

ONE

FACT AND VALUE

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THERE IS A VIEW OF SCIENCE, AS STEREOTYPED IN THE HANDS OF ITS critics as its advocates, that goes as follows: Science deals only in facts. Values come in only when decisions are made as to how the facts of science are to be applied. Often it is added that this second stage is no special concern of scientists, though this is an optional addition. My main aim in this chapter is to see what sense can be made of the first part of this story, that science deals only in facts.¹

The expression "deals in" is intentionally vague. Two ways of dealing fairly obviously need to be considered. First is the question of the nature of the products of science. These are certainly to be facts. But there might also be a second question about inputs. In generating a fact, say, dinosaurs are extinct, one needs to feed some facts in. (These are dinosaur bones. Our best tests suggest they are 80 million years old. No dinosaurs have been observed recently. And so on.) So these inputs had better be facts, too.

There are some obvious immediate worries. One might reasonably object to the suggestion that the only products of science are facts with the observation that science often produces things. Polio vaccines, mobile phones, laser-guided missiles, and suchlike are often thought of as very much what science is in the business of producing. According to

the stereotypic view with which I began, it may be replied that science produces laws and suchlike, on the basis of which it is possible to create polio vaccines, mobile phones, and so on. And the trouble with this is that it seems grossly to misrepresent how science actually works. A group of scientists trying to develop a vaccine do not try first to formulate general rules of vaccine development and then hand them over to technicians who will produce the actual vaccines. No doubt they will benefit from the past experience, recorded in texts of various kinds, of past vaccine makers. And perhaps, if they are successful, they will themselves add to the body of advice for future vaccine makers. But it seems beyond dispute that the primary objective here is an effective vaccine, not any bit of fact or theory.

Let us ignore this concern for the time being, however, and concentrate on the question whether, insofar as science produces what we might think of as bits of discourse, these bits of discourse are strictly factual, never evaluative. So we need to ask what the criterion is for a bit of discourse being merely factual.

It is not hard to find some paradigm cases. "Electrons have negative charge" is pretty clearly factual, whereas "torturing children is a bad thing to do" is pretty clearly evaluative (though we might note at the outset that the clarity of this judgment strongly invites the suggestion that it is also a fact). The existence of these and many other possible paradigms may tempt one to apply the Justice Potter criterion, "I know one when I see one." But it is just as easy to find cases that are much less clear. Consider, for instance, "The United States is a violent country." On the one hand, we can easily imagine a sociologist devising an objective measure of social violence—number of murders per capita, number of reported cases of domestic violence, and so on—and announcing that the United States ranked higher than most comparable countries in terms of this measure. But on the other hand, we can imagine someone describing this conclusion as a negative judgment on the country.

Of course, there is a familiar response here. We have the fact and then the judgment. The fact is that there are certain statistics about acts of violence. The value judgment is that these statistics constitute a bad thing about the place where they were gathered. In support of this distinction, we can point out that it is always possible to accept the fact and reject the value judgment. Some people approve of violent countries (they reveal the rugged independence of the populace, perhaps), and

perhaps there are even people who think torturing children is a good thing. But this defense is beside the present point. That point was just that the statement "The United States is a violent country" cannot be obviously assigned to either of the categories, factual or evaluative. In case this is not clear, compare the statement "Sam is a violent little boy." In any normal parlance, this does not mean just that Sam is disposed to occasional violent acts—that is, after all, true of virtually all little boys—still less that his rate of violent act production reaches a certain level on a standard scale approved by the American Psychological Association. It is a criticism of Sam, and probably of his parents, too. Anyone who doubts this should visit their nearest day care center and try out this comment on the parents collecting their precious charges there.

Suppose, as I have imagined with the case of social violence, that there is indeed a standard measure of violence for little boys. On this scale, a violent child is defined as one who emits more than five acts of aggression per hour. Now when I, as an expert child psychologist, announce that Sam is a violent child, my remark is entirely factual. Should his parents find the remark objectionable, I shall point out that this is no more than a factual observation, and it is entirely a subjective opinion, and one that I as a scientist shall certainly refrain from entertaining, whether it is a bad thing to be a violent child.

A possible conclusion at this point would be something like this: "The United States is a violent country" and "Sam is a violent little boy" are both potentially ambiguous. Although both may often be used evaluatively, especially by regular folk, scientists use them only after careful definition (operationalization) of their meanings. Thus, when used by responsible scientists, these statements will turn out to be merely and wholly factual. The statements under consideration are thus seriously ambiguous.

So perhaps scientists would do better to avoid these normatively loaded terms and stick to an explicitly technical language. To say that Sam scored 84 on the Smith-Jones physical assertiveness scale is much less threatening (even if this practically off the scale, the sort of score achieved by only the most appallingly violent children). And it is certainly true that psychologists or psychiatrists, to pursue the present example, are often more inclined to invoke technical diagnostic language, backed up by detailed technical definitions in standard nosological manuals, than to say, for instance, that someone is mad.

There is, however, an overwhelming advantage to ordinary evaluative language: It provides reasons for action. To say that the United States is a violent country is a reason for politicians to act to reduce violence or mitigate its effects (for example, by controlling the availability of dangerous weapons). It is, other things being equal, a reason not to live there. And so on. It is of no interest just to be given a number and told this is the violence index for a country or a city; we want to know whether it is high or low or, indeed, whether it is good or bad. Similarly, though here we tread on shakier ground, it might be valuable to know that someone is mad. It might be expedient to restrain them, or at least not put them in charge of security at the local nuclear power station.

There is a general point here. Once we move away from the rarified environments of cosmology or particle physics, we are interested in scientific investigations that have consequences for action. And this undoubtedly is why, while often paying lip service to operationalized or technical concepts, scientific language often gets expressed in everyday evaluative language.

The situation so far seems to me to be this: Many terms of ordinary language are both descriptive and evaluative. The reason for this is obvious. Evaluative language expresses our interests, which, unsurprisingly, are things we are interested in expressing. When we describe things, it is often, perhaps usually, in terms that relate to the relevance of things for satisfying our interests. Sometimes we try to lay down rather precise criteria for applying interest-relative terminology to things. These range from the relatively banal—the standards that must be met to count as a class 1 potato, for instance—to the much more portentous, the standards that an act must meet to count as a murder. In such cases, we might be tempted to say that the precision of the criteria converts an evaluative term to a descriptive one. It is important to notice, however, that the precision is given point by the interest in evaluation. The same is often the case for operationalized terms in science. More often in everyday life, the terms are a much more indeterminate mix of the evaluative and the descriptive: crisp, soggy; fresh, stale, or rotten; vivacious, lethargic, idle, stupid, or intelligent; or, recalling Austin's memorable proposal for revitalizing aesthetics, dainty and dumpy.

This, I think, is the language that we use to talk about the things that matter to us, and to understand such language requires that we understand both the descriptive criteria and the normative significance of

the concepts involved. It seems to follow that there is no possibility of drawing a sharp fact-value distinction. Science may reasonably eschew some of these familiar terms on the ground that they are vague and imprecise and may try to substitute more precisely defined alternatives. But first, the use of these alternatives will ultimately depend on their capturing the evaluative force of the vaguer terms they replace. And second, science does not, and almost certainly cannot, entirely dispense with the hybrid language of description and evaluation. This fact makes the assumption of a sharp fact-value distinction not only untenable but also often harmful.

So much for the general background of skepticism about the fact-value distinction. For the rest of this chapter, I shall be concerned with more detailed specific examples. Two such examples will illustrate more concretely how normativity finds its way into scientific work and how its denial can potentially be dangerous.

Before continuing, though, I have one more very general comment. The examples that I shall discuss will both be drawn from parts of science directly connected to human concerns. I have often heard the view expressed that though it is interesting and important that the human sciences should be contaminated with values, it is not altogether surprising. But what would really concern the advocate of the value-neutrality thesis with which this chapter began would be an indication that physics or chemistry or mathematics was value laden. So, on such a view, I am dodging the really important task.

In reply, let me first say that I do not propose to deny that many of the results of these sciences may well be value free. The sense in which I am questioning the legitimacy of the fact-value distinction is not one that implies that there are no areas that human values do not infiltrate. It is rather that there are large areas, including the domain of much of science, in which the attempt to separate the factual from the normative is futile. What I want to say about physics is that if most or all of physics is value free, it is not because physics is science but because most of physics simply doesn't matter to us. Whether electrons have a positive or a negative charge and whether there is a black hole in the middle of our galaxy are questions of absolutely no immediate importance to us. The only human interests they touch (and these they may indeed touch deeply) are cognitive ones, and so the only values that they implicate are cognitive values. The statement that electrons have negative charge

is thus value free, in a quite banal sense: It has no bearing on anything we care about.

I said that these were matters of no immediate importance, and the word *immediate* is crucial. It is often pointed out that physics also tells us how to build nuclear power stations and hydrogen bombs. Here, we are, to say the least, in the realm of values. There is no unique nuclear power station that physics tells us how to build, nor could there be a general theory that applied to the building of any possible power station. Physics assists us in building particular kinds of power stations, and particular kinds of power stations are more or less safe, efficient, ugly, and so on. Anyone who supposes there is a value-free theory of nuclear power station building, let alone hydrogen bomb construction, is, it seems to me, a fool or a liar. The argument that physics is value laden beyond the merely cognitive values mentioned in the last paragraph seems most plausibly to depend on some such claim as that physics really is, contrary to appearances or propaganda, the science of bomb building. I make no judgment on this issue. My point today is just that the value freedom of physics, if such there be, has no tendency to show that science is in general value free.

1.1 Rape

My first example is not a pleasant one. It is the evolutionary psychological hypothesis about rape.² The basic story goes something like this: In the Stone Age, when the central features of human nature are said to have evolved, females were attracted to mates who had command of resources that could be expended on rearing children. Perhaps they were also attracted to males with good genes—and perhaps these were simply genes for being, in the virtuously circular sense characteristic of sexual selection, attractive. Perhaps these ancestral females were smart enough to deploy some deception on the resource-rich males and get their resources from the “Dads” and their genes from the more attractive “cads.” At any rate, there would very probably have been males with neither competitive-looking genes nor resources, and they, like everyone else, would be looking for a sexual strategy. Because they have no chance of persuading any females to engage in consensual sex with them, this strategy can be only rape. As is generally the way with evolutionary

psychology, once a form of behavior has been proposed as a good idea in the Stone Age, it is inferred that a module for producing it must have evolved. So men, it appears, have a rape module, activated when they find their ability to attract females by any acceptable method falls to a low enough level.

Evolutionary psychologists presenting such theories generally also insist on a quite naive version of the fact-value distinction. Their claimed discoveries about rape are merely facts about human behavior, certainly not facts with any sort of evaluative consequences. We can at least agree, contrary to what evolutionary psychologists sometimes accuse their critics of maintaining, that showing that rape is, in the sense just described, natural doesn't mean it is good. Earthquakes and the AIDS virus are, discounting some paranoid speculations, natural but not thereby good. But such theories certainly do have consequences for what would be appropriate policy responses to the incidence of rape. Even this indisputable fact is enough to refute the occasional claim that such theories have no evaluative consequences. They have at least the consequences that certain policies would be good or bad. The most obvious such policy response to the theory in question would be the elimination of poverty, since the hypothesis is that it is poor men who are rapists (because they lack the resources to attract women). Though certainly a good idea, this goal has unfortunately proved difficult to achieve. On some plausible Marxist analyses, it is a goal that could not be achieved without the elimination of capitalism—an equally tricky proposition—because, on these analyses, poverty is not an intrinsic property of people but a relation between people, and a relation that is fundamental to capitalism. And it is interesting that such an analysis appears relevant to the sociobiological stories: It is not the intrinsic worthlessness of the failed caveman that doomed him to sterility or sexual violence, but his relative lack of worth compared with his more fortunate rivals.

But all of this is, of course, somewhat beside the point. Those who have thought seriously about contemporary sexual violence as opposed to the hypothetical reproductive strategies of imagined ancestors have observed that rape is not exclusively, or even mainly, a crime of resourceless reproductive predators lurking in dark alleyways but has much more to do with misogyny, and more to do with violence than sex, let alone reproduction. Its causes appear, therefore, to be at the level of ideology rather than economics.

These implications indicate that the stakes are high in theorizing about matters of this moment, but they do not get to the heart of my present argument. So far, I have spoken as if there is no problem whatever in deciding what, in the context of this theoretical inquiry, we are talking about. Indeed, to make research simpler, sociobiologists often begin their investigation of rape with observations of flies or ducks. If we have a good understanding of why sexually frustrated mallards leap out from behind bushes and have their way with unwilling, happily partnered, passing ducks, then the essential nature of rape is revealed, and we can start applying these insights to humans. Of course, what this blatantly ignores is the fact that human rape (and I doubt whether there is any other kind) is about as thoroughly normative a concept as one could possibly find. Those who supposed they were investigating the causes of rape but, since they were good scientists, were doing so with no preconceptions as to whether it was a good or a bad thing, are deeply confused: They lack any grasp of what it is that they are purporting to investigate.

All this is perfectly obvious when one looks at real issues rather than pseudoscience. A more serious perspective on rape is that it involves a profound violation of the rights of its victims. When, not long ago, it was conceptually impossible for a married man to rape his wife, this reflected a widespread moral assumption that, *vis-à-vis* her husband, a woman had no rights. Indeed, the husband was supposed to have a right, perhaps divinely guaranteed, to whatever kinds of sexual relations he desired with his wife. Nowadays, more complex debates surround the concept of date rape, the exact tones of voice in which no means yes, and so on. Less controversially, it has long been understood that sexual relations with young children is a form of rape, because the relation between adults and small children does not permit meaningful consent. But the age at which consent becomes possible varies greatly from culture to culture and is often subject to renegotiation.

The point of this is not to argue that there is no place for science in relation to such a topic. On the contrary, there are quantitative and qualitative sociological questions, psychological questions, criminological questions, and no doubt others that are of obvious importance. The point is just that if one supposes one is investigating a natural kind with a timeless essence, an essence that may be discovered in ducks and flies as much as in humans, one is unlikely to come up with any meaningful results. Though this is an extreme example, in that the value ladenness

in this case is so blindingly obvious that only the most extreme scientism can conceal it, I think it is atypical only in that obviousness. As I argued in the opening section of this chapter, fact and value are typically inextricably linked in the matters that concern us, and we are most often concerned with matters that concern us.

1.2 Economics

My second example is a quite different one. Nowhere is the tradition of dividing the factual from the evaluative more deeply ingrained than in economics. In recognition of the fact that issues about the production and distribution of the goods on which human life depends do have a normative component, there is, indeed, a branch of economics called normative, or welfare, economics. But this is sharply divided from the properly factual investigations of so-called positive economics, and it is hardly a matter of debate that it is the latter that is the more prestigious branch of the discipline. In common with traditional positivism and contemporary scientism, the underlying assumption of this distinction is that there is a set of economic facts and laws that economists are employed to discover and that what to do with these is largely a matter for politicians or voters to decide.³

And in fact, normative economics has itself tended to reinforce this perspective and therefore tried to limit itself to the question whether there are economic actions that are indisputably beneficial. This concern is expressed in the focus of attention on the criterion of Pareto optimality: An economic allocation is said to be Pareto optimal if there is no possible transfer of goods that would improve the lot of some agent or agents while harming no one. It may be that failures to achieve Pareto optimality should be addressed where possible (though even this may be called into question by some accounts of distributive justice). But the "optimality" in "Pareto optimality" is a dubious one. If, for example, I possess everything in the world and I derive pleasure from the knowledge that I own everything in the world, this distribution of goods constitutes a Pareto optimum. If some crust of my bread were diverted to a starving child, I would no longer have the satisfaction of owning everything in the world, and similarly with any other possible transfer. So one person, myself, would be less well off. But this would be an unconvincing

argument that this distribution was optimal, or even good. There are, of course, countless Pareto optima, which by itself suggests something anomalous in the use of the term *optimum*.

The problem is perfectly obvious. Although we can all agree that Pareto optimality is a good thing if we can get it, the issue of interest is which of the many Pareto optima we should prefer. Pareto optimality is really about efficiency, whereas we are interested in properly normative economics in matters such as justice. We should recall here the general assumption that science in general, and economics in particular, should aim simply to describe the mechanisms of economic activity and leave it to others to decide what to do with it. Not only is this assumption at work in positive economics but also it is even more starkly visible in much of the practice of normative economics, which is concerned not with how economies ought to be organized but with efficiency.

I believe that this is a highly undesirable, and very probably incoherent, conception of the business of economists. One way to see that it is undesirable is to note that when we consult supposedly expert economists about what might be good economic policy, we might naively suppose that they would have useful advice to offer us. But on the conception under review, it turns out that, apart perhaps from pointing to the occasional departure from Pareto optimality, they have no relevant expertise whatever. They are, after all, experts in efficiency, not policy. But because economists often seem willing to offer such advice, it seems disingenuous that they should deny that normative questions are part of their discipline. And if they do insist on this denial, they will presumably be of much less use to us than we had thought, and we could perhaps get by with rather fewer of them.

More worrying, it is quite clear that there is an implicit normative agenda to the vast majority of economic thinking. Because economists believe they have something to say about economic efficiency, they are naturally inclined to think of this as a good thing. And as the clearest measure of efficiency is the ability to produce more stuff with the same resources, economists are often inclined to think the goal of economic activity is to produce as much stuff as possible. Even if this account of the etiology of this goal is disputable, it is hard to dispute that many economists do assume such a goal, and assuming a goal is a good way of avoiding the vital intellectual labor of considering what the goals of economic activity really should be. Returning to the economists who offer

advice on matters of public policy, I note that very frequently they assume that what they are required to do is advocate those policies that they believe, rightly or wrongly, will promote the production of as much stuff as possible.

In fact, even if we agree that something should be maximized by economic activity, an enormously difficult question is what that something should be. Not infrequently, positive economics assumes that the real question is about maximizing wealth measured in monetary terms, and tragically, many politicians seem willing to accept this facile view. An obviously preferable goal would be something like standard of living, except that would be little more than a marker for the difficult question of what constitutes standard of living. The work particularly of Amartya Sen⁴ has made it clear that any satisfactory analysis of this concept will be only marginally related either to any standard account of utility or to the accumulation of wealth. It is also clear that even if we knew what constituted standard of living, we would still have to face the task of deciding how this should be distributed. Surely, the utility of increases in standard of living declines as one reaches more comfortable levels, so greater good can be gained by distributing standards of living more equally. And there is also the question of who should be among the beneficiaries of a distribution. Should we care about the standards of living of foreigners, for instance? Do the as yet unborn have any claim on a decent standard of living? Must we consider the well-being of non-human animals or the effects of economic activity on the environment?

Once again, however, the issue I want to emphasize here is the inescapably value-laden nature of the terms in which we talk about ourselves and our social existence. Consider a central idea in macroeconomics, the measurement of which has had profound implications on economic policies throughout the world, inflation. Like earthquakes or AIDS, inflation is generally seen to be a bad thing. But also like earthquakes and AIDS, it is seen as the sort of thing that can be described and theorized without regard to its goodness or badness.

The problem here is somewhat different from that for rape. The normative judgment is fundamental to the meaning of rape and therefore fundamental to negotiations about what should and should not count as rape. With inflation, normativity comes in a little later. The primary problem, as has long been familiar to economists, though it often appears to surprise others, is that there is no unequivocal way of

measuring this economic property. It would be easy enough if everything changed in price by identical percentages, but of course that does not happen. How should we balance a rise in the price of staple foods, say, against a fall in the price of air travel? The immediately obvious reply is that we should weight different items in proportion to the amount spent on them. The problem, then, is that not all goods are equally consumed by all people or even by all groups of people. It is quite commonly the case that luxury goods fall in price while basic necessities rise. It might be that these cancel out under the suggested weighting, so that there is no measured inflation. But for those too poor to afford luxury goods, there has manifestly been an increase in the price level.

How, then, does one decide how such an index should be constructed? The unavoidable answer, it seems to me, is that it depends on the purposes for which it is to be constructed. There are many very practical such purposes. People on pensions, for instance, may have their incomes adjusted to account for changes in the level of inflation. For such purposes, the goal might reasonably be to maintain the value of the pension, in which case the ideal would be to enable typical pensioners to continue to afford the goods that they had previously consumed. Of course, no pensioner is absolutely typical, but a case might be made for addressing particularly the case of pensioners dependent solely on the pension. For such ends, it would clearly be desirable to have specific indices designed for specific groups. But the goals might be quite different, calling for different measures. For example, and perhaps more plausibly, one such goal might be to save the taxpayer money.

Perhaps the central goal nowadays of inflation measurement is as an input into the decision procedures of central banks in determining interest rates. In Britain (I'm not sure how widespread the practice is), this leads to the rather bizarre habit of regularly announcing something called the "underlying rate of inflation." This is a measure of inflation that ignores changes in mortgage payments consequent on changes in interest rates. The rationale for this appears to be that the article of faith on which much macroeconomic policy depends is that the inflation rate is inversely related to interest rates. Since increasing interest rates has an immediate and large effect in increasing the prices confronted by consumers, this central dogma would be constantly refuted if mortgage costs were included in the measure of inflation. Hence the underlying rate is important as a way of allowing the theory to be maintained.

(I suppose this aspect of the matter is of more obvious concern to students of the theory laden than of the value laden.)

Yet another aspect of all this is that the assumption that inflation is objectively bad is by no means simple. In common with most middle-class Americans, I have spent substantial parts of my life owing large sums of money borrowed at fixed interest rates. From a personal point of view, therefore, I have always seen inflation as something to be enthusiastically welcomed. The deep horror with which it is now perceived should lend support to those who believe that the world is mainly controlled by bankers.

Some quite different aspects of value ladenness could be introduced by considering another central macroeconomic concept, employment. Having work is widely perceived in many contemporary cultures as a necessary condition for any social status and even for self-respect. But what counts as work is a complicated and contentious issue and one that has profound implications for all kinds of economic policies. It is still frequently the case, for instance, that work is equated with the receipt of financial reward, with the consequence that domestic work, from raising children to the domestic production of food, was, from an economic perspective, a form of unemployment. A quite different concept can be found in Adam Smith (and an earlier Adam who was required to make his living "in the sweat of thy face"), in which work is generally unpleasant— toil and trouble—and understood by its contrast to leisure or ease (see Smith 1994, 33). Quite different again is the idea, most conspicuously developed by Karl Marx, that work provides the possibility of human self-fulfillment. Both these conceptions are evidently value laden, and the notion that there can be a purified economic conception of work, somehow divorced from any of these varied normative connotations, seems both misguided and potentially dangerous.⁵ There are, in sum, many ways in which values figure in the construction and use of many of our concepts, and scientific concepts are no exceptions. For much of language, the notion of separating the one from the other is altogether infeasible.⁶

1.3 Conclusion

As I indicated earlier, I am not claiming that there is no distinction between the factual and the normative. What I do claim is that this is not

a distinction that can be read off from a mere inspection of the words in a sentence or a distinction on one side or the other of which every concept can be unequivocally placed. For large tracts of language—centrally, the language we use to describe ourselves and our societies—the factual and the normative are thoroughly interconnected. Where matters of importance to our lives are at stake, the language we use has more or less profound consequences, and our evaluation of those consequences is deeply embedded in the construction of our concepts. The fundamental distinction at work here is that between what matters to us and what doesn't. There are plenty of more or less wholly value-free statements, but they achieve that status by restricting themselves to things that are of merely academic interest to us. This is one reason that physics has been a sometimes disastrous model for the rest of science. We hardly want to limit science to the investigation of things that don't matter much to us one way or the other. The application of assumptions appropriate only to things that don't matter to those that do is potentially a disastrous one.

NOTES

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2. A standard reference is Thornhill and Thornhill (1992). The ideas were popularized by Thornhill and Palmer (2000). For detailed rebuttal, see various essays in Travis (2003).
3. A classic paper by Friedman (1953) provides a well-known statement of this position.
4. A number of insightful discussions of the issue can be found in Nussbaum and Sen (1993).
5. These different meanings of work are discussed in more detail in Dupré (2001, 138–46) and Gagnier and Dupré (1995).
6. For more detailed accounts of important aspects of value ladenness in economics, see Starmer (2000) and Guala (2000).

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