Chapter 19

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CHAPTER NINETEEN
CONJECTURES ABOUT HUMAN THOUGHT[1]

To learn to represent all sorts of objects, stuffs, kinds and properties with which you have no practical dealings you need another way to tell when you are reidentifying these things correctly. You need a representational system that shows within it, prior to action, when errors in identification occur. This is done, I suggest, with the introduction of subject-predicate structure into representations where the predicate is sensitive to a negation transformation. This form, the form of theoretical judgment, allows descriptive inconsistencies to emerge explicitly, right on the surface of the representational system. It allows thought openly to display coherence or incoherence in the ways it is representing the world prior to using those representations in practical activity. Inconsistencies show that corrections are needed in the ways being used to form judgments, that is, in the ways used to identify subjects and predicates of judgment --objects, events and their properties. Contrast beaver-tail slaps and bee dances, for example, which are not sensitive to a negation transformation, indeed, cannot even display contrariety. Danger signals at different times and places are not contrary to one another for there might really be that much danger around. Bee dances showing nectar at different locations are not contrary to one another, nor do the bees have any way of saying where there isn't any nectar. A subject-predicate sentence and its negation, on the other hand, are explicitly incompatible, incompatible right on the surface. Similarly, humans can think negative thoughts, and these thoughts contrast explicitly with possible positive thoughts. Whether the way human thoughts are coded resembles the way language is coded in any other way, it is clear that our thoughts are sensitive to a negation transformation.

This feature of thought, I believe, explains how humans are able to gather for possible use an enormous variety of representations of world affairs that they do not use in practice, indeed, that are very distant from them in time, space and magnitude. We are able to do this because we can test each method of gathering information about a subject matter against its use on other occasions and against alternative methods of gathering the same information, using agreement in judgments to confirm our abilities to reidentify objects and properties. Consistent agreement in results is evidence that these various methods of making the same judgment are all focusing on the same distal affair, bouncing off the same target, as it were. But, of course, agreement in judgments can be a test only because disagreement in judgments is possible.

If the same belief is confirmed by sight, by touch, by hearing, by testimony and by various inductions one has made, this is a good test not only for the objectivity of the belief but for each of the methods employed in identifying and reidentifying the objects and properties the belief concerns. The same object that is square as perceived from here should be square as perceived from there and square by feel and square by checking with a carpenter's square and square by measuring its diagonals. Both one's general methods of reidentifying individual physical objects and one's methods of recognizing shapes are corroborated in this way. Similarly, if a person knows French as found today, that person should know French when found tomorrow and as inferred from the fact that he buys Le Mond every Saturday. If the same belief is confirmed by sight, by touch, by hearing, by testimony and is also in accord with theories one holds, that helps to confirm the accuracy of one's visual, tactile and auditory perception as well as the accuracy of one's theories. That the same substance is found to melt at the same temperature by checking with an alcohol thermometer, a mercury thermometer, a gas thermometer and a bimetal expansion thermometer is evidence both that one is able to recognize the same substance again and that there is indeed some real quantity (unlike caloric pressure) that all of these instruments are measuring. In

sum, that any method of collecting evidence is in fact a method of collecting evidence FOR something can only be confirmed by a record of agreement with other methods of collecting evidence for the same. This sort of agreement is evidence both for the reality of the subject matter and at the same time for the reliability of the methods used in reidentifying both subject and predicate.[2]

But the crucial point is that the possibility of agreement in judgments presupposes the possibility of disagreement. In its basic form, negation is a semantic operation on the logical predicate of a sentence (Millikan 1984, Chapter 14, Horn 1989, Chapter 6[3]). Logicians call this "internal negation." For example, the normal reading, say, of the classic negative sentence "The king of France is not bald" makes it equivalent to "The king of France is non-bald," so that the negative as well as the affirmative presupposes the existence of a king of France. More obviously, "John is not tall" is normally equivalent to "John is non-tall" and "John does not know French" is equivalent to "John is ignorant of French," and so forth. There are also secondary uses of "not" to reject a sentence on non-truth-conditional grounds, as in "The slithy toves did not gyre and gimbal in the wabe" or "The square root of two is not blue" or "You didn't see two mongeese, dear, you saw two mongooses" or "The king of France is not bald, dear; France doesn't have a king." But the fundamental use of the negative is not to prohibit assertion of a sentence, but to make a positive, though indefinite, statement to the contrary. The standard negative sentence says something about its subject, namely, that it is characterized by some contrary or other of the predicate of the sentence. If John is not tall it is because he is short or of medium height. If John does not understand French it is because French sentences either leave his mind blank or produce in it thoughts different than for a Frenchman.

This point about negation assumes importance when we turn to epistemology and consider how evidence is gathered for a negative judgment. Begin with the obvious: The absence of a representation of a certain fact is not equivalent to the presence of a representation showing the negative of that fact. Absence of a belief is not a negative belief. Similarly, absence of perceptual evidence leading one to form or confirm a belief is not perceptual evidence that leads one to form or confirm the negative of that belief. If you look again from another angle at what you took to be a square object but fail this time to see that the object is square, or reach out with your hand but fail to feel that the object is square, this by itself is not evidence against the object's being square. Perhaps the trouble is that you can no longer see the object at all, or although you see it, you can't make out its shape against the light. Perhaps the trouble is that the object is not where it appeared to be so that reaching out your hand to feel it you encounter nothing at all. To gather evidence against the object's being square, you must first see or feel the object, and then you must see or feel that its shape is some contrary of square, perhaps round or oblong. Gathering evidence for the negative of a proposition is always gathering positive evidence, evidence for some contrary of that proposition.

It follows that the ability to recognize contraries of a property through the variety of their diverse manifestations and to recognize them as being contraries, as being incompatible, is required in order to test one's abilities to identify subjects of theoretical judgment, and vice versa. The result is not an epistemological regress or circle. But both of these abilities do have to be in place before stability of theoretical judgment over time and over perspectives can emerge with regard to any particular kind of subject matter. Both these abilities have to be in place before steady evidence can accumulate that any successful identifications at all are being made. The first leg up is undoubtedly practical. Many of the things recognized as the same again for purposes of

practical use do turn out to be pretty good subjects for theoretical judgment as well. The second leg up, as I will explain in a minute, is public language.

On the other hand, the bootstrapping into theoretical judgment is made more difficult by the fact that different categories of things suitable to be subjects of judgment have properties from different contrary ranges. For example, although each person and each building has some definite height, silver and milk have no height any more than the square root of two has a color, and although the leopard frog, as studied by the zoologist, is cold blooded and has a heart and lungs and also spots, it has no definite number of spots. If one finds that the leopard frog has 27 spots on one occasion and 29 on another, this does not cast doubt either on one's ability to recognize leopard frogs or on one's ability to count spots, for only individual frogs have a definite numbers of spots. Use of the law of contradiction to test your abilities to identify subjects of judgment and their properties thus presupposes a grasp of what kinds of contrary spaces are coordinate to what kinds of subjects. It assumes, that is, some understanding of the structure of various ontological categories involved such as the categories individual object, species, functional kind, organic substance, chemical kind, and so forth.[4]

Language provides a leg up, indeed, takes us most of the way up, in the enormously difficult task of learning to identify suitable subjects for theoretical judgment and the predicate contrary spaces that complement them. It does this, initially, by a very simple means. Every language has a small number of phonemes which, in various arrangements, account for all of the words in the language. Having learned the phonological structure of a language (which infants do in the first few months) makes it possible to tell when the same word is being said again and when a different word.[5] If the thesis of Chapter Nine is correct and listening to language is just one more form of direct perception of the world, then objects and properties that have been discovered and named in one's language community are made immediately available to one through language. A denoting word is a tracer for whatever it denotes. It evidences the existence of an objective subject matter or of an objective property already recognized by others in the community. Learning to agree with others in making judgments is learning to identify what others already know how to identify. Grammar, as well as the judgments others make, serves as a guide to ontological category. In this way, accurate abilities to locate and reidentify various objects, stuffs, events, and their kinds and properties, which abilities it may have taken the historical community hundreds of years to achieve, are acquired nearly effortlessly by later generations (Millikan 2000, Chapter 6).

The additional perspective on the world that understanding a public language affords adds much more than just another sensory modality through which objective identities are easier to perceive.[6] Or perhaps I should put it the other way around --that much more is required of one who understands a public language than that they learn to perceive through a new sensory modality. An important difference between ordinary perception and perception through language is that perception through language does not routinely yield information about the relation of what is perceived to the perceiver (Chapter Nine). But information about something that you do not understand your own relation to is useless for immediate practical ends. In order to utilize a perceived affordance, you have to know where it is in relation to you. But the one who picks up information through ordinary perception and subsequently transmits it through language knows only his own relation to the subject matter, not the relation that hearers will have, and certainly not the relation that hearers of hearers will have.

Language, then, is a vehicle primarily for transmission of theoretical judgment and thought.

Also for the representation of goal states expressed using theoretical concepts. It is reasonable to suppose then that the development of human language and the development of theoretical thought were simultaneous. A developed language would be of no use without the ability to engage in theoretical judgment and thought, and the ability to engage in theoretical judgment and thought would be difficult or impossible to sustain without language, since each generation would have to start fresh in the project of developing the sophisticated capacities to reidentify that are needed to support theoretical concepts.

Possibly the most important achievement of theoretical thought, resting directly on the capacity for language, is the capacity to represent historical time. By historical time I mean dated time, that is, time represented as a straight path receding into the past in one direction and continuing indefinitely into the future in the other without repetition. Contrast this with representing time merely as a set of unchanging conditional probabilities of temporal sequence, one kind of event following after another. The latter understanding of time makes it exactly like space. For the most part a space remains the same no matter where you move within it. You can leave a part of the space, go through a sequence of neighboring parts, later return to that same part again, finding it the same as you left it. Then you can go through the same sequence again, or through another sequence, then back to the first, and so forth. Similarly, a representation of time as a set of conditional probabilities of sequence allows one to come back to the same position in the sequence again, or to go through another sequence, then come back to the first. A representation of the space one lives in has to be updated occasionally. The same is so for this kind of representation of time. Sometimes a recurring sequence changes to a somewhat different recurring sequence. This happens, for example, when a young mammal is weaned by its mother. But updating a representation is merely changing it. As Kant admonished Hume in the parallogisms, a change in one's representation of something is not a representation of change, To change one's representation of the space or the temporal order one lives in is merely to correct current errors. It is not to represent that anything has changed. Temporal contingency sequences, even though frequently updated, need not be understood as happening within a dated time order. They need not be understood as happening within historical time.

An understanding of historical time implies the capacity to understand particular events as occurring in just one position in a linear time sequence, never to be directly encountered again. It implies the capacity to think of an individual object as having a property at one particular time but not necessarily at any other. In order to develop and test one's abilities to identify single events of this kind as valid abilities to recognize truly objective events, one has to perceive the very same time-bound events in more than one way. How do we do this? What evidence do we have, for example, that our representations of the past are of anything real? The primary evidence is that others often remember the same events. It is through other people's perceptions that we obtain more than one perspective on the same dated occurrence. But other person's perceptions are made available to us only through language. Grasp of historical time depends, in the first instance, on language.

Chapter Sixteen left us with an animal that was able to represent objective goal states, able to know when it had reached these goal states, and able, even, to make trials and errors in thought so as to invent new ways of reaching its goals. But this animal still lived in an entirely present-centered world, its goals derived only from present perceptions of nearby affordances and perceptions of present needs. Its world of perceived possibilities unfolded entirely from within its momentary perceptual experience coupled with its own and its species' past history of successes

and failures. Planning for the future was entirely instinct controlled in these animals, not thought about, not figured out. In Chapter Seventeen, however, we discovered ourselves as creatures that collect desires, dreams and ambitions concerning all sorts of things we ourselves have never experienced, sometimes even things mankind has never experienced. We found ourselves explicitly representing possible future affairs that, if brought about, would be quite new in our own experience and perhaps in others' as well. And we found ourselves explicitly worrying about how to accommodate future needs of ourselves and others, sometimes needs in the distant future. Where did these extra desires and concerns come from?

An animal that represents time as it represents space moves into the future as if navigating a terrain that is already there. Its job is to avoid the pitfalls and to seek out the rewards already laid out ahead, not to create anything new. We humans who represent time as historical understand that we are constructing a sequence, not finding one. Permanent changes can be made in the layout of the world, and on top of those changes further changes can later be made. New permanent structures can be constructed that will stay there for use tomorrow and the day after. Permanent changes can be made in the dispositions of things, for example, by altering a tool or a machine, so that it will behave more as one wishes in future. The capacity to represent historical time gives rise to our ability to conceive of, to plan and to carry out long term projects that significantly change our environments. We quite purposefully and knowingly make what will exist in the future quite different from what has existed in the past.

FOOTNOTES

1. This chapter concerns theoretical knowledge and the use of negation and contradiction. These themes are developed in more detail in (Millikan 1984) Chapters 14 through 19. Further aspects are developed in (Millikan 2000), especially Chapter 7. Interested readers may wish to turn to those earlier discussions, for the account below is much abbreviated.

2. In (Millikan 1984, 2000) I defend a strong realism or objectivism about sameness or identity at considerable length.

Wittgenstein and Davidson hold that the only way to corroborate one's ways of recognizing the selfsame thing again is through agreement with others using the same language. Wittgenstein believed this because he was a linguistic idealist. He didn't believe there were objective identities prior to language and the thought that rests on language. Why Davidson believes this is less clear. (When questioned, he just says that if you can't see the point, there really is no point in talking further.)

3. External negation, which operates on the sentence as

a whole, is called "immunizing" negation in (Millikan 1984). Horn (1989) gives a parallel analysis calling it "metalinguistic" negation as opposed to "descriptive" negation. The claim is that immunizing or metalinguistic negation is not a semantic operator.

4. These cryptic remarks are expanded, especially in (Millikan 2000).

5. Not quite. This ignores that different words can have the same sound, so that their domains often need to be tracked as well (Chapter Ten).

6. That it is a mistake to count sensory modalities by counting the end organs through which information is received was strongly, and I believe correctly, argued by Alvin Liberman over a period of many years. In particular, he argued that the perception of speech sounds uses different neural channels than the perception of other sounds, the separation occurring very close to the periphery (Liberman 1996).