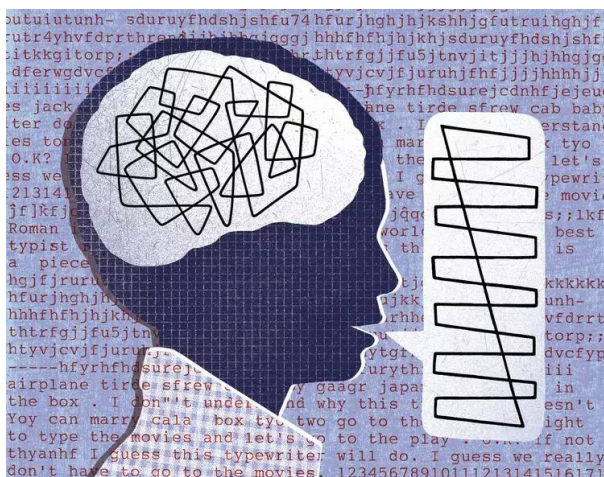


Classic Text 37 - Linguistic Competence

In the previous Classic text concerning the Philosophy of Language we were concerned with the relation between certain mental states such as beliefs, desires and other thoughts and their relation to language. In this study unit we are concerned with another mental state relevant to language, namely **linguistic competence**, which enables native speakers or signers to use their language successfully. This topic is presented by Devitt & Sterelny in chapter 8 of their *Language and Reality: An Introduction to the Philosophy of Language* (2nd Edition) (1999). We strongly recommend buying or borrowing a copy of their book and reading their chapter.



Linguistic competence is the natural knowledge people use to speak, sign and understand languages (Lizzie Roberts / Getty Images)

Following the authors in the previous series of Philosophy of Language Classic Texts, we have touched on issues relevant to linguistic competence, such as the Cartesian assumption that competence involves “privileged access” to meanings. We have also discussed description and causal theories of competence with names and natural kind terms. Here we hope to flesh out the discussion of linguistic competence.

Just as the meaning of sentences is complex, comprising partially of word meaning and partially of syntactic structure, so linguistic competence is complex, comprising partially of being able to produce and understand words (**lexical competence**) and partially of being able combine them to form grammatical sentences (**syntactic competence**). The authors’ earlier discussions of competence have been largely concerned with lexical competence; however in this section they discuss mostly, but not exclusively, syntactic competence. Their focus is primarily on **generative grammar**, a research tradition in linguistics begun in the 1950’s by Noam Chomsky, that aims to explain the cognitive basis of language by formulating and testing models of human subconscious grammatical knowledge.

The authors’ task is twofold: a) to show that the theory of syntactic competence developed by Chomsky and similar ideas in contemporary philosophy about linguistic competence are *prima facie* “puzzling and implausible” and b) to outline the beginnings of an alternative view. They begin by listing a number of puzzling features of the contemporary discussions of linguistic competence.

1. Generative grammar is not presented as a theory about the syntactic structure of linguistic symbols, but as a theory of linguistic competence of people. Generative linguists conflate the theory of the meaning of symbols with a theory of linguistic competence. According to the authors, this conflation of symbol and competence is the first, and arguably the most important problem, concerning contemporary views of competence.
2. Generative linguists construct grammars of languages in which they are interested. These grammars have a double function: a) they give an account of the structure of sentences in the language, and b) they give an account of the cognitive states of people that enable them

to produce and understand sentences by resolving them into their component parts and identifying their syntactic roles (**parsing**). Generative linguists believe that native speakers or signers have “internalised” the syntactic rules described by the grammar, which are therefore “psychologically real”. But is it really the case that a grammar explains linguistic competence, either partly or at all?

3. These linguists’ most common expression of their ideas suggest that syntactic rules are psychologically real in that they are *represented* in the speaker or signer. For the generative linguist, competence is identified with tacit *knowledge* of these grammatical rules, which are psychologically real. Similarly, many philosophers believe that a theory of meaning for a language is “tacitly known” by speakers or signers of the language. If so, speakers or signers of any language would know more about their language than the little they learned at school.
4. Some syntactic rules allegedly common to all natural languages described by “universal grammar” are said to be *innately* known. Psychological theories which emphasise the role of innate knowledge or structures in their explanations (e.g. Chomsky’s) are known as **nativist theories**, for which there is very little empirical support.
5. These linguists, like most philosophers of language, tacitly subscribe to the Cartesian assumption. They believe that competent speakers or signers have “privileged access” to facts about the syntax expressed in their intuitive judgements. Moreover, they believe that these judgements are derived by inference from a signer or speaker’s representation of their syntactic rules. There are additional reasons to think that this assumption is inappropriate.

(p. 167 - 168)

Conflating of Symbols and Competence

The authors quote from the opening passages of *Syntactic Structures* (Chomsky, 1957), the work that initiated generative grammar. According to Chomsky,

The fundamental aim in the linguistic analysis of language **L** is to separate the *grammatical* sequences which are sentences of **L** from the *ungrammatical* sequences which are not sentences of **L** and to study the structure of the grammatical sequences. (p. 13)

Chomsky’s concern here is with sentences as a product of humans. However in another classic work, *Aspects of the Theory of Syntax* (Chomsky, 1965) after similar remarks, Chomsky declares:

The problem for the linguist... is to determine... the underlying system of rules that has been mastered by the speaker-hearer... Hence, in a technical sense, linguistic theory is mentalistic, since it is concerned with discovering a mental reality underlying actual behaviour. (p. 4)

Chomsky’s concern here is with claims made by generative linguists. For them, grammar is not just a description of the structure of sentences; more so, it is an account of the mental reality underlying linguistic behaviour, *i.e.* as part of psychology.

According to the authors, the conflation of a theory of symbols did not start out with Chomsky. It does not matter for our purposes whether we can trace the antecedents or what followed, so long as we can understand the distinction between the two sorts of theory. To sharpen this distinction, the authors consider only symbols in a public language, whether written, spoken, signed and so on, but excluding Mentalise (See Classic Text 33). Furthermore, they assume that the grammar that linguists construct is a good description of the structure of these symbols. In the discussion that follows, the authors focus on a person's linguistic *production*, setting aside linguistic *understanding*. (p. 168 - 169)

As defined above, linguistic competence is a mental state of a person, intended to explain their linguistic behaviour. What we call linguistic competence plays a key role, though not the only role, in the production of linguistic behaviour. According to the authors, linguistic symbols are the *products* or *output* of linguistic competence. They are events of the physical world in time and space, whether vibrations or the movement of limbs in the air, marks or inscriptions on a page *etc.* There is nothing mental about them. "A theory of a part of the production of linguistic symbols is not a theory of the products, the symbols themselves." Of course, there is a causal relation between competence and symbols, so that a theory of the one is likely to bear on the other; but that does not make the two theories identical.

In Classic Text 17 we considered the properties of symbols that enable them to play certain roles in explaining behaviour and informing us about the world. In short, we were interested in meanings, of which syntactic properties are an important part. Properties like being a name, a verb phrase, voice (passive or an active), mood (indicative, imperative, subjunctive *etc.*) are part of the explanation of meaning. The authors draw the following analogy: we might be interested in what makes the movement a ball a good tennis shot. The answer would involve terms of such properties as speed, direction, elevation *etc.* Alternatively, we might be interested in what makes a certain action a chess move. This time the answer would invoke the rules of chess and the state of the board. In all these cases, we would be concerned with objects or events in the physical world, outside of "the mental". Of course, what goes on "in our heads" is also part of the physical world, but what we mean to say is that a good tennis shot or the movement of a chess piece is "out there" in the world of things, not "in here" in the world ideas or beliefs.

However, in another, sense we might be concerned with what is "inside the head". What is the explanation of the behaviour, whether a good tennis shot or a legitimate chess move? This time the answer would appeal to a psychological (or perhaps a neuro-physiological) theory of competence. Such a theory would, for example, explain how a particular player knew that a certain move was a legitimate chess move or a good tennis shot. And such a theory would be very different from a theory of the objects produced by linguistic competence. (p. 169)

In sum, the authors stress, "linguistic competence, together with various other aspects of the speaker's [or signer's] psychology, produce linguistic symbols. [But] a theory of symbols is not a theory of competence". (p. 170)

Distinguishing the theory of symbols from psychology does not make it mysterious. Consider, for example, the balance of payments of some country *e.g.* South Africa. There is nothing metaphysically mysterious about South Africa's balance of payments, being a systematic record of all economic transactions between it's residents and the rest of the world over a specific period. It tracks inflows and outflows of goods, services, and capital, comprising the current, capital, and financial accounts.

(International Monetary Fund) As with other social phenomena, this financial aspect of South Africa depends on the South African environment, as well as the behaviour and psychology of South Africans. But it does so in such a highly complex way, that economists necessarily theorise about the phenomenon relatively independently of the behaviour and psychology of individual South Africans. Similarly, according to the authors, linguistics as a social science has a degree of autonomy from other theories, including behavioural science and psychology, despite the fact that linguistic phenomena depend *inter alia* on psychological phenomena.

The authors conclude their section as follows:

Our theorizing about linguistic objects has, in fact, been very much concerned to explain their properties in terms of psychological states and their relation to the environment... While respecting the relative autonomy of linguistics, we have sought to explain it in other terms. So, the independence of linguistics is a partial independence. (p. 170)

Two Proposals on the Psychological Reality of Syntactic Rules

In part II of *Language and Reality*, particularly Ch. 6¹, the authors take grammar to be a theory of the syntactic properties of symbols in a language and hence a major contribution to the task of meaning. A great deal of the evidence adduced for grammar seems to bear directly upon: evidence about which strings of words or gestures count as grammatical; about the ambiguity of certain sentences; about indicative and interrogative moods; the synonymy of sentences that are superficially different and *vice versa*; about co-reference, *etc.*

Grammar, therefore is a theory of the syntactic properties of symbols. This does not mean that grammar has nothing to enlighten us about competence. But it does suggest that further argument is required, particularly that the rules (or principles) described by a grammar are psychologically real, yet not bundled (*gratis*) with the truth of grammar. (p. 170 - 171)

Consider first the authors proposal about the psychological reality of the rules (or principles) described by grammar. There are two sorts of rules: the *structural rules* governing the products of competence; and rules governing the *exercise* of that competence. In characterising the products of competence, we sometimes appeal to rules: the nature of the products are rule-governed, determined by their place in a structure defined by the system of rules. Consider the product of a chess player, *i.e.* chess moves. What characterises a chess move appeals to an elaborate system of rules. *E.g.* a bishop may only move along diagonals; a king may only move one square at a time; only a knight may “jump over” an occupied square, *etc.* According to the authors, chess moves are rule-governed in that something counts as a chess move only if it has a place in the “structure” defined by the rules of chess. Something counts as a particular chess rule in virtue of the particular rules that govern it, *i.e.* in virtue of its particular place in the structure. A theory of chess should describe these structure-rules. In doing so, it should describe the constraints on the appropriate output of a chess player. Ideally, a chess player should only make moves that have a place in the system that the structure rules describe, *i.e.* legal moves only. (p. 171)

¹ Not summarised separately as part of our series on the philosophy of language.

According to the authors, the structure-rules *may* also be among the rules governing the psychological processes by which a player produces chess moves. *i.e.* they may be among the processing-rules operating in the exercise of a player's chess competence; however this is not necessary and may not even be likely. Think of a chess playing programme which has no psychological states, only considerable computational abilities. At any rate, *being a structure-rule* - a rule governing outputs - is not the same property of *being a processing-rule*, a rule governing the psychological production of outputs.

In Classic Text 17 we described the figure-eight "waggle dance" performed by honey bee foragers returning to the hive. The position of each dance and its pattern is an effective symbol system governed by a fairly simple set of structure-rules. The theory of the dance, decoded by the Austrian Nobel laureate Karl von Frisch, describes these structure-rules. According to the authors, the processing-rules by which the bee performs this task remains unknown, but doubtless, none of the structure-rules are among them. (p. 171)

Natural language is another example of this distinction. The products of linguistic competence, *i.e.* physical tokens, are governed by a system of structure-rules, just like the products of the chess player and the honey bee. From their first chapter, the authors have emphasised that language is systematic.

The systematic relations between linguistic expressions reflect the structure-rules that govern them. Something counts as a sentence only if it has a place in the linguistic structure defined by these rules. Something [that] counts as a particular sentence, has its particular syntactic structure, in virtue of the particular structure-rules that govern it, in virtue of its particular place in the linguistic structure. It is the task of syntactic theory, a grammar, to describe these structure-rules. We distinguish these structure rules from processing-rules involved in the exercise of linguistic competence. These two sorts of rules have very different roles. The processing-rules produce sentences of the language in the exercise of linguistic competence. It is because those sentences are governed by the structure-rules that they are indeed sentences of the language. It may be possible that a structure-rule will also be a processing-rule, but it is not necessary that it be; for example, the transformation rules that govern structure and capture systematic relations between sentences may not govern any process that a speaker actually goes through in making an utterance. (p. 172)

When talking about the structure-rules of a sentence we may use words like "generate", "derive" and "transform"; but they can be misleading. While they may be useful metaphors capturing the systematic relations between sentences, we ought not to take them literally as descriptions of a process taking place somewhere in the nervous system.

The authors go on to use the distinction between the two sorts of rule above to highlight the uncontroversial way that a theory of syntax, *i.e.* a theory of the structure-rules of symbols, sheds light on syntactic competence. They emphasise that there is a causal relationship between a competence and its product. They also emphasize the existence of a logical relation that arises from the fact that the *very nature* of the competence is to produce outputs: producing them is what makes it the competence that it is. In the same way that chess competence is the ability to produce chess moves, *i.e.* those governed by the structure-rules of chess, so a competence in a language is the ability to produce sentences of that language, *i.e.* those governed by the structure-rules of the

language. Therefore a theory of such structure rules is necessarily a contribution to the theory of the competence: it informs us of the output, the production of which is definitive of the competence. Allowing for an anthropomorphism, we can say that the structure-rules must be “respected” by the competence and processing-rules that govern its practice, in that (performance errors aside) the processing-rules must produce outputs that are governed by those structure-rules. (p. 172)

According to the authors, “[t]he proposal that the structure-rules of a language must be thus respected is the minimal one on the psychological reality issue”. However, the respecting might be the result of non-psychological processes that are actualised in the speaker or signer, especially if “they” are an artificial intelligence that is really just a sophisticated collection of algorithms. We do agree with the authors that the minimal proposal “tells us nothing about the way in which the mind respects the rules of language”. (p. 172 - 3)

Their second proposal was already introduced in their chapter 7, and discussed in our Classic Text 33, namely that many people believe that some sort of Mentalese is likely to be syntactically similar to their public language. Mentalese is, of course, *ex hypothesi* psychologically real, so that the structure-rules of public language are, to the extent of that similarity, psychologically real, because they are, to that extent, the structure-rules of thought.

This second proposal is not uncontroversial. It takes for granted the folk idea that that language expresses thought, and the language-of-thought hypothesis. The folk idea may be uncontroversial, but the hypothesis is not. At any rate, this proposal does not encapsulate the way that Chomsky and his followers think that syntactic rules are psychologically real. (p. 173)

Knowledge-how vs. Knowledge-that

According to the authors, linguists that follow Chomsky seem to believe the very controversial view that a speaker or signer’s competence involves a *representation* of the rules of language applied in producing and understanding or parsing the language. Chomsky (1991) is emphatic: “There can be little doubt that knowing a language involves internal representation of a generative procedure”. (p. 9) According to Devitt & Sterelny, “on this view, the structure-rules are respected *because the speaker applies the representation of them in language processing*”. (original emphasis) Most linguists think of the rules of language as psychologically real in this way. This goes unstated with their assumption that language users have tacit *knowledge* of the rules of language and the folk truism that speakers and signers “know the language” – don’t they? (p. 173)

Linguists are concerned with syntactic competence and some philosophers make a similar assumption about full linguistic competence. Recall the discussion of the Cartesian assumption in Classic Text 17. These philosophers assume that competence with an expression consists in tacit knowledge of its meaning, *e.g.* competence with a sentence consists in knowledge that it is true, if and only if, certain circumstances obtain. The authors hold up Michael Dummett (1976, p 69 - 71) as an example (to be discussed later).

It is prudent to be wary of this truism, because it involves the term ‘know’ which is used in ordinary parlance both loosely and broadly. Consider the following instances:

- Alice knows Bob

- Alice knows who Gaga is
- Alice knows how to do addition by Rule R
- Alice knows that R is an algorithm for addition

These sentences illustrate quite different uses of the term 'know'. The authors are particularly interested in the last two because they are examples of *knowing-how* vs. *knowing-that*. Knowing-how they classify together with skills, abilities and capacities, which may be cognitive, but need not be. In contrast knowing-that is essentially cognitive, *i.e.* it requires a belief, and hence a representation – it counts as “propositional” knowledge.

Consider the following vast range of human skills: we know how to swim, ride a bike, catch a ball and write a note. These activities are governed by processing-rules that have been inculcated by learning. However, it is not plausible to suppose that these know-hows, our competencies, require that any of these embodied rules be represented, nor that many of them are, as a matter of fact, usually represented by the competent performer. Even the dumbest fish can swim – doesn't it? According to the authors, this is also true of some “intellectual” tasks. Alice *may* know to add because she knows *that* R is an algorithm for addition and can apply it. If so then this piece of know-how is largely a matter of knowing that. But Alice could just as well be governed by the algorithm which is psychologically real to her, without ever having represented it to herself. Finally, consider the skill of thinking – inferring one thought from another. Most people hardly know anything about logic and the rules of inference, and yet we surely do not think by applying representations of these rules as representations in meta-Mentalese.

If this were the case, much more than the truism that a competent speaker knows the language would be required to support the linguists' idea that we represent its rules. Such knowledge may be mere know-how, without knowing that. (p. 174)

Stephen Stich (1971 & 1978b) argues for the implausibility of the view that knowledge of language is knowledge-that by contrasting it with unproblematic cases of propositional knowledge. If someone knows that *p*, we expect them to at least be aware of it when prompted; and we expect them to understand the expressions of *p*. The ordinarily schooled speaker or signer lacks this awareness and understanding for most of their grammar. If someone knows that *p*, their knowledge of *p* should be integrated with other knowledge and beliefs to generate more knowledge and beliefs. Even if someone did have knowledge of the grammar, it is probably not inferentially integrated in this way. Without special tuition, the schooled native speaker is unlikely to understand the relatively simple claim that '*NP* → *Det* + *Adj* + *N*' is a rule of English. If they were taught the rule and remember it, their knowledge of the rule is likely to be largely inferentially isolated from their other beliefs. (p. 175)

Chomsky's view however is that a speaker or signer's knowledge of the rules of language is only “tacit”. But this does not advance the representational view of language because knowledge of language is very different from ordinary tacit propositional knowledge. People do not think about tacit knowledge, but if prompted they might acknowledge it under the right circumstances. Thus, Alice tacitly knows that rabbits don't lay eggs, even though she has probably never thought about it. However if the question were ever to arise, she would acknowledge that they don't. Clearly, the typical speaker or signer does not stand in this sort of relation to the rules of their language. If the

matter were ever to arise they would probably not acknowledge them, either because they are too complicated to understand or accept.

In the previous section, the authors noted that language processing-rules must, at least respect the structure-rules of language, even if there are performance errors. However, this minimal proposal does not justify the claim that structure-rules are psychologically real; although it might be possible that such rules might also be or function as processing-rules and hence be psychologically real. The take home message of this section is that even if this were the case, our ordinary talk of knowing the language does not substantiate the linguists' view that those rules are represented within speakers or signers. Nor, on the other hand, does it support the view of some philosophers that facts about meaning are known or internally represented within speakers or signers. (p. 175)

Built-in vs. Represented Rules

According to the **computer metaphor of mind**, the mind is a computer, even though its functional architecture is nothing like a digital computer. Just as a computer has a CPU or central processing unit which carries out almost all the computations, so the locus of a person's thought and propositional attitudes is often called the "central processor". This is where it is wrongly supposed that a person's knowledge of a language would be located if it were like ordinary knowledge-that. Chomskyan linguists, however have a very different locus in mind when they talk of "tacit knowledge" of linguistic rules. According to them, linguistic rules are represented in a distinct **module of the mind**² – a distinct mental "organ" or "language faculty", that is largely inaccessible to the central processor. (Chomsky, 1980 p 40 - 47) So, according to the authors, when linguists talk of a speaker or signer having tacit knowledge or "cognizing", the rules of their language should not be taken as attributing normal propositional attitudes to them. Instead, linguists imply that they have a representation of the rules, but not in the central processor.

Under this rubric, the authors cast doubt on the idea that the structure-rules of language are represented in the speaker or signer *at all*, whether in the central processor, a module or by extrapolation from the previous section. They are at pains to emphasise that the processing-rules that govern the exercise of a competence need not be represented, so that *even if* the structure-rules of a language happen to be processing rules, they need not be represented.

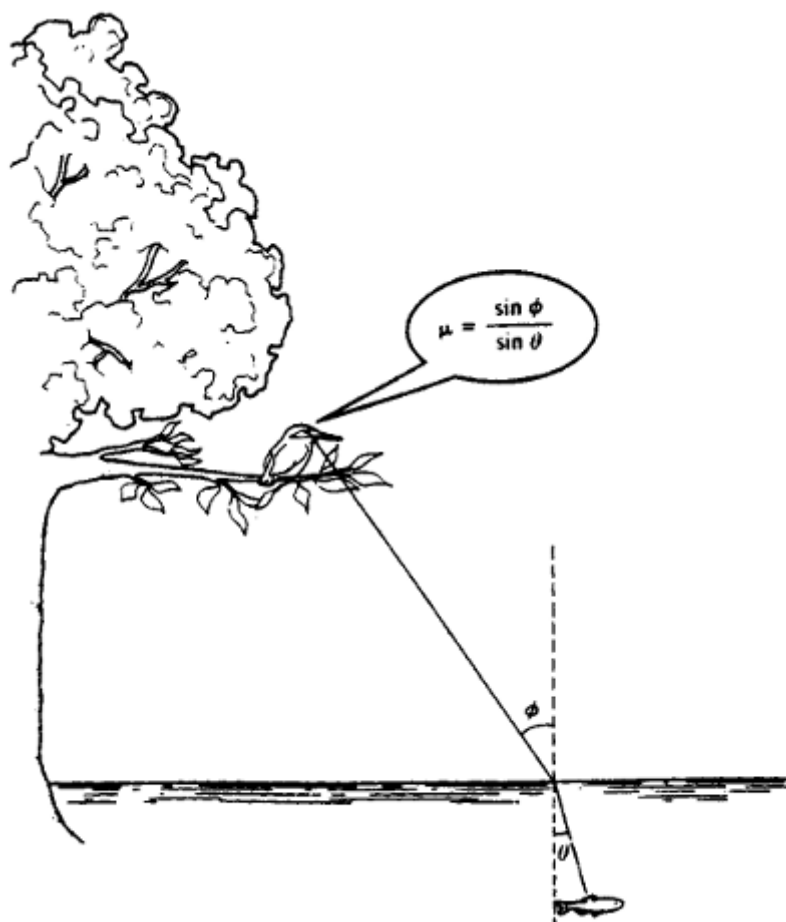
Firstly, any system has to have some rules that govern it without being represented and applied. This follows from an infinite regress argument. Suppose that there is a rule that governs by being represented and applied, then there must be another rule that governs the application. This rule might also govern by being represented and applied, but then its application must also be governed by a further rule, and so on. If this regress is to end, and any rule is to govern by being represented, there must be some rules that govern without being represented. Given any system that is rule governed, it is an empirical question whether the system represents and applies the rule or whether it is simply built into the system without being represented. (p.176)

² In a literal sense, different faculties of the minds of different animals are carried out by distinct anatomical regions of their brains. *E.g.* In humans, vision, hearing, the planning and execution of movement *etc.* are carried out by distinct anatomical regions of the brain, and in that sense can be correctly be called modules. If one such region is damaged, the faculty supported is typically compromised or lost. See Steven Mithen (1996) for an extended discussion of the modular mind.

Digital computers illustrate the authors' point. Software rules loaded into RAM can govern the operations of the computer, only because there are rules built into the hardware that enable them to do so.

Consider the following systems governed by processing-rules that are not represented (or known) in or by the system:

- I. Pocket calculators, as well as mechanical ones like adding machines and comptometers, the operations of which are governed by the rules of algorithms for solving arithmetic problems. These rules are built into the mechanisms of the system so that whether adding, subtracting, extracting square roots *etc.*, the machine goes through an electrical or mechanical process in accordance with the rules, but without representing these rules. They do however represent numbers and mathematical operations and they operate on these representations according to hardwired rules built into their design.
- II. Look at the cartoon below, redrawn after Boden (1984 p. 153).



The kingfisher catches fish by diving into the water below. Because of the refraction of light as it passes from one medium, the denser water, into the less dense air, the light bends so that a fish appears at a certain angle relative to the vertical from where it actually is under the water. Therefore, the kingfisher does not aim its dive directly to where the fish appears to be, but makes allowance for the refraction of light by adjusting the angle of its dive. The

point of Boden's cartoon is this: the kingfisher does not tacitly represent the Law of Refraction a.k.a. Snell's law:

$$\mu = \frac{\sin \phi}{\sin \theta}$$

where μ is the ratio of the refractive indices for a water and air, (which it tacitly knows) and where θ and ϕ are angles of incidence and refraction to the normal (perpendicular to the surface), and from which it can calculate the angle that it must dive, ϕ . It is vanishingly unlikely that the kingfisher does anything of the sort. Instead the "rules" of a successful dive are built-into it by "Nature", or rather natural selection.

- iii. Think next of the waggle dance of honey bees described in Classic Text 17. While it may be that the bee represents the source of its food, there is no reason to believe that it represents the rules governing its dance.
- iv. We have already considered the vast range of human skills from walking to, swimming, to riding a bike, to catching a ball, to writing a note. We don't think about the rules that govern these activities, except when we are learning them, very laboriously. In fact, performing them in the way we first learned these tasks would be extremely inefficient. They may not be in-built, but by the time we have mastered them, we should have internalised them so that they are indistinguishable from "muscle memory" as it were.
- v. Finally, consider the difference between a computer running a word-processing program like Microsoft Word and a dedicated word-processor like those developed by Wang Laboratories, dominant in the 1970's and '80s. The computer is governed by the rules of the program loaded into RAM and operates by applying them. On the other hand, the rules governing the dedicated word-processor are hardwired as part of its ROM, and not represented. According to the authors, the computer is analogous to a person who knows that certain rules are an algorithm for adding, say. The dedicated word-processor is analogous to a person who knows how to add by route without having any propositional knowledge of the rules for doing so.

It is possible to generalise from this example. Any processing rule that governs the behaviour of an object, by being represented and applied, could govern that of another object by being hard-wired, without being represented. If there are rules for processing information, then either way, incorporating them in an object enables the behaviour of the object to be explained in terms of the flow of information. Therefore, which explanation applies is a further empirical question about the way it is incorporated. (p. 177 - 178)

In a nut shell, the behaviour of a device, a human or another animal can be governed by a hardwired rules that it doesn't represent. Therefore, even if structure-rules of language are processing rules, they need not be represented. Perhaps, suggest the authors, they are more like the rules governing a calculator, a kingfisher, a bee and some human behaviours which are not are not plausibly represented.

There is an *a priori* reason believing that language processing-rules are not represented, at least once they are mastered. In general, representing rules allows for *flexibility*, whereas in-built rules allow for *speed* of their use. Language processing, the authors declare, is a paradigm of speed without

flexibility, though there are times when we do need to slow down and choose our words and sentence construction more deliberately.

The authors suggest that the literature (uncited) seems to suggest that the representationalist view of competence is the default position implied by the rejection of behaviourism; however this simply does not follow from their discussion. According to Behaviourists, there is nothing mental beyond dispositions to respond in certain ways to certain stimuli. (Recall the “Blackbox” depiction in Classical Text 11) For them, the mind, including linguistic competence, is just an arrangement of input/output functions. According to the authors: “This reflects the crude empiricist dislike of things unseen; an unwillingness to posit theoretical entities that explain the observed phenomena”. Chomsky, on the other hand, embraced theory and was historically the first to debunk Skinnerian behaviourism. (Chomsky, 1959) He believed that the only way to explain human behaviour was to ascribe to them complex inner states interacting with each other, as well as various stimuli, to produce responses. The authors agree, but with the caveat that although much of the complex inner interactions may involve in-built rules, they are not represented. (p. 178 -179)

Simply rejecting behaviourism does not vindicate the representational view, nor does the authors’ discussion show that the structure-rules of language *are not* represented in speakers or signers. A lot more theoretical work would be needed to be done in order to establish that they are represented, and if so, what functional role they might play by being represented.

Noting the above considerations, Gilbert Harman (1967) raised the following problem for *any* view that takes competence in a language to require that its rules be represented. Presumably, such a representation must itself be in a language. But what then is it to be competent in that more basic language? If the more basic language is the same as the original language then we are trapped in a vicious circle, or infinite regress. If instead, we suppose that the more basic language is in some other language (*e.g.* Mentalese), then its rules also require representation. This would require a still more basic language, and so on... The only way to escape this vicious circle or infinite regress is to accept that we can be competent in at least one language without representing its rules, and if so, why not allow that it be the original spoken or signed language?

Some linguists, particularly Jerry Fodor (1975), whom we met in Classic Text 19, had an answer to this question, with which we only partially agree. According to Fodor, there are good reasons for supposing that *learning* a language requires representing its rules, agreed, and hence competence in another language, not agreed. Native English speakers must learn that the past tense of the irregular verb ‘go’ is ‘went’ not ‘goed’. And they learn that rule in English, not in some other language like Mentalise. Similarly, a boy who comes back from a magic show tells his mother, “He disappeared her!” He is following a rule, but he must learn the conventional one, and not in another language. (p. 179)

Cartesian Intuitions

We have discussed the Cartesian assumption several times. Here particularly, it is the assumption that a person’s linguistic competence gives them privileged access to facts about meaning exemplified in their intuitive judgements. Unlike other facts that depend on the world to be true, intuitive judgements of this sort do not. It is enough to simply examine the contents of one’s mind. According to the authors, “It is hard to see how reflection on what competence with a term makes

available “inside the head” could establish such “external” and highly theoretical facts as that certain relations determine reference”. Despite being a very popular assumption, most analytic philosophers have treated it with scepticism.

The authors do concede that the Cartesian assumption might hold for meanings constituted by relations “inside the head”, *e.g.* meanings of terms covered by description theories involving inferential relations among terms. Suppose that there is an internal relation to ‘writing instrument’ that really is part of the meaning of ‘pencil’. If Jane understands ‘pencil’ and thinks about one when she sees one, she might also infer that the thing she is thinking about is also a writing instrument. The problem for Cartesianism is that there is no guarantee that she will notice this relation. She may not be very good at introspection. But suppose that she does notice, then it is another problem for Cartesianism for her to believe that this inferential relationship is part of the meaning of ‘pencil’. This would be a fairly large *theoretical* step, and there is no reason to think that her competence alone is sufficient for her to make it. But, suppose that she does make it, then there is a third even more serious problem for Cartesianism. There is no *justification* for Jane’s belief, based simply in virtue of her competence. We, or she, have no basis for grounding her belief about meaning with any epistemic authority, conferring on it the status of *knowledge*. (p. 180)

Some linguists think they have solved these sorts of problems, but we have dismissed them before, along with the representational view of competence and behaviourism. What the authors consider in this section is whether the Cartesian view gets support from the role of the speaker or signer’s intuitive judgements in linguistic theorising. Linguists claim that the chief items appealed to in constructing grammars are intuitive judgements of competent speakers or signers about grammaticality, ambiguity, co-reference and so on. They argue that this is appropriate because such judgements are inferred by causal, rational processes, from a representation of the rules in the language module. Although the process is highly reliable, it is not perfect. There is some potential for performance errors. According to Fodor (1981), “We can use intuitions to confirm grammars because grammars are internally represented and actually contribute to the etiology of the speaker/hearer’s intuitive judgements”. (p 200 - 201) Corresponding to this view, we can think of the intuitive judgements “as the voice of competence”, as the authors put it. Speakers and signers have privileged Cartesian access to facts about their language in virtue of embodying representations of its rules. So, if there is such a thing as a “central processor”, the language faculty would not be entirely inaccessible to. (p. 181)

It is possible to construct an argument from the discussion above for the thesis that rules are really represented. It seems that linguists are right in placing their faith in linguistic intuitions. But according to their unstated argument, how could they be right unless such intuitions really are the voice of competence? How could the intuitions have the status of evidence unless they are the result of the Cartesian access to the grammar, and hence to a representation of the rules? It would help to have the details of their argument made explicit. How do we get from unconscious representation in the language module to conscious judgement (in the “central processor”), they would say?

Their argument is not a deductive one, it is simply an **inference to the best explanation**. Linguistic intuitions count as reliable evidence, and the best explanation of this is that they are inferred from rules of grammar represented in the mind of the language user. This is a handy explanation but, according to the authors, there are alternative, more modest views of linguistic competence and

intuitions. We have already considered the view, supported by evidence, that competence is an ability or skill, *i.e.* a matter of know-how, not know-that. See further discussion.

Questions about linguistic intuitions are not solely the concern of linguists. Intuitions play a large role in Science and Philosophy. Consider a fossil hunter in the field. She catches the glint of a white stone sticking out from among the grey rock, and thinks “antelope mandible”. This is a quick, intuitive judgement that is unreflective. She may be quite sure, but she may not be able to explain how she knows. An audience member once asked a famous local palaeontologist how it was that he made so many “lucky” finds. He replied that the more he studied, the luckier he got. Palaeontologists’ intuitions, of course, like intuitions of other scientists, are provisional and not purely a matter of luck. According to the authors, they “*are empirical, theory-laden and almost always incomplete responses to worldly phenomena*”. [Original emphasis] (p. 181)

We trust a person’s intuitions to the degree that we have confidence in their expertise, but sometimes ordinary folk may be as expert as anyone. In the absence of specialist knowledge, intuitions laden with folk theory may be passable explanations. This is probably true for a range of psychological phenomena, although every year more of our folk psychological notions are subject to testing and revision in the light of evidence, especially in the long haul. (p. 181 - 182)

According to the authors, “the alternative view of the limited and theory-laden role of intuitions does not need to be modified because of the special situation in the philosophy of language and linguistics, ... where what we are investigating are the products of human skill or competence”. This situation arises with other competencies that we may want to investigate, *e.g.* tennis shots or chess moves. Someone who has the relevant competence has ready access to a great deal of information that is to be explained, much of it implicit. Thus, competent languages users produce tokens that overwhelmingly do refer successfully, are grammatical, and may be true in certain circumstances. They do not have to seek out special information because their competence ensures that they are at hand. Moreover, they are surrounded by similarly competent people who produce their own successfully referring tokens. The authors cite Chomsky (1988 p. 46) when he says, competent speakers “can easily construct masses of relevant data and in fact are immersed in such data”. (p. 182)

Speakers and signers are therefore well placed to become experts about the data: They have simply to reflect on their own performance and that of their linguistic peers. But this does not guarantee that they *will* necessarily become experts. A person can be highly competent and yet hardly ever reflect on the output of their performance; consider the casual cyclist. Even the professional athlete may reflect little on their own competence, which is why great players do not always make for great coaches. The fact that they possess a competence to an excellent degree does not guarantee that they can articulate and communicate the elements of that competence; knowledge-how is not knowledge-that. The authors caution:

Even if a competent person does become an expert, there is no reason to believe that her opinions carry a special authority simply because she is competent; there is no reason to believe that competence gives her Cartesian access to *the truth*. She is privileged in *her ready access to data*, not in *the conclusions she draws from the data*... The conclusions of the competent, just like those of the incompetent, are empirical responses to the phenomena and open to question. (p. 182)

Think of any manual skill, such as touch typing, playing a musical instrument, using a computer mouse, plaiting one's hair. Ask a touch typist about the placement of her fingers above the keys. It is likely she may have no ready answer. She may be an expert typist, but she is unlikely to be an expert on the "theory of typing". Still, she may think to herself, "How do I type a 'k'?" and may go through the mental motions of doing so. She might then report on what she observes: 'k' is typed by the middle finger of the right hand in the rest position. The only privilege her opinion enjoys is based on being an expert typist. (p. 182 - 183)

The authors' discussion does not disprove Chomsky's hypothesis that there is a rational causal relation between linguistic competence and speaker or signer intuition. However it does provide an alternative hypothesis, to wit that those intuitions are empirical, theory-laden responses to linguistic data which to competent language users have ready access. And this alternative hypothesis is sufficient to explain the fact that language users generally have linguistic intuitions which are rightly regarded as reliable data. (p. 183)

If this alternative hypothesis is correct, then linguistic intuitions *are* good evidence for linguistic theory. However the linguistic intuitions that we should rely on the most are not folk intuitions but those of linguists themselves. Linguists are skilled at identifying items with certain syntactic properties, just like biologists are skilled at identifying things with certain biological properties, better than folk or amateur biologists. However, the intuitions of linguists are only indirect evidence. The direct evidence is provided by the reality of sentences that people produce and understand. Whether the nature of the sentences we use are partly constituted by the syntactic properties we posit is a theoretical question to be decided by the evidence.

According to the authors, the linguistic intuitions of the educated are very robust: they do not vary much from person to person or from one time to another. This is consistent with both the Cartesian and the alternative view. Language is a salient and important part of the human environment. It is not surprising therefore that we should be fairly reliable gauges of the most obvious features about it. We are probably similarly reliable about other important features of our environment.

The alternative view of linguistic intuitions is not as demanding as the Cartesian view; it is more economical in two different ways. It treats these, like intuitions in general, as theory-laden opinions derived from ordinary empirical enquiry. Secondly, it treats them naturalistically. The alternative view accommodates the evidential role that intuitions play in linguistics, but does not require that they be drawn from an underlying representation of linguistic rules. Therefore, the evidential role of intuitions does not support the representational view of competence. (p. 183)

According to the authors, the official view (of linguists) is that linguistic intuitions are derived from an underlying representation of grammar; that linguistic concepts are highly theoretical and have their origins in hard-won empirical theories, and cannot possibly be attributed to ordinary speakers or signers. (p. 183 - 184.)

It is interesting to note Chomsky's scepticism in this regard towards "contemporary philosophy of language" and its practice of "exploring intuitions about the technical notions 'denote', 'refer', 'true of', etc." He claims that there can be no intuitions about these notions, just as there can be none about 'angular velocity' or 'protein'. These are technical terms of philosophical discourse with a stipulated sense that has no counterpart in ordinary language." (1995b p. 24) We disagree about

angular velocity for one. Anyone who has spun themselves around on a swing or performed a pirouette will tell you that they have plenty of intuitions about angular velocity and angular momentum. Nevertheless, the same scepticism is relevant to linguistics, and for the same reason. All the terms of linguistic theory are both technical and theory-laded. Some, like ‘grammatical’ and ‘sentence’ occur in ordinary discourse, but this need not give intuitions employing these terms the privileged status that they would have from being the voice of competence. Such intuitions could simply be the outcome of years of empirical folk linguistics. (p. 184)

“The Only Theory in Town”

In Classic Text 22 we asked whether Darwinism was the “Only Game in Town”. Here the authors mean something similar but this time about the representational view of language. Despite having no evidence for the representational view of linguistic competence, the authors think that many linguists are drawn to the representational view by two inferences to the best explanation, one about language parsing, the other about language acquisition, that makes it seem that the representational view is “the only theory in town”.

These linguists believe that we can explain how humans parse language if we view it as a rational process of hypothesis testing about people’s speech or signing input, with no other way to explain it. On this view, if the psycholinguistic evidence showed that a certain rule was at play in the process (and was psychologically real), then it would have to be represented. After all, hypothesis testing *is* a process of testing one representation against another. (p. 184)

Similarly, these linguists believe that the acquisition of language is a rational process of hypothesis testing for the language of a child’s community, with again, no other way to explain it. On this view, any linguistic rule that is at play in language learning has to be represented. So if the evidence of acquisition (see below) showed that a certain rule was innate, it would have to be innately represented. The authors quote Fodor:

... *no* account of language learning which does not thus involve propositional attitudes and mental processes has ever been proposed by anyone, barring only behaviorists. (1981, p. 194)

Even now, we still don’t have an empirical account of these matters; therefore, the authors think that these arguments are premature. On the one hand, the representational explanations of language parsing and acquisition provided so far are insufficiently precise, complete and successful to be candidates for an inference to the best explanation. On the other hand, it is possible that more “brute-cause” mechanisms may be at work. Consider language parsing. This is a skill involving the processing of certain inputs, but then so is catching a ball or riding a bike... and most significantly, thinking. We still don’t know how these processes work, at least not in detail, but it is surely plausible to think that the rules that govern them are simply built-in (once acquired) without being represented. They certainly have the mark of “hardwired” processes: speed and inflexibility. Consider language acquisition next. Clearly, innate but unrepresented rules enable us to acquire non-linguistic abilities such as walking, catching a ball and thinking. Yet we do not know in any detail how we do so. If we did, then perhaps we could similarly explain language acquisition. (p. 185)

The authors point out that it would be rational to accept that theories of language parsing and acquisition must be representational if we had good representational theories of them and no hope

of good nonrepresentational theories forthcoming. This is not the case at present. We still know very little about linguistic parsing and acquisition. (p. 185)

Are Syntactic Rules Built-in Processing-rules?

If the structure-rules of language, *i.e.* its syntactic rules, are unlikely representational, could they be psychologically real in any other way? Earlier in their chapter, the authors indicated that it should be uncontroversial that such rules should be respected by the competence and its processing rules. But it does not follow from this minimal proposal that syntactic rules are psychologically real. Secondly, the authors argued that such rules are probably more akin to the syntactic rule of thought, and to that extent are psychologically real. Linguists however, believe that such rules are psychologically real in the role they play in language processing. Although the representational version of this view is the most popular, there is another version, according to which, rather than being represented, syntactic rules could be built-in processing rules. (p. 185 - 186)

What support is there for this latter view? Firstly, the role of intuitions as evidence, discussed above, does not support this view any more than it did the representationalist view. Competent speakers or signers have first hand access to the output of their competence, and hence are in a good position to develop opinions about them, no matter what rules produce the output.

Secondly, the standard evidence appealed to in constructing a grammar, *e.g.* concerning grammaticality, ambiguity, coreference, *etc.*, do not support this view. The reason being, that this sort of evidence bares on the syntactic rules of the language in question, and does not show one way or another whether these structure-rules are also processing-rules.

Thirdly, what is still wanting is evidence of what is actually going on in the head during language processing, in other words, psycholinguistics. In principle, this sort of evidence should be able to support the view that certain structure-rules of language are really processing-rules, *e.g.* that transformations in voice, say from active to passive, or mood, say from indicative to interrogative, *etc.* actually take place during processing.

In the first edition of their book, the authors posed the problem by pointing to the lack of evidence for *which* set of syntactic rules are psychologically real. If it is possible to construct one grammar for a language, it is possible to construct others, which, though they might posit different syntactic rules, are, in a sense, equivalent. We would require certain psycholinguistic evidence, which we do not have, to resolve which syntactic rules, are, in fact, playing a role in linguistic processing. But the problem is more acute: we do not yet have *any* evidence that syntactic rules are processing-rules or that the rules of *any* grammar are psychologically real in this way.

The authors think that this lack of evidence is particularly pressing because they believe that syntactic rules are simply of the wrong sort to be language processing-rules. If they are right, then the relation between thought and language is really a matter of "translation". In language production, a thought in Mentalese is translated into English, say, and in parsing the reverse occurs. Consider, for example, the syntactic rule governing the transformation rule for yes-no questions, which govern the structure of the outputs. These processes seem very unlikely suited to govern the processes of producing them. (p. 186)

What does the psycholinguistic evidence show? According to the authors, the evidence shows which syntactic rules the processing-rules *respect*. In other words, it provides evidence that the syntactic rules hypothesised by a speaker or signer's grammar are indeed rules of their grammar. So, although it provides evidence of the authenticity of the grammar, it does not provide any evidence of the psychological reality issue, other than the uncontroversial minimal one above.

Finally, there is evidence from language acquisition, discussed in the authors' section 8.10. It seems that our processing-rules are innately constrained to respect universal syntactic rules of human language. But it doesn't follow that those syntactic rules are processing-rules.

According to the authors, Chomsky has a stock response to doubts about the psychological reality of language. Grammar is a typical scientific hypothesis, *i.e.* an inference to the best explanation. As such, we should take it as descriptive of reality, just as we would for any other for any other scientific hypothesis. And the authors have, above, but they ask: What reality is it descriptive of? Their chief claim is that it is descriptive of the rules of language, and in a minimal way descriptive of competence in the language and the structure of Mentalese. But beyond that, they doubt that it is otherwise descriptive of psychological reality. (p. 187)

Linguistic Competence as a Translation Ability

In this section the authors develop their non-Cartesian view of competence. Accordingly, language does not consist in the speaker or signer's semantic propositional knowledge of or representation of rules, instead it is a set of skills or abilities, some of which are grounded in the external world. Understanding a language then, no more involves possessing propositional knowledge of a semantic sort about a language or representing its rules, than riding a bicycle involves possessing propositional knowledge of a mechanical sort about riding or representing the mechanics of riding. The development of this view follows on from their discussion of the priority of thought over language in their chapter 7 (our Classic text 33).

The most theory-neutral take on competence in a spoken, signed or written language is that it is the ability to produce and understand sentences in the medium of sound, gestures or inscriptions and meanings of that language. The folk idea which they endorsed previously is that speakers, signers or writers have meaningful thoughts which they express in language. This leads them to a more theory-laden view that competence is an ability to use the medium of the language to express thoughts with the semantic contents that the sounds, gestures or inscriptions have in the language. Therefore, competence in a language requires the conceptual competence to have thoughts with meanings expressible in the language.

The authors' acceptance of the language-of-thought hypothesis previously, leads them to an even more theory-laden view of linguistic competence, *i.e.* the ability to translate sentences back and forth between Mentalese and the medium of the language, whether meaningful sounds, gestures or inscriptions. Therefore competence in a language requires competence to think in sentences of Mentalese that are expressible in the language. Since the language-of-thought hypothesis is conjectural, so must be the authors' view of competence on which it depends. (p. 188)

On their view, competence in Mentalese is at the core of linguistic competence. And just as the theory of linguistic competence should not be conflated with the theory of linguistic sentences, so

the theory of Mentalese competence should not be conflated with the theory of Mentalese sentences. By the theory of Mentalese sentences we mean the theory of their meanings, the properties in virtue of which those sentences, as parts of thoughts, play a role in explaining behaviour and informing us about reality. The theory of competence, on the other hand, is the ability to produce such sentences, and hence the ability to think. But see Stix (2004) which we cited in Classic Text 33.

The authors point out that the relation between linguistic competence and the Mentalese at its core is a complex one. Syntactic competence in Mentalese, which is the ability to combine words of Mentalese of various syntactic categories into sentences of Mentalese, is but one part. As argued above, whatever this ability involves, it surely does not involve representation of the rules of Mentalese in a meta-mentalese. Syntactic competence in the spoken, signed or written language, the authors believe, is the ability to translate back and forth between sounds, gestures and inscriptions with the syntactic structures of sentences of the language and those of Mentalese structurally similar enough to count as translations. This ability, they argue, must respect the syntactic rules of the language, without the processing-rules of this ability including any of those syntactic rules. Even less likely, they argue, does the ability involve any representation of those syntactic rules. (p. 188 - 189)

Lexical competence, or our competence with words, is another part of linguistic competence and the Mentalese at its core. Consider our abilities with the most basic words, those covered by pre-causal theories of reference borrowing and fixing discussed in Classic Text 25 ff. The authors ask us to assume, for the sake of argument, that we are working with a theory of reference fixing that is historical-causal rather than indicator or teleological. (Classic Text 33) Also, let us assume that a natural kind term like 'Protea' and its Mentalese counterpart, PROTEA, are words covered by this theory. According to the authors, competence with PROTEA consists of having thoughts that are appropriately linked, directly or indirectly, with Proteas. So, my doppelgänger on Twin Earth will not have our competence, even if he is otherwise identical with me, because his thoughts are linked with different plants, even if they are identical to ours.

The direct links, including perceptual confrontations with the plants, are groundings in Proteas. However, for most people, especially overseas, the links are indirect, stemming from being appropriately linked to the network of causal chains for 'Protea', including other people's perceptual abilities, as well as reference borrowings and groundings in Proteas. On the authors' theory then, competence with 'Protea' is the ability to translate back and forth between 'Protea' and PROTEA, a competence that a person has in virtue of being part of the causal network for 'Protea'.

Next, consider words that cannot be borrowed but are covered by description theory of reference fixing. The word 'bachelor' and its mentalese counterpart BACHELOR are familiar examples. Competence with BACHELOR consists of associating it with ADULT, MALE and UNMARRIED, and a functional-role consisting of a disposition to infer from X is a BACHELOR to X is ADULT, X is MALE, and X is UNMARRIED. According to the same theory, competence with 'bachelor' is the ability to translate back and forth between 'bachelor' and BACHELOR.

The authors theory of competence with other sorts of words that are covered by combinations of various theories of reference fixing and borrowing will be combinations of their ideas above. (p. 189)

Finally for this section, the authors note that competence in using a language can be mediated by abilities that are not specifically linguistic. Recall how clarifying the context of a remark helps remove ambiguity. Without effort we may determine accurately that something is implied by a sentence, over and above what is said or signed. To do so, we must determine the communicator's intentions, but this need not draw upon any specific linguistic skills. (p. 190) Nonverbal behaviour or Body Language, as it is popularly known, includes facial expressions, non-signed gestures, posture, and tone of voice. According to HelpGuide.org, far from just an accessory to speech, these wordless cues form the foundation of human interaction, transmitting attitudes, emotions, and intentions in real time.

Chomskyan Nativism

In the final section of their chapter, the authors revisit and elaborate on the question of innateness. We have discussed Chomsky's claim that there are grammatical rules common to all languages *i.e.* "universal grammar" (UG), innately known by all language users. It has been argued that this nativism requires an innate language in which to represent these rules; hence innate Mentalese. Recall the objection by Harman, above, to the representational view of competence, in contrast to Fodor's claim that the innate language can represent *all* rules of any public language. Indeed, Fodor goes further, claiming that the innate language is rich enough to represent not just grammatical rules, but *anything* that a public language can represent.

The authors discuss Chomsky's claims about innateness that he and others regard as forcing a reassessment of the traditional debate between empiricists and rationalists over "innate ideas". Historically, rationalists regarded many concepts as innate, while empiricists denied this. It is thought that Chomsky's nativism strongly supports the rationalist position. In considering nativism, the authors distinguish a range of different positions that are not adequately distinguished in the literature.

Firstly, there is what we prefer to call the *default* position. Those who occupy this position claim that because of their innate neurological make up, human children are innately predisposed to learn languages, given the appropriate linguistic input. Human adults are unable to learn a language if they have never been exposed to language before puberty, *e.g.* feral children. (See Critical Reasoning 12). Why most non-human animals never acquire spoken language has as much to do with their different neurological makeup as their anatomically different vocal tracts which, for them, make articulated speech impossible. (p. 190)

Secondly, there is a set of four theses or positions that the authors regard as more *interesting* than the default position:

1. According to the minimal interesting nativist thesis, humans are innately disposed to learn languages that conform to UG. The authors describe this as the initial state "respecting" the rules described by UG – this in contrast to the final state of competence respecting the rules described by the grammar of the language learned. As pointed out earlier, this much about the final state should be uncontroversial. Not so for the initial state, but if it is right, the universality of UG-rules is not down to chance, but determined by our biological heredity. In other words, it is "in our genes".

Note that 1. above does not say *what* innate language-constraining rules cause us to respect UG rules, nor *where* they reside in the human brain and its mind. 2 below answers the “what” question, while 3. below addresses the “where” question.

2. The initial state represents UG-rule *because it embodies those UG-rules*. It is not that we inherit *some* language-constraining rules that cause us to respect the UG-rules, rather we inherit UG-rules themselves.

The authors suspect that linguists find the move from 1 to 2 easy because they conflate a theory of syntax with a theory of competence. Recall that the conflation of the two encourages the view that the psychological reality of grammatical rules comes *gratis* with the grammar. Similarly, it encourages the view that the psychological reality of universal grammatical rules comes *gratis* with universal grammar. If this really did come *gratis*, then the idea that the initial state respects the UG-rules because they are innate would be very appealing. But the psychological reality of either does not come *gratis*. It requires psychological evidence.

3. The initial state that represents UG-rules is a *language-specific faculty*, not a *general* learning device that makes all learning possible. This addresses the “where” issue:

- **Broca’s Area (Inferior Frontal Gyrus):** Responsible for the motor production of speech and the processing of grammar and syntax.
- **Wernicke’s Area (Posterior Superior Temporal Gyrus):** Crucial for language comprehension and the processing of word meaning (semantics).
- **Angular Gyrus & Supramarginal Gyrus:** Located in the parietal lobe, these areas integrate auditory, visual, and somatosensory information. They are vital for reading, writing, and connecting words to ideas.
- **Arcuate Fasciculus:** A thick bundle of white matter nerve fibres connecting Broca’s area to Wernicke’s area. It allows the brain to link what is heard to what is spoken.

4. Language-constraining rules are UG-rules and reside in the language faculty. This addresses the questions of “what” and “where”.

Theses 1. to 4. above do not entail any innate *knowledge* or *representation* of the linguistic rules. Probably, they are simply built-in. See above. According to the authors, the relation of these theses to the traditional debate over innate ideas is unclear. At any rate, these theses remain at the periphery. Chomsky and his followers go significantly beyond them, by requiring that linguistic rules be innately know and represented in the mind. This move makes theses 2, 3 and 4 above much more interesting; however just because something is interesting doesn’t necessarily make it true. According to the authors, these are theses that no empiricist, traditional or contemporary, could allow. (p. 191 - 192)

That linguistic rules are innately know and represented in the mind is something we have already argued is highly unlikely, or just not the case. Therefore, we pass over the remaining discussion of Chomsky’s version of the theses.

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