WHY THINKING ISN'T COMPUTING

It is now a well-established fashion to hold that thinking is computational in nature. My goal is to refute that claim. Jerry Fodor proposed over twenty-five years ago that ". . . cognitive processes are computational processes . . ."[1] In the interim, MIT Press has published a whole series of works under the heading, *Computational Models of Cognition and Perception*.[2] During the same period, physicalists of various stripes have been predictably eager to see the view that thinking is computational advance to the head of the line of candidate theories of thought.[3]

My remarks are in four parts. In the first section I want to focus on some ordinary language considerations that are essential to a clear view of the claim that thinking is computing. In the second section, I will briefly return to Jerry Fodor's view of the matter, and in the final sections I will try to show why it is that the thesis that thinking is computing is doomed from the start.

-I-

To begin, please note that my topic is not that popular fellow, "do computers think?" I don't believe *that* to be a very interesting question. The reason that it is not interesting is because we already know the answer: yes, computers do think. In this world are living, breathing computers, who, I am very sure, are thinking. This is not a joke. Until very recently in human history, the only computers that existed were human beings, at least as far as we know. Historically, computers were people who performed calculations, especially those of accounting, surveying, and chronological reckoning or calendar construction. More recently, a computer is a person who calculates the trajectory for an artillery round. That, in fact, was one of the projected uses of ENIAC, the first large, fully operational electronic digital computer.

It is difficult to exaggerate the importance of this point. Fodor, for instance, at one point refers to "real computers," meaning electronic digital computers.[4] Just think for a moment, if you will, about how *strange* this is (without assuming, of course, that strangeness is a mark of the false)! In 1945, ENIAC was referred to as a computer because it imitated the human activity of computing. At that time, no one would have thought to have referred to ENIAC as a "real" computer, compared to human computers. Yet, barely thirty years later, the concept of computing as a human activity was perceived by some (Fodor, for example) as parasitic on the concept of machine computation instead of the other way around. I want to show that this is not merely linguistic abuse. It is symptomatic of a conceptual error of the first magnitude.

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[1]Jerry A. Fodor, *The Language of Thought* (New York: Thomas Y. Crowell, 1975), p. 34. Fodor was hardly the first to make this claim but his is perhaps the first systematic defense of that view.

[2]Although I don't believe that perception is computing I won't discuss that issue in today's remarks. My premises are laid out in two papers, "What Is Non-Epistemic Seeing?" (*Mind*, April 1976) and "More on Non-Epistemic Seeing" (*Mind*, January 1980).

[3]I include those congenial to eliminativism, like Stephen Stich, who, being informed that thinking is (just) computing, take that as pure elimination of thoughts and hence as a reason for not providing *any* theory of thought (since there is nothing about which to theorize).

[4]*Ibid.*, p. 65.

So, the question "Do computers think?" is not my interest here. I am also leaving aside the question, "Do electronic digital computers think?" or more generally, "Do machines think?" The reason is that "Do machines think?" (or "Can machines think?") is not at all the same question as "Is thinking computing?"

As I hinted at a moment ago, these questions sometimes get confused because people fail to clarify what they really mean when they ask "do computers think?" They get caught up in the "computer" part of the question, wrongly assuming that if there's some computing going on, then it must be a machine that's doing it. This mistake can be avoided by repeating to oneself, several times a day, "I am a computer, I am a computer." You are; and so am I.

There is another reason that the question, "Can a machine think?" gets confused with the question, "Is thinking computing?" namely, because of research goals in artificial intelligence and cognitive psychology. The reasoning has been something like this: If electronic computers think (or can appropriately simulate cognitive states), then since we understand exactly how an electronic computer works, we can understand what thinking is (or is likely to be).[5] Those familiar with the literature know that this line of reasoning has been heavily criticized over the years. I will not rehearse those criticisms here.

Having distinguished the question, "Do machines think?", let's return to the topic at hand: Is thinking just computing? One response would be that it doesn't really matter, since I've already given the game away. After all, just a short while ago, I encouraged us all to remember that we humans--most of us, anyway--are computers. And, we have historically done our computing by means of thinking. So, there you are. Thinking is computing. Case closed. But of course, the mere conjunction of properties does not show a logical relation between those properties. It is true that humans compute by means of thinking. It does not follow that doing a computation entails thinking or that thinking entails doing a computation. If it did, there would be no argument about electronic computers thinking. If it were true that thinking entails computing, or that thinking is computing, it would require more of an argument than pointing to the fact that we do computations *by means of* thinking.

Up to this point, I have been using the expressions, 'compute', 'computing', 'doing a computation', and so on, in a very straightforward way. For example, I compute my mileage by dividing the miles traveled by the number of gallons I used. If I have a calculator handy, I enter the dividend and the divisor and the calculator computes the quotient for me. In an introductory computer programming course, we might ask our students to write a program so that the machine will prompt the user for input, compute the mileage, and display the quotient. The user of the program (or the calculator) doesn't have to do the computing for himself or herself. That's what electronic computers are for, after all.

However, when people talk about thought being computational, one quickly recognizes that there is some *outre* use of the word 'computational' occurring. When Fodor says that most explanations of behavior accepted by cognitive psychologists "treat behavior as the outcome of computation"[6] he is not talking about good old human reckoning and calculation. *Some sort of electronic digital computer-type concept of computation has been imported.*

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[5]This crude statement of the view, to be fair, finds its origin in artificial intelligence literature of the early years of that discipline. Still, it is held *de rigueur* among many AI researchers and cognitive scientists that electronic computer simulation of human cognition has led, or will lead, to an understanding (or a theory) of human cognition.

[6]*Ibid.*, p. 33.

This importation of a machine-based model is conceptually tainted. The concept of machine computation is itself derivative on the paradigm of computation, viz. human reckoning and calculation. That model of machine computation cannot be dragged back into an explanation of the thinking from which our computing originated--not when we have just finished characterizing certain machine events as "computing" on the grounds that the machine produced what we humans produce when we compute. Such a move is not just suspicious; it's down right circular.

For example, suppose you compute your mileage and I, wishing to explain your act of computing, say, "Well, that's no mystery. All cognition, including your computation of your mileage, is an outcome of computation." I suspect that I would be laughed out of the room. We can hardly explain human computation by adverting to a machine model of computing which is itself derivative on the human model of computation.

One is reminded here of Voltaire's jab at the philosopher's definition of a sleeping potion as being a substance with dormitive powers. The point is that the very idea of computing finds its roots in human thought. To launch a theory of thought in which thinking is computational is bound to be circular.

That's the first argument against the thesis that thinking is just computing. To recap, computing is paradigmatically conscious human reckoning and calculation. It is something we do by means of thinking. Viewed this way, the error is a confusion of genus and species. The computationalists want to analyze seeing, hearing, etc. and thinking as species of computation, where thinking includes such sub-species as believing, imagining, and--this is our point here--computing. In the paradigm case, computing issues from thinking. Thinking, and cognition in general, do not issue from computing. Now you can see why I believe each of us should silently repeat, "I am a computer. I am a computer." (as opposed to "My brain is a computer. My brain is a computer.").

-II-

The second argument against the thesis that thinking is just computing is more involved. I suspect that what some people have in mind when advancing this thesis is something like

> Cognition is electronic digital computer-like in some vague way at some appropriate level of description.

The appropriate level of description, of course, is not the mechanical level--brains aren't made of semiconductors. For Fodor, the digital computer-likeness of cognition is linguistic in nature. He says,

> . . . what happens when a person understands a sentence must be a translation process basically analogous to what happens when a machine 'understands' (viz., compiles) a sentence in its programing language.[7]

[7] *Op. cit.,* p. 67.

Natural language, the source code, is thus compiled into a object code, viz., the language of thought, the machine language of the human computer (hence, the title of Fodor's book, *The Language of Thought*).

The idea that there is a mental language, a language of thought, is quite an old idea, dating back at least to William of Ockham, and it is an idea which has consistently escaped the famed razor. To Fodor, the language of thought is far from being a superfluous explanatory device ripe for shearing from the unbarbered jaw of cognitive science. Fodor suggests in more than one place that the discipline of cognitive science virtually hangs by the thread of a language of thought.

Fodor's reasoning here is straightforward. On his view, the computational nature of cognitive processes presupposes a computational medium. This medium must be a representational system powerful enough to express the formulae on which the putative computations are carried out. But an internal system of representation is just an internal language. Fodor's basic argument here may be summarized as follows:

(1) Cognition as computation is the only plausible model for explaining psychological states.
(2) Computation requires a system of representation (a language).
(3) Therefore, there must be an internal language the "sentences" of which explain the cognitive state of the organism.[8]

In the remainder of his book, Fodor qualifies, elaborates, and defends this thesis ((3) above). Will this thesis, if true, do its job? Will it explain the psychological states of organisms that we attribute to them? More generally, can *any* language of thought or an internal code explain propositional attitudes? It is this more general question that I will address in the following section. If we can show that a mental language, however it is construed, cannot explain propositional attitudes, then, given (2) above, which is surely true, we will have refuted the thesis that cognition is computational. My argument is straightforward:

(A) If thinking is computing (if cognition is computational), then there must be a mental language which can explain propositional attitudes.

(B) No mental language can explain propositional attitudes.

(C) Therefore, thinking is not computing.

I accept (A) above as uncontroversial. My defense of (B) in the section that follows will proceed like this:

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[8]Fodor's precise statement of this thesis is that

> . . . for any propositional attitude of the organism (e.g., fearing, believing, wanting, intending, learning, perceiving, etc., that *P*) there will be a corresponding computational relation between the organism and some formula(e) of the internal code such that (*the organism has the propositional attitude iff the organism is in that relation*) is nomologically necessary. (*Ibid.*, p. 75).

(D) If a mental language can explain propositional attitudes, then the propositional content of a given attitude must be explained in terms of the structural (syntactic) properties of the mental sentence corresponding to that attitude.[9]

(E) Propositional content cannot be explained in terms of the structural properties of mental sentences.

(B) Therefore, no mental language can explain propositional attitudes.

Specifically, I will defend (E) above.

-III-

The central problem of any theory of cognitive states is to show how certain states, like belief, have the propositional or intentional content they have.[10] I will use judgments and beliefs as examples. What is it about John's judgment that Tom loves Mary that distinguishes it from John's judgment that Mary loves Tom? For that matter, what distinguishes that judgment from John's judgment that there are visitors at the door?

In this century, there have been at least three attempts to address this problem of propositional content or cognitive significance from a perspective similar to Fodor's: Bertrand Russell; Peter Geach; and Anthony Kenny. These three philosophers all attempt to expose the putative structure of cognitive states, and in particular, the structure of judgment. Their aim is to show how the identity of a judgment is a function of the structural components of the judgment.

Let's begin with Geach's theory[11] since his discussion of "mental utterances" is strongly suggestive of Fodor's "language of thought." Geach's position is a compound of two theories: one which Geach calls a "revision" of Bertrand Russell's "multiple relation" theory of

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[9]I intend this premise to be congenial to most proponents of the computational approach. It may not be acceptable to someone like Stephen Stich who wants to map cognitive states onto "abstract syntactic objects" in a way that eliminates the notion of propositional content. Still, as Margolis points out, "these abstract objects do appear to be a set of sentences or codes . . ." See Joseph Margolis, *Science without Unity: Reconciling the Human and Natural Sciences* (Oxford: Basil Blackwell, 1987), p. 175.

[10]I am using the term 'content' here to individuate beliefs and judgments in a referentially opaque way. This corresponds with some uses of the term 'narrow' applied to propositional content, cf. Hilary Putnam, "The Meaning of 'Meaning'," *Mind, Language and Reality: Philosophical Papers*, vol. 2 (Cambridge: Cambridge University Press, 1975), and Jerry A. Fodor, "Methodological Solipsism Considered as a Research Strategy in Cognitive Psychology," *Behavioral and Brain Sciences* 3 (1980). To be precise, I use the term 'content' to individuate propositional attitudes in accordance with Baker's notion of *restricted semantic type* in Lynn Rudder Baker, *Saving Belief* (Princeton: Princeton University Press, 1987), pp. 17-18, 53-54, viz., ". . . Beliefs are individuated by *restricted semantic type* if they are identified by means of the obliquely occurring expressions in the 'that'-clauses of their ascriptions, where obliquely occurring expressions are those that freely permit neither existential generalization nor substitution of co-extensive terms." (p. 53)

[11]Peter Geach, *Mental Acts* (New York: Humanities Press, 1957, 1971). All page references below are to this book.

judgment;[12] and a second which is called an "analogical" theory and which is used to interpret the first theory.

Geach's revision of Russell's early (1910) theory is based on three definitions. First, a *concept* is defined as the ability to frame a judgment of a particular sort, viz., the sort that involves that particular concept. For example, "the concept *some spoon* is . . . the ability to frame judgments [to the effect that some spoon is . . .]." Second, Geach defines an *Idea* as "the exercise of a concept in judgment." Last, Geach introduces an operator 'Z( )',[13] so that if a relational expression is written inside the brackets we get a new relational expression of the same polyadicity. The operator is by definition nonextensional since 'R' and 'Z(R)' cannot relate the same objects. (pp. 52-54). Geach is then prepared to state the first half of the combined theory of judgment:

> Suppose that James judges that every knife is sharper than every spoon. This judgment comprises ideas of *every knife* and of *every spoon*; let us call these two ideas α and *ß* respectively. My theory is that James's act of judgment consists of his Idea α, of *every knife*, standing in the relation [Z(sharper than)] to his Idea *ß*, of *every spoon*. (p. 54).

Perhaps the most noticeable feature of this part of Geach's theory is that the constituents of the judgment bear a one-to-one correspondence with the constituents of the sentence used to characterize the judgment. This approach has great promise since, as language-users, we can read and understand the characterizing sentence. If judgments were mental counterparts of sentences, then it would appear that we could understand and, more important, differentiate those mental "sentences."

What can we say about this isomorphism between the constituents of the judgment and the terms of the characterizing sentence? Geach claims that the relation between those two kinds of objects is to be revealed in terms of a special sort of analogy between the concepts of judging and saying, viz. one in which "a whole system of description is transferred to an analogical use."

For Geach, the *oratio obliqua* construction is just such a system of description. Just as we may report what someone says by beginning our report with the words, say, 'John says that', rather than quoting John word for word, so, too, we may report what John believes or judges by using the construction 'John judges that . . .', though here, of course, we have no choice of an alternative construction.

Nevertheless, Geach quickly excludes the *oratio obliqua* construction as a basis of analysis of the analogical relation between the concepts of judging and saying. This is because *oratio obliqua* is used to report what was meant or intended--to give the "purport" of what was said--and *those* notions might require analysis in terms of the very psychological concepts they

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[12]For example, see Bertrand Russell, "Knowledge by Acquaintance and Knowledge by Description," reprinted in *Mysticism and Logic* (London: Allen and Unwin, 1950), pp. 219-220. As David Pears notes, Geach seems to conflate this early theory of Russell's with a quite different theory that Russell advanced in 1919. An excellent discussion of Russell's two theories appears in D. F. Pears, *Bertrand Russell and the British Tradition in Philosophy* (New York: Random House, 1967), pp. 197-241.

[13]I adopt the notation 'Z' in place of Geach's use of the section mark, following Anthony Kenny, *Action, Emotion and Will* (New York: Humanities Press, 1963), pp. 230ff. I use Geach's own symbols, the percentage sign (%), and the dagger sign (†).

were supposed to explain. If judgment is to be analyzed in terms of language, the concepts involved in the analysandum must be fundamentally linguistic in nature.

Since the primary use of *oratio recta* is not psychological, but rather "serves to report what somebody actually said or wrote," (p. 80) Geach says, the *oratio recta* device of quoting a person's words may be extended to mental acts. Geach cites two examples from the Bible in which *oratio recta* is used in this way: "The fool hath said in his heart 'There is no God';" and "They said in their heart 'Let us destroy them together'." Citing the latter of these quotations, Anthony Kenny argues that wants, desires, and intentions may also be reported via *oratio recta*.[14] (Interestingly, Russell was well aware of these various uses of the *recta* construction. He says, "We have no vocabulary for describing what actually takes place in us when we think or desire, except the somewhat elementary device of putting words in inverted commas."[15])

Let's pause a moment and assess the situation. In the first half of Geach's theory of judgment we found that to judge was to have one's Ideas standing in a certain relation to each other. How is this model to be connected with the *oratio recta* description of the judgment?

To begin with, recall the isomorphism in the first half of Geach's theory. There is a one-to-one correspondence between the constituents of the judgment, viz., Ideas, and the terms of the characterizing sentence. We can see now that this isn't a coincidence.

We have an analogy alleged to hold between the concept of saying and the concept of judging. This implies that there is a correspondence between the constituents of the judgment and the *oratio recta* construction describing it.[16] In reporting actual speech with *oratio recta*, the terms in the *oratio recta* construction correspond isomorphically with certain features of what is said, for example, with certain clumps of noise. By Geach's analogy then, the terms of an *oratio recta* report of a judgment must correspond one-to-one with some features of what is judged, presumably with the ideas that constitute the judgment.

The analogy that Geach wishes to promote is thus anchored in the notion that an *oratio recta* report of a judgment is a report of a mental "saying," or as Geach calls them, "mental utterances." This notion links the two halves of Geach's theory together. Note the way that Geach defines Ideas in terms of mental saying:

> Smith's Idea *every man* consists in his saying-in-his-heart something to the same effect as "every man" (which, let me repeat, need not consist in his having mental images of these or other words). (p. 99)

Mental utterances are just sayings-in-one's heart of something to the same effect as '. . .'; hence, Smith's Idea *every man* in his mental utterance of 'every man'. This yields a one-to-one correspondence between the constituents of a judgment (ideas) and certain constituents of the *oratio recta* expression used to characterize or report the judgment. And, the analogy between the concepts of saying and judging is expressed by comparing real utterances with mental utterances.

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[14] *op. cit.*, esp. pp. 206-208.

[15] Bertrand Russell, *An Inquiry Into Meaning and Truth* (Baltimore: Pelican Books, 1962), p. 197.

[16] The idea of such a correspondence is not new. In a letter to Russell, Wittgenstein says: "I don't know what the constituents of a thought are but I know that it must have such constituents which correspond to the words of Language." (*Notebooks, 1914-1916* (New York: Harper Torchbooks, 1969), p. 129).

It is at this point that the real challenge to Geach's theory arises just as it arose for Bertrand Russell many years before. Students of Russell's multiple relation theory of judgment will recall that there, John's judgment, say, that A loves B consists of a complex of John, A, the relation *loves*, and B, all of which are related by the *judging* relation.[17] Wittgenstein was quick to point out that Russell's theory allows a judgment to be a piece of nonsense.[18] Since the relation *loves* in the above example does not function as a relation, but only as another relatum of the judging relation, there is no way to determine what is judged; no ordering of the constituents of the judgment is provided.[19]

Geach prepares to meet this problem in the first half of his theory by means of the Z(R) relation which would order ideas in the desired way, but what is still needed is an interpretation of the Z(R) relation in terms of the second half of Geach's theory. Quite simply, Geach must show how the Ideas in a particular complex of Ideas are related so that the complex conveys the propositional content of the judgment. Russell's theory fails at this point--can Geach's succeed? Unfortunately, the answer is "No." (Geach attempts to interpret the Z(R) relation with another relation, %(R), but as he concedes, the definition is incomplete.)[20]

Because Geach fails to successfully interpret the Z(R) relation, Geach's theory falters, leaving us basically in the same position that Russell leaves us. And, Fodor's approach fails for the same reason. We still do not know how the constituents of a judgment, a mental utterance, are related so that the resulting complex reveals its propositional content. *That*, we must remember, is the fundamental problem faced by any theory of thought.

-IV-

There are three questions I want to address at this point: (1) what has gone wrong here?; (2) how does this bear on thinking as computing?; and (3) is there a way out of this mess?

Geach seems to be saying something like the following: "Take the constituents of a sentence or an utterance of a sentence. They are related in a way such that they convey a particular proposition. I can't tell you what that relation is, but we know that there is one since sentences do convey propositions. As for the constituents of a judgment, there must be some relation which relates them so that the complex conveys a proposition. I can't tell you what *that* relation is, either, but it is analogous to, or definable in terms of, that relation that exists between the expressions of the actual utterance of which the judgment is a mental utterance."

The failure to provide an interpretation of that Z(R) relation is no minor problem; without the interpretation, the entire theory of judgment collapses. The problem is this: all of these strategies (Russell, Geach, Fodor, and any "cognition is computational" approach) attempt to analyze judgments *structurally*. The identity of a judgment is felt to be a function of the

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[17]"Knowledge by Acquaintance and Knowledge by Description," *op. cit.*, pp. 219-220.

[18]Ludwig Wittgenstein, *Tractatus Logico-Philosophicus* (London: Routledge & Kegan Paul, 1961), p. 109 (5.5422). Russell responds to the criticism in "The Philosophy of Logical Atomism," reprinted in Robert C. Marsh (ed.), *Logic and Knowledge* (London: Allen and Unwin, 1956), p. 226.

[19]See Pears, *op. cit.*, pp. 217-218.

[20]Anthony Kenny, *op. cit.*, attempts to interpret the Z(R) relation, too. A summary of Geach's and Kenny's efforts is provided in an endnote below.

structural relations of the components of the judgment. All such strategies face a common problem.

Whether one feels that the constituents of a judgment are the objects that the judgment is about, or are Ideas in relation, or are (ultimately) neural circuits, one must answer the question: how is *this* structure to be identified as the judgment that *p*? This is a question that can never be answered by any of these theories. Geach's theory rests on the notion that the concept of judging is analogous to the concept of saying. But, the concept of judging cannot be an *analogical* extension of the concept of saying because there is nothing to which the concept of saying can be extended in any particular case that is identifiable as the judgment that *p*, say, rather than *q*. An analogy demands two analogs; hence, before we can say that the judgment that *p* is in some way analogous to the utterance or assertion that *p* is in some way analogous to the utterance or assertion that *p*, we must be able to identify the two analogs. But on Geach's theory, the identification of the mental analog depends on the premise that there is an analogy between judging and saying.

The central fault of all compositional or structural theories of thought lies in not recognizing that there is no access to the identity of a judgment--to its propositional content--independent of the speech-act reporting devices of *oratio obliqua* and *oratio recta*. Russell could not account for the relation that must hold between the constituents of a judgment such that the judgment has the appropriate propositional content. Geach's Z(R) relation is supposed to correct this deficiency, but how could it? The move is thwarted by what we can call the "no independent access" property of cognitive states. We can't tell one judgment from another without the interpretation of the relation, but in order to know what relation to interpret, we must know with which judgment we are concerned.

What can be salvaged from Geach's theory is that the analysis of judgment must proceed in terms of some model of speech-act reports. What we are forced to admit is that judgments or beliefs are *not* mental sentences or "utterances" to which we have access independently of the structure of speech. This is why the extension of the concept of saying to the concept of judging is not *analogical*. We do not have two structures which we then examine component for component, analyzing one in terms of the other.

Nevertheless, there is *some* connection between the concept of saying and the concept of judging. Geach's employment of the metaphors of saying in one's heart and mentally uttering show at least that much. But it is only what is literally said or uttered that can be structurally detailed. This allows, within limits, public debate about what is said.

What is judged or believed, on the other hand, does not display a structure of its own, i.e., does not display some internal structure with respect to which a determinate propositional content may be discerned.

The structure of judgment, if the judgment must be said to have a structure (in the sense relevant to propositional content), is imported, borrowed from the structure of what is said. This is part of what we mean when we say that mental states are "private;" they do not display their features to the public eye.

But, we mean more than that here, for not even the one who judges can discern any structure intrinsic to their own judgment. This is why Fodor's elaborate defense of a private language is insufficient to establish his thesis. The reason is that the structure of the judgment exists solely as a function of the features of what someone *says* when they report their judgment

to us. The judger, like everyone else, can specify the judgment only by employing constructions which find their fundamental application in speech.[21]

CONCLUSION

If I am right, the door has been closed on the thesis that thinking is computing. To summarize, if the thesis means something on the order of "the human brain is machine-like" or "the human brain is massively parallel processor-like" then we have a neurophysiological thesis starkly distinct from what we're concerned with here.

On the other hand, if the thesis that thinking is computing is taken at face value, it is circular. Since computing is a paradigmatically human activity that issues *from* thinking, computing can hardly be advanced as a process in terms of which thinking can be understood. Computation is simply not a cognition-neutral concept that can be brought in to spade ground in the theory of thought.

Finally, I have tried to close the door on any theory of thought which accounts for propositional content by appeal to a putative intrinsic structure of mental states. This obviously includes any "mental language" account. Cognitive states have no discernible structure independent of the structure of those speech-acts we perform in ascribing or reporting the cognitive state.[22]

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[21]Essentially the same point is made by Lynne Rudder Baker, *op. cit.*, pp. 83-84, with respect to the inexpressibility of Fodor's Mentalese sentences. She says ". . . if narrow contents in Mentalese are untranslatable into English, these logico-semantic properties turn out to be private in such a strong sense that we cannot say what they are."

[22]An earlier version of this paper was presented at the 4th Annual Computing and Philosophy Conference and the Philosophy Colloquium at the University of Toledo. Part of the criticism of Geach's theory of judgment was presented to the Ohio Philosophical Association, and a cousin of that paper was presented to the Society for Philosophy and Psychology.

Geach/Kenny Endnote

Consider the relation Z(sharper than), and suppose that Smith's Idea α stands in the Z(sharper than) relation to his Idea *ß*. Geach says that there will then be another relation %(sharper than) which behaves in the following way. Given Smith's judgment as just described, Geach says,

> . . . there are expressions A, B, C, such that α, *ß* are Smith's mental utterances of A, B, respectively, and Smith's judgment as a whole is a mental utterance of C, and any (physical) occurrence of C consists of an occurrence of A in the relation %(sharper than) to an occurrence of B. (p. l00)

As Geach admits, the problem has merely been pushed back a step, for now we need a definition of '%(sharper than)'. That is, if we knew what relation it is that exists between the parts of a sentence (those parts which name the relata of the relation *sharper than* in this case) such that the sentence conveys the proposition it does convey, then we could at least say that the Z(sharper than) relation functions in an analogous way, or that the Z(sharper than) relation holds between Ideas α and *ß* if and only if the %(sharper than) relation holds between expressions A and B, or something of that sort. The interpretation of the Z(R) relation depends on defining the %(R) relation if the analogy between judging and saying is to be preserved.

However, Geach does not define the %(R) relation. Instead, he promises to show us "the main outlines of the definition" by defining *another* relation '†(R)'. Using the same example, Geach says that

> . . . *x* is in the relation †(sharper than) to *y* if and only if: x and y are utterances of the same person, and there are expressions X and Y such that *x* is the utterance of X, and *y* of Y, in that person's utterance *either* of X & "is" & "sharper than" & Y *or* of Y & "is conversely" & "sharper than" & X. (The ampersand is as before the sign of 'concatenation'.) (p. l00)

Geach's efforts to provide an interpretation of the Z(sharper than) relation end there, and with them, the chances of interpreting, in general, the Z(R) relation in terms of the *oratio recta* construction. The only progress we have made is that the Z(sharper than) relation is alleged to hold between the two Ideas just in case the %(sharper than) relation holds between the analogs of those Ideas in an *oratio recta* description of the judgment. But what is that %(sharper than) relation? At the crucial moment, Geach's theory falters, leaving us much the same as did Russell's theory. That is, Geach fails to show us how it is that the constituents of a judgment are related so that the resulting complex is seen to have the propositional content it does have.

We may consider Anthony Kenny's emendations of Geach's theory. Kenny attempts to interpret the Z(R) relation with another relation, the 'Y(R)' relation. Kenny feels his Y(R) relation will suffice to interpret the Z(R) relation. Consider John's judgment that blood is thicker than water. The Y(thicker than) relation functions in the following way. In any physical occurrence of the expression 'blood is thicker than water', we may say that the expression 'blood' stands in some relation, call it 'Y(thicker than)', to the expression 'water'. Thus, John's

mental utterance of 'blood' (his Idea of blood) is defined as being Z(thicker than) to his mental utterance of 'water' if and only if any physical occurrence of the expression he mentally utters, viz. 'Blood is thicker than water' consists of the expression 'blood' standing in the relation Y(thicker than) to the expression 'water'. In short, whatever relation exists between the expressions 'blood' and 'water' in an actual utterance of "Blood is thicker than water' has its counterpart in the mental analog: some analogous relation exists between the mental utterances of 'blood' and 'water'. That analogous relation, Z(thicker than), is thus the beneficiary of whatever quality it is that the relation Y(thicker than) has, such that the Y(thicker than) relation relates the terms of the actual utterance so that the utterance conveys the proposition it does convey. But, despite Kenny's attempt, the Z(R) relation is *still*, at bottom, uninterpreted.

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