expression. Once again, any such processing will have a lower level description. Just as the lower level causal processes implicated in the generation of an expression play a role in determining its fine grained syntactic structure, so do the lower level processes that it can in turn be subjected to. So, the extent to which two distinct expressions share a common syntactic structure partly depends on the extent to which they can be subjected to further common lower level processing.

To talk in terms of states and processes that reside at a level lower than the linguistic is to leave unanswered the question of how such states and processes are to be described and individuated. This is not a question that one should expect the linguist to answer but there is no problem here. This is because it is commonplace for the scientist to develop theories whose truth-value is sensitive to facts concerning the nature of lower level phenomena the precise details of which the scientist is ignorant. For example, Mendel was able to make considerable progress in genetics long before the discovery of DNA.[16]

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[15] This implies that there is a fundamental distinction between the language faculty and other systems whose behaviour might be said to accord with rules. For example, suppose that it were claimed that the behaviour of a planet accorded with a rule corresponding to Keplar's law of planetary motion. This would provide no reason to think of the planet as representing that rule as its behaviour does not have any psychological description. The planet merely follows a particular elliptical trajectory whereas the language faculty is part of a complex system that understands and employs a language.

[16] To account for rule representation in terms of lower level causal processes echoes the account of tacit knowledge of the axioms of theories of meaning devised by Evans 1981 and developed by Davies 1987. In an important paper Wright (Wright 1986) criticises this account. Whatever its power, I don't think that Wright's points have any direct bearings on my position due to salient differences between Chomsky's project, on the one hand, and that of

4. Dealing with Quine and Kripke

How does the account of rule representation that I have been developing deal with the challenges generated by Quine and Kripke? Recall that Quine argued that numerous distinct yet extensionally equivalent grammars of English will fit the linguistic behaviour of an individual whose first language is English. In such a case, in contrast to the Danish children of his example, the English speaker is not guided by any particular grammar. The account of rule representation that I have developed deals with this problem in a straightforward way by suggesting that there is a real sense in which an individual's linguistic behaviour is guided by a particular grammar. The correct grammar is that of the competing extensionally equivalent grammars that corresponds to the lower level processing executed by the language faculty in the course of generating expressions. For example, suppose that there is a choice between a grammar containing a general head-first rule and one containing numerous more specific rules that together have the same implications for linguistic behaviour as the general rule. Then, if it is the case that all expressions conforming to the general rule are the product of the execution of a common lower level process by the language faculty, that fact will tell against the advocate of the latter grammar. If, on the other hand, there is no such commonality, then that fact would tell against the former grammar. Alternatively, suppose that two competing grammars consist of equally specific rules, but differ with respect to the syntactic structures that they assign to various expressions of an individual's language. Once again, patterns of commonality and difference in lower level processing involved in the production of expressions and the further processing that the expressions can be subjected to may tell against one grammar and count in favour of its competitor. For example, suppose that grammar G_1 assigns a particular structure to expression E_1 and an analogous structure to E_2 whereas grammar G_2 assigns distinct structures to each of these sentences. Were it the case that a common lower level process was involved in the production of the expressions and that both expressions were subject to common further lower level processing, then that fact would undermine G_2 and support G_1. However, were it the case that quite distinct lower level processes were involved in the production of the expressions and that the expressions were subject to quite different further lower level processing, then that would count for G_2 and against G_1. In short, the nature of the lower level processes implicated in the generation and further processing of expressions determines which of the distinct yet extensionally equivalent grammars is true as an account of an individual's language.

I now come to the problems generated by Kripke. Recall that Kripke argued that an appeal to dispositions could not succeed in explaining how it is possible for an individual to grasp a determinate rule as, being finite creatures, our dispositions are finite whereas the demands of a rule are typically infinite. This threatens to undermine my account

those philosophers who have engaged in the armchair project of constructing a theory of meaning, for example, Dummett 1993 and Davidson 1983.

of rule representation as that account requires that linguistic rules that have an infinite character fit the behaviour of the language faculty.

The first element of my response to Kripke's objection is to question the assumption that a finite creature cannot have infinite dispositions. The behaviour of plenty of finite physical systems are governed by laws of nature that are such as to imply that the system is disposed to behave in a distinctive way in each of infinitely many possible situations. For example, a particular body of gas that at this moment has a particular volume, temperature and pressure. The gas laws determine what volume the gas would occupy when subjected to any of infinitely many distinct pressures at any given temperature. Hence, the laws imply that the gas has infinite dispositions with respect to the volume it occupies in response to pressures that it could be subjected to.

The case of laws governing the behaviour of finite systems can help defeat Kripke's objection if there are appropriate laws governing the workings of the language faculty and here there are grounds for optimism. For one thing, Chomsky conceives of linguistics as being a science, the science of the language faculty. Sciences typically uncover laws and construct explanations that appeal to such laws so that one might expect the enthusiast for the scientific status of Chomskyan linguistics to hold that the language faculty is governed by laws and that these laws directly correspond to linguistic rules. Moreover, the nativist commitments of Chomskyan linguistics suggests that we should think of rules in terms of laws. For Chomsky a characterisation of Universal Grammar (UG) describes the initial state of the language faculty, a state that places constraints on the mature states that the language faculty can assume and determines how the language faculty develops in response to impoverished linguistic stimulation during the language acquisition period. As UG is innate it is part of our biological endowment, an aspect of us that is genetically determined. This seems to imply that an accurate specification of UG would capture a body of laws about the initial state of the language faculty and how its state changes in response to external stimulation. With respect to the mature state of the language faculty it seems to imply that there are laws governing the operation of that faculty when it is in any such state. For example, given that I was subjected to expressions of a head first language when I was acquiring my first language, it is a law of the workings of my language faculty that it generates expressions that accord with the head first rule. In short then, there are reasons for thinking that linguistic rules are closely related to laws governing the workings of the language faculty so that the behaviour of that system has the required infinite character.

Suppose that it is accepted that law governed finite systems can have infinite dispositions. There is still a problem as gases always behave in accord with the gas laws whereas speakers of a language routinely violate the putative rules of their language. The language faculty is conceived as being connected to performance systems so that is operations are reflected in the linguistic behaviour of the individual. So, one might reasonably ask, how can it be a law that the language faculty of individuals who encounter

head-first phrases as children acquiring their first language operates in such a way as to fit the head first rule? The answer to this question involves pointing that any such linguistic laws will, like all special science laws, be ceteris paribus laws (Fodor 1975; Fodor 1987; Fodor 1991). Ceteris paribus laws have exceptions; it can be a law that, ceteris paribus, As cause Bs, even though an A is sometimes tokened without causing a B to be tokened. At this point it will be helpful to give an account of the nature of ceteris paribus laws. The account that I favour is explicitly championed by Pietroski and Rey (Pietroski & Rey 1995) and implicit in Fodor (Fodor 1987).

The natural world consists of many distinct systems. Any given special science will be concerned with the workings of one such system. The special scientist will conceive of her system as relatively self-contained and independent of all others and will attempt to uncover how it operates when free of external interference. When she states that a particular law holds she is making a claim about how the system of her concern works when free of external interference. But she recognises that in reality such interference does take place. Thus, she qualifies her statement of the laws governing the workings of the system in question with a ceteris paribus clause implying that any putative violation of the law constitutes a case where an external factor has interfered with the natural workings of the system. In such a case, the violation of the law can be explained by appeal to the external interference. Fodor presents an illustrative example (Fodor 1987). It is a geological law that, ceteris paribus, a meandering river erodes its outer bank. Examples of cases where a meandering river fails to erode its outer bank include those where the bank is concreted over, where the tiny abrasive particles are sieved from the water and so on, cases where some extra geological event has interfered with the workings of the geological system. Such putative violations of the law can be explained by appeal to the interfering extra-geological event (for example, the river failed to erode its outer bank because the bank was concreted over).

This account of ceteris paribus laws suggests the following line of thought.[17] Lingusitics is concerned with the workings of a distinct system of the natural world, namely the language faculty. The laws governing the workings of the language faculty are ceteris paribus laws so there can be exceptions to them. The cases where I produce a phrase where the head comes after its complement, where I misjudge the grammaticality of a sentence, where I am unable to deal with a long complex sentence, and so on, are cases where some interfering, extra linguistic factor prevents my language faculty from producing its natural effect. For example, my failure to process a long and complex sentence may be due to memory limitations of the system feeding input to the language faculty. My production of an ungrammatical sentence may be due to physical damage to the language faculty or a breakdown in the workings of an adjacent system such as the articulatory system. What some of these examples bring out is that the language

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[17]   This line of thought is inspired by Rey and Pietroski's appeal to the nature of ceteris paribus laws in responding to Kripke's critique of dispositionalism (Rey and Pietroski 1995).

faculty interacts with other in-head systems and requires the co-operation of these systems to ground our observable linguistic capacities. Consequently, the language faculty can lose its ability to ground such a capacity either as a result of its own breakdown or as a result of the breakdown of such adjacent systems. An example of the latter type of case would be that where damage due to a stroke prevents an individual's articulatory system from responding to the language faculty. But in such a case, the putative violation of a linguistic law is due to, and can be explained in terms of, the occurrence of some extra linguistic phenomenon.

It should be noted that there are cases where all else isn't equal in the linguistic sphere which do not involve the interference of extra-linguistic factors. Suppose that it is a rule of English that the past tense form of a verb is the verb with -ed added to the end and, thus, that it is a law that the language faculty of English speakers adds -ed to the end of verbs to make their past tense forms. However, the past tense of 'sleep' is 'slept' and not 'sleeped.' All else is not equal when I say 'I slept well last night' rather than 'I sleeped well last night.' But my behaviour in this case, though not constituting a genuine counter-example to the law, has a linguistic explanation. The explanation has to do with the lexicon, something that Chomsky describes "as a list of 'exceptions'" (Chomsky 1995, p. 235). The lexical entry for 'sleep' will contain information about that item that is unique to it, for example that its past tense form is 'slept.' In contrast, the lexical entry for regular verbs such as 'talk' will contain no information concerning their past tense form. When I produce a sentence containing 'slept' and reject as ungrammatical one containing 'sleeped' my so behaving is an interaction effect, the product of an interaction between a general rule and an atypical lexical entry that instructs the language faculty to treat the lexical item in question in a non-general way. Thus, the apparent counter-example to the general rule or law – and why it is not a genuine counterexample – is to be explained by appeal to the lexicon and so is to be explained in linguistic terms. This example indicates another respect in which the linguist, like any special scientist, is engaged in a process of abstraction; for, she is trying to separate out the distinct factors that are involved in the occurrence of everyday phenomena that are typically interaction effects.

In sum then, there are good reasons for thinking that there are linguistic laws and that, despite our being finite creatures, the language faculty may well operate in a way that rules that have an infinite character fit.

Kripke offers a second criticism of dispositionalism that, once again, needs to be dealt with. This has to do with normativity and runs as follows. Rules have a normative dimension in that they determine facts about how we ought or should behave. There is a gap between how we ought to behave and how we actually behave as we often do things that we ought not. By tying the demands of the rules that govern our behaviour to how we would behave in certain possible circumstances, the dispositionalist obliterates this distinction. She implies that whatever we do or would do is right or correct. But if

whatever we do or would do is right or correct then it makes no sense to talk of right and wrong or correct and incorrect and, thus, it makes no sense to talk of rules. Directly applied to my account of rule representation the objection is that laws of nature have to do with how a system – for example, the language faculty – does or would behave and that there is a distinction between this and how we ought to behave if we speak a rule governed language.

My response is to question the centrality of normativity to rules.[18] I do not wish to deny that there are facts to do with right and wrong, correct and incorrect, associated with many of the rules that philosophers have focussed their attention on. But such facts might well be grounded in facts concerning human social practises and psychological phenomena that need not be present in every case where rules are operative. Consider the example of the rules of chess. In teaching children how to play chess we typically explicitly state the rules of the game, encourage them to consciously consult the rules when deciding how to behave and aim to instil in them a respect for the rules and a desire to act in accord with them. When they violate the rules we criticise them and advise them to consider the rules and think again. And when we realise we have violated a rule we reproach ourselves, regret our actions and, even, feel shame. My suggestion is that normative facts surrounding chess are the products of such practices of teaching and evaluating and the desires, regrets and states of shame that they give rise to. Thus, in principle, such normative facts need not be present in all cases of rule governed behaviour. More specifically, they need not be present when our behaviour comes to be governed by a particular rule without any antecedent process akin to that involved in cases of learning the rules of chess. In the case of the rules that Chomsky envisages, the rules do not come to govern our behaviour as a result of such a process. The rules have a substantial innate basis and so there is no explicit instruction, criticism by appeal to statements of the rule and resultant desires, regrets, shame, and so on. In short, there is an explanation for the absence of normative facts surrounding linguistic rules such as the head-first rule and it is a mistake to generalise on the basis of a consideration of rules that come to govern our behaviour on the basis of a process of learning in a social context.

5. *Wright's objections*

I will now turn my attention to a paper by Crispin Wright (Wright 1989) in which he explicitly considers the impact of Wittgenstein's rule following considerations on Chomsky's work.[19] Wright suggests that the rule following considerations generate a

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[18] Such a move is far from unprecedented. For example, Horwich argues that meaning isn't inherently normative (Horwich 1998).

[19] See Wittgenstein 1953, §§ 138-242 and Wittgenstein 1967, particularly Part VI, §§15-49 and Part VII, §§ 47-60).

pair of related objections to Chomsky. The first runs as follows. Chomsky views the rules belonging to an individual's language as a theoretical matter to be determined by reference to factors that the individual is not necessarily in the best position to determine. Consequently, Chomsky cannot make sense of a salient feature of language, the fact that language users have non-inferential knowledge of the rules of their language. Wright relates this objection to Dummett's (Dummett 1976) views on knowledge of language suggesting that he thinks that it is part of the concept of following a rule that the rule follower has such non-inferential knowledge.

The second objection draws upon Wittgenstein's rejection of the idea that rules are infinite rails whose demands are independent of the judgements of the rule follower whose task it is to track those rails. Rather, argues Wright, for Wittgenstein, the demands of a rule are bound up with the rule follower's judgements in a manner that echoes the case of colour concepts. Our judgements of colour determine the extension of our colour concepts rather than reflect a pre-determined extension. Similarly, the demands of a given rule are related to our 'best judgements' as to those demands. Wright accuses Chomsky of endorsing this 'rules as rails' mythology as he portrays the demands of the rules of an individual's language as being determined by a syntactic mechanism that settles which expressions of her language are well formed and which are not in advance of her making any grammaticality judgements.

I will consider these objections in reverse order. There is a respect in which, for Chomsky, the demands of an individual's linguistic rules are determined by the state of her brain in advance of her making any judgements. However, this is not to say that there is no connection between those demands and the judgements that she would make, at least on the account of rule representation that I have developed. The state of my brain causally grounds facts about the grammaticality judgements I do make along with facts concerning the grammaticality judgements I would make in various possible circumstances. Were this link between my brain state and my judgements not to exist then the demands of the rules of my language would be other than what they are. So, it might be said that for Chomsky the demands of a rule are bound up with the individual's judgements.

I take it that Wittgenstein's target is Platonism. Now Chomsky is clearly not a Platonist as for him language is a psychological entity. Hence, when an individual makes a linguistic judgement she is not making a judgement about anything existing independently of her; she is not trying to track rails laid down in some Platonic heaven. This is why Chomsky (Chomsky 1986; Chomsky 2000) insists that we mustn't be mislead by the term 'representation' to think that the representations he talks about are representations *of* or *about* anything.

Nevertheless, even though Chomsky is an opponent of Platonism his picture of linguistic rules is at odds with that Wright seems to have in mind as that picture finds a substantial role for judgement in an ongoing process of shaping and settling the demands

of our rules. Whereas, for Chomsky, the demands of our linguistic rules are settled in advance of our making any judgements as to their demands. Now there is considerable plausibility in Wright's view when applied to many of the most familiar rules that we follow. For example, think of rules governing the games that we invent. When we invent a game we need to lay down rules governing the behaviour of the game's participants. Rarely can we envisage every situation that might be thrown up in the course of a game so we do not explicitly specify what the rules imply with respect to every such situation. Consequently, once we begin to play the game a contestant will occasionally behave in a manner whose legality is far from clear to the contestants, the referee and any spectators. In response to such cases judgements are often made – sometimes there and then, sometimes subsequently – as to precisely what the rules demand in such situations. In this way an ongoing process of judgement can shape the precise demands of a rule.

As portrayed by Chomsky, linguistic rules are not shaped by any such process of ongoing judgement. Rather, the demands of any given rule are fixed prior to the individual's actually making any judgements. However, there is nothing problematic about this as why there should be such a difference between linguistic rules and the rules governing games that we invent has a ready explanation. For, according to Chomsky, linguistic rules have a substantial innate dimension. Consequently, unlike the rules we self-consciously invent, there is no need for any ongoing process of judgement to shape and determine the demands of the rule. In effect, the accusation is that Wright, noticing a prominent feature of certain rules, makes an illegitimate generalisation to the conclusion that all rules have this feature.

A similar response can be made to Wright's first objection. We do have non-inferential knowledge of many of the rules that we follow. But this doesn't reflect a general fact about the nature of rules. Rather, it reflects a contingent fact about the manner in which we acquire mastery of many of the rules that we follow. The rules of chess are not innate. On the contrary, the chess player has to learn them through a process of explanation, deliberation, and correction. This process will often involve a conscious confrontation with a statement of the target rules as the learner is told what the rules are and reflects on such statements in her early attempts to play the game. Consequently, it is hardly surprising that the competent chess player has non-inferential knowledge of the rules of chess. As the rules that Chomsky postulates are innate rather than learnt, the acquisition process does not involve any such conscious confrontation with statements of the rule. Hence, it is no surprise that the individual finds it difficult to state the rules of her language. In sum, the accusation is that Wright once again makes an illegitimate generalisation on the basis of a consideration of learnt rules and fails to appreciate the significance of Chomsky's nativism.

Both Kripke and Wright's objections draw upon interpretations of Wittgenstein's rule following considerations. This raises the general question of the relationship of the rule following considerations to the line of thought that I have developed. The rule follow-

ing considerations are concerned with the question of how, if at all, it is possible for a particular rule to belong to an individual's language. A key aim of Wittgenstein's is to undermine mentalist attempts at answering this question as such attempts are either circular or lead to infinite regress. In other words, they are explanatorily bankrupt. If the account of rule representation that I have developed in this paper is viable then an important implication is that Wittgenstein has not undermined mentalist attempts to explain rule following per se. At best, he has only defeated the particular mentalist lines of thought that he considers, for example, the appeal to mental images and the appeal to interpretations.

Conclusion

In this paper I have attempted to defend Chomskyan linguistics against objections generated by the work of Quine, Kripke and Wright. I have done this by developing an account of rule representation that makes a crucial appeal to the lower level causal workings of a particular component of the mind/brain that plays a fundamental role in grounding our linguistic capacities. But what exactly is the status that I accord to this account? I should make it clear that I have not attempted to provide a constitutive account of rule representation, an account of the necessary and sufficient conditions for a rule to be represented in the mind/brain. Rather, my aim as been to give an account of one way in which determinate rules could be represented in the mind-brain that does not rule out the possibility that there are other ways in which determinate rules could be represented in the mind/brain. In other words, I have aimed to present a sufficient condition for rule representation rather than a necessary and sufficient condition.[20] My account draws upon various elements of Chomsky's core commitments. These include his modularity thesis, his view that the language faculty owes its status as such to its relations to other in-head systems, his goal that linguistics ultimately be incorporated into neuroscience, and his nativist conception of language acquisition. To that extent, my account is motivated by Chomsky's work and is designed to be attractive to the Chomskyan.

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[20] Cf. Fodor's approach to naturalising intentional content, Fodor 1990.

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