Overview and chapter synopsis

On my Facebook feed right now: Keep politics out of science. Many people from both sides of the political spectrum think that if scientists let their political values affect them, then those values will hinder their objectivity. The situation is presumed to be even worse when science is influenced by the political values of non-scientists, such as politicians, or politically-motivated individuals or groups, especially when those political values are different from our own. I think, however, that much depends on what we mean by political values, objectivity, and science.

Once we get clearer about what we mean, then we can see that political values affect scientific research all the time, and not always for the worse, indeed, sometimes for the better. I realize this might sound odd. I need to show that and how we can make the distinction between political values that affect science for the better, and those that affect it for the worse. I admit that when we try to make this distinction, we might get it wrong. But this is no different than the other kinds of mistakes that scientists make all the time, that are then subject to correction. And of course we might get the distinction right. As we debate policy decisions affecting the fate of our planet and all its inhabitants, it is more important than ever that we get the distinction right.

The worry about political values in science seems to be that claims expressing political values are a kind of evaluative claim, and evaluative claims are different from the descriptive claims of science. The descriptive claims of science express facts, not
On the face of it, the difference seems clear: “The Earth orbits the Sun” is a factual description of the world. It is supported by an objective process involving the impartial weighing of the relevant sets of evidence provided by astronomical observations, and the linking of this evidence with the explanatory theories of physics. This is a long way of saying that we think it’s true. Importantly, while we think that the description is true, we recognize that we might need to alter it in the face of new evidence, resulting from new experience, new observations. Indeed, one of the strengths of the scientific enterprise is that, ideally, at least, it rewards those who respect the weight of evidence, and shift their views to keep up with new evidence.

Now compare this descriptive claim with an evaluative claim: “Scientists should be honest about any financial interests that may be influencing their work.” While this evaluative claim may garner wide-spread support, it doesn’t seem to describe a state of the world that could be said to be true or false. Unlike the descriptive claim about the Earth, it is hard to imagine what changes would have to occur before we would alter our support for it. Claims expressing values seem impervious to refutation in the face of evidence; they are not things we expect to change. Perhaps that is one of the reasons why it is so hard to talk to people whose values conflict with our own.

Another way to put the point is that if evaluative claims do not straightforwardly describe states of the world, then whatever they mean, their content, is unrelated to the evidence of experience. If this is right, it might explain why our values are often resistant to change in the face of new evidence—the evidence of experience is thought to
be irrelevant to values. So, while we have objective methods involving the impartial assessment of the relevant evidence supporting competing descriptive claims, these methods cannot be used when assessing competing evaluative claims. If evaluative claims are not themselves capable of objective evidential assessment, then it seems difficult to imagine that those claims could be anything other than a distraction, or worse, an obstacle, to assessing the evidential strength of a particular descriptive hypothesis within a scientific setting.

While much of this might seem plausible, I argue that these and other characterizations of the difference between descriptive claims and evaluative claims, facts and values, are actually mischaracterizations that negatively affect the way that both non-scientists and scientists talk about science and politics. In response I offer an alternative view of facts and values that focuses on the ways that humans learn and use language. We develop language for descriptive claims in the same way that we develop language for evaluative claims, that is, by moving around our worlds in communication with others.

Consider everyday basic descriptive claims: “the stove is hot,” “that kid is a biter”; or basic claims of a more evaluative sort: “this dog is so gentle with children,” “maple syrup on waffles is awesome” — we learn the meaning of these descriptive and evaluative claims by attending to the evidence of experience, that is, by attending to patterns in our communication with others about shared experiences with the world. Learning the meaning of a claim is to learn the circumstances under which it is true, and there is no principled distinction to be made between the way we learn the descriptive
circumstances under which it is true that “the stove is hot” and the way we learn the evaluative circumstances under which it is true that “maple syrup on waffles is awesome.”

Learning to deploy in a conversation, sentences of either kind, is a mark of successful engagement with and in the world. Successfully describing something as hot, or evaluating it as awesome, recognizing when claims about heat and awesomeness are true, requires an objective process involving the impartial assessment of the relevant evidence. In both cases, the kinds of pattern-detection, evidence collection, and engagement with the world are importantly symmetrical.

Because most of us are proficient language-users, we no longer pay attention to the detection of these patterns, unless perhaps we are learning a new language, or learning to communicate with an autistic friend for whom linguistic behavior is not the primary organizer of their world — then the patterns largely implicit and obvious to us are thrown into sharp relief.

Of course, descriptive claims like “The Earth orbits the Sun” and “Scientists should be honest about any financial interests that may be influencing their work” are much more complex than basic claims about hot stoves and awesome waffles, but the learning process involves the same kinds of inferential patterns. We understand the more complex claim about the importance of honesty and science, based on the connections between those complex claims and more basic claims about concrete experiences that, over time, have informed our ideas about “scientists,” “financial interests,” and “honesty.” We have learned, by attending to patterns in our
communication with others about shared experiences in the world, when we can truthfully evaluate someone or some act as “honest,” just as we have learned when we can truthfully describe someone as a scientist. Building connections from these basic claims, the truth or falsity of the evaluative features that make up more complex claims about the importance of honesty in science can be objectively assessed.

Again, this is not to claim that such assessment is always practiced, or that it is always straightforward. Most adult language-users who are confident in the correct application of the terms “scientists” and “honesty” almost never bother to perform an objective re-assessment of the evidence for their claims about who or what a scientist is, or what honesty means (though similarly, for our use of terms “Earth,” “orbit,” and “Sun”). But at some point they (we) learned how to use claims containing these features by attending to some simple patterns in our communication with parents or teachers about shared experiences of and with the world. From there we learned not to overgeneralize from the examples we were given initially—not all people wearing white coats are scientists, some are department store employees working at the Clinique counter; there are exceptions to the maxim “honesty is the best policy.” Just as with learning about concrete features of our world, we learn about abstract features such as honesty by deploying them in claims about our own relationships, with our families and friends, and building inferential associations to more complicated relationships, say, between scientists and funding sources. We improve on our understandings of these features, we fine-tune the objectivity with which we assess claims appealing to these features, as we move around our worlds, communicating with others. Or at least
we can make these improvements in our assessments. And insofar as this sort of objective assessment is, in principle, available in the case of complex descriptive claims about the Earth orbiting the Sun, so too it is, in principle, available in the case of more complex evaluative claims about how scientists ought to be honest concerning their financial interests.

We still might want to say that descriptive claims function in different ways from evaluative claims. We might think that we use these two kinds of claims in different ways, in different circumstances. But whatever the differences, I hope in this book to ease the burden of proof onto those who want to maintain that it is only descriptive claims and not evaluative claims that involve evidence, or that it is only descriptive claims and not evaluative claims that can be true or false, and whose truth can be objectively assessed.

Of course, many of us agree that certain value claims at least, are true, as for example, the claim about the importance of honesty in science. However, it is important to see that it is not our broad agreement that makes the value claim about honesty in science true. The reason that we think it’s true that scientists should be honest about their financial interests is because, as a community, we have accumulated vast interconnected inferential associations linking the evidence provided by fairly straightforward claims about scientists and honesty to the evidence provided by more complex claims about how scientific research is negatively affected when scientists are not honest about their financial interests. And if we began to accumulate evidence from inferences showing that dishonesty in science had no such ill-effects on the resulting
research, then we would have to rethink the value of honesty in science. Of course it is hard to imagine not valuing honesty, just as it is hard to imagine the Earth not orbiting the Sun, but in each case, the imaginative difficulty comes not because we don’t need (or don’t have) evidence for each claim, or because everyone agrees that each claim is true. Rather, it’s because of the many firm inferential associations linking each of these claims—both the evaluative and descriptive— with the evidence provided by other claims about the world that we hold true.

Onward then to the argument that we can objectively assess both descriptive and evaluative claims, and that this assessment will help us make a distinction between political values that affect science for the better, and those that affect it for the worse. Here’s the plan for the rest of the book. The next chapter (Chapter 2) is called \textit{Values are always science-laden}; and here I’ll further develop my argument that values, generally, and political values in particular, are not importantly different from descriptive claims in science. Some evaluative claims, like some descriptive claims, can be more or less well-supported by the evidence of experience, and this support can be as objectively assessed in the case of facts as in the case of values. In Chapter 3, \textit{Scientific results are always value-laden}, I explore how values, including political values are often implicit and assumed, operating as auxiliary or background hypotheses that are ubiquitous in our best science.

If I’m right about the arguments in Chapters 2 and 3, then we can conclude that objective scientific research does not need to be “value-free,” it needs simply (simply!) to be well-supported by an impartial assessment of relevant evidence claims, some of
which we might call “political” claims. In this case we will have objective research that is not politically “neutral,” but where the auxiliary hypotheses at work, both descriptive and evaluative, are made explicit and the evidence brought to bear in the research is relevant and impartially assessed. So the main danger to objectivity in science is not political content itself, but the implicit and dogmatic role that this, or any other kind of content plays.

In Chapter 4, *Is good science good enough?* I acknowledge that appeals to good science have not always been straightforwardly aligned with good politics, and bad politics have not always been aligned with bad science. Here, I’ll discuss case studies where political policy has been controversially influenced by science, and vice versa, as in debates about science education in US public schools, cancer research in Nazi Germany, and vaccination research. The reasons for the mismatch between politics and science in these cases are varied, but typically can be traced to some kind failure of objectivity as I define it.

Chapter 5, *Better values, better science,* is the penultimate chapter where I explain how some kinds of politics can make for better science in some cases. Here I examine case studies of feminist approaches to sociology and epidemiology, and show what a non-dogmatic approach to feminist values might look like and why including these sorts of values can make for better science in particular cases.

I conclude in Chapter 6 by exploring the concept of “inductive risk.” Even when we are explicit and nondogmatic about the evaluative and descriptive auxiliary hypotheses underlying our scientific research, even when we objectively assess the
evidence in support of that research, we could still make mistakes. That is the nature of scientific predictions about the future, or “retrodictions” about the past—these assessments are always based on incomplete evidence and so our conclusions cannot be guaranteed to be true. We are faced then with making decisions about what risks of error we are willing to accept and why. Here I discuss some of the debates surrounding climate science. What is the worst that could happen if we’re wrong? On what side do we want to err? This it turns out is the real question underlying the politics of science and the science of politics