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0521623863 - On Clear and Confused Ideas: An Essay about Substance Concepts

Ruth Garrett Millikan

Excerpt

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## 1

*Introducing Substance Concepts*

## §1.1 ONE SPECIAL KIND OF CONCEPT

One use of the word “concept” equates a concept with whatever it is one has to learn in order to use a certain word correctly. So we can talk of the concept *or* and the concept *of* and the concepts *hurrah*, *the*, *because*, *necessarily*, *ouch*, *good*, *true*, *two*, *exists*, *is* – and so forth. We can talk that way, but then we should remember Wittgenstein’s warning: “Think of the tools in a toolbox: there is a hammer, pliers, a saw, a screwdriver, a glue pot, nails and screws – The functions of words are as diverse as the functions of these objects” (1953, Section §11). Given this broad usage of “concept,” there will be little or nothing in common about any two of these various concepts. We mustn’t expect a theory of how the tape measure works to double as a theory of how the glue works.

In this book, I propose a thesis about the nature of one and only one kind of concept, namely, concepts of what (with a respectful nod to Aristotle) I call “substances.” Paradigmatic substances, in my sense, are individuals (Mama, The Empire State Building), stuffs (gold, milk), and natural kinds (mouse, geode). The core of the theory is not, however, about grasp of the use of *words* for substances (although I will get to that). Rather, the core belongs to the general theory of cognition, in exactly the same way that theories of perception do. Substance concepts are primarily things we use to think with rather than to talk with. A reasonable comparison might be between the proposal I will make here and David Marr’s first level of analysis in his theory of vision. I attempt something like a “task analysis” for substance concepts, a description of what their job or function is, why we need to have them. Marr claimed

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(rightly or wrongly) that the task of vision is to construct representations of three dimensional objects starting from retinal images. I will claim that the task of substance concepts is to enable us to reidentify substances through diverse media and under diverse conditions, and to enable us over time to accumulate practical skills and theoretical knowledge about these substances and to use what we have learned.

There is another tradition that treats a theory of concepts as part of a theory of cognition by taking a concept to be a mental word. If one takes it that what makes a mental feature, or a brain feature, into a mental word is its function, then this usage of “concept” is not incompatible with my usage here. Indeed, during the first part of this book I will rely rather heavily on the image of a substance concept as corresponding to something like a mental word (while plotting subsequently to demolish much that has usually accompanied this vision). But if a substance concept is thought of as a mental word, it must constantly be borne in mind that the category “mental word for a substance,” like the category “tool for scraping paint,” is a function category. My claims will concern the function that defines this category. If a mental word for a substance is to serve a certain function, the cognitive systems that use it must have certain abilities. It is onto these abilities that I will turn the spotlight, often speaking of a substance concept simply as *being* an ability.

In this chapter I will roughly sketch the general sort of ability I take a substance concept to be. In later chapters I will fill in details, but some rough understanding of the whole project is needed first.

### §1.2 WHAT ARE “SUBSTANCES”?

From the standpoint of an organism that wishes to learn, the most immediately useful and accessible subjects of knowledge are things that retain their properties, hence potentials for use, over numerous encounters with them. This makes it possible for the organism to store away knowledge or know-how concerning the thing as observed or experienced on earlier occasions for use on later occasions, the knowledge retaining its validity over time. These accessible subjects for knowledge are the things I am calling “substances.” Substances are, by definition, what can afford this sort of opportunity to a learner, and where this affordance is no accident, but is supported by an ontological ground of real connection. The category of substances is widely extensive, there being many kinds of items about which it is possible to learn from one encounter something about what to expect on other encounters. I will discuss the

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ontology of substances in Chapter 2.<sup>1</sup> Here I illustrate with just a few paradigmatic examples.

I can discover on one temporal or spatial encounter with cats that cats eat fish and the knowledge will remain good on other encounters with cats. That is, I can discover from the cat over here eating fish that the cat over there will probably also eat fish, or from a cat now eating fish that a cat encountered later will eat fish. I also can discover numerous other anatomical, physiological, and behavioral facts about cats that will carry over. There is the entire subject of cat physiology and behavior studied by those attending veterinary schools. I can learn how to hold a frightened cat on one or a few occasions, and this may hold good for a lifetime of cat ownership.

Similarly, I can discover that Xavier knows Greek on one encounter and this will remain good on other encounters with Xavier. Or I can discover that he has blue eyes, that he is tall, that he likes lobster, and that he can easily be persuaded to have a drink, and these will, or are likely to, carry over as well. I can discover that ice is slippery and this will remain good when I encounter ice again, either over there with the next step I take, or next winter. I can learn how to avoid slipping on ice, and this will carry over from one encounter with ice to the next. And for any determinate kind or stuff, there is a vast array of questions, such as “what is its chemistry?,” “what is its melting point?,” “what is its specific gravity?,” or “what is its tensile strength?” that can sensibly be asked about it and answered, once and for all, on the basis, often, of one careful observation. For these reasons, catkind, Xavier, and ice are each “substances.” Besides stuffs, real kinds, and individuals, the category *substances* may include certain event types (here’s breakfast again), cultural artifacts, musical compositions, and many other things such as McDonald’s and the Elm Street bus, but I will ignore these others in this introductory chapter.

### §1.3 KNOWLEDGE OF SUBSTANCES

It is not a matter of logic, of course, but rather of the makeup of the world, that I can learn from one observation what color Xavier’s eyes are or, say, how the water spider propels itself. It is not a matter of logic that these things will not vary from meeting to meeting. And indeed,

1 The ontology is discussed with a different emphasis in Millikan (1984), Chapters 16 and 17.

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the discovery on one meeting that cat is black does not carry over; next time I meet cat it may be striped or white. Nor does the discovery that Xavier is talking or asleep carry over; next time he may be quiet or awake. Nor does discovering that ice is cubical or thin carry over, and so forth. Although substances are, as such, items about which enduring knowledge can be acquired from one or a few encounters, only certain types of knowledge are available for each substance or broad category of substances.

Furthermore, most of the knowledge that carries over about ordinary substances is not certain knowledge, but merely probable knowledge. Some cats don't like fish, perhaps, and a stroke could erase Xavier's Greek. But compare: No knowledge whatever carries over about non-substance kinds, such as *the red square* or *the two-inch malleable object*, or *the opaque liquid*. There is nothing to be learned about any of these kinds except what applies to one or another of the parts of these complexes taken separately, that is, except what can be learned separately about red, about square, about malleability, liquidity, and so forth.

Classically, simple induction is described as a movement from knowledge about certain instances of a kind to conclusions about other instances of the same kind. Forced into this ill-fitting mold, learning what the properties of a substance are would be viewed as running inductions over instances of the second order kind *meetings with substance S*: meetings with Xavier, meetings with ice, meetings with cat, and so forth. If we then made the usual assumption that running inductions over members of a kind involves having concepts of the various instances of the kind on the basis of which an inference is made, we would get the strange result that learning that Xavier has blue eyes involves beginning with concepts of meetings with (or instances of, or time slices of . . . ?) Xavier. But to have a concept of a meeting with Xavier, presumably you must first have a concept of Xavier. If having a concept of Xavier requires knowing how to generalize productively from one meeting with Xavier to another, as I will argue it does, then a regress results if you must begin with a *prior* concept of Xavier in order to do this. I will discuss the psychological structure of substance concepts in Chapter 5. At the moment, let me just note that when I speak of "running inductions" over occasions of meeting with various substances, I do not imply that this kind of "induction" can be unpacked in the usual way. Possibly "generalization" would be a less misleading word. Its usage in "stimulus generalization," for example, does not imply that inferences are involved that start with premises containing concepts of stimula-

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tions. On the other hand, the central thesis to be argued in this book implies that a great many logical/psychological moves that have traditionally been treated as examples of simple induction, in particular, inductions over the members of real kinds, need not begin with such concepts either, so it is best, in general, not automatically to shackle the notion “induction” with its classical analysis.

#### §1.4 WHY WE NEED SUBSTANCE CONCEPTS

The next step in articulating the notion of a substance concept is to ask ourselves *why* a person, or animal, needs to carry knowledge of the properties of a substance from one encounter with it to another. Why is it helpful to learn about a substance and remember what has been learned? Notice that if all of a substance’s properties were immediately manifest to one upon every encounter with it, there would be no need to learn and remember what these properties were. If every cat I encountered was in the process of eating a fish, I would not need to remember that cats eat fish, and if Xavier was always speaking Greek when I encountered him, I would not need to remember that he speaks Greek. Carrying knowledge of substances about is useful only because most of a substance’s properties are not manifest but hidden from us most of the time. This is not, in general, because these properties are “deep” or “theoretical” properties, but because observing a property always requires that one have a particular perspective on it. To observe that butter is yellow you must be in the light, to observe that it is greasy you must touch it, to observe that the sugar is sweet it must be in your mouth, to observe that the milk is drinkable and filling you must tip the cup and drink. You do not find out that the cat scratches until you disturb it, or that the fire burns unless you near it. The bright colored design on the front of the quilt is not seen from the back, and although Xavier knows Greek he is seldom come upon speaking it. Different properties and utilities of a substance show themselves on different encounters. Were it not for that, there would be no point in collecting knowledge of a substance over time and remembering it.

#### §1.5 THE ABILITY TO REIDENTIFY SUBSTANCES

Yet a sort of paradox lurks here that, I believe, takes us straight to the most central problem there is for cognition. The difficulty is that it won’t help to carry knowledge of a substance about with you unless

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you can recognize that substance when you encounter it again *as* the one you have knowledge about. Without that you will be unable to apply whatever knowledge you have. But if different properties of a substance show themselves on different encounters with it, how is one to know when one is encountering the same substance again? The very reason you needed to carry knowledge about in the first place shows up as a barrier to applying it. Indeed, not only substances but also their properties reveal themselves quite differently on different occasions of meeting. The enduring properties of substances are distal not proximal, and they affect the external senses quite differently under different conditions and when bearing different relations to the perceiver.

This is a problem, moreover, not merely for the application of knowledge of substances one already has, but for the project of collecting knowledge of substances. How can you collect knowledge of a substance over time, over a series of encounters, if you cannot recognize that it is the *same* substance about which you have learned one thing on one encounter, another thing on another encounter? Clearly it is essential to grasp that it is the *same* thing about which you have these various bits of knowledge. Suppose, for example, that you are hungry and that you know that yogurt is good to eat and that there is yogurt in the refrigerator. This is of no use unless you also grasp that these two bits of knowledge are about the same stuff, yogurt. *To caricature*, if you represent yogurt to yourself in one way, say, with a mental diamond, as you store away the knowledge that yogurt is good to eat, but represent it another way, say, with a mental heart, as you store away the knowledge that it is in the refrigerator, these bits of information will not help you when you are hungry.<sup>2</sup> Indeed, the idea that you might be collecting information about a thing without grasping that it was the same thing that any of these various pieces of information was about is not obviously coherent. Russell's claim that "it is scarcely conceivable that we can make a judgment or entertain a supposition without knowing what it is we are judging or supposing about" (Russell 1912, p. 58) has an intuitive appeal and a plausible application (Chapters 13 and 14).

From this we should conclude, I believe, that a most complex but crucial skill involved for any organism that has knowledge of substances must be the ability to reidentify these substances efficiently and with

2 To model the act of reidentifying a substance in thought as using the same mental term again, as I have playfully done here, is a crude and misleading expedient, to be criticized at length in Chapter 10.

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fair reliability under a variety of conditions. The other side of this coin is that a fundamental ability involved in all theoretical knowledge of substances must be the capacity to store away information gathered about each substance in such a way that it is understood which substance it concerns. Information about the same must be represented by what one grasps *as* a representation of the same.

This capacity is central to the capacity to maintain a coherent, non-equivocal, nonredundant, inner representational system, which means, I will try to persuade you, that it is essential for representing something in thought (i.e., conceptually) at all. That these capacities are specifically conceptual capacities, not to be confused with judgmental capacities, will be argued culminating in Chapter 12.

#### §1.6 FALLIBILITY OF SUBSTANCE REIDENTIFICATION

The ideal capacity to identify a substance would allow correct reidentification under every physically possible condition, regardless of intervening media and the relation of the substance to the perceiver. The ideal capacity also would be infallible. Obviously, there are no such capacities. If the cost of never making an error in identifying Xavier or ice or cats is almost never managing to identify any of them at all, then it will pay to be less cautious. But if one is to recognize a substance a reasonable proportion of the time when one encounters it, one will need to become sensitive to a variety of relatively reliable indicators of the substance, indeed, to as many as possible, so as to recognize the substance under as many conditions as possible.

Reasonably reliable indicators of substances may come in a variety of epistemic types. One kind of indicator may be various appearances of the substance to each of the various senses, under varying conditions, at varying distances, given varying intervening media, or resulting from various kinds of probing and testing, with or without the use of special instruments of observation. That is, one kind of indicator may allow recognition of the substance directly, without inference. Another kind of indicator may be possession of various pieces of information about the presented substance – that it has these or those objective properties that indicate it reliably enough. In Chapter 6, I will argue that words also can be indicators of substances, but that requires a special story.

In the case of familiar substances, typically we collect over time very numerous means of identification, but all of these are fallible, at least in principle. There is no such thing as a way of identifying a substance that

works with necessity and that one also can be sure one is actually using on a given occasion. All methods of identification rest at some point on the presence of conditions external to the organism, and attempting to identify the presence of these conditions poses the same problem over again. Nor is any particular method or methods of identification set apart as “definitional” of the substance, as an ultimate criterion determining its extension or determining what its concept is of. The purpose of a substance concept is not to sustain what Wettstein (1988) aptly calls “a cognitive fix” on the substance, but the practical one of facilitating information gathering and use for an organism navigating in a changing and cluttered environment.

Consider, for example, how many ways you can recognize each of the various members of your immediate family – by looks of various body parts from each of dozens of angles, by characteristic postures, by voice, by footsteps, by handwriting, by various characteristic activities, by clothes and other possessions. None of these ways nor any subset *defines* for you any family member, and probably all are fallible. There are, for example, conditions under which you would fail to recognize even your spouse, conditions under which you would misidentify him, or her and conditions under which you might mistake another for him or her. The same is true of your ability to identify squirrels or wood. To be skilled in identifying a substance no more implies that one never misidentifies it than skill in walking implies that one never trips. Nor does it imply that one has in reserve some infallible defining method of identification, some ultimate method of verification, that determines the extension of each of one's thoughts of a substance, any more than the ability to walk implies knowing some special way to walk that could never let one trip.

§1.7 FIXING THE EXTENSIONS OF SUBSTANCE CONCEPTS:  
 ABILITIES

If this is so, it follows that it cannot be merely one's disposition to apply a substance term that determines its referent or extension. The question emerges with urgency, then: What *does* determine the extension? When my mother stoutly insisted her father was “Uncle Albert,” it seems clear that the name “Uncle Albert,” for her, did not in fact refer to her father. She applied “Uncle Albert” incorrectly according to her own standards, not just the standards of adults. By contrast, in a passage characteristic of the psychological literature, Lakoff remarks, “It is known, for example, that two-year-olds have different categories than



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adults. Lions and tigers as well as cats are commonly called “kitty” by two-year-olds . . .” (1987, p. 50). How does Lakoff know that two-year-olds don’t think that lions and tigers *are* housecats, for example, housecats grown big or giant kitties, just as my mother thought her father was Uncle Albert? Perhaps with more experience the child will change her mind, not on the question what “cat” means, but on reliable ways to recognize kitties. A child who has got only partway toward knowing how to ride a bicycle has not learned something different from bicycle riding, but *partially* learned how to ride a bicycle. Won’t it be the same for a child who has got only partway toward recognizing Uncle Albert, or housecats?

The issues here turn, I will claim, on the question what “an ability to reidentify X” is, other than a disposition to identify X. If having a concept of cats requires having an ability to reidentify cats, and if an ability were just a disposition, then whatever the child has a disposition to identify as a cat would have to be part of the extension of her concept. It is crucial, I will argue, that an ability is *not* a disposition – of any kind. The question what a given ability is an ability to do, even though it may not accomplish this end under all conditions, is the same as the question what substance a given substance concept is of (Chapters 4, 13, and 14).

#### §1.8 SUBSTANCE TEMPLATES

The practical ability to reidentify a substance when encountered, so as to collect information about it over time and to know when to apply it, needs to be complemented with another and equally important ability. Having a concept of a substance requires a grasp of what kinds of things can be learned about that substance. It requires understanding from which kinds of experienced practical successes to generalize to new encounters with the substance, or if the concept is used for gathering information, it requires understanding what sorts of predicates will remain stable over encounters with the substance, that is, what some of the meaningful *questions* are that can be asked about the substance.<sup>3</sup> You can ask how tall Mama is, but not how tall gold is. You can ask at what temperature gold melts, but not at what temperature chairs (as such) do – the latter is a question that can be answered only for certain individual chairs. There is much that you can find out about the internal organs of each species of animal but not about the gross internal

3 See Millikan (1984), Chapter 15, p. 252 ff, and Chapters 16 and 17.

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parts of gold or mud. Having a concept of a substance does not involve knowing an essence. Rather, it involves understanding something of what recognition of the substance might be good for, in the context either of developing practical skills or theoretical knowledge.

To have the concept of any individual person, you must know what kinds of questions can be asked and answered about individual people; to have the concept of any individual species, you must know some of the questions that can be asked and answered about species; to have the concept of any chemical element, you must know some of the questions that can be asked and answered about chemical elements, and so forth. The primary interest of groupings like *persons*, *species*, and *chemical elements* is not that they themselves correspond to substances, but that they bring with them “substance templates.” Many of the same sorts of questions can be asked and answered though not, of course, answered the same way, for all members of each of these groups. They are natural groups, the members of which display a common set of determinables rather than, or in addition to, a common set of determinates.<sup>4</sup> All chemical elements have, for example, some atomic number or another, some specific chemical combining properties or others, some electrical conductivity or other.

*Physical object* seems to be a pure substance template. To be a physical object in the broadest sense, a thing need have no particular determinate properties at all, but it has to have some mass, some charge, some position and velocity at each time, some extension, be composed of some particular material, and so forth. With rare exceptions, however, categories that bring with them substance templates also bring at least a bit more. They correspond to substances displaying at least a few common properties as well as bringing substance templates with them.

#### §1.9 CONCEPTIONS OF SUBSTANCES

The practical ability to reidentify a substance is typically composed of a variety of different ways of identifying it. These multiple means are used conjointly and alternatively for identifying the substance, each being employed whenever possible under the given circumstances, and given the thinker’s particular current relation to the substance. None of these

4 Determinables are not specific properties like *red* or *square*, but rather disjunctions of contrary properties like *colored* (equals red or blue or green or . . .), and *shaped* (equals square or triangular or circular or . . .).