

Judgement and the Limits of Knowledge: Distinguishing the Humanities from the Sciences Using Two Concepts of Causation

Vivasvan Soni

When we reflect today on the limits of knowledge, and the limits of scientific knowledge in particular, it is difficult to imagine that there are any. Rigorous scientific methods of investigation have proved themselves repeatedly in one domain after another. We have seen into the furthest reaches of the universe, almost to the beginning of time; we have probed the makeup of matter on a scale far smaller than an atomic nucleus. We have decoded the human genome; we now understand the chemical bases of many emotional states. And just last year, with the advent of the latest iteration of AI, we can already see evidence of the uncanny technological mimicry of human intelligence and human language use. It seems naïve to stipulate that anything at all lies beyond the realm of scientific inquiry, even what were once thought to be the sacrosanct domains of human emotion, creativity and higher-order non-algorithmic thinking. If everything is in principle knowable by scientific methods, given enough time and adequate technological means, why would we need another way of understanding the world? Those of us who continue to believe that humanistic ways of understanding are not reducible to scientific knowledge risk sounding obsolete and out of touch. If we want to make the case that there is something distinctive about the humanities, beyond the reach of science, we must explain as precisely as possible what the limits of scientific knowing are and what constitutes the specificity of humanistic inquiry. To this end, my article shows how we can use the difference between final and efficient causation to establish judgement as a distinctive cognitive habitus, irreducible to ways of knowing. The distinction between these two modes of causation allows me to describe the structure of the world of judgement and to detail exactly how the meanings constituted by judgment lie beyond the limits of (scientific) knowing. I argue that the world of judgement, not knowledge, forms the proper basis of humanistic inquiry.¹

Shaftesbury's "Soliloquy": The Need for Final Causes

I developed my strategy of distinguishing the two worlds based on a passing hint by the philosopher Anthony Ashley Cooper, Third Earl of Shaftesbury (1671-1713). I begin by describing his remarkable intervention into early modern philosophical accounts of human motivation, though most of my article will focus on developing the implications of the distinction in a contemporary idiom. Shaftesbury opposed the reductive accounts of motivation being proposed by a number of thinkers in this period (see Pfau, *Minding the Modern*, 227-48), among them Hobbes, Locke and later Mandeville, accounts that would become formative for the empirical study of human behaviour (Nagel, *View from Nowhere*, 149-51; Tallis 24). On the reductive view, human action is explained by self-interest, or the strongest desire, or as Mandeville puts it, whichever passion is "uppermost" (Mandeville 39; see also, Soni, "Can Aesthetics Overcome Instrumental Reason?"). What Shaftesbury understood is that these accounts, in keeping with emerging modalities of scientific explanation, were attempts to explain human behaviour according to the logic of efficient causation (the play of forces in the psyche) rather than final causation (the orientation by purposes). Such accounts were designed to construe us as effectively desiring machines, whose

movements could be explained purely by efficient causes (just like any planet or pendulum), not anything so whimsical as thoughts. The turn from final to efficient causation is particularly evident in Locke. In the first edition of the *Essay Concerning Humane Understanding* (1690), Locke had proposed that “*Good then, the greater Good is that alone which determines the will*” (124). In subsequent editions of the *Essay*, dissatisfied with this account which attributes actions to a final cause or “good”, Locke proposes that it is uneasiness or desire, an immediate propulsive force in the psyche, that impels us to action (on Locke’s revisions to the *Essay*, see Kramnick 141-67). In effect, Locke tells us that to give an empiricist account of human behaviour, we must focus on efficient causes like desire, interest, and passion rather than some vague and fictive notion of a purpose, like the “good”.

Shaftesbury is troubled by these reductive, naturalist accounts, which effectively obliterate the ethical dimension of human action. Not being a systematic philosopher (Den Uyl), he proposes a number of different antidotes such as a common sense (*sensus communis*) and the yearning for aesthetic proportion, not all of which may be compatible. But the one I want to focus on here is his notion of “soliloquy”, which is perhaps his most direct challenge to the efficient-causal or “desiring machine” model of behaviour. For Shaftesbury, desires are inchoate and incoherent, a seething flux in the psyche which simply push us this way and that. To act in a way that is intelligible and coherent, we must enter into conversation with ourselves, choose among the many inarticulate desires, and forge a will for ourselves by committing to the ends we judge valuable (for histories of the concept of will, see Arendt; Pfau, *Minding the Modern*). Here is the practice of soliloquy as Shaftesbury understands it:

One wou’d think, there was nothing easier [...] than to know [...] what we propos’d to our-selves, as our *End*, in every Occurrence of our Lives. But our Thoughts have generally such an obscure implicit Language [...] For this reason, the right Method is to give ’em Voice and Accent. (Shaftesbury 62)

In proposing this, Shaftesbury is building on an insight of Locke’s. After offering his reductive account of motivation according to desire or uneasiness, Locke recognises its inadequacy, its threat to our agency and capacity for judgement. He admits that we have a capacity to hesitate, reflect on our desires, and judge between them instead of simply being pushed around by them (Locke, *Essay* (2004) 242; see Arendt 1.76, 2.119, 2.130, 2.207). Shaftesbury gives substance and heft to this ephemeral and nearly unreal mental space of hesitation, by conceiving it as the site of soliloquy or internal conversation. Only when we give our thoughts “Voice and Accent”, when we reason out loud or “*viva voce*” with ourselves (46), do we form our wills through judgement (final cause), rather than being buffeted by our desires (efficient cause). (For a full reading of Shaftesbury’s essay, see Soni, “How to Hit Pause”). We can extract a strong claim from Shaftesbury’s argument: soliloquy is the way in which I transcend the realm of efficient causes (the space of knowledge) and become an agent (occupying the space of judgement). What are the distinctive features of soliloquizing that allow us to claim that the judgements I make in forging a will operate in a different realm from knowledge? In soliloquy, I reason with myself about my ends, using natural language to give myself purposes. Indeed, by distinguishing between two modes of causation (final vs. efficient causation), two modes of language (natural vs. formal language) and two modes of reason (discursive vs. algorithmic reason), we

can establish the rigorous distinction we are seeking between the worlds of judgement and knowledge.

Shaftesbury's Watch: The Exclusion of Final Causes from Scientific Explanation

This article can only focus on the first of these: the distinction between final and efficient causes. Why does Shaftesbury think that final causes – the purposes I give myself or attribute to objects ("our End[s]") – mark out a hard limit to knowledge, and are his claims defensible? Until now, we have mostly been speaking of human beings and their motivations, so one might think that Shaftesbury is relying on uninterrogated assumptions about the irreducible character of human interiority and freedom. However, instead of resorting to something that might be thought to lie entirely beyond the bounds of knowledge in some obvious way (aesthetic experience, emotions, creativity, the encounter with the sacred), Shaftesbury uses the surprising example of a watch. At the moment when he is writing, watches and clocks (interchangeable for our purposes) are paradigmatic examples of knowable objects and indeed, in the enduring metaphor of the clockwork universe, serve as the very emblem of the kind of knowability promised by emergent scientific and empirical forms of inquiry (Barnett 59, 86; Cipolla 7; Bruton 69; Landes 12; Wootton 324, 432-48; Mumford 52).

If this is the case, how could Shaftesbury think that the watch could reveal something about the limits of knowing, when it seems rather to embody the promise of complete knowability? The brilliance and power of Shaftesbury's approach lies exactly in this paradoxical strategy. If there is a limit to what knowledge can reveal about an object, Shaftesbury recognises, it cannot be a matter of arbitrarily declaring certain kinds of phenomena beyond the reach of knowledge, but in discovering what is missing even when something is as completely known as possible. Indeed, as a thought experiment, we might even stipulate that we know everything there is to be known about the watch scientifically, and then ask ourselves: what more do we need in order to understand the watch? Shaftesbury explains his insight this way:

IF a Passenger shou'd turn by chance into a Watchmaker's Shop, and thinking to inform himself concerning *Watches*, shou'd inquire, of what Metal, or what Matter, each Part was compos'd; [...] without examining what the real Use was of such an Instrument; or by what Movements its *End* was best attain'd, and its Perfection acquir'd: 'tis plain that such an Examiner as this, wou'd come short of any Understanding in the real Nature of the Instrument. (Shaftesbury 214)

What Shaftesbury claims is that we could know everything about the watch (its "Matter") and still not understand its purpose or final cause, "its *End*" or "Energy" as Shaftesbury calls it elsewhere (Soni, "*Energeia*"). No matter how completely we understand the efficient causes that drive the watch's mechanism and account for its movement – and for argument's sake we can assume that we know all of them – we are no closer to understanding the final cause or purpose of the watch.

But is the claim plausible? At first glance, it sounds hyperbolic. After all, who doesn't know the end and use of a watch? Surely, its purpose is unmistakable, namely, to tell time. However, we must proceed carefully here. The distinction Shaftesbury is drawing is not only tenable, but crucial for understanding the limits of knowledge and the distinctive role of humanistic understanding. Let us explore more fully what our efficient causal knowledge of the watch looks like, what form it takes,

and why purpose cannot be encompassed within it. As an example of the efficient-causal knowledge we have about clocks, I will take the central result for the purposes of timekeeping, the formula for the period of a pendulum, derived from the second-order differential equation for the pendulum's motion (the formula for the balance spring of a watch is very similar):

$$T = 2\pi \sqrt{\frac{L}{g}}$$

This is as well established a scientific result as we could possibly want. (For a contemporary derivation of the formula from Newtonian principles, see Halliday and Resnick 41-52. The formula is doubly imprecise. I deliberately use it because it is still "empirically adequate" (12) as van Fraassen might say). Now, although the formula expresses a relationship between the period of a pendulum and its length, there is absolutely nothing in it that tells us the purpose of the clock. Indeed, purpose is simply inexpressible in the language of mathematics which codifies the relations at the core of scientific knowledge, even though there is nothing easier than to say, in natural language, that the purpose of the watch is to tell time.

The reason purpose eludes mathematical representation is rather simple. If the purpose were mathematically expressible like the relationship between the period and length of the pendulum, then the purpose would lie in the materiality of the object: it would be intrinsic to the parts of the object and their relation to one another, and we could describe this with an equation. However, as obvious as the purpose of the watch is, as easily as we can express it in natural language, this purpose is not intrinsic to the object, as Aristotelians tend to think, but rather a fiction we project onto it, and one that can be otherwise. It is not a kind of knowledge we have about the object but a judgement we make about it, even though we say in casual language that we "know" the purpose of the watch. To see this, it is enough to recognise that even the best-made and most accurate mechanical watch might be used simply for the purposes of ornamentation, or it might be purchased as an investment and locked away in a safe. Indeed, today, these are arguably the more common purposes of mechanical watches; for the purposes of precision and accuracy, a cheap digital watch with a quartz oscillator is far superior. One can imagine even more creative and outlandish purposes for the watch, depending on the situation and context, such as using it to trigger a bomb or, in an emergency, using it as a projectile simply because it is ready at hand. A watch that exists by itself in the natural world – say, one that has fallen to the bottom of the ocean – serves no purpose at all; it simply lies there, ticking away to no end until its power source is depleted. To claim that this watch was designed for a purpose does not make the purpose intrinsic: that is a judgement of the designer. It still serves no purpose on the bottom of the ocean; and if it is salvaged, I might use it for other purposes (say a museum piece or an item to study the corrosiveness of seawater), or I might mistake the purpose of the designer, who had really designed it as an aesthetic object. Clearly, then, the purpose of the watch is not intrinsic to it, not a property of it, but given to it by me through a judgement I make, though in most cases this judgement is highly stable and a matter of common sense, namely, to tell time. One needs to construct a rather elaborate scenario in which using the watch as a projectile would be considered an instance of good judgement. This is the stuff of movies and science fiction.

Although we do not much attend to Shaftesbury's insight and have not developed the profound implications it has for recognizing the limits of knowledge and the distinctiveness of humanistic ways of understanding, the distinction Shaftesbury articulates is hardly a controversial one. He is simply exploiting one of the most recognizable and constitutive gestures in the emergence of modern scientific thought, and one that largely remains in effect to this day, namely, the exclusion of purposes and final causes as legitimate modes of scientific explanation. Bacon declares in the *New Organon* that "[i]t is also not bad to distinguish four causes: Material, Formal, Efficient and Final. Yet, of these the Final is a long way from being useful; in fact, it actually distorts the sciences *except in the case of human actions*" (102; my emphasis). And Descartes says in the *Meditations*: "[T]he entire class of causes which people customarily derive from a thing's 'end,' I judge to be utterly useless in physics" (37). We have already seen how Locke rewrites his account of action and motivation in the *Essay* to replace final causes ("greatest good") with efficient causes ("most pressing ... uneasiness"). And one can find similar gestures in Hobbes, Spinoza, Pascal, Boyle, and Mandeville among many others.² Tad Schmaltz summarises the intellectual history this way:

According to a standard narrative concerning the history of philosophy, René Descartes (1596-1650) set out on a new path by replacing the four causes (*aitiai*) [...] that Aristotle introduced [...] and that were prominent in scholastic natural philosophy, with the efficient causes required for his new mechanistic physics. (139)

For the most part, the exclusion of final causes as legitimate modes of scientific explanation remains in force today.³ Even in the domain of biology, where thinking in terms of purposes and functions seems nearly unavoidable, Salmon explains that

it has been appropriate to deny that such appeals to [biological] functions involve the conscious purposes of a creator, or any other sort of final causation. The basic idea is that we can understand the evolutionary process in terms of efficient causes in conjunction, perhaps, with chance occurrences. Evolutionary biology thus requires a causal explanation of function. (32)

He is referring to the work of Larry Wright, and Bigelow and Pargetter, who have shown how seemingly teleological and functional explanations can be rewritten in terms of efficient causes by way of a "consequence-etiology" (see Wright 39; Bigelow and Pargetter 187; Salmon 111-12; for contemporary debates, see Allen, Bekoff and Lauder).

There is little doubt that final causes are excluded from scientific explanation, then, and that efficient-causal explanations are what science aspires to. But what precisely is an efficient-causal explanation? Unfortunately, causation is an area of significant contention (see Salmon; Psillos), and I cannot address it in the space of this article. For our purposes, I will simply rely on Van Fraassen's minimalist definition of what a scientific theory accomplishes: "the belief involved in accepting a scientific theory is only that it 'saves the phenomena,' that is, correctly describes what is observable" (4) or that it is "empirically adequate" (12). We will take description, the kind of description provided by the formula for the period of the pendulum or the differential equation that describes its motion, to be what is at stake in efficient-causal explanation: "[T]he true demand on science is not for explanation *as such*, but for

imaginative pictures which have a hope of suggesting new pictures of observable regularities and of correcting old ones" (34). There are those who would demand, not unreasonably, that a scientific explanation should involve something more than mere description, but there is good reason to believe that this "more" requires judgement (see Van Fraassen 125-26, 155).

We have achieved exactly what we set out to accomplish, proving that there is a sharp distinction between the efficient causes that are explanatory in science and the final causes or purposes that we attribute to objects (including ourselves). Final-causal explanations are, according to an overwhelming consensus, excluded from science, and that is as it should be; but this means that such explanations mark out one clear limit of knowledge. If we want to know what lies beyond the boundary of knowledge, one good answer is purpose and the attendant structure of explanation it entails. So, if efficient-causal explanations are the realm of science, then might we not say quite simply that final-causal explanations are the domain of the humanities? Despite the nearly reflexive opposition to anything "teleological" in the contemporary humanities, I am indeed arguing that the proper realm of humanistic understanding is that of purposiveness and judgement (just as the proper realm of science is efficient-causal explanation). However, before the result can be established, there are innumerable problems we must confront. In the rest of this article, I take up a few of these concerns and show what is required for their solution. The discussion will make clear how humanistic understanding gained through judgement differs from efficient-causal knowledge.

Are Final Causes Legitimate? A Crisis of Judgment

To begin, notice that the distinction between efficient and final causes is not symmetric. When final causes are excluded from scientific explanation, they are not relegated to a separate realm acknowledged to be legitimate. They are banished entirely as not explanatory at all; indeed, they are considered obfuscating, metaphysical, superfluous. Once we know everything about an object through scientific investigation, why would we even need purposes? Do they contribute anything to our understanding of objects? The radical exclusion of purposes and final causes from any explanation whatsoever, which is pervasive, is one of the most important contributing factors to what I call the "crisis of judgement" that begins in the seventeenth and eighteenth centuries and continues into the present (Soni, "Introduction: The Crisis of Judgment"). In fact, on the face of it, there is good reason to be suspicious of final causes, judgement and the explanatory capacity of purposes. Have I not insisted that we project purposes into objects, and that we can do so differently each time? This suggests that the world of judgement constituted by purposes is subjective and even arbitrary, perhaps highly unstable. You may think that a watch is good for telling time, but I like mine because it is a fashion statement, or perhaps I prefer to use it as a projectile. Have I not also said that purposes do not inhere in objects but are projections in excess of their materiality? Taken seriously, this means that purposes are fictions; they are neither true nor false but give us ways of looking at objects. In other words, when we view the world purposively, we see it through a veil of fiction. Perhaps we understand better now why early modern philosophers and even contemporary scientists are troubled by final-causal "explanations", why Bacon thinks they distort the sciences; perhaps we have simply replicated in a more rigorous and abstract register the argument that, in a world replete with scientific knowledge, the humanities and their ways of understanding the world are not just superfluous, but even deceptive and misleading.

In order to address these objections, we must answer a whole series of questions. Why do we need to project purposes and make judgements based on them? Isn't the knowledge we have sufficient? Even if we grant that the projection of purposes is necessary, is it legitimate? Since judgements are not a form of knowledge, as I have argued, what legitimacy or value do they have? And even supposing that the world constituted by purposes and judgements is legitimate and necessary, might it not still be the case that this world is radically unstable, given that it seems to be based on fictions projected by individual subjects? How is this not a world of mere opinion and radically subjectivised perspectives? Is there a way to stabilise the world of judgement and generate a *sensus communis*, so that it has the consistency and feel of a real world we can inhabit instead of a chaotic flux of fleeting subjective perspectives? Finally, assuming that we are able to answer all of the above questions, can we specify what the structure of the world of judgement is and how it differs from the world of knowledge? If, beginning from the distinction between efficient and final causation, we want to place humanistic understanding on a secure footing with its own legitimacy distinct from that of the sciences, these are the tasks that await us. We cannot simply declare that the humanities operate in the realm of final causation and be done.

Legitimizing Final Causes: Towards a Phenomenology of Judgement

The first perplexity that confronts us when faced with this set of questions is: what method could we use to answer them? We have seen that final causes do not inhere in the world in Aristotelian fashion, but are projected by us onto objects, through a process of soliloquy or internal conversation with ourselves. Strictly speaking, then, we require a phenomenological method, because we are interested in the interior thought processes by which purposes are projected, judgements arrived at, and worlds of meaning constituted. In a philosophical idiom, Heidegger and Merleau-Ponty, in particular, have laid the foundations for such a methodology, though Jane Austen's novels had already pioneered this phenomenology of judgement with unsurpassed sophistication (see Soni, "Committing Freedom").⁴

With these preliminaries in place, we can approach the first question, which is the easiest to answer: why is the projection of purpose necessary, if we have *ex hypothesi* complete and thorough knowledge of the watch? Why do we need anything beyond the knowledge we have about the watch? The answer is quite simple: no matter how much we know about a watch and how it functions, we will have absolutely no use for it until we begin to project purposes or final causes onto it, make judgements about it, and use it in a world of practice. If we have no purpose for the watch, we stand paralyzed before it, even though we may know everything there is to know about it (see Nagel 209-217). In short, final causes are essential for any action or practice. To see this, consider the potentially infinite knowledge we have about the watch. The equation for the pendulum (or balance spring) tells us the period of the watch's oscillator. The potential energy stored in a power source gives us information about how long the watch can run for. The ratio of the various gears tells us how the hands of the watch move around the indicator. Still, none of this information can tell us what to do with the object. Science is simply not designed to answer this question; the question lies beyond its purview. Now, the astute reader might object: since we have assumed that we know everything about the watch, we must know how to use it. However, this is precisely not the case. This is why I showed above that the purpose of the watch is not a kind of knowledge about it, but a judgement we form about it.

Though we are easily confused, we must keep the two worlds strictly separate, since no science allows final causes as a kind of knowledge.

Having established that we need purposes in order to navigate the world, that they are not simply superfluous, we are now in a position to understand how judgement and the projection of purpose transform the watch from a thoroughly known but meaningless entity to a meaningful object in our world. As long as we consider the watch purely as an object of scientific knowledge, without any purposes, we are overwhelmed, disoriented and confused by it. We look now at this aspect of it (say, the oscillator), now at some other (say, the power source), and on and on, endlessly, filled with knowledge but without knowing why we should care. None of it is significant or meaningful to us. All these forms of knowledge are equally interesting or uninteresting. We have no way of understanding what aspect of the watch is relevant or irrelevant, so we explore all of it or none of it, as our fancy takes us. But from the moment we have a purpose for the watch – to tell time – we know exactly where to focus our attention (another act of judgement!). We turn our eyes to the indicator of the watch, its face, not the mechanism concealed behind it. From the scientific perspective, the hands and the dial are the least interesting part of the watch, but they matter most if we want to know what time it is. Indeed, we do not need to know the first thing about the physics of harmonic oscillators, or how potential energy is converted into kinetic energy in order to be able to use the watch. How many of us do? All that interests us is where the hands are on the dial. The distinction between the indicator of the watch and its mechanism gives us a rough, intuitive way to understand the differences between the world of judgement and the world of knowledge, the world of purposes (final causes) and the world of efficient causes, the world of humanistic understanding and the world of scientific knowledge (of course, the face of the watch is not impervious to scientific study, so the distinction is not precise).

We have arrived at the threshold of understanding how the world of judgement is constituted. Setting aside our knowledge about the watch, we want to grasp how the numbers on the face become meaningful to us. This is not a question of knowing what they mean, since we have seen that we are not concerned with knowledge here; rather, we want to understand how a fairly arbitrary set of numbers or symbols (we could just as easily use geometric or astronomical symbols on the face where the numbers 3, 6, 9 and 12 are, or we could opt for a decimal rather than a duodecimal base for the numbering) comes alive with meaning for us. This is precisely where a phenomenological approach becomes indispensable, because we are interested in the interior force and sense of meaning the numbers have, not just their "use in the language" as Wittgenstein might say (20). Now, we might come to the watch with all kinds of prior mathematical knowledge about the numbers one through twelve, the many multiplicative relations among them, what geometric properties follow when they are evenly spaced along the circumference of a circle, and so on. However, none of this is especially relevant to our practice of using the watch. The fact that we may use different numbers or even non-mathematical symbols on the face of the watch, and still know how to use it to tell time, suggests that the meaning of the numbers on the face is not primarily in their mathematical relations. The numbers have a prior mathematical meaning, but that is a meaning imported from a different practice; it tells me little about how I experience the numbers on the watch face as meaningful. Let me attempt to sketch very roughly how this happens, so I can highlight some salient aspects of the world of judgement.

In order to move beyond my infinite but meaningless knowledge of the watch, and see how it becomes a meaningful object in my world, I need to give it a purpose and embed it in a practice. Recall that I can do this differently, because the purpose is not implicit in the object. If the purpose of the watch is to express a fashion statement, its aesthetic qualities will be important to me. If I am using the watch as an investment, I will pay attention to its price, its rarity, the intricacy of its design, the use of costly materials, and, ultimately, the probability that its value will increase over time. If for some bizarre reason I need to use the watch as a projectile, its heft and aerodynamic properties become salient. Nevertheless, let me for now embed the watch in the simplest and most commonsensical practice to observe how the numbers on its dial become meaningful through the work of judgement. Suppose, then, that I am using the watch to tell time so I can arrive at my new job punctually. Work begins at 9:00 a.m. In this scenario, the numbers 8 and 9 on the dial are somewhat important since they mark the hour that matters, but my judgement tells me the minute hand is far more relevant: the minutes from 8:30 to 9:00 a.m. will matter most for me in this practice. (A little common sense reveals that precision of the second hand is unnecessary and obfuscating. I ignore it. Judgement is again at work here). The number 12 now becomes especially important since it marks the top of the hour. It is like a wall, a hard line that must not be crossed. It is now the most significant number on the face, even though, as mathematical quantities, all the numbers are equally important. The number 12 becomes even more important when I realise that in my social world, many events start on the hour. This number is not like the others; it often signifies that something momentous is about to happen. Even so, we are getting ahead of ourselves. I want to be at work by 9:00 a.m., and my house is 15 minutes away, so I decide to leave at 8:40. Now the number 8 – signifying twenty minutes to the hour rather than 8:00 a.m. – becomes significant to me: I must have left the house by the time the minute hand reaches the 8. My heart starts to race, and I begin to feel stressed as that time approaches. Was it a good judgment to decide to leave at 8:40 instead of 8:35?

This is not something I can know *a priori*; only time will tell. This week, I made it to work comfortably three times. On two days, I was late because of bad traffic. Even these facts by themselves do not tell me whether the judgement is good or bad. My character or disposition matters. Perhaps I like to live on the edge, and do not mind being late once a week. I might then think 8:40 a.m. is a fine time to leave. Or perhaps I prize my reputation for punctuality, and do not enjoy being stressed. So, I alter my judgement, planning to leave at 8:35 or 8:30 a.m. The number 6 would then come to mean a comfortable departure time, the number 7 that I was pushing it, and as the minute hand approaches the number 8, I will have alarms blaring in my head. This is how these numbers come to be meaningful in the context of a very limited practice. (Other numbers will become meaningful in different ways in different practices. For example, if I am training to improve my 400 m sprints, the second hand suddenly leaps into focus as does the number 8 signifying 40 seconds). This kind of analysis might seem tedious. Yet only at this level of granularity, this level of phenomenological detail, can we see how the numbers on the dial of the watch acquire their meaning. In the first place, it is my judgements in relation to a purpose that render the numbers meaningful. This is how meaning comes into being, how it is inscribed on my body in the context of a practice, through repeated judgement. The reader can easily extrapolate this analysis to show how I come to a full understanding of the watch and learn to live in relation to it.

What can we learn about the world of judgement from this brief phenomenological analysis? What is its structure? How does it differ from the world of knowledge? First, it is worth noting that my knowledge of the physics of the watch does not enter into the account of how the numbers on the face become meaningful, even though physics determines how the watch functions. As long as I have a working watch that is good enough for my purposes, I do not need any scientific knowledge about its mechanism to use a watch. Nobody needs to solve second-order differential equations to be on time for work. This is further evidence that worlds of knowledge and judgement are quite distinct. Second, while my knowledge of the watch is context-independent (the view from nowhere), it is clear how my judgement even in this simple practice depends on context and narrative situation. (On the context-independence of knowledge, see Nagel 86-89; Van Fraassen 91; Heidegger 200-201; Taylor, *Language Animal*, 23). Different numbers would become relevant for someone who lives elsewhere. If I drive a jalopy that can barely make 40 mph, other numbers on the watch matter for me than for someone whose car can easily go 70 mph. We saw, too, that my character or disposition is important in forming the judgement about when to leave (the punctual person vs. the adrenaline junkie). In addition, the culture of my workplace might also matter. Is it a relaxed environment? Is my boss mean or a stickler for punctuality? It is also clear that my emotional state is important and contributes to giving the numbers the affective colouring they acquire through my judgements. Am I just slightly tense when the watch gets to 8:40 a.m. or am I in a panic? How do I feel at 8:35 or 8:45 a.m.? Without these emotions, the numbers would have no meaning to me, though the emotions are closely tied to my judgements. And my judgements are only possible if I care about the purpose (of being on time) and commit to it. If I judge that this is an oppressive practice that needs to be undermined at every turn, the meaning of the numbers changes yet again. The social world is partly responsible for creating some of these meanings (the significance of the number 12, for example, or even the ethic of punctuality), but my own particular situation will be responsible for many of the nuances. Nor does this mean I judge in a merely subjective way. There are reasons for my judgement that can be gleaned from the details of the practice.

We see, then, that context, narrative situation, social norms, character, the body, affect, and time are all implicated in the world of judgement as they are not in the world of knowledge. I would like to highlight a final stark difference between the two worlds, perhaps the most important of all. The purpose of a scientific account is, in the first instance, to describe how a system functions (and consequently, to predict how it will function under certain given conditions). There is no call for any judgement about these descriptions. A slow watch can be described just as well by my equations as one that runs on time. A projectile that misses its target obeys the same laws of physics as one that hits. From within the world of knowledge, there is no way to discern good and bad, better and worse. However, from the moment I specify a purpose for the watch, I am able to make judgements about what counts as good or bad. If the purpose of the watch is to tell time, then I can ask whether it does this well. Here, too, judgement is necessary. If it loses 5 seconds a day, it is probably good enough. If it loses a minute a day, and makes me late by the end of the week, I call it a bad watch. I can also ask whether it is good or bad to leave at 8:35 or at 8:40 a.m. for work. I am constantly adjusting these judgements as I gain more experience. I learn which numbers are relevant, significant, important, and which ones I can ignore. These, too, are judgements that I make based on the purpose for which I am using the watch. Indeed, having a purpose orients me to the watch and allows me to form

judgements, like the fundamental one to pay attention to the face rather than the mechanism. In short, the world of judgement is necessarily a normative world. It is shot through with values that arise from my complex interaction with the watch as I repeatedly judge it in relation to my purposes. Amidst the confusing infinity of things about the watch that might demand my attention (all of which have an equal claim from the perspective of knowledge), judgement hierarchises this world, allowing me to discern what is important and unimportant, relevant or irrelevant, significant or insignificant, interesting or uninteresting, and so forth. In the material world of science that is purely horizontal, where everything is equally (un)important, (in)significant, (ir)relevant, (un)interesting, judgement introduces a dimension of verticality, allowing me to organise, prioritise, and orient myself, and ultimately, enabling me to do something rather than simply being acted upon. Our capacity to judge is the source of our agency.

Some Conclusions about the Relationship Between the Sciences and the Humanities

If we accept the distinction between the world of knowledge and the world of judgement – the distinction between efficient-causal description and final-causal explanation/understanding – what follows? What implications can we deduce about each way of comprehending the world, and how they relate to one another? For the reader who has followed my analysis of the two worlds of the watch above (an analysis that can be replicated for any object that is both known scientifically and has a place in human practices), I have shown that the two worlds are conceptually separate. They obey different logics and serve different functions. There are many ways to characterise the differences, but at a first pass, we can say that the world that science describes is objective, context-independent, value-free (the view from nowhere) whereas the world that judgement constitutes/discovers is first-personal, context-dependent, bound to narrative, connected to personal experience, seen through fictions, affectively inhabited, and shot through with values and norms.

It might sound contradictory to imagine that the same object can exist in both worlds, but my analysis of the watch shows there is no mystery here. Science can describe with absolute precision the movements and functioning of a watch (the gears, the pendulum, the power source), but a watch only becomes meaningful in the context of a human practice when we give it a purpose. In order to understand the meanings a watch has – how it shapes our lives, structures our social worlds, imposes norms like punctuality, subjects bodies to the rigors of clock time, or enables unanticipated social coordination – we need a different mode of analysis, one that makes reference to purposes, demands evaluative judgement, and attends to normative criteria. Since purposes, as I have shown, lie beyond the purview of science, they do not concern knowledge, but raise questions of understanding, interpretation, value and judgement. These questions, I claim, are the domain of humanistic understanding rather than scientific knowledge. Science allows us to describe empirically how the watch functions, how its various parts move, how it interacts with the world; a humanistic understanding should begin with the “why” of the watch, or what it is good for. This does not mean that scientists cannot think about what a watch is good for; they should, and they do; it simply means that when they do, they are not thinking as scientists concerned with knowledge but as humanists concerned with understanding and judgement. The two worlds are conceptually separate, but the same person can occupy both at different moments. Still, it is essential not to confuse them because each world operates according to different rules and serves different functions. The

world of judgement, in particular, has been poorly understood and dismissed as lacking in legitimacy. What my analysis shows is that it has its own legitimacy, different from that of the sciences, and that it has a relative stability because of the way it is constructed, not arbitrarily, but through the exercise of judgement in relation to a purpose.

The conceptual distinction I have established between the two worlds, if it holds, commits us to a radical dualism of knowledge and understanding. Which world are we to prefer? Is one privileged over the other? In fact, my analysis makes clear that these are the wrong questions. We need both worlds, but for different reasons. Nor should we think that knowledge and understanding are simply two different ways of looking at the world, equally illuminating of an object, but from different perspectives. There is no such symmetry here. Modern science has been instrumental in the development of clocks and watches to the extraordinary degrees of precision they are currently capable of; the most accurate quantum clocks today lose only a second in the lifetime of the universe! These, and the many other technologies that scientific ingenuity has produced, have transformed the modern world. One might think of the electronics revolution, the staggering advances in medical technology, the unparalleled increase in food production, to name only a few. We live longer, eat better, are healthier, all because of the remarkable discoveries of modern science. In my account, science is the source of our knowledge about the world, and this knowledge is progressive and cumulative. Scepticism about science requires a stunning obtuseness to the manifest success of this enterprise; it requires bad judgment, in a word. The knowledge provided by the sciences is precious and its legitimacy must be safeguarded. That is the task of philosophers of science like Salmon and Van Fraassen (for some other recent defenses, see Oreskes; McIntyre; Zimring). Nothing I say should be seen as casting doubt on the legitimacy of this enterprise, when it is practiced with rigour and care. The knowledge it seeks should be pursued to its utmost extent (see Kant 5: 387-88).

At this point, it should be the humanist, not the scientist, who is alarmed by my characterisation of the two worlds. If my account is correct, the humanities, properly considered, are not concerned with knowledge at all. Knowledge, to the extent we have any, comes from the sciences and their rigorous empirical methods of investigation. So, what good is humanistic understanding? What place does it have on this schema? Why do we need it once we are in full possession of knowledge? Has my analysis not confirmed the superfluity of the humanities? Not at all. If my account accurately distinguishes judgement and understanding from knowledge, then rigorously speaking, knowledge by itself is inert. Nothing from within science can tell us how to use it, because use implies a relation to purpose. Knowledge does nothing; on its own, it is good for nothing. It can be used for great good or great evil. Or not used at all. The equation for a pendulum says nothing about whether a watch will be used to regulate the brutal regimen of factory work or to improve the efficiency of food delivery through railway transport. With my knowledge of nuclear physics, I might build a nuclear reactor for power, or build a nuclear bomb, or I might simply admire the beauty of the equations. If science is the realm of knowledge, then judgement is the realm of understanding, practice, and action. Where scientific knowledge meets the world, one needs purposes, final causes, and judgement, which lie outside the realm of science. Together, purposes and judgement illuminate the world, and make it come alive with significance, just as they do in the limited case of the watch face (see Iser). They make a world in which the practice of science can be a meaningful and valuable activity. If the task of the sciences is to acquire knowledge,

then the task of the humanities must be to interrogate the shape of the worlds of judgement we inhabit, the meanings they generate and the normative structures that lie unexpectedly concealed within them.

The two worlds need each other (see Snow 50). But it is not simply a matter of providing different perspectives or different ways of seeing the same thing. There is a strict division of labour; they have very different tasks and functions and must be respected in their distinctness. Science describes for us how things function, and judgment animates things with meaning within a practice. Though the knowledge of the watch remains the same, the meanings of it are as different as the myriad purposes and practices we can imagine for it, the different contexts and situations in which we embed it, the different human stories in which it finds a place (for examples of these stories, see Mumford; Thompson; Foucault; Sherman).

Thus, the dualism I am proposing between the worlds of knowledge and judgement is a sharp one. However, it is not a hierarchy, but a relationship of complementarity. The world of knowledge needs the world of judgement, where knowledge comes alive with meaning and purpose; strictly speaking, the world of judgement does not need the world of scientific knowledge, which was not available for much of human history before the advent of the modern sciences, but the world of judgement is greatly impoverished when it does not take empirical knowledge for its foundation.

However, it is not enough to say that the two worlds are complementary. Although they can be separated conceptually, they are in practice deeply intertwined with one another. When I bring the face of a watch to life by projecting a purpose for the watch and making judgements in relation to it, I may not understand the physics of its mechanism. However, I am relying implicitly on the predictability of those physical laws in my practice of judgement. The laws of physics are not magically suspended when I animate the world of the watch through my acts of judgement; they are in fact the foundation of my judgements (though they do not determine them). I may imagine as intently as I like the purpose of making time move backwards, but I am not going to succeed in actualizing my intention, and the world of judgement this imagining produces will be an aberrant one for most purposes (though a world of judgement all the same – I can, for example, write good science fiction about it).

Similarly, if engaging in any practice immerses us in a world of judgement, if I need purposes in order to act, then any time I am engaged in the practice of science, I must operate partially in the world of judgement. Of the thousands of research questions I might pursue, deciding that this one is worth my attention rather than that – deciding that this area of research is more interesting, promising, important, worthwhile than that – these are questions of judgement, not knowledge, though my judgement should be informed by all the knowledge at my disposal as a practicing scientist. Likewise, my commitment to the values of objectivity, impartiality and empirical rigour is what makes it possible for me to practice science well. Such values are not themselves scientific (though they are not unscientific); they are judgements, commitments, and attachments that arise from my immersion in a practice (see McIntyre 49-52, 59-61, 112-13, 191; Gaukroger 196-249). They must be cherished, nurtured, and cultivated within the community of scientific research. Though essential to the practice of good science, they obey the logics of judgement that I have outlined. Indeed, as the history of the philosophy of science has shown, many of the problems about the foundations of scientific knowledge are intractable if we restrict ourselves to the world of knowledge alone: the problem of induction; the problem of how we transition from one paradigm to another; questions about the nature of scientific

causation and explanation. These problems only find their solution in the world of judgement. Thus, understanding the character and legitimacy of judgement is crucial for the resolution of these foundational problems.

At the same time, my distinction between the two worlds is not meant as a way of offering anything so facile as a humanistic critique of science. On the contrary, as I have already indicated, we must defend as robustly as possible the rigour of scientific methods and the deep insight they give us into how the world works. If my description of the different logics of the worlds of knowledge and judgement has a purpose, it is twofold. First, it is to explain to those committed to the project of knowledge, to those outside the humanities, what the value, legitimacy, and necessity of judgement is. The best way to defend the humanities is to defend the distinct logic of the world of judgement, to explain how it is irreducible to knowledge, why we need it, and what makes it a legitimate mode of understanding the world different from the sciences. But it is not only the value of the humanities I am defending. As I have explained, when anyone engages in the practice of science, they must partially inhabit the world of judgement, so any defence of the legitimacy of science will also require a defence of the legitimacy of judgement, an explanation of why judgement is not merely subjective, arbitrary, or fictive. This can only be done through the kind of phenomenology I have sketched above.

Second, and perhaps more importantly, if there is a critique here, it is directed not at the sciences but at the contemporary humanities, which have not only been unable to articulate rigorously the value of what they do but have adopted a number of methods and methodological dogmas which tend to obscure, if not annihilate, the very value of the enterprise itself. I am thinking, among others, of the following: the critique of teleology and normativity of all kinds; the taboos around intention and interiority; the abdication of judgement and meaning; the inattention to questions of value and evaluation; the ongoing fascination with materialisms and materialist methodologies; the preference for a hermeneutics of suspicion over positive hermeneutics; the obsession with ambiguities, tensions, aporias, interpretive impasses, indecision, unreadability, and the suspension of judgement; the staunch refusal of the ethical dimension of literary texts in favour of formal analysis; the structuring of interpretive work in the humanities as though it constituted scientific research forever concerned with novelty; and so much else (see Felski, *Limits of Critique*). A proper attention to the logic of the world of judgement would show that these are the wrong ways to approach the objects of the humanities. The worlds the humanities should be concerned with are the very ones they have given up on: the world of intentions, purposes, meanings, first-personal experience, values, norms, and judgements, in other words, not the material world described by science but the world of spirit. If the sciences must disenchant the world and strip it of purposes in order to arrive at rigorous empirical knowledge (and they must! – this is not a critique but a description of a necessary methodological gesture), then the task of the humanities is not to continue this critical disenchantment in another register, but to re-enchant the world, to comprehend how we enter the magic circle of the game (see Huizinga; Soni, "Playing at Judgment"), to re-animate the world with the richness and plenitude of meaning. It is clear that the pendulum has begun to swing back for some time now.⁵ But what has been missing from this picture is a rigorous and systematic defence of judgement, a recognition that it is through judgement above all that our worlds of meaning and value are constituted and stabilised. It is this lacuna that my account of the genesis of the world of judgement means to fill.

Notes

1. For other theoretical accounts of judgement, see Kant; Fleischacker; Zerilli; Pfau, *Minding the Modern*, 79-107; Soni and Pfau.

2. See Pfau, *Minding the Modern*, 186-87; Schmaltz 12, 169; Wootton 391-92, 447; Dupré 18-44; Koyré v-vi, 4; Soni, "Can Aesthetics Overcome Instrumental Reason?". On the more general loss of teleological frameworks in modernity, see MacIntyre; Taylor, *Sources of the Self*; Pfau, *Minding the Modern*.

3. See Salmon 4-5, 26-32; Ladyman 26; Schmaltz 23; Johnson 3, 16, 23-24; Wootton 365; Pfau, "Romantic Bildung," 154-55; Hennig 137; Cameron 153, 165, 176; Furley 62, 70; Ernest Nagel 401-2; Thomas Nagel 20, 66.

4. For phenomenological and hermeneutic approaches especially relevant to this project, see Heidegger 91-148; Merleau-Ponty 112-70; Gadamer 388-90; Poulet; Iser; Felski, *Uses of Literature*, 16-18, 35, 42, 49; Taylor, "Self-Interpreting Animals," 65-68; Pfau, "Varieties of Non-Propositional Knowledge".

5. See, for example, Ricoeur; Sedgwick; Felski, *Uses of Literature*; Felski, *Limits of Critique*; Hanlon; McDonald; Pfau, *Incomprehensible Certainty*, 557-723.

Works Cited

- Allen, C., Bekoff, M. and Lauder, G. *Nature's Purposes: Analyses of Function and Design in Biology*. MIT Press, 1998.
- Arendt, Hannah. *The Life of the Mind*. One-volume edition. Harcourt, 1978.
- Bacon, Francis. *The New Organon*, edited by Lisa Jardine and Michael Silverthorne. Cambridge UP, 2000, <https://doi.org/10.1017/CBO9781139164030>.
- Barnett, Jo Ellen. *Time's Pendulum: From Sundials to Atomic Clocks, the Fascinating History of Timekeeping and How Our Discoveries Changed the World*. Harcourt, 1998.
- Bigelow, John and Robert Pargetter. "Functions." *The Journal of Philosophy* vol. 84, no.4, 1987, pp. 181-196, <https://doi.org/10.2307/2027157>.
- Bruton, Eric. *The History of Clocks and Watches*. Chartwell Books, 2002.
- Cameron, Rich. "The Ontology of Aristotle's Final Cause." *Apeiron* vol. 35, no.2, 2002, 153-179, <https://doi.org/10.1515/APEIRON.2002.35.2.153>.
- Cipolla, Carlo M. *Clocks and Culture, 1300-1700*. Walker and Company, 1967.
- Den Uyl, Douglas J. "Shaftesbury and the Modern Problem of Virtue." *Social Philosophy and Policy* vol. 15, no.1, 1998, pp. 275-316, <https://doi.org/10.1017/S0265052500003150>.
- Descartes, René. *Meditations on First Philosophy*. 3rd edition, translated by Donald A. Cress. Hackett, 1993.
- Dupré, Louis. *The Enlightenment and the Intellectual Foundations of Modern Culture*. Yale UP, 2004.
- Felski, Rita. *The Limits of Critique*. U of Chicago P, 2015, <https://doi.org/10.728/chicago/9780226294179.001.0001>.
- . *Uses of Literature*. Blackwell, 2008, <https://doi.org/10.1002/9781444302790>.
- Fleischacker, Samuel. *A Third Concept of Liberty*. Princeton UP, 1999, <https://doi.org/10.1515/9781400822942>.
- Foucault, Michel. *Discipline and Punish: The Birth of the Prison*, translated by Alan Sheridan. Vintage, 1977.

- Furley, David. "What Kind of Cause Is Aristotle's Final Cause." *Rationality in Greek Thought*, edited by Michael Frede and Gisela Striker. Oxford UP, 1996, <https://doi.org/10.1093/oso/9780198240440.003.0003>.
- Gadamer, Hans-Georg. *Truth and Method*, translation revised by Joel Weinsheimer and Donald G. Marshall. 2nd revised edition. Crossroad, 1989.
- Gaukroger, Stephen. *The Emergence of a Scientific Culture: Science and the Shaping of Modernity, 1210-1685*. Oxford UP, 2006, <https://doi.org/10.1093/acprof:oso/9780199296446.001.0001>.
- Halliday, David and Robert Resnick. *Fundamentals of Physics*. 2nd edition. John Wiley and Sons, 1986.
- Hanlon, Aaron R. "The Ends of Literary Studies." *The Ends of Knowledge: Outcomes and Endpoints across the Arts and Sciences*, edited by Seth Rudy and Rachael Scarborough King. Bloomsbury Academic, 2023, pp. 37-43, <https://doi.org/10.5040/9781350242326.ch-2>.
- Heidegger, Martin. *Being and Time*, translated by John Macquarrie and Edward Robinson. Harper and Row, 1962.
- Hennig, Boris. "The Four Causes." *The Journal of Philosophy* vol. 106, no.3, 2009, pp. 137-160, <https://doi.org/10.5840/jphil200910634>.
- Huizinga, Johan. *Homo Ludens: A Study of the Play Element in Culture*. Beacon Press, 1950.
- Iser, Wolfgang. "The Reading Process: A Phenomenological Approach." *New Literary History* vol.3, no.2, 1972, pp. 279-299, <https://doi.org/10.4324/9781003247937-8>.
- Johnson, Monte Ransome. *Aristotle on Teleology*. Oxford UP, 2005, <https://doi.org/10.1093/0199285306.001.0001>.
- Kant, Immanuel. *Critique of the Power of Judgment*, edited by Paul Guyer, translated by Paul Guyer and Eric Matthews. Cambridge UP, 2000, <https://doi.org/10.1017/CBO9780511804656>.
- Koyré, Alexandre. *From the Closed World to the Infinite Universe*. Angelico Press, 2016.
- Kramnick, Jonathan. *Actions and Objects from Hobbes to Richardson*. Stanford UP, 2010, <https://doi.org/10.1515/9780804775120>.
- Ladyman, James. *Understanding Philosophy of Science*. Routledge, 2002.
- Landes, David S. *Revolution in Time: Clocks and the Making of the Modern World*. Barnes and Noble, 1983.
- Locke, John. *An Essay concerning Human Understanding*, edited by Roger Woolhouse. Penguin, 2004.
- . *An Essay concerning Humane Understanding: In Four Books*. London: Thomas Basset, 1690.
- MacIntyre, Alasdair. *After Virtue: A Study in Moral Theory*. 2nd edition. U of Notre Dame P, 1984.
- Mandeville, Bernard. *The Fable of the Bees; or, Private Vices, Public Benefits*. Liberty Fund, 1924.
- McDonald, Rónán. "Introduction." *The Values of Literary Studies: Critical Institutions, Scholarly Agendas*, edited by Rónán McDonald. Cambridge UP, 2015, <https://doi.org/10.1017/CBO9781316440506>.
- McIntyre, Lee. *The Scientific Attitude: Defending Science from Denial, Fraud, and Pseudoscience*. MIT Press, 2019, <https://doi.org/10.7551/mitpress/12203.001.0001>.

- Merleau-Ponty, Maurice. *Phenomenology of Perception*, translated by Colin Smith. Routledge, 1958.
- Mumford, Lewis. *Technics and Civilization*. U of Chicago P, 2010.
- Nagel, Ernest. *The Structure of Science: Problems in the Logic of Scientific Explanation*. Hackett, 1979.
- Nagel, Thomas. *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False*. Oxford UP, 2012, <https://doi.org/10.1093/acprof:oso/9780199919758.001.0001>.
- . *The View from Nowhere*. Oxford UP, 1986.
- Oreskes, Naomi. *Why Trust Science?* Princeton UP, 2019, <https://doi.org/10.1515/9780691189932>.
- Pfau, Thomas. *Incomprehensible Certainty: Metaphysics and Hermeneutics of the Image*. U of Notre Dame P, 2022, <https://doi.org/10.1353/book.129733>.
- . *Minding the Modern: Human Agency, Intellectual Traditions and Responsible Knowledge*. U of Notre Dame P, 2013.
- . "Romantic *Bildung* and the Persistence of Teleology." *Brill's Companion to German Romantic Philosophy*, edited by Elizabeth Millán Brusslan and Judith Norman. Brill, 2018, https://doi.org/10.1163/9789004388239_008.
- . "Varieties of Non-Propositional Knowledge: Image – Attention – Action." Soni and Pfau, *Judgment and Action*.
- Poulet, Georges. "Phenomenology of Reading." *New Literary History* vol.1, no.1, 1969, pp. 53-68, <https://doi.org/10.2307/468372>.
- Psillos, Stathis. *Causation and Explanation*. McGill-Queen's UP, 2002, <https://doi.org/10.1017/UPO9781844653317>.
- Ricoeur, Paul. *The Rule of Metaphor: Multi-Disciplinary Studies of the Creation of Meaning in Language*, translated by Robert Czerny with Kathleen McLaughlin and John Costello, SJ. U of Toronto P, 1977.
- Salmon, Wesley C. *Four Decades of Scientific Explanation*. U of Pittsburgh P, 1990.
- Schmaltz, Tad M, ed. *Efficient Causation: A History*. Oxford UP, 2014, <https://doi.org/10.1093/acprof:oso/9780199782185.001.0001>.
- Sedgwick, Eve Kosofsky. "Paranoid Reading and Reparative Reading." *Touching Feeling: Affect, Pedagogy, Performativity*. Duke UP, 2003, <https://doi.org/10.1215/9780822384786-005>.
- Shaftesbury, Anthony Ashley Cooper, Third Earl of. *Soliloquy; or, Advice to an Author. Standard Edition: Complete Works, Selected Letters and Posthumous Writings*. Vol. I,1, edited and translated by Gerd Hemmerich and Wolfram Benda. Frommann-Holzboog, 1981.
- Sherman, Stuart. *Telling Time: Clocks, Diaries, and English Diurnal Form, 1660-1785*. U of Chicago P, 1996.
- Snow, C.P. *The Two Cultures*. Cambridge UP, 1998.
- Soni, Vivasvan. "Can Aesthetics Overcome Instrumental Reason? The Need for Judgment in Mandeville's *Fable of the Bees*." *Mind, Body, Motion, Matter: Eighteenth-Century British and French Literary Perspectives*, edited by Alison Conway and Mary Helen McMurrin. U of Toronto P, 2016.
- . "Committing Freedom: The Cultivation of Judgment in Rousseau's *Emile* and Austen's *Pride and Prejudice*." *The Eighteenth Century: Theory and Interpretation* vol. 51, no.3, Fall 2010, pp. 363-387, <https://doi.org/10.1353/ecy.2010.a403791>.
- . "Energeia: Our Energy Unconscious." *Fueling Culture*, edited by Imre Szeman and Patricia Yaeger. Fordham UP, 2017.

- . "How to Hit Pause: Language, Transcendence, and the Capacity for Judgment in Shaftesbury's 'Soliloquy; or, Advice to an Author.'" Soni and Pfau, *Judgment and Action*.
- . "Introduction: The Crisis of Judgment." *The Eighteenth Century: Theory and Interpretation* vol. 51, no.3, Fall 2010, pp. 261-288, <https://doi.org/10.1353/ecy.2010.a403787>.
- . "Playing at Judgment: Aporias of Liberal Freedom in Kant's Third Critique." *Literary/Liberal Entanglements: Towards a Literary History for the Twenty-First Century*, edited by Corrinne Harol and Mark Simpson. U of Toronto P, 2017.
- Soni, Vivasvan and Thomas Pfau, eds. *Judgment and Action: Fragments toward a History*. Northwestern University Press, 2018.
- Tallis, Raymond. *Why the Mind Is Not a Computer: A Pocket Lexicon of Neuromythology*. Imprint Academic, 2004.
- Taylor, Charles. *The Language Animal: The Full Shape of the Human Linguistic Capacity*. Harvard UP, 2016, <https://doi.org/10.4159/9780674970250>.
- . "Self-Interpreting Animals." *Human Language and Agency: Philosophical Papers I*. Cambridge UP, 1985.
- . *Sources of the Self: The Making of Modern Identity*. Harvard UP, 1989.
- Thompson, E. P. *Customs in Common*. New Press, 1993.
- van Fraassen, Bas C. *The Scientific Image*. Oxford UP, 1980.
- Wittgenstein, Ludwig. *Philosophical Investigations*, translated by G. E. M. Anscombe. 2nd edition. Macmillan Company, 1958.
- Wootton, David. *The Invention of Science: A New History of the Scientific Revolution*. HarperCollins, 2015.
- Wright, Larry. *Teleological Explanations: An Etiological Analysis of Goals and Functions*. U of California P, 1976.
- Zerilli, Linda M. G. *A Democratic Theory of Judgment*. U of Chicago P, 2016, <https://doi.org/10.7208/chicago/9780226398037.001.0001>.
- Zimring, James C. *What Science Is and How It Really Works*. Cambridge UP, 2019, <https://doi.org/10.1017/9781108569149>.