The Language - Thought Partnership: A Bird's Eye View

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Abstract

I sketch in miniature the whole of my work on the relation between language and thought. Previously I have offered closeups of this terrain in various papers and books, and I reference them freely. But my main purpose here is to explain the relations among the parts, hoping this can serve as a short introduction to my work on language and thought for some, and for others as a clarification of the larger plan.

In this paper I will try to sketch in miniature the whole of my work on the relations between language and thought. I have offered closeups of this terrain in various papers and books which I will reference freely. Here I will focus on the relations among the parts, hoping to provide a short introduction to my work on language and thought for some, and for others a clarification of the larger plan.

I take language and thought to stand largely parallel to one another. For example, the intentionality of each is defined independently of that of the other: thought is possible without language, and language is possible that does not convey thought. On the other hand, public language is not merely a stimulus to the development of

thought. It is constitutive of developed human thought. These are the relations I hope to clarify.

The first idea needed to understand the relation of language to thought, I claim, is that of a "proper function." Linguistic meanings are (in the first instance) the proper functions of various language forms. Further, the intentionality both of language and of thought concerns the way these serve their proper functions. Speaking extremely roughly at first, proper function is survival value. In the simplest instances, the proper function of an item is what it has been doing, better, what the predecessors from which it was reproduced or copied were doing, that helped account for continued reproduction or copying and hence for its existence. In less simple instances, the proper function must be described as varying in relation to obtaining conditions, or the function is derived from the functions of prior devices that function properly by varying their outputs according to conditions. I defined "proper function" and discussed implications of this definition in (Millikan 1984 chapters 1 and 2; 1993 chapters 1 and 2).

When speaking informally I used to call proper functions "biological functions," but this led to misunderstandings. It was thought that my analysis was an attempt to analyze biologists' usage of the term "function", and it was thought that I held that all proper functions are derived from genic selection. Neither of these is right. Especially obvious, the functions of the elements of specific languages, such as words, syntactic forms, tonal inflections and so forth, are not filtered through the genes. More generally, the functions of learned behaviors are related only in indirect ways to the genes that account for the dispositions to learn these behaviors under specific conditions, and the functions of thoughts are related very indirectly to the genes that account for the

abilities to develop the concepts exercised in them. These issues are treated in (Millikan 1984, 1993, 1995, 1996a, 2000) and I'll say no more about them here.

Intentionality has to do with truth conditions or, more broadly, satisfaction conditions, which I will discuss in time. At the moment, I want only to clear the ground by saying what intentionality is not. It does not correspond to a peculiar kind of proper function that intentional items like sentences and beliefs can have (e.g., the function of "indicating" or "representing" or the like). Rather, it corresponds to a special manner in which some things serve their proper functions. I will explain this later. Right now I want to put intentionality aside and talk just about the functions of language forms.

Not all complete functional units of public languages have satisfaction conditions. Some just have proper functions. "Hello!" has no satisfaction conditions, but it has a function. What, exactly, is involved in a language form having a function? Its proper function is its survival value. It is something that it does or has been doing that accounts for the fact that it continues to be repeated, reproduced, so that it does not die out of the language. Characteristically, what language forms do in this capacity is to produce a characteristic response in a hearer or hearers. (Elementary language forms don't do this by themselves, of course, but in combination with other language elements functioning together in ways admitting of systematic description.) Why does the language form continue to produce this characteristic response? We must ask the same question about the response produced as about the form itself. What is its survival value? Why does it keep recurring? Why does its lineage not die out?

I call a proper function of a meaningful form in a public language a "stabilizing

function." This is a function that, when performed, tends both to encourage speakers to keep using the device and hearers to keep responding to it with the same (with a stable) response. A stabilizing function of a language device must be one that accords both with the speaker's purposes and with the hearer's purposes often enough to keep the device in circulation along with a stable response to it. Stabilizing functions are found where speakers and hearers cooperate, where their immediate interests overlap, though overlapping immediate interests sometimes conflict, of course, in ulterior motives.

The easiest illustrations of stabilizing functions are the functions of syntactic forms constituting the indicative, imperative and interrogative moods. Roughly, indicatives have the function of producing or activating true beliefs in the hearer, imperatives have the function of producing hearer compliance, interrogatives have the function of eliciting true answers (details are in Millikan 1984 chapter 3). Stabilizing functions for a variety of other kinds of language devices are discussed in (Millikan 1984, parts I and II; Millikan 1996b, 1998a). The mechanisms at work in stabilizing the functions of public language devices are, in certain crucial respects, much like those at work in biological evolution under natural selection. Especially obvious is the similarity between stabilization of the functions of various public language forms through social selection processes and stabilization of the functions of animal signs, such as mating displays, danger signals, territory markers, bee dances and so forth, through genetic selection processes. Notice that in both cases, the actual physical forms that survive, as opposed to the functions they perform, have a high degree of arbitrariness.

Biological traits are often selected for functions they perform not on the average

but just often enough to be worth preserving them for. For example, the eye blink reflex may well be triggered more often by other stimuli than by objects that would actually have hit the eye. Similarly, stabilizing functions of language forms are not necessarily statistically average functions or even common functions. A language device needs to perform its stabilizing function only in some critical mass of cases, the proportion varying with the average positive value of the function over against the costs of function failure for speakers and for hearers. We all know the effect even of very occasional weakness when dealing with a child who teases for things. The disposition to tease can survive many failures. Similarly, it is no mystery that the forms and idioms of daily speech can withstand much misuse, many failures of cooperation, and use in a multitude of parasitic or secondary ways, without altering their stabilizing functions.

Another similarity between stabilizing functions of language devices and biological functions is that neither is defined by reference either to anyone's intentions for them or anyone's cognition of them as having functions. Blinking one's eyes in response to an approaching object has a purpose, a proper function, but this function corresponds to no one's intention. Using smiles as a reward, it is possible to condition a person to blink more frequently without their awareness that they are doing so or of the purpose the blinks are serving. Their learned blinking behavior has a proper function of which they are unaware. Where actions are backed by explicit intentions, moreover, they often have intermediate purposes that are not explicitly intended. When I turn the key in the ignition of my car I intend to start it, but an intermediate proper function of my learned behavior is to cause electricity to flow in certain wires and a magnetic field to materialize in the starter motor, and so forth, all of which I may know

nothing about. Similarly, one function of a child's use of "More juice!" may be to produce the belief in her hearer that she desires to have more juice, yet the child may not possess so much as the concepts of belief and desire, let alone an intention to produce a belief about a desire. The notion "stabilizing function" for language devices is defined by reference to purposes or proper functions of speaker utterances and of hearer responses, not in terms of speaker intentions and hearer understandings. (The mistaken notion that Gricean intentions underlie language use is discussed in (Millikan 1984 chapter 3)).

Thus the definition of function for public language devices and hence, as remarked earlier, the primary definition of linguistic "meaning", makes no reference to human intentions or, indeed, thought. It does not follow that the stabilizing functions of specific language parts can all be described without reference to thoughts. For example, I have described the specific function of the indicative mood as the production or activation of true hearer beliefs. Similarly, if it is the function of the imperative mood to produce compliant hearer acts, presumably it is also its function, prior to that, to produce consonant hearer intentions. On the other hand, not all complete and functional language forms have as their stabilizing functions to express, transmit or impart intentional attitudes. Nor do I refer merely to greetings, exclamations, expletives and so forth. There are complete sentences that do not function to convey intentional attitudes. But to explain what I have in mind here I must first discuss intentionality.

The question whether a language form displays intentionality is independent of the question whether its function involves transmission of intentional attitudes from speaker to hearer. Let me begin with an analogy from ethology, one I have often relied

on because it can be used to illustrate so many important points at once. Consider the dance of the honey bee. This dance has a whole series of proper functions. It stimulates the nervous systems of watching worker bees in certain ways, causing them to fly off in a certain direction for a certain distance determined as a function of the shape and angle of the dance. This brings the worker bees to the location of flowers bearing nectar, producing stimuli which cause the nectar to be collected by the workers and brought back to the hive, providing nourishment for the next generation of bees. To initiate this whole series of effects is also the proper function (series of proper functions) of the mechanism that is responsible for producing the dance in the dancing bee. The mechanisms that produce bee dances and the mechanisms that respond to them are cooperating devices that have coevolved, resultinging in stabilization of the dance form, its method of production, and its effect on watching bees. The analogy I have in mind, of course, is with human language forms that have become stabilized in their cooperative functions. Now a natural thing to say about bee dances is that they represent the location of nectar which the dancing bee has discovered. What is it about them that makes it natural to call them representations of nectar locations?

First notice that it is not their proper functions that make them representations. To have the function of initiating neural responses, of producing flight in a certain direction, of causing arrival at a site of nectar, of causing larval bees to be fed and so forth, these functions, just as such, have no more to do with representing than do the functions of circulating blood or digesting food. Nor are they representations because their function is to convey intentional attitudes. Just to keep the biology honest, there is evidence that bees carry neural maps in their heads, but we do not have to assume this

is so to see that the dances are representational. It could be that the watching bees responded directly to the dances by pivoting about to a certain direction and flying that way for a certain time.

What makes the dances into representations is not what they do but why they work, why they help to cause arrival at sites of nectar hence arrival of nectar in the hive hence well fed larval bees. They work by bearing a correspondence to what they represent, according to a certain projection rule, such that in being guided by the dance the worker bees are caused to fly toward nectar. The "certain rule of projection" describes the relation the dance must have to the location of nectar if it is to cause the watching bees to fly towards nectar when they react to the dance as they are designed to. The intentionality lies not in the function of the dance, but in the explanation of how the function is performed, in the principle involved. Roughly, the principle is mathematical isomorphism. Variations in possible bee dances to which worker bees are designed to respond correspond one-to-one to variations in possible locations of nectar in such a way that being guided by the dances produces arrival at sites of nectar.

Why is this intentionality? Because the dances display the characteristic trait of the intentional, namely, they can be wrong or false. They can fail to correspond as they should to a place where there is nectar. Should anything disturb the normal mapping between the shape of the dance and the location of nectar, this misalignment will, quite literally, lead the workers astray. Bee dances have truth conditions. The rules by which they are designed to correspond to nectar locations are semantic rules.

The intentionality of language is exactly parallel to the intentionality of bee

dances. Language forms have, first, a function or series of functions. Next, we can ask how these functions are performed, what principles are involved. If, given the normal stabilizing hearer reaction to the form, the form will guide the hearer so that its stabilizing function is performed only when that there is a correspondence by a given rule or function between form and some structure in the world, then the form is intentional. It has a truth condition.[1] (For a full account here, see Millikan 1984, chapter 6 ff.)

For example, there are many indicative sentences of English the stabilizing functions of which are to produce true hearer beliefs, but that will not produce this result in a hearer who is responding in the stabilizing English-comprehending way unless they

[1] Typically, this will be true only of complete sentences. Portions and aspects of sentences that make a systematic contribution to truth conditions can be considered to be intentional in a derivative way. That is, the intentionality of the complete representation which sports a truth condition is prior to the intentionality of any of its parts or aspects. Truth conditions are not built up from term references. Rather, term references are abstracted from truth conditions.

correspond to the world by certain mapping rules, namely, certain semantic rules of English. In this particular case, of course, the stabilizing function involves the production of intentional attitudes. But the general notion of intentionality for language has not been defined such that intentional language forms have to express or transmit intentional attitudes. And, indeed, in (Millikan 1984) I argued that traditional puzzles about the meanings of a number of language forms, including sentences expressing identities, sentences explicitly asserting existence, and sentence of the form "x means y," find solution when we allow that the sentences can be intentional, can have truth conditions, without having as their stabilizing functions to produce intentional attitudes. I suspect this is also true, for example, of sentences expressing various of the modalities.

The kind of intentionality I have been discussing is the kind had by representations of fact. I call these "indicative representations" or "fact-icons." Representations of goals SS"imperative representations" or "goal icons"SS are another matter. Consider the bee dance again. It is natural to say that the dance represents the location of nectar, but it is just as natural to say that the dance represents where the bees are to go, their goal. Again, the intentionality is there because of a correspondence rule or a mapping, but this time the rule IS determined by a proper function of the dance. A proper function of the dance is to cause the watching bees to fly to a location that bears a certain relation to the dance, namely, the relation described by the correspondence rules for the dance, the semantic rules of B-mese. This is the paradigm for all goal representations, including directive sentences (Millikan 1984, especially chapter 6; 1983, chapters 3-5). Again, as in the case of the bees, it need not

be that the goal expressed by a directive sentence is normally reached by means of the interpreter's first forming a corresponding intention. That is not built into the definition, although in the case of explicitly directive language forms, it does happen to be the case.

On the other hand, the bee dance is not really the best exemplar for either fact representations or goal representations. That is because it has two faces whereas pure fact icons and pure goal icons each have only one. The bee dance represents the facts and tells what to do about them all in one breath. I have called representations of this kind "pushmi-pullyu representations" (Millikan 1996b), arguing that they are found also in both human language and thought. Consider "No, Johnny, we don't eat peas with our fingers" and "This road is legally closed."

The way the definition of "proper function" is set up (Millikan 1984), it falls out that artifacts and human activities have as proper functions whatever functions their makers or performers intended them to serve (chapter 2). Similarly, where nonrepresented proper functions or implicit purposes are involved in the making or performing, they have these purposes as their functions. Recall the function of the unconscious blinking that has been trained by smiles, and recall the various functions concerning parts under the hood that my turning of the ignition key has. Now the maker (performer) of a public language expression or sentence token is the speaker or writer of the token. So one proper function of a public language token is whatever the speaker either explicitly intended and/or nonexplicitly purposed that it accomplish. But another proper function that it has is the stabilizing function of its type, roughly, its literal meaning. The former is a "derived proper function," derived in this case from speaker's

intention or purpose. The latter is a "direct" and "stabilizing proper function," which has been accounting for survival of the expression type (or its elements and their form of concatenation) in the language community. (For details of this distinction, see Millikan 1984, chapter 2). These two proper functions may be consonant with one another or, in more interesting cases, they may conflict.

A large portion of the subject matter of pragmatics concerns the interaction between speaker-derived functions and stabilizing functions of tokens of language forms. Stabilizing uses of any language form must be uses in which these two kinds of functions do not conflict, indeed, in which the derived function includes the direct stabilizing function as a part. The speaker purposes the literal function and the hearer cooperates (see Millikan 1984, especially chapters 3 and 4). Stabilizing functions concern the "conventional" nature of language (Millikan 1998a, 1998b), and for the most part the conventional outcomes of speaker uses of language, the perlocutionary effects that conventionally follow these uses (in the mild sense that living together "conventionally" follows marriage), accord with their stabilizing functions, that is, with their public linguistic "purposes." Thus in typical stabilizing uses of language, speaker purpose, public linguistic purpose, and conventional outcome all coincide. But there are also many cases in which these come apartSSone and two, two and three, or all three come apart. The modern debate about which if any speech acts are performed conventionally arises from this confusing overlap (coupled with inadequate theories about what language "conventions" areSSMillikan 1998a, 1998b).

To understand the intentionality of thought with care requires thorough understanding of the nature of "derived proper functions," and I cannot say very much

about that here. Still, the rough idea is not hard. The perceptual, cognitive and conative systems of the human, we assume, have a normal way of developing from embryonic form to their mature adult state. This normal development is describable, however, only with constant reference to input from an environment that is "normal" in a variety of respects, "normal," in particular, relative to very broad features of the historical environment of the human species. Moreover, certainly in the case of the cognitive and conative systems, the description of the normal state of these systems at more advanced stages of development is a highly relational description. What is normal is for certain generally describable kinds of relations to have developed between these systems and certain kinds of structures in the environment, resulting in certain capacities and dispositions of the organism to interact with its specific environment, hence in behaviors adapted to that environment. But exactly which particular relations and capacities it is normal for a particular human to have developed depends on the particular input, the experience, the system has had, the particular environment it has been adapted to. This much seem incontrovertible.

Now how normal cognitive and conative development occur is, presumably, theoretically explainable. That is, there are principles, some perhaps quite specific, others very general, that account for the possibility of normal development, and account in a general way for the adaptiveness of the behaviors that result from it. Some of these principles must be very general principles indeed, such that they are operative over very wide variations in environmental input to produce what are, relationally described, the same sorts of adaptations of these systems and of the behaviors they control although to different environments. Were this not so, there could be no possibility of a science of

normal developmental psychology or normal adult psychology. There would be no explanation for the fact that humans growing up in widely different environments tend to behave in ways adaptive in those environments. Put simply, I know my way home but you don't, nor would it help you much if you did. You know your own way home. It does not follow that there are not univocal general principles of learning that account for the development of both our abilities to get home, and univocal principles that explain how both are exercised, how our neural states function to get each of us home.

Now add another hypothesis. Many adaptive behaviors that are normal for organisms of various species are controlled by plastic states or structures within the organism that vary in a systematic way to parallel variations in the environment. The obvious simple cases here are perceptual states of those organisms that can perceive aspects of their distal environments. Systematic parallel variation equals isomorphism of inner state to environment in accordance with some abstract rule. The perceptual state is, normally, aligned with the environment in accord with a definite alignment function. Suppose this to be true for cognitive states as well, for the states that correspond to intentional attitudes. One would expect the alignment or mapping functions to be much more abstract, of course. Fodor's vision of a "language of thought" would be one among other ways to envision this very general possibility. All that would now be needed to demonstrate the intentionality (as intentionality was described earlier in this paper) of intentional attitudes would be this assurance: reference to this sort of mapping helps to explain how the systems that manufacture and use intentional attitudes manage to perform their proper functions. That is, we have to assume that the cognitive systems of the adult are designed by evolution to perform

in this sort of manner, or better, that they were designed to learn to perform in this manner.

Now it seems not impossible, at least, that when perception is used to guide bodily motion, different members of the same species might use physically identical or similar perceptual representations to represent the same environmental features. They might use the same perceptual "notation," as it were, or perceptual "maps" having identical keys and projections. But this is not at all reasonable for human thought, because people can represent widely different things in thought, depending on their past experiences. They do not have ideas of the same thingsSSnot of the same people, nor the same kinds of objects and events, nor of the same properties. If thought involves mental representations, then each of us must think in his or her own individual representational scheme. There could not, for example, be such a thing as "THE language of thought."

A hugely interesting developmental question then concerns how the cognitive representational system of the individual human is developed. Ultimately the question belongs to experimental psychology. The philosopher's job is to suggest directions in which to look, and how to recognize the desired object when sighted. I discuss this at some length in (Millikan 1984 parts III and IV; 2000) and will present only a small fragment here, focusing on the way language enters the cognitive scene.

The problem that faces the cognizing organism is (1) to develop a representational system with which to map relevant affairs in its world and (2) to learn to make accurate representations of relevant aspects of its environment using this mapping system. The difficulty, of course, is that the aspects of the environment that it

needs most to map are distal, and correspond in highly complex and often unreliable ways to proximal aspects. Correlatively, the organism has no direct access to what has to be mapped so as to tell when its maps are accurate. Speculations about how all this is done must begin with ontology: the notion of a map of a structureless world is incoherent. And they must proceed through epistemology--not the traditional epistemology of judgment but an epistemology of concepts. How do we know when our concepts are clear, when we are representing what in fact is the same as the same, being neither equivocal nor redundant as we form our basic representational systems? These projects I have tackled in (Millikan 1984, parts III and IV and, especially, 2000) and will not try to abbreviate here. But between ontology and epistemology lies the philosophy of mind, which I will talk about here. Granted a world with objective structure, what is it to have a concept corresponding to some aspect of that objective structure? What is it, for example, to have a concept of Fido or of dogs or of sugar or of round?

To have a concept of one of those sorts of things, to have, that is, a paradigm empirical concept, involves (caution: I do not say "equals") a rough practical ability to reidentify that thing--"practical" in two senses. The ability is "practical" because it is fallible, and could not be otherwise even in theory. It is an ability that gets one by, for the most part, in practice. And it is "practical" in that it must be applicable in practice. It must be a practical way of recognizing when the information contained in energies bombarding one's senses is about that same thing again rather than about something different. This sort of ability typically includes numerous sub-abilities, corresponding to different ways of recognizing the concept's object under a great variety of conditions,

when bearing a great variety of relations to the thinker, and through a variety of intervening media. Nor are any of these subabilities more basic, more "definitional" of the concept, than any others (Millikan 1984 chapter 15; 2000). Surprisingly, by this route enters language.

Language enters as just one among the many other media by which information about the disposition, among other such things in the environment, of an empirical object, kind, stuff, or property can manifest itself to the senses. Just as there are conditions under which patterns of light striking the retina will vary systematically with certain properties of the distal objects reflecting it, there are conditions under which the sentences that a person hears will vary systematically according to the dispositions of things in the world that originated them. In neither case are the relations entirely dependable, and there is, of course, much more static in the case of sentences. Also, the correspondence rules vary less systematically when one moves from one surrounding language community to another than from one kind of lighting conditions to another. The basic principle, however, remains exactly the same.

The result is that a very large portion of our conceiving is done mainly or entirely through the medium of language (Millikan 2000, Chapter 6). As individuals, each of us has empirical concepts that are entirely dependent on language, having no means of recognizing the objects of these concepts "in the flesh." We recognize them only through their manifestations in the speech of others. Even more important is the role of language in concept learning. Mastering the phonetic and phonemic structure of a language so as to be able to recognize, in general, when one has encountered the same word again, is, quite literally, play for babies. It is much easier than learning how

to reidentify "in the flesh" the vast number of natural objects, kinds and properties that concern us. Extreme examples are the many concepts from the sciences that were historically developed through great labor over long periods of time but are learned in minutes or hours when one studies the sciences. And with the stabilizing hand of language to hold onto, abilities to recognize the objects of these concepts in the flesh are often readily obtainable as well.

So which comes first, thought or language? The relations, if they are as I have outlined them, are very complex indeed.

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