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MEDITATION

Transacting ontologies
Kockelman's sieves and a Bayesian
anthropology

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Meditation on KOCKELMAN, Paul. 2013. "The anthropology of an equation: Sieves, spam filters, agentive algorithms, and ontologies of transformation." *HAU: Journal of Ethnographic Theory* 3 (3): 33–61.

To understand Paul Kockelman's article, "The anthropology of an equation," it is more important to grasp its form, the set of relations built into it, than it is to learn his specific vocabulary. As he says here and elsewhere in his writings, if you don't like the words he's using—because they seem overly analytical, too Peircean, "not ethnographic"—then use your own, or use those of someone else, "your people's" even. I will adopt some of Kockelman's terms from "The anthropology of an equation" and other of his essays (especially Kockelman 2010), but will also employ my own from time to time. This is in the interest of clarifying not muddling—or, rather, of getting somewhere rather than standing still. For one of the criticisms I've heard of Kockelman's form is that it is rigidly locked into place, a beautiful but fragile crystalline structure that shatters in its encounter with the world or its insertion into other language games. This misses the point entirely. His form is nothing if not motile, muscular not in some macho, grand theory sense but in the proprioceptive sense. This is theory that moves, and that wants us to move with it, so that we can move in and with the moving world. My response takes for granted that readers have already gone through "The anthropology of an equation" at least once.

Kockelman writes about sieves, and his article itself takes the form of a sieve. It is, as he writes, "an instantiation of what it instigates, a display of what it describes" (2013: 35). This is a Strathernian device: in her writing, Marilyn Strathern often sets for herself a series of writing constraints that mirror the relations she is trying to elucidate. The result is more like poetry than prose (see Reed 2004: 19 on this

point). This is also in the mode of Wittgenstein, “showing” rather than “saying”—“what does not get expressed in the sign is shown by its application. What the signs conceal, their application declares” (Wittgenstein 1922: 3.262)—which suggests not only a form for writing, or a philosophical conundrum on the difference between propositions and elucidations (see McGinn 2001) but a materialist semiotics. Things, after all, do indeed show; they don’t, strictly speaking, say (Keane 2003). They exert force or agency in and through their material. Sieves sort by letting some things through and holding other things back. They thereby demonstrate, as they induce, a kind of order into the world after their own kind.

This is what Kockelman’s article does, too. It goes anthropology. Out comes . . . something else! A demonstration of modes of ontological transformation, as Kockelman puts it. Which, incidentally, were there all along, both in the world and in anthropology. They might get transformed themselves in the process of sieving but the sieve takes in whatever is a priori in order to do its work.

A story about sieves sticks with me: At a conference on the archaeology of money in October 2013, Stephanie Wynne-Jones and Jeffrey Fleisher presented a paper on coins and their value on the East African coast. Their findings were based on their discovery of around 800 coins (Wynne-Jones and Fleisher 2012). Another archaeologist working on the same site ten years ago did not turn up any. At lunch, I asked why they had found so many while their predecessor had found none. “We sieve,” was the reply. It was as simple as that. It was so simple that I had to ask them to repeat what they had said. The things were there all along. You just needed the right tools.

This is a picture of the sieves in my kitchen. Just to make sure we’re on the same page.



Figure 1: Sieves. Photograph by the author, November 30, 2013



Now, Kockelman's essay is a sieve, and also the result of a sieving. I won't dwell on whatever processes went into its initial drafting, from Kockelman's brain-hands-fingers into the keyboard of a digital device, probably connected to other such devices over a network that is its own kind of sieve, the author having to keep certain things out (email, online shopping websites, pop-up reminders that distract, barking dogs, loud recycling trucks, or a playful child—well, these are the things distracting me, at any rate). From the moment he submitted the essay to *HAU*, another process of sorting and sieving took place. *HAU* itself is a sieve—not everything that goes in comes out. *HAU* uses a series of processes, a set of sieves: its editors' judgment, whatever constraints of space and time under which it operates, and anonymous peer reviewers like me (anonymous to a point, anyway). In the process of going through the *HAU*-sieve and the Maurer-sieve and other reviewers' sieves, Kockelman's article underwent some transformations occasioned by these sieves. I think of it as having had some of its edges rounded out, so it would pass through the Maurer-sieve as well as the Maurer-imagination of you, dear reader, and what you would require in order to shake the essay through your own set of sieves. But you can see how this sieving depends on a set of presumptions, a priori judgments or assessments of probabilities (the probability that *HAU* would accept the article, the probability this will make sense to you). Again: if you don't like the word sieve, then use your own, employ your own sieve. The point is that there is a processing going on the particular character of which is shaped or sorted by the tools applied.

Statistics and spam

A central component of a Bayesian anthropology is an appreciation of plural priors going into a world of probabilities. What do I mean by this? Let me put it in the way I did when I taught statistics to Irvine anthropology graduate students. I also did something very like this over a decade ago when I was first writing about financial derivatives (Maurer 2002).

Here are a couple of ways we can think about the world: One is represented by Ronald A. Fisher, one of the founders of modern statistics. The world is one of "continuous variation" (Fisher 1948: 5) that, when the universe as a whole is taken into consideration, at every level of scale, sorts itself out into a frequency distribution.

Just as a single observation may be regarded as an individual and its repetition as generating a population, so the entire result of an extensive experiment may be regarded as but one of a population of such experiments. The salutary habit of repeating important experiments, or of carrying out original observations in replicate, shows a tacit appreciation of the fact that the object of our study is not the individual result but the population of possibilities of which we do our best to make our experiments representative. The calculation of means and standard errors shows a deliberate attempt to learn something about that population. (Fisher 1948: 2-3)

Because of continuous variation, you can take a random sample from a population and get a sense of the frequency distribution of variables in the whole. Because the notion of population is applied at every level of scale (a population of people, a population of numbers about people, a population of numbers about numbers

about people) you can rely on the same set of mathematical operations to deduce the parameters of the population, the measures according to which it conforms. This is the standard statistics you may have learned once upon a time. In sum: this is a plural world of continuous variation, variation all the way up and down, falling out into frequency distributions. Think big. Think Darwin.

The second way, Thomas Bayes' plural world of priors, is a bit different. Bayes began with the idea that before we encounter the data, we come to it with an uncertain judgment about a parameter and infer a distribution of outcomes based on that initial assumption, or prior. Where Fisher began with "observational data" (Fisher 1948: 1), Bayes began with an "expectation":

If a person has an expectation depending on the happening of an event, the probability of the event is to the probability of its failure as his loss if it fails to his gain if it happens. (Bayes and Price 1763: 377)

Where does this prior judgment come from? Well, it all depends on what kind of Bayesian you want to be, and I will leave that question to the proper statisticians and philosophers of mathematics. For anthropology, however, and for Kockelman, it comes from whatever processual tool, whatever subjective or objective sieve you want to start with. It also comes from the repeated iteration of engagement between the sieves and the world, the expectation being revised each time. Take the archaeologists in my anecdote above. By deciding to sieve, they start with an expectation: "I bet there are coins here." Finding one, they might adjust the openings or select a different sieve to ensure fewer coins get through the holes. For Bayes, the world is one of plural, revisable priors. Or, refer to the example from Laplace that Kockelman relates. One could assay a distribution of coins in a set of urns by taking a series of random samples, if that is what your problem is, or if that is where others beyond you have gone. That will tell you one kind of thing, based on one kind of probability. There are also affordances from other paths you might take. So, you may have a different task: assaying which of a series of kinds an urn containing coins of different metals in different proportions might be. Here, you start from your priors. Selecting an urn and drawing out some coins, you then infer which kind of urn you have. Or, alternately, you might realize you have to go back to the drawing board and revise your understandings of the kinds themselves. This latter alternative is the kind of problem Kockelman is addressing, and that he sees in other anthropological problems: how do we and others understand and revise kinds in light of indices, to use his terms. And not just kinds, but indices themselves, agents, individuals, and worlds.

Kockelman shows algorithmic spam filters work like a particular kind of sieve—a Bayesian sieve. "The general features of spam and ham [i.e., nonspam] messages are already known," he writes, but as spam senders wise up to the algorithm in my spam filter, they get better at sending spam that might get through the sieve. Thus, "the statistical assumptions [of the spam filter must] be updated," as must "the relevant features to look for" in any given message and perhaps the algorithm itself (Kockelman 2013: 40).

Just to be clear, there are frequentist sieves, not based on Bayesian prior expectations (although, again, let's leave the finer points to the philosophers). A quincunx is a frequentist sieve used to demonstrate probability. Balls fall into a contraption containing pegs. As the balls fall and bounce off the pegs, they collect

at the bottom of the contraption forming a normal distribution curve. Francis Galton built some:

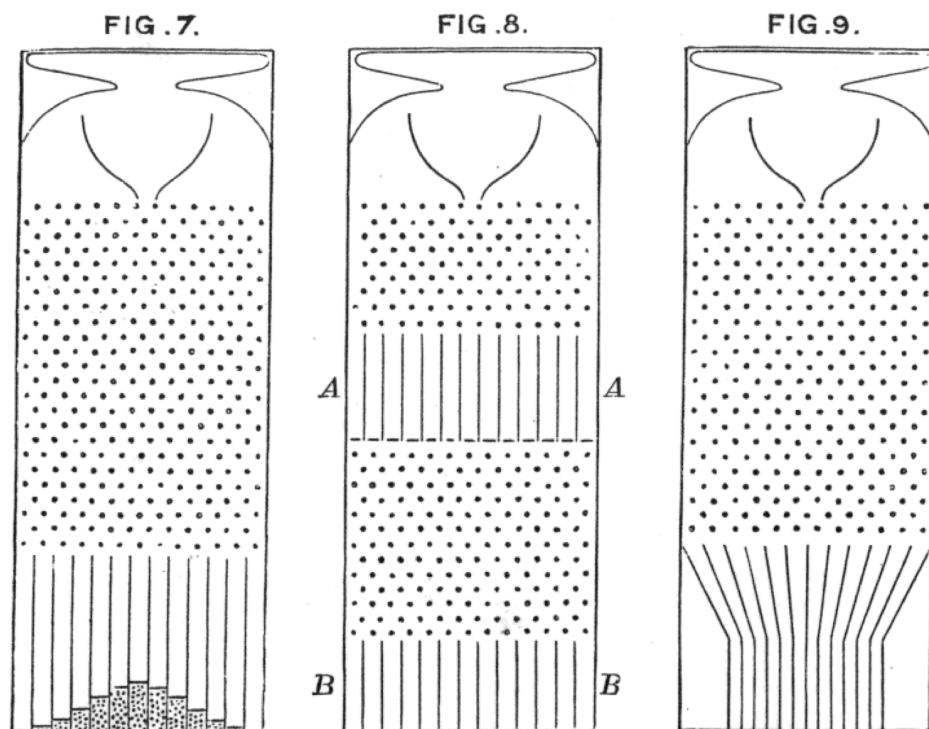


Figure 2: Quincunx. Retrieved from:

[http://en.wikipedia.org/wiki/File:Quincunx_\(Galton_Box\)_-_Galton_1889_diagram.png](http://en.wikipedia.org/wiki/File:Quincunx_(Galton_Box)_-_Galton_1889_diagram.png)

But spam filters do not work this way; they constantly revise themselves based on the messages coming through. They update their assumptions based on hunches about the parameters that make one message spam and another ham. Note that it is not the language qua language in an email message that matters here but formal or we might say poetic properties of the message, its rhyme, meter, assonance, word distributions (compare Larkin 2013 on infrastructure and Jakobson's poetic function). The spam filter's work is not easy, either. Here are two subject lines from emails I received while thinking about writing this article: one spam, one ham. Which is which? (The answer can be found at the end).

1. ***URGENT REQUEST - ASK TO CONSIDER MY REQUEST TO HELP***
2. **Ship Notification ID#EN571985301C**

You don't need Kockelman to tell you that a lot of spam filters operate on Bayesian principles. Take a machine learning class, or read Barber (2012). Why should any of this business of Bayes and spam filtering be of interest to the readers of *HAU*, much less ordinary anthropologists (see Seaver 2012)? Now we get to the heart of the thing.

Kockelman writes, “by your index (sign), I infer your kind (object), and thereby come to expect (interpretant) other indices that would be in keeping with your kind” (2013: 41). He turns to a passage from *Huckleberry Finn*. But let me linger over the resonance the sentence I just quoted has with Christian mythology. Fighting the army of Maxentius at the Milvian Bridge, Constantine saw a “cross of light” (Barnes 1981: 43) in the sky, and the words, *In Hoc Signo Vinces* (“by this sign, you will conquer”). By that sign, Constantine inferred the One God, who, in keeping with His kind, would protect Constantine’s forces in battle if they emblazoned the same sign on their shields. They did. Constantine won. The priors on which the world was known—of multiple Roman gods—were revised, as would be the whole of the Roman Empire. That’s an ontological transformation if there ever was one.

Kockelman next further differentiates five kinds of ontological transformations—types of revisions to the priors, giving us a set of sieves to understand transformations in sieving. These kinds are worth puzzling through but my intention is not to reproduce his essay so I will be brief. We have words for Kockelman’s first and fifth kind of ontological transformativity:

1. Performativity: an index changes my kind. I am pronounced “husband” or “wife.”

5. Worlding, or cultural construction, or self-fulfilling prophesy: my assumptions about the world transform the world. Not “by this sign, conquer” but “after this sign, and a successful conquering, the world is remade.”

We don’t really have words for the other kinds. Transformativity 2, 3, and 4, Kockelman writes, have different inferential properties and different degrees of inertia, the ontological assumptions in each becoming more “resistant to change” from one to the next (2013: 48). We have here, then, a theory of ontology linked, because of these degrees of inertia, to history and durability.

From ontology to infrastructure

Kockelman’s article sends me down a number of avenues. Let me single out two. First, Kockelman gives us a richer and more precise vocabulary for thinking about the phenomena we would otherwise call cultural construction or performativity. It contributes to a “radical empiricism” (James 1909: 43) by seeking to give us some handles on transacting and transforming agents, never in any “absolute totality” but “dis-seminated, distributed . . . incompletely unified” and always in process of being achieved (ibid.: 44). Second, and therefore, he helps reframe the ontology discussions taking place in the discipline of anthropology in the early 2010s (see Carrithers et al. 2010).

Consider the contrast with Eduardo Viveiros de Castro. In his account, Amazonian shamans are individuals with the “capacity . . . to cross ontological boundaries deliberately and adopt the perspective of nonhuman subjectivities in order to administer the relations between humans and nonhumans” (Viveiros de Castro 2004: 468). He also writes, “To know is to . . . take on the point of view of that which must be known” (ibid.). Shamans can “make perspectives communicate,” but “only under special, controlled conditions” (ibid.: 471). In a multi-natural world where all things partake of a primary, given, universal humanity but



inhabit diverse natural forms (an animal being a sort of ex-human), the shaman who takes on the point of view of the fish sees it in terms of its relationships to all the other ex-humans, not some intrinsic fishiness (*ibid.*). Perspectivism, it follows, is not only a type of exchange but “any exchange is by definition an exchange of perspectives” (*ibid.*: 473).

I have been hewing closely to Viveiros de Castro’s language because while I am tempted to parse it in terms of my own I think that to do so would significantly change what he is saying and would cover over a fundamental difference in orientation between us. Two things stand out: the reliance on vision and knowledge, and the neglect of what I will call the infrastructures that facilitate the exchange of perspectives.

Viveiros de Castro uses knowing and seeing words, not doing, feeling, or moving words. The shamans cross boundaries—but we do not know how they do so, what bridges carry them across (Kockelman 2010; Elyachar 2010, 2012). Shamans “make perspectives communicate” but we do not know if they constitute the channel through which communication flows, how and when the pathways are opened up so that the exchange can take place through other channels, if the opening of the channel is itself the communication, or if there is no separation among all or some of these elements, all of the time or some of the time (Elyachar 2010). If perspectivism is exchange and exchange is an exchange of perspectives, I want to literalize the metaphor and ask about the infrastructures facilitating that passage. What do shamans cross, how, and what subtends and makes efficacious the ontological transformation that they conjure? For me, as for Kockelman, this is where, quite literally, the action is. Or, to put it in other terms, while exchanging perspectives and points of view, I also want to feel my feet carry me across the bridge (Ingold 2004), appreciate the uneven pavement, the gaps between the stones, while (and this is my own specific ethnographic concern) paying whatever toll such passage requires to the parasites living off it who keep it from collapsing. Where Viveiros de Castro sees exchange, I hear payment, and want to get into how that exchange is cleared and settled (Maurer 2012). I’d like a shift from *what* to *how* (Maurer 2006).

In fairness, Viveiros de Castro does write that the shamans are the “conductors or commutators of perspectives” (2004: 478), a kind of channel in themselves. But in his critique of phenomenology he errs, I think, or gives up too soon, when he chides anthropologists for falling into epistemology rather than reaching toward ontology. Is it not the case, he asks, that among phenomenologically-inclined anthropologists “lived world” is a “euphemism for ‘known world,’ ‘represented world,’ ‘world real for a subject’” (*ibid.*: 484)? In fact, no. For me, at least, following Deleuze, “relations are not the object of a representation, but the means of an activity” (Deleuze 1991: 120).

Not like this is a new concern, either. Take Ruth Benedict (who influences me), Edward Sapir (who influences Kockelman), or Franz Boas himself. Matti Bunzl’s (2004) reappreciation of the Boasian tradition in anthropology helpfully points out that much of the critique of anthropology takes fieldwork of the Malinowskian kind as the norm, which reifies self/other through what Gupta and Ferguson called the “self-conscious shifting of social and geographical location” (1997: 16, as quoted by Bunzl 2004: 436). Boas, however, worked from dislocations in time, not space, focusing on the historical developments that led to the “plenitude of

humanity” (Bunzl 2004: 437). Otherness was not only “not fetishized” (ibid.) but not even really on the table. The plenitude of humanity was what was on the table.

One might say that where Malinowski made a change of location the requisite for anthropological fieldwork, Boas had a concern for the process by which and the time it took to get there. Locomotion matters: it gets you places, in time. As the economist Joan Robinson said in another context, time will help you with space. But take as much space as you want: how is that going to help you with time (see Maurer 2002)?

I am suggesting that Viveiros de Castro’s mistake is in falling into the nexus of exchange without attending to the technologies of transaction that afford ontological transformation. These technologies shuttle value, meaning, understanding, and whatnot back and forth so that the exchange can actually settle, and it is precisely these technologies that Kockelman outlines. As I have noted elsewhere, the prefix *ex-* denotes an expelling, a going out from, which presumes a stable pole or entity at one end of the transactional infrastructure. The prefix *trans-* denotes across, or through. Transaction derives from *transigĕre*, *agĕre* meaning to act or to drive (Maurer 2005: 169). Expelling out versus driving across. Settled agents versus motion via pathways, channels, and towlines.

Rather than exchanging perspectives, then, Kockelman transacts ontologies. (I feel I want some wiggle-room here, sensing the beauty in the discord between Viveiros de Castro’s and Kockelman’s calls, so perhaps “alongside” instead of “rather than”: imagine you are on a train, moving on a track, going from here to there; but there are other vibrations, unpredictable movements, as well as occasional rhythmic swaying, rocking . . .) Ontological transformativities imply more or less fragile or durable infrastructures, more or less revisable or settled histories (Nelms 2012): when indices change our assumptions about the stuff of which the world is made, we need to build new bridges and rails, new transactional infrastructures. Kockelman concludes on the role of encounter in anthropology that it brings “us one step closer to another’s ontologized world . . . and one step further from our own” (2013: 58). We are moving here, step-by-step, not exchanging between worlds entire; always shuttling, transacting, transforming. We are moving from an ontological to an infrastructural turn.

Butterfly-collecting, bullae, and Bayes

Now, I have three questions about Kockelman’s article. One is that it is not clear if the task now is to go out into the world with Kockelman’s Table 2 and start identifying and cataloging. Bowker and Star relate how in the nineteenth century, the germ theory of disease instituted new practices as well as new systems of standards and classifications, new infrastructure (1999: 16–17). That’s transformativity #4! But this is not what I would choose to do with “The anthropology of an equation.” It comes too close to the misreading of Kockelman with which I opened this article (the “overly formalistic” criticism) and misses the point of the performance, that is, allows one to not be sieved through one’s reading of his article. The point, I think, is not to go butterfly-collecting or identifying *this* as a *that*. Rather, it is to reorient you in the world and in your (anthropological) work. This means leaving some of our presumptions at the door. I am reminded of Isabella’s admonition, in *Measure for Measure*, referenced by figures ranging from Peirce to Rorty:



. . . man, proud man,
 Drest in a little brief authority,
 Most ignorant of what he's most assured,
 His glassy essence, like an angry ape,
 Play such fantastic tricks before high heaven,
 As make the angels weep

In “Man’s glassy essence,” Peirce (1892) argued that the “life-slimes”—of which humans are made, or which human *are*—move, grow, waste, and renew according to habit. As life-slimes move and grow they preserve some of their characteristics and incorporate others, but their growth contains a sort of path-dependency. Their habits make channels. They take on new habits, too, like accretions into their substance. Kockelman’s article fosters new habits. To me, it reminds me that I am always living-with, modestly witnessing a la Donna Haraway (2008), which in turn compels an ethical imperative alongside radical empiricism.

The second conundrum is just how far to take Kockelman’s association of sieves with the agricultural revolution. Part of me really wants to take it far, far, far. Yet there is a tension in the present article between the locating of the origins of meaning in hunting-gathering and in agriculture. (By these signs you know us to be anthropologists of a certain kind?) Kockelman cites Ginzburg on the venatic origins of meaning—the origins of reading indices to track animals. He also invokes sieving’s agricultural origins and Biblical exhortations (unquenchable fire, anyone?). Both the venatic and the agricultural examples demonstrate the “radical kind of intimacy” (Kockelman 2013: 36) between sieves and their substances: animal feet and kernels of grain.

Kockelman’s discussion of sieving calls to mind the story archaeologists of proto-cuneiform tell of the comingling development of writing, number, and accounting in ancient Mesopotamia. Denise Schmandt-Besserat’s (1996) work on Mesopotamian clay tokens shows the development of linguistic signs through a similar intimacy: tokens were impressed into clay leaving an inverse representation. The lump of clay—a bulla—or the “envelope” of clay into which tokens were sealed after having been impressed on the surface were simple sieves sorting symbols and thereby making meaning. Richard Mattessich (2000) speculates on the point at which impressions of tokens cease “showing” and start “saying.” Is it the case, he asks, that “as soon as the *structural similarity* between a symbol and its referent gets lost, it can no longer ‘show’”? (2000: 39, his emphasis). That is, when the intimacy is estranged, does sieving shift to saying? He ends up answering no, because even our concepts are “rooted in such physical realities as vibrations of air, tokens and tablets of clay, ink on papyrus or paper, magnetized dots on plastic tape” (Mattessich 2000: 40).

My third question goes back to Bayes. Kockelman takes care to say that he is focusing on algorithmic sieving in particular, and warns us against confusing Bayesian inference with the ontological trasformativity that it, at least sometimes, via some agents, acts upon (Kockelman 2013: 55). At the same time, it is difficult to know how to delimit the areas to which Bayesian inference is applicable. Would it be any arena where we calculate a posterior probability to revise our a priori

expectations? This is at the crux of Kockelman's proposal for a Bayesian Anthropology, which, he writes with a surfeit of Ps, is "a paradigm that is probably as perilous as it is promising." This phrase is (unconsciously?) part of the poetry of the piece, after all, replicating via initial consonant:

$$P(A|B) = \frac{P(B|A) P(A)}{P(B)}$$

The question, however, is this: when is it, and is it not, the way to go? When is it, and is it not, a way to see ways others have gone? For a Bayes evangelist like the columnist and pop statistician Nate Silver (see Silver 2012), it's all Bayes, all the time. But why not also accept the world of Fisher's (and Deleuze's) "continuous variation," with its other P, the p-value that is an agreed-upon probability threshold that . . . separates the wheat from the chaff, signal from noise, result from random error?

Passages and poetry

Ruth Benedict composed a poem about taking a train to Zuñi country. It remains unpublished, and as a result I can only quote a line or two (though about half is available in Lapsley 1999: 132 and I direct readers to Lapsley to read more of the poem than I can quote and remain within the strictures of fair use). The opening has two friends, self-important, languid in an upper-class sort of way, chatting about the latest art and philosophy. The first stanza presents two objects: the metaphorical ball we toss back and forth as we debate, and the thrones of the gods whose places we thereby so proudly assume. Echoing Isabella's speech in *Measure for Measure*, Benedict dryly self-mocks her and her companion's self-assured brilliance:

We are so wise. The gods run panic-struck
From their old high places

In the next stanza (reproduced in Lapsley), Benedict contrasts the ball and thrones with a third object, the "feathered prayer-sticks" of a Zuñi "they." While we are tossing the ball of high ideas back and forth, they, meanwhile, are planting their prayer-sticks in the moon in the night. Could we but once do the same, she writes, we would shatter our false pride.

The tension in the poem is like that between Viveiros de Castro and Kockelman, as I have sketched out above. One could emphasize the humility occasioned by the encounter with another's ontology, the effort to know, the exchange that challenges. And one could emphasize the tools facilitating the transaction, as the structure of the poem itself seems to do: the ball-ideas that transact between you and me, the thrones between us and the gods, the prayer-sticks between the Zuñi and their gods and between us and that relation, and the "doing" going on in each instance. There is also, of course, the train, rattling on toward a desert outpost. The poem's title, "Parlor Car—Santa Fe," sets on either side of an equation the parlor games that while away the time and a place, the destination.

The poem occasions passages, sketches maps, provides indices that point to kinds and transactions between worlds. It moves. It asks us to do the same, to sieve



and resieve and sieve again, to challenge expectations and revise (self-satisfied) priors. To show rather than say, shake the black box rather than get overly captivated by its form or announce its arrival with a flourish. The risk in specifying a paradigm is in the tendency we have to transmute theories into identity formations, to rest content in our parlor games tossing the ball back and forth from our high chairs, and to use paradigms as sieves not for making our way in the world but for enclosures of a more violent kind.

Appropriately, then, it was the second message I received, about a package to be delivered, that was spam. What other gift might have been contained by way of the hyperlink it enticed me to follow, I—thankfully—do not know. I did not take that path.

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