Here is a story you probably haven’t heard, about how a team of American researchers inadvertently introduced a virus into a third-world country they were studying. They were experts in their field, and they had the best intentions; they thought they were helping the people they were studying, but in fact they had never really seriously considered whether what they were doing might have ill effects.

The virus they introduced had some dire effects indeed: it raised infant mortality rates, led to a general decline in the health and well-being of women and children, and, perhaps worst of all, indirectly undermined the only effective political force for democracy in the country, strengthening the hand of the traditional despot who ruled the nation. When the researchers were confronted with the devastation they had wrought, their response was frustrating, to say the least: they still thought that what they were doing was, all things considered, in the interests of the people, and declared that the standards by which this so-called devastation was being measured were simply not appropriate. Their critics, they contended, were trying to impose “Western” standards in a cultural environment that had no use for them. In this strange defense they were warmly supported by the country’s leaders—not surprisingly—and little was heard—also not surprisingly—from those who might have been said, by Western standards, to have suffered as a result of their activities.

These researchers were not biologists intent on introducing new strains of rice, nor were they agri-business chemists testing new pesticides, or doctors trying out vaccines that couldn’t legally be tested in the United States. They were postmodernist science critics and other multiculturalists who were arguing, in the course of their professional researches on the culture and traditional “science” of this country, that Western science was just one among many equally valid narratives, not to be “privileged” in its competition with native traditions that other researchers—biologists, chemists, doctors, and others—were eager to supplant. The virus they introduced was not a macro-molecule but a meme (a replicating idea): the idea that science was a “colonial” imposition, not a worthy substitute for the practices and beliefs that had carried the third-world country to its current condition. And the reason you have not heard of this particular incident is that I made it up to dramatize the issue and to try to unsettle what seems to be current orthodoxy among the literati about such matters. But it is inspired by real incidents—that is to say, true reports. Events of just this sort have occurred in India and elsewhere and reported, movingly, by a number of writers.

My little fable is also inspired by a wonderful remark of E. O. Wilson, in Atlantic Monthly a few months ago: “Scientists, being held responsible for what they say, have not found postmodernism useful.” Actually, of course, we are all held responsible for what we say. The laws of libel and slander, for instance, exempt none of us, but most of us—including scientists in many or even most fields—do not typically make assertions that, independently of libel and slander considerations, might bring harm to others, even indirectly. A handy measure of this fact is the evident ridiculousness we discover in the idea of malpractice insurance for literary critics, philosophers, mathematicians, historians, cosmologists, etc. What on earth could a mathematician or literary critic do, in the course of executing her profession duties, that might need the security blanket of malpractice insurance? She might inadvertently trip a student in the corridor, or drop a book on somebody’s head, but, aside from such outre side-effects, our activities are paradigmatically innocuous. One would think. But in those fields where the stakes are higher—and more direct—there is a long-standing tradition of being especially cautious, and of taking particular responsibility for ensuring that no harm results (as explicitly honored in the Hippocratic Oath). Engineers, knowing that hundreds of people’s safety may depend on the bridge they design, engage in focused exercises with specified constraints designed to determine that, according to all current knowledge, their designs are safe and sound. Even economists—often derided for the risks they take with other people’s livelihoods—when they find themselves in positions to endorse specific economic measures considered by government bodies or by their private clients, are known to

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attempt to put a salutary strain on their underlying assumptions, just to be safe. They are used to asking themselves, and to being expected to ask themselves: “What if I’m wrong?”

We others seldom ask ourselves this question, since we have spent our student and professional lives working on topics that are, according both to tradition and common sense, incapable of affecting any lives in ways worth worrying about. If my topic is whether or not Vlastos had the best interpretation of Plato’s Parmenides or how the wool trade affected imagery in Tudor poetry, or what the best version of string theory says about time, or how to recast proofs in topology in some new formalism, if I am wrong, dead wrong, in what I say, the only damage I am likely to do is to my own scholarly reputation. But when we aspire to have a greater impact on the “real” (as opposed to “academic”) world—and many philosophers do aspire to this today—we need to adopt the attitudes and habits of these more applied disciplines. We need to hold ourselves responsible for what we say, recognizing that our words, if believed, can have profound effects for good or ill.

**TRUTH VS. PASSING FANCIES**

When I was a young, untenured professor of philosophy, I received a visit from a colleague from the Comparative Literature Department, an eminent and fashionable literary theorist, who wanted some help from me. I was flattered to be asked, and did my best to oblige, but the drift of his questions about various philosophical topics was strangely perplexing to me. Finally he managed to make clear to me what he had come for. He wanted “an epistemology,” he said. *An* epistemology. Every self-respecting literary theorist had to sport an epistemology that season, it seems, and without one he felt naked, so he had come to me for an epistemology to wear—it was the very next fashion, he was sure, and he wanted the *dernier cri* in epistemologies. It didn’t matter to him that it be sound, or defensible, or (as one might as well say) *true;* it just had to be new and different and stylish. Accessorize, my good fellow, or be overlooked at the party.

At that moment I perceived a gulf between us that I had only dimly seen before. It struck me at first as simply the gulf that separates and we have built with our tools. Could you have imagined it without them? [p.455]

“It’s just a war of metaphors,” you say—but metaphors are not “just” metaphors; metaphors are the tools of thought. No one can think about consciousness without them, so it is important to equip yourself with the best set of tools available. Look what we have built with our tools. Could you have imagined it without them?” [p.465]

“I wish,” Rorty says, “he had taken one step further, and had added that such tools are all that inquiry can ever provide, because inquiry is never ‘pure’ in the sense of [Bernard] Williams’s ‘project of pure inquiry.’ It is always a matter of getting us something we want.” But I would never take that step, for, although metaphors are indeed irreconcilable tools of thought, they are not the only such tools. Microscopes and mathematics and MRI scanners are among the others. Yes, any inquiry is a matter of getting us something we want: the truth about something that matters to us, if all goes as it should.

When philosophers argue about truth, they are arguing about how not to inflate the truth about truth into the Truth. Some absolutist doctrine that makes indefensible demands on our systems of thought. It is in this regard similar to debates about, say, the reality of time, or the reality of the past. There are some deep, sophisticated, worthy philosophical investigations into whether, properly speaking, the past is real. Opinion is divided, but you entirely misunderstand the point of these disagreements if you suppose that they undercut claims such as the following:
Life first emerged on this planet more than three thousand million years ago.

The Holocaust happened during World War II.


These are truths about events that really happened. Their denials are falsehoods. No sane philosopher has ever thought otherwise, though, in the heat of battle, they have sometimes made claims that could be so interpreted.

Richard Rorty deserves his large and enthralled readership in the arts and humanities, and in the “humanistic” social sciences, but when his readers enthusiastically interpret him as encouraging their postmodernist skepticism about truth, they trundle down paths he himself has refrained from traveling. When I press him on these points, he concedes that there is indeed a useful concept of truth that survives intact after all the corrosive philosophical objections have been duly entered. This serviceable, modest concept of truth, Rorty acknowledges, has its uses: when we want to compare two maps of the countryside for reliability, for instance, or when the issue is whether the accused did or did not commit the crime as charged.

Even Richard Rorty, then, acknowledges the gap, and the importance of the gap, between appearance and reality, between those theatrical exercises that may entertain us without pretense of truth-telling, and those that aim for, and often hit, the truth. He calls it a “vegetarian” concept of truth. Very well, then, let’s all be vegetarians about the truth. Scientists never wanted to go the whole hog anyway.

**BASIC INSTINCT**

So now, let’s ask about the sources or foundations of this mild, uncontroversial, vegetarian concept of truth.

Right now, as I speak, billions of organisms on this planet are engaged in a game of hide and seek. But it is not just a game for them. It is a matter of life and death. *Getting it right,* not making mistakes, has been of paramount importance to every living thing on this planet for more than three billion years, and so these organisms have evolved thousands of different ways of finding out about the world they live in. Discriminating friends from foes, meals from mates, and ignoring the rest for the most part. It matters to them that they not be misinformed about these matters—indeed nothing matters more—but they don’t, as a rule, appreciate this. They are the beneficiaries of equipment exquisitely designed to get what matters right, but, when their equipment malfunctions and gets matters wrong, they have no resources, as a rule, for noticing this, let alone deploiring it. They soldier on, unwittingly. The recognition of the difference between appearance and reality is a human discovery. A few other species—some primates, some cetaceans, maybe even some birds—shows signs of appreciating the phenomenon of “false belief”—*getting it wrong.* They exhibit sensitivity to the errors of others, and perhaps even some sensitivity to their own errors as errors, but they lack the capacity for the reflection required to dwell on this possibility, and so they cannot use this sensitivity in the deliberate design of repairs or improvements of their own seeking gear or hiding gear. That sort of bridging of the gap between appearance and reality is a wrinkle that we human beings alone have mastered.

We are the species that discovered doubt. Is there enough food laid by for winter? Have I miscalculated? Is my mate cheating on me? Should we have moved south? Is it safe to enter this cave? Other creatures are often visibly agitated by their own uncertainties about just such questions, but because they cannot actually *ask themselves* these questions, they cannot articulate their predicaments for themselves or take steps to improve their grip on the truth. They are stuck in a world of appearances, making the best they can of how things seem.

We alone can be racked with doubt, and we alone have been provoked by that epistemic itch to seek a remedy; better truth-seeking methods. Wanting to keep better track of our food supplies, our territories, our families, our enemies, we discovered the benefits of talking it over with others, asking questions, passing on lore. We invented culture. Then we invented measuring, and arithmetic, and maps, and writing. The point of asking questions is to find true answers; the point of measuring is to measure *accurately*; the point of making maps is to *find your way* to your destination. The Land of the Liars could exist only in philosophers’ puzzles; there are no traditions of False Calendar Systems for misrecording the passage of time. In short, the goal of truth goes without saying, in every human culture.

We human beings use our communicative skills not just for truth-telling, but also for promise-making, threatening, bargaining, story-telling, entertaining, mystifying, inducing hypnotic trances, and just plain kidding around, but prince of these activities is truth-telling, and for this activity we have invented ever better tools. Alongside our tools for agriculture, building, warfare, and transportation, we have created a technology of truth: science. Try to draw a straight line, or a circle, “freehand.” Unless you have considerable artistic talent, the result will not be impressive. With a straight edge and a compass, on the other hand, you can practically eliminate the sources of human variability and get a nice clean, objective result, the same every time.

Is the line really straight? How straight is it? In response to these questions, we develop ever finer tests, and then tests of the accuracy of those tests, and so forth, bootstrapping our way to ever greater accuracy and objectivity. Scientists are just as vulnerable to wishful thinking, just as likely to be tempted by base motives, just as venal and gullible and forgetful as the rest of humankind. Scientists don’t consider themselves to be saints; they don’t even pretend to be priests (who according to tradition are supposed to do a better job than the rest of us at fighting off human temptation and frailty). Scientists take themselves to be just as weak and fallible as anybody else, but recognizing those very sources of error in themselves and in the groups to which they belong, they have devised elaborate systems to tie their own hands, forcibly preventing their frailties and prejudices from infecting their results.

It is not just the implements, the physical tools of the trade, that are designed to be resistant to human error. The organization of methods is also under severe selection pressure for improved reliability and objectivity. The classic example is the double blind experiment, in which, for instance, neither the human subjects nor the experimenters themselves are permitted to know which subjects get the test drug and which the placebo, so that nobody’s subliminal hangkernings and hunches can influence the perception of the results. The statistical
design of both individual experiments and suites of experiments is then embedded in the larger practice of routine attempts at replication by independent investigators, which is further embedded in a tradition—flawed, but recognized—of publication of both positive and negative results.

What inspires faith in arithmetic is the fact that hundreds of scribblers, working independently on the same problem, will all arrive at the same answer (except for those negligible few whose errors can be found and identified to the mutual satisfaction of all). This unrivaled objectivity is also found in geometry and the other branches of mathematics, which since Antiquity have been the very model of certain knowledge set against the world of flux and controversy. In Plato’s early dialogue, the Meno, Socrates and the slave boy work out together a special case of the Pythagorean theorem. Plato’s example expresses the frank recognition of a standard of truth to be aspired to by all truth-seekers, a standard that has not only never been seriously challenged, but that has been tacitly accepted—indeed heavily relied upon, even in matters of life and death—by the most vigorous opponents of science. (Or do you know a church that keeps track of its flock, and their donations, without benefit of arithmetic?)

Yes, but science almost never looks as uncontroversial, as cut and dried, as arithmetic. Indeed rival scientific factions often engage in propaganda battles as ferocious as anything to be found in politics, or even in religious conflict. The fury with which the defenders of scientific orthodoxy often defend their doctrines against the heretics is probably unmatched in other arenas of human rhetorical combat. These competitions for allegiance—and, of course, funding—are designed to capture attention, and being well-designed, they typically succeed. This has the side effect that the warfare on the cutting edge of any science draws attention away from the huge uncontested background. The dull metal heft of the methods of science, like the sun, are themselves objects of scientific reflection, where the passions turn the foolproof into the fool, and the foolproof is itself often made foolish by the chose for it to be admired.

Robert Proctor usefully draws our attention to a distinction between neutrality and objectivity: Geologists, he notes, know a lot more about oil-bearing shales than about other rocks—for the obvious economic and political reasons—but they do know objectively about oil bearing shales. And much of what they learn about oil-bearing shales can be generalized to other, less favored rocks. We want science to be objective; we should not want science to be neutral. Biologists know a lot more about the fruit-fly, Drosophila, than they do about other insects—not because you can get rich off fruit flies, but because you can get knowledge out of fruit flies easier than you can get it out of most other species. Biologists also know a lot more about mosquitoes than about other insects, and here it is because mosquitoes are more harmful to people than other species that might be much easier to study. Many are the reasons for concentrating attention in science, and they all conspire to make the paths of investigation far from neutral; they do not, in general, make those paths any less objective. Sometimes, to be sure, one bias or another leads to a violation of the canons of scientific method. Studying the pattern of a disease in men, for instance, while neglecting to gather the data on the same disease in women, is not just not neutral; it is bad science, as indefensible in scientific terms as it is in political terms.

It is true that past scientific orthodoxies have themselves inspired policies that hindsight reveals to be seriously flawed. One can sympathize, for instance, with Ashis Nandy; editor of the passionately anti-scientific anthology, Science, Hegemony and Violence: A Requiem for Modernity (Delhi: Oxford University Press, 1988). Having lived through Atoms for Peace, and the Green Revolution, to name two of the most ballyhooed scientific juggernauts that have seriously disrupted third-world societies, he sees how “the adaptation in India of decades-old western technologies are advertised and purchased as great leaps forward in science, even when such adaptations turn entire disciplines or areas of knowledge into mere intellectual machines for the adaptation, replication and testing of shop-worn western models which have often been given up in the west itself as too dangerous or as ecologically non-viable” (p. 8). But we should recognize this as a political misuse of science, not as a fundamental flaw in science itself.

HOW SCIENCE PREVAILS

The methods of science aren’t foolproof, but they are indefinitely permissible. Just as important: there is a tradition of criticism that enforces improvement whenever and wherever flaws are discovered. The methods of science, like everything else under the sun, are themselves objects of scientific scrutiny; as method becomes methodology, the analysis of methods. Methodology in turn falls under the gaze of epistemology, the investigation of investigation itself—nothing is off limits to scientific questioning. The irony is that these fruits of scientific reflection, showing us the ineliminable smudges of imperfection, are sometimes used by those who are suspicious of science as their grounds for denying it a privileged status in the truth-seeking department—as if the institutions and practices they see competing with it were no worse off in these regards. But where are the examples of religious orthodoxy being simply abandoned in the face of irresistible evidence? Again and again in science, yesterday’s heresies have become today’s new orthodoxies. No religion exhibits that pattern in its history.

Notes

