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PRE-LINGUISTIC AND POST-LINGUISTIC CONCEPTS

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I want to discuss and, if possible, reconcile two views of the nature of concepts which appear, superficially at least, to be radically opposed to one another. I shall call these two views of the nature of concepts respectively the *linguistic philosophical* view and the *pre-linguistic psychological* view.

The Linguistic Philosophical View of Concepts

What I call the linguistic philosophical view is in fact the view of one particular contemporary philosopher, Peter Geach, as set out in his book *Mental Acts* of 1957. Geach's account of concepts in *Mental Acts* has two components, a positive component and a negative component. The positive component of Geach's theory is expressed in the following quotation from pages 12-13 of the book.

It will be a *sufficient* condition for James's having the concept *so-and-so* that he should have mastered the intelligent use (including the use in made-up sentences) of a word for *so-and-so* in some language. Thus: if somebody knows how to use the English word 'red', he has the concept of red; if he knows how to use the first person pronoun, he has a concept of *self*; if he knows how to use the negative construction in some language, he has a concept of negation.

The negative part of Geach's theory of concepts appears in Chapter 6 in which he criticises and totally rejects what he calls "abstractionism", the doctrine that

a concept is acquired by a process of singling out in attention some one feature given in direct experience - *abstracting* it - and ignoring the other features simultaneously given - *abstracting from them*" (Geach 1957 p. 18).

According to Geach, this view of concept formation is

wholly mistaken; ... no concept at all is acquired by the supposed process of abstraction.

Reduced to its basic essentials, Geach's argument against abstractionism is that it provides no account of what for him is the essence of having a concept, namely, the ability to use a word correctly in constructing

an indefinite number of well-formed sentences containing that word. This theory of what is involved in having and acquiring a concept has three important consequences:

- (1) *Only a linguistically competent organism can have a concept.*

Animals, with the doubtful exception of apes who have been taught a human sign language, and pre-linguistic children have no concepts, since there are no words whose use in constructing sentences they have mastered; by the same token we cannot say, as Piaget (1923/1926) wants to do, that a child who uses words in a way that is deviant by the standards of correct adult usage has a *different* concept from that possessed by the adult. To the extent that the child's usage coincides with that of the adult, it possesses part of the concept. In so far as its usage deviates, it lacks that part of the concept.

- (2) *Concepts exist only in so far as they are embodied in language.*

They exist only in so far as the words that express those concepts are used by speakers in constructing sentences in the language and those sentences are understood by listeners who are competent interpreters of the language.

- (3) *Every word which forms part of a language 'stands for' a concept.*

Geach's theory involves a rejection of the traditional view which goes back to Aristotle according to which a concept is a principle which human beings employ when they classify features of their environment into universals or kinds of thing, whether object, event or state of affairs. Translated into linguistic terms, this traditional view implies that only what are variously referred to as 'general terms', 'lexical words' or, to use Skinner's terminology, "tact words", i.e., nouns (other than proper names) verbs, adjectives and adverbs, stand for concepts. Syntactic or, to use Skinner's term, "autoclitic" words like *self* and *not*, to use two examples that Geach gives, do not stand for concepts, because their role or function is to give the sentence its structure, rather than pick out a recurrent feature of the environment. Geach's theory of concepts ignores this distinction both in his insistence that to have a concept is to be able to use a word - any word - correctly, and in his rejection of

¹For this use of the term 'tact', see my ["Three senses of the word 'tact'"](#) (Place 1985).

abstractionism which, if it has an application at all, can only apply to learning the meaning of general terms, lexical or tact words and not to learning the meaning of syntactic or autoclitic words.

It will be evident from this that both in his rejection of the traditional association between concepts and universals and in his rejection of abstractionism, Geach's view is an untypically extreme position. There are, nevertheless, two respects in which it is typical of the view of concepts taken by philosophers in general and linguistic philosophers in the post-Wittgensteinian tradition in particular. What seems to be common to all philosophical views on the nature of concepts is that having a concept is seen primarily, if not exclusively, as a linguistic phenomenon which is consequently peculiar to human beings. Thus, for Aristotle the one thing that distinguishes the *intellectus agens* or rational soul which, he thinks, is an exclusively human possession is the ability to form concepts by abstracting universals from the particulars in which they are embedded. Because they possess only sensitive and vegetative souls, "brutes", as Locke puts it, "abstract not" and, hence, for Aristotle have no rational souls and that, according to this view, is why they are dumb - unable to talk.

Where Geach's theory dovetails neatly with the linguistic tradition of philosophy is in providing a rationale for what is known as 'conceptual analysis', the technique which is used by philosophers in the linguistic philosophical tradition to throw light on the meaning of words by studying the kind of sentences in which they naturally occur and the position in those sentences which they occupy. Clearly a theory like Geach's, which emphasises the way words are used in the process of a sentence construction as the key to the nature of concepts, is very congenial to such a way of trying to throw light on the concepts for which those words and expressions are said to stand.

The Pre-Linguistic Psychological View of Concepts

What I am calling the pre-linguistic psychological view of the nature of concepts differs from what I am calling the linguistic philosophical theory in that, instead of representing the view of one particular individual, it is a composite or amalgam of a number of psychological traditions and individual contributions by individual psychologists of which the following are representative rather than exhaustive. Thus, in order of publication, we have:

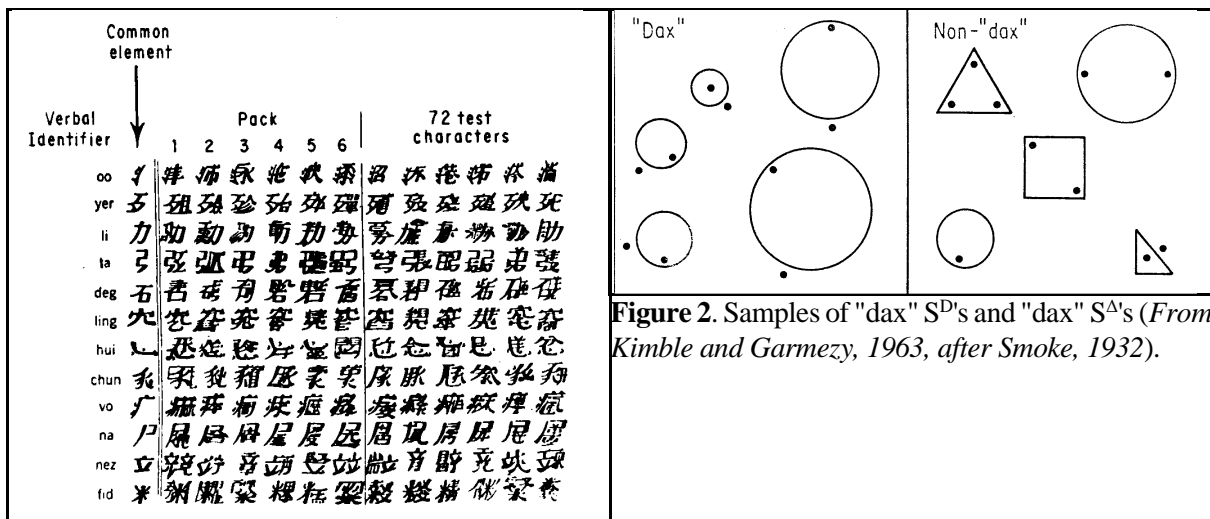


Figure 1 The 144 Chinese characters used by Hull (1920) to study concept acquisition.

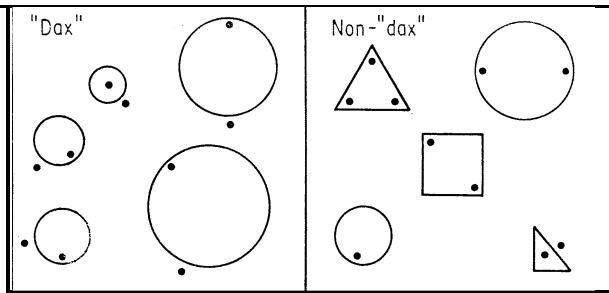


Figure 2. Samples of "dax" S^D 's and "dax" S^A 's (From Kimble and Garnezy, 1963, after Smoke, 1932).

1. The tradition in the study of human concept formation which was initiated by Clark Hull's (1920) study of the human subject's ability to extract a common radical from a set of Chinese characters (Figure 1), followed by Smoke's (1932) study from which the Dax example shown on Figure 2 is ultimately derived,
2. the tradition of studying generalisation and discrimination learning in animals which goes back to Pavlov (1927) and was developed through Hull's (1943) concept of the "gradient of stimulus generalisation" and Skinner's (1938) account of discrimination learning in terms of the contrast between positive instances (S^P) and negative instances (S^A).
3. The somewhat different tradition within animal discrimination learning studies initiated by Lashley's (1929) classical study of shape discrimination in the rat - the definitive experimental refutation of Locke's claim that "brutes abstract not".
4. A. W. Wolters' (1933) paper on 'Conceptual thinking' in the *British Journal of Psychology* which introduced the notions
 - (a) that having a concept is a disposition, and
 - (b) that the pre-linguistic concepts of animals consist in the propensity to respond to things of a kind in ways peculiar and appropriate to things of that kind.

5. Piaget's (1923/1926, etc.) studies of concept development in children and the distinction that he draws in his later work between the pre-linguistic concepts of animals and children (*schemata*) and the linguistic concepts of older children and adults.
6. The tradition of studying the use of concepts in classificatory behaviour by means of the Goldstein-Scheerer (1941) Object Sorting Test, later developed by Lovibond (1954) as a measure of Norman Cameron's (1938) concept of *over-inclusive thinking* which Lovibond interprets in Pavlovian terms as "over-generalisation".
7. Berlyne's studies of curiosity behaviour in the rat which culminated in his book *Conflict, Arousal and Curiosity* (Berlyne 1960),
8. Broadbent's (1971) book *Decision and Stress* in which he assigns to what in a previous book (Broadbent 1958) he refers to as the "*limited capacity (information- processing) channel*" the function of *categorizing* the current sensory input on the basis of the "evidence" (sensory experience?) supplied by the selective attention mechanism,²
9. The tradition which stems from Nick Humphrey's (1974) observation that the rhesus monkey, Helen, who had had virtually the whole of her striate cortex surgically removed

after years of experience . . . never showed any signs of recognising even those objects most familiar to her, whether the object was a carrot, another monkey, or myself." (p. 252),

which is continued by Weiskrantz's (1986) demonstration that the effect of lesions of the striate cortex in humans is to abolish visual conscious experience in the affected part of visual field, culminates in Cowey and Stoerig's (1995; 1997) demonstration that the same is true in the monkey, and which together shows that the function of the so-called "dorsal pathway" (V1-V5-infero-temporal cortex) is to assemble what Broadbent (1971) calls the "evidence" on which the categorization of problematic visual inputs is based (Place forthcoming).

² Broadbent draws a distinction between two processes (a) *pigeon-holing* in which a non-problematic input is routinely assigned to an existing category, and (b) *categorization* in which a new category is formed or the boundaries of an existing category are modified so as to accommodate a new instance. However, if, as the "blindsight" evidence suggests, the function of the selective attention mechanism is to ensure that only problematic inputs are presented for processing to the limited capacity channel, thereby allowing the brain either to ignore those that are non-problematic or route them automatically to output without the need for any kind of conscious processing, the need to postulate a process of pigeon-holing to deal with non-problematic inputs disappears.

10. The research tradition within behaviour analysis which stems from Murray Sidman's (1971) identification of the phenomenon of stimulus equivalence in human subjects. Although the precise nature of the relationship is still controversial, recent research (Dugdale and Lowe 1990; Place 1995/6; Horne and Lowe 1996) shows beyond doubt that the child's development of the ability to attach names to concepts is associated with the spontaneous development of patterns of generalisation as a consequence of discrimination training which have not yet been convincingly demonstrated in infra-humans.

The common thread running through these research traditions is an idea which, though conceding a key role to concepts in language, stands in polar opposition to three features which are central to the linguistic philosophical view as expounded by Geach:

- (a) the view that there are no concepts prior to language,
- (b) the view that there are concepts corresponding [to] all parts of speech, and
- (c) the view that there is no such thing as the acquisition of concepts by a process of abstraction.

The pre-linguistic psychological position, by contrast, holds

- (a) the view that having a set of concepts is a pre-requisite for the ability to recognise a stimulus event as an instance of an encounter with a thing of a certain kind, and that that in turn is a pre-requisite for selecting a response appropriate to a situation of that kind [~~when the problematic nature of the stimulus~~]
- (b) the view that, when incorporated into language, concepts correspond to general terms, whether expressed as nouns, verbs, adjectives or adverbs, not to other parts of speech,
- (c) the view that the process whereby new concepts are acquired and old ones modified in the light of new instances does, indeed, answer to traditional descriptions of the process of abstraction in which a common feature is extracted from encounters with a variety of instances (S^p) and contrasting non-instances (S^A).

This psychological view of the nature of concepts has a number of consequences which parallel those of Geach's contrasting philosophical view:

- (1) *Animals and pre-linguistic children have concepts.*

Since this view does not tie having a concept to any kind of linguistic ability, there is nothing to prevent us from attributing the possession of concepts to pre-linguistic children and animals.

(2) *Concepts are embodied in the classificatory behaviour of individual organisms.*

Since concepts are not tied to words as conventionally used within a verbal community, concepts in this sense have no existence apart from the classificatory behaviour of particular individuals, except in so far as the propensity to classify certain things as, say, edible or dangerous is built into the genetic constitution of the species.

(3) *Not all words in a language stand for concepts.*

Although the view of what it is to have a concept allows the possession of concepts by linguistic incompetents, having a set of concepts is seen as an essential pre-requisite for the acquisition of linguistic competence by those with the ability to acquire it. Thus the process of learning the "meaning" of a particular lexical or tact word is construed as a matter either of attaching a verbal label to a pre-existing pre-linguistic concept or of forming a new concept in relation to a word whose concept or meaning does not correspond to any pre-existing pre-linguistic concept. It follows from this that only general terms (lexical or "tact" words and phrases) can be said to stand for concepts on this view.

What the Two Views Have in Common

Having contrasted these two views of the nature of concepts, I now want to draw your attention to two related features which these two views have in common. The first of these is the fact that both what I am calling the linguistic philosophical view and what I am calling the pre-linguistic psychological view are committed to rejecting the notion that a concept is something like a mental image, an introspectible mental content that is in Locke's words "before the mind when a man thinks". There are two philosophical arguments both of which show quite conclusively to my mind that a concept cannot be a kind of mental image. The first is Bishop Berkeley's (1710/1962) *reductio ad absurdum* argument against Locke's theory of abstraction and abstract ideas in the Introduction to *The Principles of Human Knowledge*.

Whether others have this wonderful faculty of abstracting their ideas, they best can tell. For myself, I find indeed I have a faculty of imagining, or representing to myself, the idea of those *particular*

things I have perceived, and of variously compounding and dividing them. I can imagine a man with two heads, or the upper parts of a man joined to the body of a horse. I can consider the hand, the eye, the nose, each by itself abstracted or separated from the rest of the body. But then whatever hand or eye I imagine, it must have some particular shape and colour. Likewise the idea of man that I frame to myself must be either of a white, or a black, or a tawny, a straight, or a crooked, a tall, or a low, or a middle-sized man. I cannot by any effort of thought conceive the *abstract* idea above described. And it is equally impossible for me to form the abstract idea of motion distinct from the body moving, and which is neither swift nor slow, curvilinear nor rectilinear; and the like may be said of all other abstract general ideas whatsoever." (1977 pp. 49-50)

The dependence of this argument on the assumption that an "abstract general idea" is something that one imagines, a mental image in other words, is I think fairly obvious. It loses its hold on us once we begin to think of a concept or rather the having of it in other ways.

The second philosophical argument against the notion that a concept is a kind of mental image is also a *reductio ad absurdum* argument. It is to be found in two sources: in Kant's introduction of the concept of the "*schema*" in Chapter I of Book II of the *Transcendental Analytic* in the *Critique of Pure Reason*, and in Wittgenstein's discussion of the theory that the meaning of a word is an image in the mind, at the beginning of *The Blue Book*. Wittgenstein's version of the argument is the more accessible to us. He writes:

If I give someone the order 'fetch me a red flower from that meadow', how is he to know what sort of flower to bring, as I have only given him a *word*? Now the answer one might suggest first is that he went to look for a red flower carrying a red image in his mind, and comparing it with the flowers to see which of them had the colour of the image. Now there is such a way of searching, and it is not at all essential that the image we use should be a mental one. In fact the process may be this: I carry a chart co-ordinating names and coloured squares. When I hear the order 'fetch me etc', I draw my finger across the chart from the word 'red' to a certain square, and I go and look for a flower which has the same colour as the square. But this is not the only way of searching and it isn't the usual way. We go, look about us, walk up to a flower and pick it, without comparing it to anything. To see that the process of obeying the order can be of this kind, consider the order '*imagine* a red patch'. You are not tempted in this case to think that *before* obeying you must have imagined a red patch to serve you as a pattern for the red patch which you were ordered to imagine. (Wittgenstein 1958, p. 3)

What I take Wittgenstein to be saying here is that in order to carry out any command or instruction I must be able to recognise when what I do does and does not conform to what I have been asked or instructed to do and make the appropriate corrections. That is the principle of negative feedback as applied to any form of deliberate or intentional action. Now in order to recognise what I do as conforming or failing to conform to the instruction I must have a concept of what it is I am being asked to do. But that concept cannot consist in having an image of the action to be performed, because in order to construct such an image I must be able to recognise when the image itself conforms or fails to conform to the action I have been asked to

perform, and in order to do that I must already have a concept or, as Kant would say, a schema of that action which, on pain of circularity, cannot itself be an image of the action.

But if concepts are not images what are they? The answer which is given by both the views of the nature of concepts I have discussed is that to have a concept is to have a disposition, a disposition to behave and/or talk in a particular way. The two views differ only with respect to the kind of disposition they take having a concept to be. In Geach's view, having a concept is a matter of being able to use a word correctly in constructing and uttering sentences containing it. In what I am calling the psychological view, having a concept consists in the propensity to accept certain individual objects, events and states of affairs as instances belonging to a kind or class and rejecting others, where that acceptance or rejection manifests itself in the differential reactions including, in the case of linguistically competent humans, differential verbal reactions to those instances which do or do not fall within the boundaries of a particular concept.

Reconciling the Two Theories

The observation that both these theories are committed to a dispositional theory of what it is to have a concept and that the main difference between them is that in one case the disposition is a purely linguistic capacity, while in the other case it is a capacity or propensity which manifests itself in both verbal and non-verbal behaviour, prompts the question as to whether the two views are really as far apart as Geach would have us believe.

As I see the matter, we can achieve a reconciliation between the two positions if three principles are accepted:

- (1) that concepts are of two different kinds
 - (a) pre-linguistic concepts which consist of a set of non-verbal behavioural strategies which come into play when stimuli characteristic of a particular class of objects, states or events are encountered;
 - (b) linguistic concepts which consist of a set sentence-construction and sentence-deployment strategies involving the use of a particular word or phrase;

- (2) that the notion of a linguistic concept is restricted to the constraints governing the words and phrases that may legitimately occupy the predicate (function) and argument places (Frege 1879/1960; 1891/1960) in a particular sentence frame or argument structure;
- (3) the picture theory of the meaning of sentences developed by Wittgenstein in his 1922 book *Tractatus Logico-Philosophicus* according to which a declarative sentence, in so far as it is true, is thought of as a map of a situation (Barwise and Perry 1983) which exists now, has existed in the past or will exist in the future, in which an imperative sentence is thought of as a plan or blueprint of a situation which the listener is being required to bring about, and in which an interrogative is either an incomplete picture of either kind which the listener is being asked to complete, or one previously issued by the listener as speaker whose form or interpretation the listener is being asked to confirm.

The Picture Theory of Meaning

Characterised in this way, the Picture Theory of the meaning of sentences implies that the ability of a sentence to orientate the behaviour of the listener towards the actual or required existence of the situation which it specifies depends on an isomorphism or formal correspondence between the content and structure of the sentence on the one hand and the form and content of the situation which it thereby specifies on the other. Moreover, the distinction between form and content of the sentence is the same distinction as that between the sentence frame or argument structure formed by the arrangement of syntactic or, to use Skinner's (1957) term, "autoclitic" words and other grammatical devices such as word order which give a sentence its form on the one hand and the noun and verb phrases that occupy the predicate and argument places within that structure. On this view the special association between concepts and general terms arises from the fact that in a simple sentence the noun and verb phrases which occupy the predicate and argument places serve to characterise objects (in the argument places) and events or states of affairs (in the predicate position) which, even if referred to by some other part of speech such as a proper name or a pronoun in the case of an argument, nevertheless fall within the scope of some general term. In other words, they depict situations composed of objects and events or states of affairs of particular kinds such that things of that kind

are capable of standing in the real world in the relation to one another that the sentence depicts. Only if they are, does the sentence make sense. If they aren't, we have what Ryle (1949) calls "category mistake".

It follows from this not only that there is a correspondence between general terms and the kinds or classes of thing that exist or are capable of coming into existence in an organism's environment, but that in learning what kinds of thing can and cannot go where in her stimulus environment by the process of abstraction, a linguistically competent human being is at the same time learning what position in a sentence frame can be occupied by the word or phrase which connotes that class of object, state or event and in what kinds of sentence frame it can and cannot sensibly occur.

In other words, by relying on the Picture Theory of the meaning of sentences, a plausible case can be made out for the view that the process of abstraction can indeed enable a speaker to deploy correctly the words and phrases which stand for features thereby abstracted when constructing sentences in which a reference is made to instances of them.

Pre-Linguistic and Post-Linguistic Concepts

However, there is more to the difference between pre-linguistic and post-linguistic concepts than

- (a) assigning a verbal label to a pre-linguistic behavioural disposition, and
- (b) the ability to deploy that verbal label correctly in constructing sentences.

There is also

- (c) an important change in the way concepts are acquired once the common features defining a class of objects, events or states are themselves labelled, and these labels are built into a verbally formulated hypothesis as to what it is that is common to all instances of the class in question.

We can illustrate this by means of our old friend the "Dax" (Figure 2 above). As a reference back to Smoke's (1932) paper shows, this example has in fact been doctored in order to fit the pattern of positive instances (S^p's) contrasted with negative instances (Sⁿ's) which is required by Skinner's theory of discrimination learning. Smoke in fact raises the question whether or not the subjects needed to be presented with negative instances in a case such as this in order to form the concept of a Dax and found that they didn't. But the reason why they didn't need the negative instances is fairly clear. As we all do, they only had to look at the

collection of Dax's on the left to be able to generate a verbal definition of a Dax as a circle with one dot inside the circle and another adjacent to it on the outside. Given that definition, no reference to negative instances (S^A 's) is needed in order to be able to recognise an indefinite number of new cases of Dax's and distinguish them from non-Dax's. But that is something that only applies in cases like this where the linguistically competent human organism can pick out and label and form a definition in terms of the features that are common to members of a class. Where no such verbal labelling is possible, either because the organism lacks the necessary verbal skills or because the concept is one of those basic linguistic concepts which are not susceptible to verbal definition at the level of the ordinary speaker's understanding and which must exist in order to provide the words in terms of which definitions are constructed in the first place, I have no doubt that in these cases Skinner's insistence on the need for a contrast between positive instances (S^D) and negative instances (S^A) applies. Verbal definitions help us only because the meaning of the noun and verb phrases it contains have themselves been established through a process of discrimination learning of the type described by Skinner in which learning takes place through repeated encounters between contrasting positive (S^D) and negative instances (S^A).

However, the research on stimulus equivalence mentioned under 10 above [p. 6] suggests that in the process of language acquisition by the child there is an intermediate stage between the type of discrimination learning we observe in infra-humans and the pre-linguistic child which depends on a contrast between positive (S^D) and negative (S^A) instances and concept formation which depends on the formulation of a verbal definition, as in the Dax case (Figure 2). At this stage verbal labels (names) are associated with concepts and these concepts generalise spontaneously in ways that they do not do when concepts are based on simple discrimination learning alone. Thus, if in the presence of an arbitrarily selected stimulus A (the sample) a subject is trained to pick a similarly selected stimulus B from a group of stimuli B , C , D , and E , a child that has begun to name things will spontaneously pick A from a similar group of stimuli when presented with B as sample (symmetry), something which no animal or pre-linguistic child has been convincingly shown to do.

What this seems to show is that long before the child becomes able to formulate the distinctive features that mark off one kind or category of thing from another, the possession of elementary linguistic

skills has begun to affect the character of the human conceptual scheme in ways that have no parallel in the case of pre-linguistic organisms. I conclude that, whereas Locke was undoubtedly mistaken in claiming that brutes lack the power of abstraction, he was right in claiming that linguistically competent humans have powers of abstraction which go far beyond anything that is observed in brutes.

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