

Interlude

The Simple Truth



I remember this paper I wrote on existentialism. My teacher gave it back with an F. She'd underlined true and truth wherever it appeared in the essay, probably about twenty times, with a question mark beside each. She wanted to know what I meant by truth.

—Danielle Egan, journalist

This essay is meant to restore a naive view of truth.

Someone says to you: “My miracle snake oil can rid you of lung cancer in just three weeks.” You reply: “Didn’t a clinical study show this claim to be untrue?” The one returns: “This notion of ‘truth’ is quite naive; what do you mean by ‘true’?”

Many people, so questioned, don’t know how to answer in exquisitely rigorous detail. Nonetheless they would not be wise to abandon the concept of “truth.” There was a time when no one knew the equations of gravity in exquisitely rigorous detail, yet if you walked off a cliff, you would fall.

Often I have seen—especially on Internet mailing lists—that amidst other conversation, someone says “*X* is true,” and then an argument breaks out over the use of the word “true.” This essay is *not* meant as an encyclopedic reference

for that argument. Rather, I hope the arguers will read this essay, and then go back to whatever they were discussing before someone questioned the nature of truth.

In this essay I pose questions. If you see what seems like a really obvious answer, it's probably the answer I intend. The obvious choice isn't *always* the best choice, but sometimes, by golly, it *is*. I don't stop looking as soon I find an obvious answer, but if I go on looking, and the obvious-seeming answer *still* seems obvious, I don't feel guilty about keeping it. Oh, sure, everyone *thinks* two plus two is four, everyone *says* two plus two is four, and in the mere mundane drudgery of everyday life everyone *behaves* as if two plus two is four, but what does two plus two *really, ultimately* equal? As near as I can figure, four. It's still four even if I intone the question in a solemn, portentous tone of voice. Too simple, you say? Maybe, on this occasion, life doesn't *need* to be complicated. Wouldn't that be refreshing?

If you are one of those fortunate folk to whom the question seems trivial at the outset, I hope it still seems trivial at the finish. If you find yourself stumped by deep and meaningful questions, remember that if you know exactly how a system works, and could build one yourself out of buckets and pebbles, it should not be a mystery to you.

If confusion threatens when you interpret a metaphor as a metaphor, try taking everything *completely literally*.

Imagine that in an era before recorded history or formal mathematics, I am a shepherd and I have trouble tracking my sheep. My sheep sleep in an enclosure, a fold; and the enclosure is high enough to guard my sheep from wolves that roam by night. Each day I must release my sheep from the fold to pasture and graze; each night I must find my sheep and return them to the fold. If a sheep is left outside, I will find its body the next morning, killed and half-eaten by wolves. But it is so discouraging, to scour the fields for hours, looking for one last sheep, when I know that probably all the sheep are in the fold. Sometimes I give up early, and usually I get away with it; but around a tenth of the time there is a dead sheep the next morning.

If only there were some way to divine whether sheep are still grazing, without the inconvenience of looking! I try several methods: I toss the divination sticks of my tribe; I train my psychic powers to locate sheep through clairvoyance; I search carefully for reasons to believe all the sheep are in the fold. It makes no difference. Around a tenth of the times I turn in early, I find a dead sheep the next morning. Perhaps I realize that my methods aren't working, and perhaps I carefully excuse each failure; but my dilemma is still the same. I can spend an hour searching every possible nook and cranny, when most of the time there are no remaining sheep; or I can go to sleep early and lose, on the average, one-tenth of a sheep.

Late one afternoon I feel especially tired. I toss the divination sticks and the divination sticks say that all the sheep have returned. I visualize each nook and cranny, and I don't imagine scrying any sheep. I'm still not confident enough, so I look inside the fold and it seems like there are a lot of sheep, and I review my earlier efforts and decide that I was especially diligent. This dissipates my anxiety, and I go to sleep. The next morning I discover *two* dead sheep. Something inside me snaps, and I begin thinking creatively.

That day, loud hammering noises come from the gate of the sheepfold's enclosure.

The next morning, I open the gate of the enclosure only a little way, and as each sheep passes out of the enclosure, I drop a pebble into a bucket nailed up next to the door. In the afternoon, as each returning sheep passes by, I take one pebble out of the bucket. When there are no pebbles left in the bucket, I can stop searching and turn in for the night. It is a *brilliant* notion. It will revolutionize shepherding.

That was the theory. In practice, it took considerable refinement before the method worked reliably. Several times I searched for hours and didn't find any sheep, and the next morning there were no stragglers. On each of these occasions it required deep thought to figure out where my bucket system had failed. On returning from one fruitless search, I thought back and realized that the bucket already contained pebbles when I started; this, it turned out, was a bad idea. Another time I randomly tossed pebbles into the bucket, to amuse myself, between the morning and the afternoon; this too was a bad idea, as I

realized after searching for a few hours. But I practiced my pebblecraft, and became a reasonably proficient pebblecrafter.

One afternoon, a man richly attired in white robes, leafy laurels, sandals, and business suit trudges in along the sandy trail that leads to my pastures.

“Can I help you?” I inquire.

The man takes a badge from his coat and flips it open, proving beyond the shadow of a doubt that he is Markos Sophisticus Maximus, a delegate from the Senate of Rum. (One might wonder whether another could steal the badge; but so great is the power of these badges that if any other were to use them, they would in that instant be *transformed* into Markos.)

“Call me Mark,” he says. “I’m here to confiscate the magic pebbles, in the name of the Senate; artifacts of such great power must not fall into ignorant hands.”

“That bleedin’ apprentice,” I grouse under my breath, “he’s been yakkin’ to the villagers again.” Then I look at Mark’s stern face, and sigh. “They aren’t magic pebbles,” I say aloud. “Just ordinary stones I picked up from the ground.”

A flicker of confusion crosses Mark’s face, then he brightens again. “I’m here for the magic bucket!” he declares.

“It’s not a magic bucket,” I say wearily. “I used to keep dirty socks in it.”

Mark’s face is puzzled. “Then where is the magic?” he demands.

An interesting question. “It’s hard to explain,” I say.

My current apprentice, Autrey, attracted by the commotion, wanders over and volunteers his explanation: “It’s the level of pebbles in the bucket,” Autrey says. “There’s a magic level of pebbles, and you have to get the level just right, or it doesn’t work. If you throw in more pebbles, or take some out, the bucket won’t be at the magic level anymore. Right now, the magic level is,” Autrey peers into the bucket, “about one-third full.”

“I see!” Mark says excitedly. From his back pocket Mark takes out his own bucket, and a heap of pebbles. Then he grabs a few handfuls of pebbles, and stuffs them into the bucket. Then Mark looks into the bucket, noting how many pebbles are there. “There we go,” Mark says, “the magic level of this bucket is half full. Like that?”

"No!" Autrey says sharply. "Half full is not the magic level. The magic level is about one-third. Half full is definitely unmagic. Furthermore, you're using the wrong bucket."

Mark turns to me, puzzled. "I thought you said the bucket wasn't magic?"

"It's not," I say. A sheep passes out through the gate, and I toss another pebble into the bucket. "Besides, I'm watching the sheep. Talk to Autrey."

Mark dubiously eyes the pebble I tossed in, but decides to temporarily shelve the question. Mark turns to Autrey and draws himself up haughtily. "It's a free country," Mark says, "under the benevolent dictatorship of the Senate, of course. I can drop whichever pebbles I like into whatever bucket I like."

Autrey considers this. "No you can't," he says finally, "there won't be any magic."

"Look," says Mark patiently, "I watched you carefully. You looked in your bucket, checked the level of pebbles, and called that the magic level. I did exactly the same thing."

"That's not how it works," says Autrey.

"Oh, I see," says Mark, "It's not the level of pebbles in *my* bucket that's magic, it's the level of pebbles in *your* bucket. Is that what you claim? What makes your bucket so much better than mine, huh?"

"Well," says Autrey, "if we were to empty your bucket, and then pour all the pebbles from my bucket into your bucket, then your bucket would have the magic level. There's also a procedure we can use to check if your bucket has the magic level, if we know that my bucket has the magic level; we call that a bucket compare operation."

Another sheep passes, and I toss in another pebble.

"He just tossed in another pebble!" Mark says. "And I suppose you claim the new level is also magic? I could toss pebbles into your bucket until the level was the same as mine, and then our buckets would agree. You're just comparing my bucket to your bucket to determine whether *you* think the level is 'magic' or not. Well, I think *your* bucket isn't magic, because it doesn't have the same level of pebbles as mine. So there!"

"Wait," says Autrey, "you don't understand—"

“By ‘magic level,’ you mean simply the level of pebbles in your own bucket. And when I say ‘magic level,’ I mean the level of pebbles in my bucket. Thus you look at my bucket and say it ‘isn’t magic,’ but the word ‘magic’ means different things to different people. You need to specify *whose* magic it is. You should say that my bucket doesn’t have ‘Autrey’s magic level,’ and I say that your bucket doesn’t have ‘Mark’s magic level.’ That way, the apparent contradiction goes away.”

“But—” says Autrey helplessly.

“Different people can have different buckets with different levels of pebbles, which proves this business about ‘magic’ is completely arbitrary and subjective.”

“Mark,” I say, “did anyone tell you what these pebbles *do*?”

“Do?” says Mark. “I thought they were just magic.”

“If the pebbles didn’t do anything,” says Autrey, “our ISO 9000 process efficiency auditor would eliminate the procedure from our daily work.”

“What’s your auditor’s name?”

“Darwin,” says Autrey.

“Hm,” says Mark. “Charles does have a reputation as a strict auditor. So do the pebbles bless the flocks, and cause the increase of sheep?”

“No,” I say. “The virtue of the pebbles is this; if we look into the bucket and see the bucket is empty of pebbles, we know the pastures are likewise empty of sheep. If we do not use the bucket, we must search and search until dark, lest one last sheep remain. Or if we stop our work early, then sometimes the next morning we find a dead sheep, for the wolves savage any sheep left outside. If we look in the bucket, we know when all the sheep are home, and we can retire without fear.”

Mark considers this. “That sounds rather implausible,” he says eventually. “Did you consider using divination sticks? Divination sticks are infallible, or at least, anyone who says they are fallible is burned at the stake. This is an extremely painful way to die; it follows that divination sticks are infallible.”

“You’re welcome to use divination sticks if you like,” I say.

“Oh, good heavens, of course not,” says Mark. “They work infallibly, with absolute perfection on every occasion, as befits such blessed instruments; but what if there were a dead sheep the next morning? I only use the divination

sticks when there is no possibility of their being proven wrong. Otherwise I might be burned alive. So how does your magic bucket work?"

How does the bucket work . . . ? I'd better start with the simplest possible case. "Well," I say, "suppose the pastures are empty, and the bucket isn't empty. Then we'll waste hours looking for a sheep that isn't there. And if there are sheep in the pastures, but the bucket is empty, then Autrey and I will turn in too early, and we'll find dead sheep the next morning. So an empty bucket is magical if and only if the pastures are empty—"

"Hold on," says Autrey. "That sounds like a vacuous tautology to me. Aren't an empty bucket and empty pastures obviously the same thing?"

"It's not vacuous," I say. "Here's an analogy: The logician Alfred Tarski once said that the assertion 'Snow is white' is true if and only if snow is white. If you can understand that, you should be able to see why an empty bucket is magical if and only if the pastures are empty of sheep."

"Hold on," says Mark. "These are *buckets*. They don't have anything to do with *sheep*. Buckets and sheep are obviously completely different. There's no way the sheep can ever interact with the bucket."

"Then where do *you* think the magic comes from?" inquires Autrey.

Mark considers. "You said you could compare two buckets to check if they had the same level . . . I can see how buckets can interact with buckets. Maybe when you get a large collection of buckets, and they all have the same level, *that's* what generates the magic. I'll call that the coherentist theory of magic buckets."

"Interesting," says Autrey. "I know that my master is working on a system with multiple buckets—he says it might work better because of 'redundancy' and 'error correction.' That sounds like coherentism to me."

"They're not quite the same—" I start to say.

"Let's test the coherentism theory of magic," says Autrey. "I can see you've got five more buckets in your back pocket. I'll hand you the bucket we're using, and then you can fill up your other buckets to the same level—"

Mark recoils in horror. "Stop! These buckets have been passed down in my family for generations, and they've always had the same level! If I accept your

bucket, my bucket collection will become less coherent, and the magic will go away!”

“But your *current* buckets don’t have anything to do with the sheep!” protests Autrey.

Mark looks exasperated. “Look, I’ve explained before, there’s obviously no way that sheep can interact with buckets. Buckets can only interact with other buckets.”

“I toss in a pebble whenever a sheep passes,” I point out.

“When a sheep passes, you toss in a pebble?” Mark says. “What does that have to do with anything?”

“It’s an interaction between the sheep and the pebbles,” I reply.

“No, it’s an interaction between the pebbles and *you*,” Mark says. “The magic doesn’t come from the sheep, it comes from *you*. Mere sheep are obviously nonmagical. The magic has to come from *somewhere*, on the way to the bucket.”

I point at a wooden mechanism perched on the gate. “Do you see that flap of cloth hanging down from that wooden contraption? We’re still fiddling with that—it doesn’t work reliably—but when sheep pass through, they disturb the cloth. When the cloth moves aside, a pebble drops out of a reservoir and falls into the bucket. That way, Autrey and I won’t have to toss in the pebbles ourselves.”

Mark furrows his brow. “I don’t quite follow you . . . is the *cloth* magical?”

I shrug. “I ordered it online from a company called Natural Selections. The fabric is called Sensory Modality.” I pause, seeing the incredulous expressions of Mark and Autrey. “I admit the names are a bit New Agey. The point is that a passing sheep triggers a chain of cause and effect that ends with a pebble in the bucket. *Afterward* you can compare the bucket to other buckets, and so on.”

“I still don’t get it,” Mark says. “You can’t fit a sheep into a bucket. Only pebbles go in buckets, and it’s obvious that pebbles only interact with other pebbles.”

“The sheep interact with things that interact with pebbles . . .” I search for an analogy. “Suppose you look down at your shoelaces. A photon leaves the Sun; then travels down through Earth’s atmosphere; then bounces off your

shoelaces; then passes through the pupil of your eye; then strikes the retina; then is absorbed by a rod or a cone. The photon's energy makes the attached neuron fire, which causes other neurons to fire. A neural activation pattern in your visual cortex can interact with your beliefs about your shoelaces, since beliefs about shoelaces also exist in neural substrate. If you can understand that, you should be able to see how a passing sheep causes a pebble to enter the bucket."

"At exactly *which* point in the process does the pebble become magic?" says Mark.

"It . . . um . . ." Now *I'm* starting to get confused. I shake my head to clear away cobwebs. This all seemed simple enough when I woke up this morning, and the pebble-and-bucket system hasn't gotten any more complicated since then. "This is a lot easier to understand if you remember that the *point* of the system is to keep track of sheep."

Mark sighs sadly. "Never mind . . . it's obvious you don't know. Maybe all pebbles are magical to start with, even before they enter the bucket. We could call that position panpebbлизм."

"Ha!" Autrey says, scorn rich in his voice. "Mere wishful thinking! Not all pebbles are created equal. The pebbles in *your* bucket are *not* magical. They're only lumps of stone!"

Mark's face turns stern. "Now," he cries, "now you see the danger of the road you walk! Once you say that some people's pebbles are magical and some are not, your pride will consume you! You will think yourself superior to all others, and so fall! Many throughout history have tortured and murdered because they thought their own pebbles supreme!" A tinge of condescension enters Mark's voice. "Worshipping a level of pebbles as 'magical' implies that there's an absolute pebble level in a Supreme Bucket. Nobody believes in a Supreme Bucket these days."

"One," I say. "Sheep are not absolute pebbles. Two, I don't think my bucket actually contains the sheep. Three, I don't worship my bucket level as perfect—I adjust it sometimes—and I do that *because* I care about the sheep."

“Besides,” says Autrey, “someone who believes that possessing absolute pebbles *would* license torture and murder, is making a mistake that has nothing to do with buckets. You’re solving the wrong problem.”

Mark calms himself down. “I suppose I can’t expect any better from mere shepherds. You probably believe that snow is white, don’t you.”

“Um . . . yes?” says Autrey.

“It doesn’t bother you that *Joseph Stalin* believed that snow is white?”

“Um . . . no?” says Autrey.

Mark gazes incredulously at Autrey, and finally shrugs. “Let’s suppose, purely for the sake of argument, that your pebbles are magical and mine aren’t. Can you tell me what the difference is?”

“My pebbles *represent* the sheep!” Autrey says triumphantly. “*Your* pebbles don’t have the representativeness property, so they won’t work. They are empty of meaning. Just look at them. There’s no aura of semantic content; they are merely pebbles. You need a bucket with special causal powers.”

“Ah!” Mark says. “Special causal powers, instead of magic.”

“Exactly,” says Autrey. “I’m not superstitious. Postulating magic, in this day and age, would be unacceptable to the international shepherding community. We have found that postulating magic simply doesn’t work as an explanation for shepherding phenomena. So when I see something I don’t understand, and I want to explain it using a model with no internal detail that makes no predictions even in retrospect, I postulate special causal powers. If that doesn’t work, I’ll move on to calling it an emergent phenomenon.”

“What kind of special powers does the bucket have?” asks Mark.

“Hm,” says Autrey. “Maybe this bucket is imbued with an *about-ness* relation to the pastures. That would explain why it worked—when the bucket is empty, it *means* the pastures are empty.”

“Where did you find this bucket?” says Mark. “And how did you realize it had an about-ness relation to the pastures?”

“It’s an *ordinary bucket*,” I say. “I used to climb trees with it . . . I don’t think this question *needs* to be difficult.”

“I’m talking to Autrey,” says Mark.

"You have to bind the bucket to the pastures, and the pebbles to the sheep, using a magical ritual—pardon me, an emergent process with special causal powers—that my master discovered," Autrey explains.

Autrey then attempts to describe the ritual, with Mark nodding along in sage comprehension.

"You have to throw in a pebble *every* time a sheep leaves through the gate?" says Mark. "Take out a pebble *every* time a sheep returns?"

Autrey nods. "Yeah."

"That must be really hard," Mark says sympathetically.

Autrey brightens, soaking up Mark's sympathy like rain. "Exactly!" says Autrey. "It's *extremely* hard on your emotions. When the bucket has held its level for a while, you . . . tend to get attached to that level."

A sheep passes then, leaving through the gate. Autrey sees; he stoops, picks up a pebble, holds it aloft in the air. "Behold!" Autrey proclaims. "A sheep has passed! I must now toss a pebble into this bucket, my dear bucket, and destroy that fond level which has held for so long—" Another sheep passes. Autrey, caught up in his drama, misses it; so I plunk a pebble into the bucket. Autrey is still speaking: "—for that is the supreme test of the shepherd, to throw in the pebble, be it ever so agonizing, be the old level ever so precious. Indeed, only the best of shepherds can meet a requirement so stern—"

"Autrey," I say, "if you want to be a great shepherd someday, learn to shut up and throw in the pebble. No fuss. No drama. Just do it."

"And this ritual," says Mark, "it binds the pebbles to the sheep by the magical laws of Sympathy and Contagion, like a voodoo doll."

Autrey winces and looks around. "Please! Don't call it Sympathy and Contagion. We shepherds are an anti-superstitious folk. Use the word 'intentionality,' or something like that."

"Can I look at a pebble?" says Mark.

"Sure," I say. I take one of the pebbles out of the bucket, and toss it to Mark. Then I reach to the ground, pick up another pebble, and drop it into the bucket.

Autrey looks at me, puzzled. "Didn't you just mess it up?"

I shrug. "I don't think so. We'll know I messed it up if there's a dead sheep next morning, or if we search for a few hours and don't find any sheep."

“But—” Autrey says.

“I taught you everything *you* know, but I haven’t taught you everything *I* know,” I say.

Mark is examining the pebble, staring at it intently. He holds his hand over the pebble and mutters a few words, then shakes his head. “I don’t sense any magical power,” he says. “Pardon me. I don’t sense any intentionality.”

“A pebble only has intentionality if it’s inside a ma—an emergent bucket,” says Autrey. “Otherwise it’s just a mere pebble.”

“Not a problem,” I say. I take a pebble out of the bucket, and toss it away. Then I walk over to where Mark stands, tap his hand holding a pebble, and say: “I declare this hand to be part of the magic bucket!” Then I resume my post at the gates.

Autrey laughs. “Now you’re just being gratuitously evil.”

I nod, for this is indeed the case.

“Is that really going to work, though?” says Autrey.

I nod again, hoping that I’m right. I’ve done this before with two buckets, and in principle, there should be no difference between Mark’s hand and a bucket. Even if Mark’s hand is imbued with the *élan vital* that distinguishes live matter from dead matter, the trick should work as well as if Mark were a marble statue.

Mark is looking at his hand, a bit unnerved. “So . . . the pebble has intentionality again, now?”

“Yep,” I say. “Don’t add any more pebbles to your hand, or throw away the one you have, or you’ll break the ritual.”

Mark nods solemnly. Then he resumes inspecting the pebble. “I understand now how your flocks grew so great,” Mark says. “With the power of this bucket, you could keep on tossing pebbles, and the sheep would keep returning from the fields. You could start with just a few sheep, let them leave, then fill the bucket to the brim before they returned. And if tending so many sheep grew tedious, you could let them all leave, then empty almost all the pebbles from the bucket, so that only a few returned . . . increasing the flocks again when it came time for shearing . . . dear heavens, man! Do you realize the sheer

power of this ritual you've discovered? I can only imagine the implications; humankind might leap ahead a decade—no, a century!”

“It doesn't work that way,” I say. “If you add a pebble when a sheep hasn't left, or remove a pebble when a sheep hasn't come in, that breaks the ritual. The power does not linger in the pebbles, but vanishes all at once, like a soap bubble popping.”

Mark's face is terribly disappointed. “Are you sure?”

I nod. “I tried that and it didn't work.”

Mark sighs heavily. “And this . . . *math* . . . seemed so powerful and useful until then . . . Oh, well. So much for human progress.”

“Mark, it was a *brilliant* idea,” Autrey says encouragingly. “The notion didn't occur to me, and yet it's so obvious . . . it would save an *enormous* amount of effort . . . there *must* be a way to salvage your plan! We could try different buckets, looking for one that would keep the magical pow—the intentionality in the pebbles, even without the ritual. Or try other pebbles. Maybe our pebbles just have the wrong properties to have *inherent* intentionality. What if we tried it using stones carved to resemble tiny sheep? Or just write ‘sheep’ on the pebbles; that might be enough.”

“Not going to work,” I predict dryly.

Autrey continues. “Maybe we need organic pebbles, instead of silicon pebbles . . . or maybe we need to use expensive gemstones. The price of gemstones doubles every eighteen months, so you could buy a handful of cheap gemstones now, and wait, and in twenty years they'd be really expensive.”

“You tried adding pebbles to create more sheep, and it didn't work?” Mark asks me. “What exactly did you do?”

“I took a handful of dollar bills. Then I hid the dollar bills under a fold of my blanket, one by one; each time I hid another bill, I took another paperclip from a box, making a small heap. I was careful not to keep track in my head, so that all I knew was that there were ‘many’ dollar bills, and ‘many’ paperclips. Then when all the bills were hidden under my blanket, I added a single additional paperclip to the heap, the equivalent of tossing an extra pebble into the bucket. Then I started taking dollar bills from under the fold, and putting the paperclips back into the box. When I finished, a single paperclip was left over.”

“What does that result mean?” asks Autrey.

“It means the trick didn’t work. Once I broke ritual by that single misstep, the power did not linger, but vanished instantly; the heap of paperclips and the pile of dollar bills no longer went empty at the same time.”

“You *actually* tried this?” asks Mark.

“Yes,” I say, “I actually performed the experiment, to verify that the outcome matched my theoretical prediction. I have a sentimental fondness for the scientific method, even when it seems absurd. Besides, what if I’d been wrong?”

“If it *had* worked,” says Mark, “you would have been guilty of counterfeiting! Imagine if everyone did that; the economy would collapse! Everyone would have billions of dollars of currency, yet there would be nothing for money to buy!”

“Not at all,” I reply. “By that same logic whereby adding another paperclip to the heap creates another dollar bill, creating another dollar bill would create an additional dollar’s worth of goods and services.”

Mark shakes his head. “Counterfeiting is still a crime . . . You should not have tried.”

“I was *reasonably* confident I would fail.”

“Aha!” says Mark. “You *expected* to fail! You didn’t *believe* you could do it!”

“Indeed,” I admit. “You have guessed my expectations with stunning accuracy.”

“Well, that’s the problem,” Mark says briskly. “Magic is fueled by belief and willpower. If you don’t believe you can do it, you can’t. You need to change your belief about the experimental result; that will change the result itself.”

“Funny,” I say nostalgically, “that’s what Autrey said when I told him about the pebble-and-bucket method. That it was too ridiculous for him to believe, so it wouldn’t work for him.”

“How did you persuade him?” inquires Mark.

“I told him to shut up and follow instructions,” I say, “and when the method worked, Autrey started believing in it.”

Mark frowns, puzzled. “That makes no sense. It doesn’t resolve the essential chicken-and-egg dilemma.”

“Sure it does. The bucket method works whether or not you believe in it.”

“That’s *absurd!*” sputters Mark. “I don’t believe in magic that works whether or not you believe in it!”

“I said that too,” chimes in Autrey. “Apparently I was wrong.”

Mark screws up his face in concentration. “But . . . if you didn’t believe in magic that works whether or not you believe in it, then why did the bucket method work when you didn’t believe in it? Did you believe in magic that works whether or not you believe in it whether or not you believe in magic that works whether or not you believe in it?”

“I don’t . . . *think* so . . .” says Autrey doubtfully.

“Then if you didn’t believe in magic that works whether or not you . . . hold on a second, I need to work this out with paper and pencil—” Mark scribbles frantically, looks skeptically at the result, turns the piece of paper upside down, then gives up. “Never mind,” says Mark. “Magic is difficult enough for me to comprehend; metamagic is out of my depth.”

“Mark, I don’t think you understand the art of bucketcraft,” I say. “It’s not about using pebbles to control sheep. It’s about making sheep control pebbles. In this art, it is not necessary to begin by believing the art will work. Rather, first the art works, then one comes to believe that it works.”

“Or so you believe,” says Mark.

“So I believe,” I reply, “*because* it happens to be a fact. The correspondence between reality and my beliefs comes from reality controlling my beliefs, not the other way around.”

Another sheep passes, causing me to toss in another pebble.

“Ah! Now we come to the root of the problem,” says Mark. “What’s this so-called ‘reality’ business? I understand what it means for a hypothesis to be elegant, or falsifiable, or compatible with the evidence. It sounds to me like calling a belief ‘true’ or ‘real’ or ‘actual’ is merely the difference between saying you believe something, and saying you really really believe something.”

I pause. “Well . . .” I say slowly. “Frankly, I’m not entirely sure myself where this ‘reality’ business comes from. I can’t create my own reality in the lab, so I must not understand it yet. But occasionally I believe strongly that something is going to happen, and then something else happens instead. I need a name

for whatever-it-is that determines my experimental results, so I call it 'reality'. This 'reality' is somehow separate from even my very best hypotheses. Even when I have a simple hypothesis, strongly supported by all the evidence I know, sometimes I'm still surprised. So I need different names for the thingies that determine my predictions and the thingy that determines my experimental results. I call the former thingies 'belief,' and the latter thingy 'reality.'"

Mark snorts. "I don't even know why I bother listening to this obvious nonsense. Whatever you say about this so-called 'reality,' it is merely another belief. Even your belief that reality precedes your beliefs is a belief. It follows, as a logical inevitability, that reality does not exist; only beliefs exist."

"Hold on," says Autrey, "could you repeat that last part? You lost me with that sharp swerve there in the middle."

"No matter what you say about reality, it's just another belief," explains Mark. "It follows with crushing necessity that there is no reality, only beliefs."

"I see," I say. "The same way that no matter what you eat, you need to eat it with your mouth. It follows that there is no food, only mouths."

"Precisely," says Mark. "Everything that you eat has to be in your mouth. How can there be food that exists outside your mouth? The thought is nonsense, proving that 'food' is an incoherent notion. That's why we're all starving to death; there's no food."

Autrey looks down at his stomach. "But I'm *not* starving to death."

"*Aha!*" shouts Mark triumphantly. "And how did you utter that very objection? With your *mouth*, my friend! With your *mouth*! What better demonstration could you ask that there is no food?"

"*What's this about starvation?*" demands a harsh, rasping voice from directly behind us. Autrey and I stay calm, having gone through this before. Mark leaps a foot in the air, startled almost out of his wits.

Inspector Darwin smiles tightly, pleased at achieving surprise, and makes a small tick on his clipboard.

"Just a metaphor!" Mark says quickly. "You don't need to take away my mouth, or anything like that—"

"*Why do you need a mouth if there is no food?*" demands Darwin angrily. "*Never mind. I have no time for this foolishness. I am here to inspect the sheep.*"

"Flock's thriving, sir," I say. "No dead sheep since January."

"*Excellent*. I award you 0.12 units of *fitness*. Now what is this *person* doing here? Is he a necessary part of the *operations*?"

"As far as I can see, he would be of more use to the human species if hung off a hot-air balloon as ballast," I say.

"Ouch," says Autrey mildly.

"I do not *care* about the *human species*. Let him speak for *himself*."

Mark draws himself up haughtily. "This mere *shepherd*," he says, gesturing at me, "has claimed that there is such a thing as reality. This offends me, for I know with deep and abiding certainty that there is no truth. The concept of 'truth' is merely a stratagem for people to impose their own beliefs on others. Every culture has a different 'truth,' and no culture's 'truth' is superior to any other. This that I have said holds at all times in all places, and I insist that you agree."

"Hold on a second," says Autrey. "If nothing is true, why should I believe you when you say that nothing is true?"

"I didn't say that nothing is true—" says Mark.

"Yes, you did," interjects Autrey, "I heard you."

"—I said that 'truth' is an excuse used by some cultures to enforce their beliefs on others. So when you say something is 'true,' you mean only that it would be advantageous to your own social group to have it believed."

"And this that you have said," I say, "is it true?"

"Absolutely, positively true!" says Mark emphatically. "People create their own realities."

"Hold on," says Autrey, sounding puzzled again, "saying that people create their own realities is, logically, a completely separate issue from saying that there is no truth, a state of affairs I cannot even imagine coherently, perhaps because you still have not explained how exactly it is supposed to work—"

"There you go again," says Mark exasperatedly, "trying to apply your Western concepts of logic, rationality, reason, coherence, and self-consistency."

"Great," mutters Autrey, "now I need to add a *third* subject heading, to keep track of this entirely separate and distinct claim—"

"It's not separate," says Mark. "Look, you're taking the wrong attitude by treating my statements as hypotheses, and carefully deriving their consequences. You need to think of them as fully general excuses, which I apply when anyone says something I don't like. It's not so much a model of how the universe works, as a Get Out of Jail Free card. The *key* is to apply the excuse *selectively*. When I say that there is no such thing as truth, that applies only to *your* claim that the magic bucket works whether or not I believe in it. It does *not* apply to *my* claim that there is no such thing as truth."

"Um . . . why not?" inquires Autrey.

Mark heaves a patient sigh. "Autrey, do you think you're the first person to think of that question? To ask us how our own beliefs can be meaningful if all beliefs are meaningless? That's the same thing many students say when they encounter this philosophy, which, I'll have you know, has many adherents and an extensive literature."

"So what's the answer?" says Autrey.

"We named it the 'reflexivity problem,'" explains Mark.

"But what's the *answer*?" persists Autrey.

Mark smiles condescendingly. "Believe me, Autrey, you're not the first person to think of such a simple question. There's no point in presenting it to us as a triumphant refutation."

"But what's the *actual answer*?"

"Now, I'd like to move on to the issue of how logic kills cute baby seals—"

"*You are wasting time*," snaps Inspector Darwin.

"Not to mention, losing track of sheep," I say, tossing in another pebble.

Inspector Darwin looks at the two arguers, both apparently unwilling to give up their positions. "Listen," Darwin says, more kindly now, "I have a simple notion for resolving your dispute. *You* say," says Darwin, pointing to Mark, "that people's beliefs alter their personal realities. And *you* fervently believe," his finger swivels to point at Autrey, "that Mark's beliefs *can't* alter reality. So let Mark believe really hard that he can fly, and then step off a cliff. Mark shall see himself fly away like a bird, and Autrey shall see him plummet down and go splat, and you shall both be happy."

We all pause, considering this.

"It *sounds* reasonable . . ." Mark says finally.

"There's a cliff right there," observes Inspector Darwin.

Autrey is wearing a look of intense concentration. Finally he shouts: "Wait! If that were true, we would all have long since departed into our own private universes, in which case the other people here are only figments of your imagination—there's no point in trying to prove anything to us—"

A long dwindling scream comes from the nearby cliff, followed by a dull and lonely splat. Inspector Darwin flips his clipboard to the page that shows the current gene pool and pencils in a slightly lower frequency for Mark's alleles.

Autrey looks slightly sick. "Was that really necessary?"

"*Necessary?*" says Inspector Darwin, sounding puzzled. "It just *happened* . . . I don't quite understand your question."

Autrey and I turn back to our bucket. It's time to bring in the sheep. You wouldn't want to forget about that part. Otherwise what would be the point?

