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A Coffeehouse Conversation on Minds and Metaphor

The speakers are SIMPLICIO *and* SALVIATI*, both students of Nietzsche. They have just read "On Truth and Falsity in their Ultramoral Sense."*

SALVIATI: It's quite a thrill, isn't it, to learn that the words we know and love are effectively arbitrary? That "hard" only means *hard* by fiat?

SIMPLICIO: It would be a thrill if it were true. But words aren't quite as arbitrary as you or Nietzsche seem to think. Consider how the ones we use frequently, like "I" and "you," are much shorter than those encountered rarely, like "subjectivity" and "historicization." That's no accident: it is just more efficient, when designing a language, to make sure that your common words are shorter than the uncommon ones. The idea can be made rigorous if we appeal to something called the Kraft-McMillan theorem...

SALVIATI: I'm sure it can, but that won't help you here. To rebut your point all I have to do is ask, *so what* if we evolved a somewhat "efficient" language? Efficiency is a *human* value. All you've done is replace a little arbitrariness here with a little there.

SIMPLICIO: What you're saying is that the concept of efficiency itself is no less an arbitrary human "construct," if you will, than the words we live by? At least by Nietzsche's standard of arbitrariness?

SALVIATI: Exactly. Even if our languages have *internal* structure—maybe word lengths are distributed according to some general rule that maximizes efficiency; maybe there's a "universal grammar," and every dialect in every country uses some subset of the exact same vowel sounds—that won't impress Nietzsche, because those regularities are all wrapped up in e.g. the way the human brain is wired. And that's precisely his point: none of that internal structure buys you a substantive map between words and their objects, and in that very important sense, words *are* arbitrary. A rock by any other name would still be whatever the hell a "rock" actually *is*.

SIMPLICIO: Hmm. What about onomatopoeia? In those cases there's a very clear relation between the word, say "quack," and its object, namely, the sound a duck makes. Is there not?

SALVIATI: Not exactly. You have to be careful to distinguish between the thing itself—the sound a duck makes—and your percept of it, viz., the sound a duck makes *to you*. And that's really the central problem that Nietzsche was driving at. You, and I, and every other idiot human out there, acts as though our perceptual equipment gives us a *window* to the world: we hear a duck and think, "*that's* what a duck sounds like"; we see a stop sign say, "that sign *is* red." But the only reason ducks quack and stop signs are red is because our "nerve impulses," as N. put it, tell us so. It might help to think of your eyes as less like cameras receiving input from the world and more like projectors making this stuff up; the picture only *seems* objective because everyone else has the same kind of projector as you.

SIMPLICIO: See, I'm willing to grant that *words* (with some caveats) are basically cooked up at random, i.e. that as long as we were consistent, reversing "hard" and "soft" wouldn't make that much of a difference. But I am decidedly *not* on board with the idea that our perception of hardness itself is somehow arbitrary. There are actual rocks! They're hard!

SALVIATI: Again, you talk as though you have access to objective reality,—

SIMPLICIO: I *do*, as a matter of fact. These eyes of mine you insist on calling "projectors" are, believe it or

not, little curved *windows*: a black hole and some eyeball-shaped glass. All they do is let the light in.

SALVIATI: Don't forget your retinas, your optic nerve, your lateral geniculate nucleus, your occipital lobe, your visual cortex, and all the neural pathways that integrate everything you see into a unified "mental image."

SIMPLICIO: And what exactly do you think all this gear is doing? "Making stuff up"?

SALVIATI: Do I believe that the visual processing machinery housed in and around your brain is literally constructing images out of nothing? No. Obviously there is some *correspondence* between the "light you're letting in" and what you perceive. But your brain *does* do an incredible amount of computation before you see what you see, and who are you to say that it's the "right" computation? Another way of putting that (and it's an angle Nietzsche took in the essay) is this: there are all kinds of animals on Earth, including ones with radically different sensory apparatus than yours—the canonical example (since Nagel at least) being the bat and its sense of echolocation. What privileges your particular picture of things?

SIMPLICIO: Evolution, that's what. We happen to be (cognitively, at least) the most advanced species on the planet. Which is to say, in the optimization problem that is evolution we're the best solution so far. So presumably the way *we* see things is closer to reality than the way bats see them. Evidence: bats didn't land a bat on the moon, and there aren't any bat movies about bat superheroes, or bat malls where you can buy, I don't know, *blood* at exorbitant prices, and as f—

SALVIATI: You have to keep in mind what you're optimizing for.

SIMPLICIO: Pardon?

SALVIATI: You just said that "in the optimization problem that is evolution, humans are the best solution so far." My question is, what is this optimization problem optimizing *for*? What's the goal?

SIMPLICIO: Reproductive fitness. The number of grandchildren you have.

SALVIATI: Right—evolution doesn't care if your beliefs are closer to reality (whatever that means) than a bat's. All it cares about is your ability to replicate your DNA before you die. (Which probably has something to do with the 10^{20} new viral particles created by the human population alone each day...)

SIMPLICIO: Well, evolution doesn't *care* about anything; it's a dumb, blind process that just does what it does, no agency or intentionality involved. But presumably, having a better model of the world—knowing for instance where things are, what can and cannot be eaten, how to tell leaves apart from branches, etc.—improves reproductive fitness. As such, the degree to which one's beliefs map to reality in those kinds of ways is really the key to the whole operation, if you think about it.

SALVIATI: No no no... that is *exactly* what I'm arguing against! [*pauses*] Consider the tendency among mammals to see macroscopic objects: leaves, tigers, rocks, etc.

SIMPLICIO: More than a "tendency," I'd say.

SALVIATI: Sure. But what if this roughly universal feature of mammalian minds was only a metaphor, a helpful mapping from one frame to another and nothing more? So just as a word maps neatly, consistently, but totally *arbitrarily* to a percept—as in "hard" mapping to the physical sensation of *hardness*—so does a percept map neatly, consistently, but totally arbitrarily to some thing-in-the-world.

SIMPLICIO: So in effect what you're claiming here is that tigers, say, are as tenuous as words.

SALVIATI: Exactly! In the same way that "dangerous," for example, is a feature we *ascribe* to certain things

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(like tigers), and not intrinsic to those things, we ascribe "tigerness" to certain patches of matter or whatever.

SIMPLICIO: Yes, but there are a lot of rules about *how* we ascribe "tigerness"; we don't go around willy-nilly accusing things of being a tiger! It must be striped, have four legs, live in the jungle, etc. etc.

SALVIATI: I hope you recognize that all you've done there is to break down the "tigerness" problem into several subproblems—"stripedness," "four-leggedness," etc.—that themselves admit to the same process. So all I have to do to defeat this particular plaint of yours is ask you to define "tigerness" in a way that doesn't lead to an infinite regression of recursively defined types.

SIMPLICIO: I don't quite see what you mean.

SALVIATI: Well, your goal here is to show that while the map between the word "tiger" and the percept of a tiger may be arbitrary, the map between that percept and the *actual* tiger is not. Instead, you claim, it's grounded in all kinds of rules that capture something of the real structure of the tiger itself. Something that flies around and shits keyboards, for instance, would not set off any "tigerness" alarm bells.

SIMPLICIO: Yes, I'd like to think that "tigerness" would be pretty low on the list of concepts activated by some kind of flying object that pooped computer peripherals.

SALVIATI: Okay. Then what you're not seeing yet is that these structural features that you take to be actually there are really *in your head*. That is, if you grant that "tigerness" is just the composition, in your mind, of things like "stripedness" and "four-leggedness," I need merely point out that these sub-concepts are likewise composed—"four-leggedness" is built out of the concepts "legs" and "four." And the process never bottoms out.

SIMPLICIO: Sure it does! That's what Nietzsche failed to realize, too. It's not like my brain makes these patterns that lead up to tigers out of *nothing*. There is a bottom: the light that hits my retina, for instance, is itself highly patterned—*before* it gets there. Feynman puts it this way: imagine that you're sitting by the pool and a kid jumps in and makes a nice big splash. Of course he's not the only one in the water: there are all kinds of kids swimming in there left and right, playing "Marco, Polo" and swatting at each other with those foam noodles... which makes, overall, for a lot of choppiness. The question Feynman then asks is whether there are enough *clues* in all that activity so that a clever little insect floating on the surface somewhere in the corner could deduce, just from being disturbed by the waves, who dived in when, who's swimming in what direction, and so on.

SALVIATI: Sounds tricky.

SIMPLICIO: It sure does. But guess what Feynman says next: *that's what we're doing when we're looking at something.* In other words, that's what all that heavy-duty machinery at the back of your brain is for; it's doing the kinds of calculations that that little insect would have to do to figure out what the waves mean. Point being, there may not be macroscopic objects *per se*, but there are, like you said, little patterned "patches of matter" (and electromagnetic fields and the like) that we sense and make sense of. We take those patterns and work our way up chains of abstraction, losing bits and pieces of the hard data as we go, until photonic fluctuations become the image of an animal.

SALVIATI: So you *are* granting that these "chains of abstraction" are just as metaphorical as those that we use to transfer percepts into words?

SIMPLICIO: Yes, I'll grant that. But there are *real patterns* out there in the world, and brains that extract them effectively, and act on them effectively, will fare better than those that don't. That's how evolution works. Which means that *our* brains must be pretty damn excellent at this stuff, because otherwise we

wouldn't be having this conversation.

SALVIATI: Nicely argued. I'm going to get a cup of coffee, and when I come back I'll tell you how Nietzsche, about 140 years ago, ripped the rug out from under most of what you've just said. Want anything?

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SALVIATI: Okay. So your premise here is something like this: your brain is coded for by your DNA, which in total is comprised of roughly ten megabytes of "active" information (with the rest being "junk," as they say). This DNA was arrived at after billions of billions of trials—a series of parallel computations, if you will—as organisms of various kinds were born, competed for scarce resources, and died since the dawn of life. That so much computation is embedded in so little data (less than the source code for Microsoft Word, actually) must mean that there has been a massive amount of *compression*: your DNA must be an extremely compact representation of some of the actual structure in the world, in the same way that $\frac{2\pi}{\phi^2}n$ is a compact representation of the floret pattern in a sunflower. The odds of such a small DNA code producing (very) capable organisms by *chance* are laughably tiny, and thus, we can reasonably assert that the code *actually* codes for something, namely features of the real world.

SIMPLICIO: I couldn't have said it better myself. Think of how Newtonian mechanics are baked into what are effectively spear-throwing algorithms in the human brain, or how our muscle spindles feed into simple trigonometric functions computed by motor neurons to give us an incredibly accurate sense of how our limbs are oriented, or how edge detector neurons use Gaussian filters to discern macroscopic objects. Like that little insect in the corner of a pool, we're able to figure out what's going on in this mess because the very laws of physics—e.g. that gravity accelerates at 9.8 m/sec^2—are represented to some approximation in that overeducated squishy noggin of yours.

SALVIATI: Or they're hidden behind the bush.

SIMPLICIO: Sorry?

SALVIATI: That's Nietzsche. He said that "If somebody hides a thing behind a bush, seeks it again and finds it in the self-same place, then there is not much to boast of." And here you are *putting* all kinds of mathematical patterns "in the real world" and acting as though you *found* them there. Look at the bottom of page 186:

> All obedience to law which impresses us so forcibly in the orbits of stars and in chemical processes coincides at the bottom with those qualities which we ourselves attach to those things, so that it is we who thereby make the impression upon ourselves.

SIMPLICIO: So in your view I'm conflating the map with the territory?

SALVIATI: That's it! Remember how I said that "efficiency" was a *human* concept, and that therefore your appeal to it was just as arbitrary as the choice of the word "rock"? And how I then argued that even things that seem elemental, like "four-leggedness," are actually just arbitrary concepts themselves composed of other arbitrary (read: human) concepts?

SIMPLICIO: Sure.

SALVIATI: Well that's the way it goes with math, too! We look at Newton's equations and assume they map in a very perspicacious way to something actually in the world, like a map maps to the territory. We feel special because we assume we've evolved the best damn picture of the territory there is. What we don't realize is that *everything is in the map.*

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SIMPLICIO: Even the very foundations of math, like set theory and the natural numbers... you would say *these* are "made up"?

SALVIATI: Yes: there's nothing "natural" about the natural numbers at all.

SIMPLICIO: It's one thing to point out that we do arithmetic in base ten because we have five fingers; that's quite transparently an arbitrary convention. But *numerosity itself*—the very *idea* of a "number"—is *not* a human product. If anything is true, that is.

SALVIATI: Bingo: *there is no truth*, at least in the ultramoral sense. It's all Vanity-with-a-capital-V.

SIMPLICIO: Cute, but I'm not convinced. What, in your view, is so *un*natural about the natural numbers?

SALVIATI: Well you agree that they're not quite at the bottom of all mathematics? That they're in turn built out of more primitive objects?

SIMPLICIO: Sure—in a very strict sense we can construct $\mathbb{N}$ inductively by embedding sets, so that $0 = \{\}$, $1 = \{0\} = \{\{\}\}$, $2 = \{1\} = \{\{\{\}\}\}$, and so on.

SALVIATI: And what are these sets, exactly?

SIMPLICIO: Collections of distinct objects. Or, one could think of a set as a rule that divides the universe into (a) the things that belong inside the set and (b) the things that belong outside of it. The even numbers, for example, can be written in the first way (as a collection of distinct objects) as $\{2, 4, 6, 8, \dots\}$ and in the second (as a kind of rule) as $\{n \in \mathbb{N} : n \equiv 0 \bmod 2\}$.

SALVIATI: So at *absolute bottom* is, in one formulation, the notion of "discrete collections," and in another, the rule "A vs. not-A." Correct?

SIMPLICIO: Yes, absolutely. That is ground zero.

SALVIATI: Well, sir, don't you see where this is going?

SIMPLICIO: Sure I do. You want to argue that these "absolute fundamentals" are no less metaphorical, no less anthropomorphic and "in the map" than higher-order percepts or words. You want to argue that pattern *itself* is in my head. That the laws of nature have about the same ontological status as the laws of man.

SALVIATI: Well?

SIMPLICIO: I think that's wonderful. I really do. One question, though: *so what*? What becomes of the world after you've turned it on its head?

SALVIATI: Well it's not like I'm speaking to *Con*gress here; the only thing I'm really aiming to change, if only a little bit, is your point of view.

SIMPLICIO: How so?

SALVIATI: Maybe it's a bit pessimistic, but as a rule I think you would do quite well to never underestimate a person's insecurity, selfishness, or self-deception. And for a practitioner of post-Popperian science like yourself, combating that evil triumverate—if only for the sake of humility—means seeing one's search for truth as deeply metaphorical, and ultimately subjective.

SIMPLICIO: Not that there's anything wrong with that...

SALVIATI: Exactly.