

**Non-Propositional Knowledge. Access and Procedures**  
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## Non-Propositional Knowledge: Access and Procedures

*"We are like people who think that pieces of wood shaped more or less like chess or draught pieces and standing on a chess board make a game, even if nothing has been said as to how they are to be used."*

— Wittgenstein, *"The Blue and Brown Books."*

Intellectualists argue that know-how is a matter of knowing-that, ie. knowing a set of propositions. In particular, modern intellectualist Carlotta Pavese argues that know-how is a propositional attitude, the conceptual content of which may include special "practical senses." This sentiment underplays the knowledge, which may or may not constitute "knowing-how," that is required for one to know the "practical" propositions in question. I hope to give an account the knowledge underlying Pavese's propositional account that is entirely non-propositional and completely replaces her notion of practical senses (Pavese, 2015a)[1]. Moreover, I hope to address an error in Pavese's formulation of practical senses and the requirements for grasping them.

Here is the plan. I will go over Pavese's account and highlight a problem I see in her account "bottoming-out." I will introduce the concept of the "Physical Symbol System" (Newell and Simon, 1976)[2]. I will then give a concrete explanation of access and designation within the physical symbol system as the ad hoc expansion of the symbol system. Using these tools, I will give an account of propositional knowing and acquaintance; and of knowing-how and procedural knowing, demonstrating a propositional/non-propositional parity of knowledge in these two epistemic domains.

### Pavese's Account

Pavese's account revolves around the notion of a "practical sense." She defines this as similar to a Fregean sense [3][4]. Given a task  $\phi$ , Pavese says that a practical sense of  $\phi$ -ing has a way to  $\phi$  as its sense and the actual task of  $\phi$ -ing as its referent (Pavese, 2015a; p. 13). That is to say "grasping a practical sense of  $\phi$ -ing" gives one access the the task of  $\phi$ -ing *through the lens* of a particular way to  $\phi$ .

Pavese requires that the capacities for grasping a practical sense be rule following capacities and that the abilities afforded from grasping a practical sense be rule following abilities (Pavese, 2015a)[1]. In her later 2015 work, *Knowing A Rule*, Pavese gives her *Conceptualism*, the idea that "knowing a rule is a matter of possessing a practical concept" (Pavese, 2015b; p. 180)[5]. Her position is that knowing-how is a matter of knowing a practical proposition, a proposition with some practical conceptual content.

I have drawn out her capacity and ability restrictions on grasping practical senses because I hope to illuminate a "bottoming-out" of this account which requires meaningful non-propositional and also *non-rule-based* knowledge. Consider the following example taken directly from *Practical Senses*:

**(Capacity)** *If the chef were to make Indian curry by following a particular recipe for doing so, she would succeed.*

**(Ability)** *If the chef were to make Indian curry, she would succeed.*

Pavese finds that ability requires one to possess a rule (eg. the chef has memorized the recipe), while capacity does not. However, Pavese requires that grasping a practical sense require only rule-following *capacities*, not rule-following *abilities*. However, she says that "one may have the capacity to  $\phi$  because, were one instructed to  $\phi$  in a certain way, one would be able to  $\phi$  *by following that instruction*" (Pavese, 2015a, pp. 9-10). Consider however *rule-following capacity*. We would arrive at the idea that "one may have the capacity to follow some rules because, were one to be instructed to follow some rules in a certain way, one would be able to follow some rules *by following that instruction*." This however requires that one be able to follow that instruction. This is all to show that in Pavese's view, *capacity* to do *anything* requires rule-following *ability*. On this account, however, rule-following ability cannot be granted from grasping a practical concept, because that requires (rule-following) capacities which, themselves, require rule-following abilities. Therefore we are *not* endowed with our basic rule-following abilities in virtue of a practical sense. While this does not undermine her theory, it is a sign that something is not quite right.

I will try to address this by providing an alternative to practical senses that does not face this bottoming-out and that furthers the anti-intellectualist agenda by being wholly non-propositional and which clearly is deserving of epistemic value.

To do this, I will need the physical symbol system.

## Physical Symbol Systems

### Definition

A physical symbol system may be thought of as the last common ancestor between the brain and the computer. Allen Newell and Herbert Simon put forth the physical symbol system along with a hypothesis that these systems have the necessary and sufficient means for human level intelligence (Newell and Simon, 1976)[2]. A physical symbol system consists of three kinds of entities: symbols, symbol structures, and processes. A symbol is a physical pattern. A symbol structure, or expression, is a collection of instances of symbols, called tokens, which are *physically* related. For example, a computer has lots of physical patterns which designate bits. These bits form structures based on the wired connections of the machine. These would constitute symbol structures. The final kind of entity included in a physical symbol system is a process. Processes operate on expressions to produce other expressions. These are the complete statics of the system but there are also two important semantic definitions to give.

Firstly, we say an expression *designates* an object whenever it affords access to that object. This can either mean that the system may act in ways dependent on the object or that, given the expression, the system can effect the object. Secondly, we say that an expression may be *interpreted* whenever that expression designates a process and, given the expression, the system may carry out that process.

Throughout this paper I will be assuming Newell and Simon's hypothesis that this is truly the machinery of the human brain. On that basis, I will attempt to construct an epistemology consistent with the metaphysics of such system that does not face the problems we see in Pavese's account.

### **Access Clarified**

First, I need to flesh out one detail of the physical symbol system. As it stands, the notion of designation, particularly the designation of physical objects is vague, especially in the case of the human brain as such a system. The phenomenon of designation is such that given an expression the system has access to an object. I propose that this access be understood as taking the object temporarily into the system.

For example, consider printing a paper from your computer. From a cybernetics perspective, there is no clear dividing line between your computer, the printer, the infrastructure connecting them, and the page being printed. It is actually useful to think of that complex as one single system. To give a cognitive example, when using a tool, eg. a pen, it is not absurd for me to say that it is the person-pen system, and not the just-person or the just-pen system that is doing the writing.

I make this clarification because it allows the *processes* of the physical symbol system to also be *procedures* in the real world<sup>6</sup>. By extending a physical symbol system to include the physical objects it designates, we are able to get manipulation of the real world through the manipulation of symbol structures.

I'd also like to support framing in particular in the context of the mind/brain/body. Taking the brain to be a physical symbol system, the brain clearly has access to the body, and so this system includes the body. If we call the mind the phenomenal experience generated by the brain, then we have "fixed" mind body dualism by intimately connecting the mind, brain, and body. I think this is a more realistic result than one we see when building our entire metaphysics and epistemology out of propositions.

## Knowing in the Physical Symbol System

### Propositional Knowing

Knowing a proposition must clearly require access to that proposition. In the physical symbol system, this is accomplished with designation. Let us outline a simple principle for propositional knowing:

***Propositional Knowing:*** *One knows that **p** if and only if one has an expression designating the proposition that **p** and which affords a special kind of access.*

This kind of access may vary between different levels of epistemic acceptance, but we could state a similar principle for belief. In particular, the kind of access indicates what most epistemologists would call our doxastic attitude towards the proposition.

### Designation Primacy

My main goal in this paper is not to dismiss propositional knowing as a kind of knowledge, but to establish it more as an "icing on the cake." Right now, I'd like to put forth the idea that in forming any beliefs about an object, I must first have access to the object. Consider the following example:

***The Cup:*** *I am sitting looking at a cup on my desk. If you ask me what color the cup is, I can tell you that it is blue.*

As simple as this example is, it shows that perception, at least in this case, implies access. For people defending that propositions are the only carriers of epistemic value, this is an interesting situation. Do I know how to answer you only in virtue of a proposition? Imagine a "propositions first" account of what happens in *The Cup*.

*I am sitting looking at a cup on my desk. I form the belief that the cup is blue.  
You ask me what color the cup is, and I tell you that it is blue.*

I think it is entirely plausible that before I answer you, I have to form a belief about the cup, but I disagree that this propositional belief is the first carrier of epistemic value in this example. If I did not first gain access to the cup, ie. if I did not first

properly form a symbol structure designating the cup, it would **not** be plausible that I managed to form a belief about the cup and not about my desk, the liquid inside, or the evening or morning star. Because it is a necessary step in forming *any* belief about the cup, I think we may consider taking designation to have some *intrinsic* epistemic value. I call this principle that designation and access themselves are the first carriers of epistemic value "designation primacy" and I would call this kind of knowledge "acquaintance." But my focus in this paper is not on propositional knowing, but instead knowing how. In the next two sections, we will explore how there is a similar parallel of designation primacy within knowing how.

### **Knowing-how**

Consider what goes into my typing the letter *a* on my keyboard. In physical symbol system terms, we can understand this as executing a procedure/process which we call "typing the letter *a*." Taking this as a model, I think one can produce a principle to parallel Pavese's conclusion in both *Knowing a Rule* and *Practical Senses* (Pavese, 2015a; 2015b)[1][5].

***Naïve Knowing How:*** *One knows how to  $\phi$  if and only if (a) one has access to a process  $\pi$  through a symbol structure and (b) one knows that  $\pi$  is a way to  $\phi$ .*

While this is a good start, there is one major kink to work out. Recall just what processes are. They are things which operate on symbol structures to produce new ones. Taking Pavese's example of cooking curry, we would hope that some process  $\pi$  for cooking Indian curry would take a symbol structure for a valid curry-cooking environment and leave us in a new environment containing curry. But this is a little odd. I argue that, instead, we are better off asking for a process,  $\pi^*$ , which accepts a curry-cooking environment, *e*, and yields a symbol structure designating a process for cooking curry in environment *e*<sup>7</sup>.

Let's consider another example. I know how to sit. Using the work above, we might actually be better off saying I know how to sit *on some things*. Then we might want to say that I have a process which takes some object that I can sit on, *o*, and yields a process which will make me sit on *o*.

I make this distinction for an obvious reason. Knowing how to cook curry doesn't just imply the ability to cook curry in the right environment. It also meaningfully allows one to *imagine* cooking curry. While I may not be an expert currier, I can still

imagine this process roughly, and know that it is not something imaginable without one also imagining an environment in which one is cooking curry. On another note, I *am* a fairly masterful sitter, and I know for a fact that it is quite odd to imagine sitting without an environment or seat.

Both these examples show that our know-how gives us not one, but *many* objects we can take consciousness of. I can imagine sitting in my kitchen chair, on a folding stool, in my particular chair at my desk, etc. I can imagine doing all these things at different times of the day.

This is all to say that this first process, called  $\pi^*$  above, is what is required for my knowing-how: knowing-how is knowing-how *given an environment*. This leads us to my proposed definition:

**Knowing How:** *One knows how to  $\phi$  if and only if (a) one has access to a meta-process  $\pi^*$  through a symbol structure; (b) given an environment  $\mathbf{e}$ ,  $\pi^*$  yields a symbol structure designating a process  $\pi$ ; and (c) one knows that some  $\pi$  produced by  $\pi^*$  are ways to  $\phi$ .*

I would like to take just a minute to defend my requirement that only *some* of the processes produced are ways to  $\phi$ . My reason for doing this is to leave room for metaphor and pretending. I can take my curry-cooking know how and work with an environment full of paint instead of food. The result of this will be an odd mess of color which is in no way curry. This does not undermine my curry know-how. I could also reasonable pretend to cook curry using toy ingredients. This would result in toy curry, which not is curry. The versatility of this meta-process in knowing-how will be the focus of the next section of the paper and will be the basis of my main positive position.

### **Procedural Knowing**

In this section, I claim that having access to a meta-process is of intrinsic epistemic value, deserving of the name "procedural knowing." In particular, I would like to present an inversion of Pavese's practical sense: I claim that in knowing-how, the meta-process should be thought of as the referent, while the task to be accomplished is a mere sense. To show this, I would like to present an example where the same meta-process is used for multiple tasks.



**The Karate Kid:** *In the film, **The Karate Kid**, a young boy is taught to defend himself by learning skills involved in cleaning an old man's house and cars. In a pivotal scene, the boy confronts the old man, saying he hasn't taught him anything at all. The old man then attacks him and tells him to perform the various tasks he has been doing around the house. By using these skills (eg. "wax-on-wax-off") the boy successfully defends himself.*

I think it is fair to say that the boy does not "know-how" to do karate until he realizes that his car-waxing skills are of karate-import. This is consistent with both Pavese's account of knowing-how and my own. My account, however, allows us to do a more meaningful analysis of these epistemic happenings. In this example, the meta-process involved in knowing-how to do "wax-on-wax-off" enables the boy to "learn" karate in an instant. In particular, it allows him to make the simple recognition that *some* processes yielded from the wax-on-wax-off meta-process are ways to do karate.

Think of how easily we would say that he learned karate by learning these other skills. I think that it is reasonable to say that it isn't knowing how to shine a car that is to credit for the boy's knowing karate, but *the way that he knows how*. In our work here, we have clarified explicitly just what that means: the conjunction of clauses (a), (b), and (c) of our principle of knowing-how.

In particular, I think clauses (a) and (b) are doing the work for this knowledge transmission. It is not a jump from knowing-how to knowing-how, but instead a dip down to procedural knowing and back up. This is **not** possible with a Fregean sense as used by Pavese, because the relationship between signs, senses, and referents is mono-directional [3][4]. There is no way to recover the sense from the referent<sup>8</sup>. In our account, we have explicitly defined the process as something accessible to the knower and have no erasure like that of Fregean senses. Moreover, we have ameliorated our understanding of the processes involved in knowing-how, and now may think of meta-processes which allow for skills to be generalized or brought into new domains.

## Loose Ends

Have we actually solved the problem I identified in Pavese's account? I think yes. Her bottoming-out caused by rule-following restrictions is not at all relevant to the physical symbol system and its processes. The required capacities for interpreting a process are the capacities for being a physical symbol system in the first place (and are often purely physical) and they are of a very different kind than the abilities yielded from procedural knowing or knowing-how. Moreover, we have given an account of knowing-how that has an underlying epistemic unit, procedural knowledge, which allows us to analyze knowledge transference, metaphor, pretending, imagining, and I'm sure much more.

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6. I am just using the word procedure to clarify that a process has real world implications, and is not just a manipulation of formal symbols. As we have just shown this is not a real distinction and so I may use the two terms interchangeably, stressing the physical impacts of a process when I use the term procedure.
7. Funny as it may be, the idea of breaking down function application like this is often called "currying," after logician and mathematician Haskell Curry.
8. While it may be possible if one still has access to the sign, this concern is not addressed in Pavese's work.