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The Handbook of Rationality

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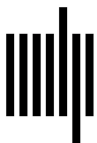
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1.1 Theories of Rationality and the Descriptive–Normative Divide: A Historical Approach

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Summary

This chapter considers the history of the descriptive–normative divide, viewed as fundamental to, but also challenging, current research on rationality. I show how, from antiquity through early modernity, this distinction never became a topic of discussion. That changed, however, during the Enlightenment, through a mixture of new metaphysical and scientific ideas, and, importantly, due to philosophical struggles over the nature, potential, and limits of rationality. The distinction first became explicit in moral philosophy through Hume’s “is–ought distinction.” In Kant, we find more sophisticated uses of it in both his theoretical and practical philosophy. Criticisms of those views are also discussed, with an eye toward examining how they are related to competing concepts of rationality. Finally, I show how this distinction became emphasized but also criticized in the psychologism debate and still shapes discussions in philosophy and psychology today.

1. Three Historical Stages of the Distinction

“Reason”¹ or “rationality” has been called an “accordion term” (Burian, 1977): its meaning is highly ambiguous (Black, 1986), “fragmented” (Evans, 1991; Stich, 1990), or hard to give a unified account of (Audi, 2001). A historical review proves this to be true. Plato’s *logos* differs substantially from Descartes’s *ratio* or *intellectus*, both differ from Hume’s notion of reason as well as from Kant’s complex concept of *Vernunft*, and so on. The Greek, Latin, French, German, and English terms *logos* and *nous*, *ratio* and *intellectus*, *raison* and *entendement*, *Vernunft* versus *Verstand*, or “reason” and “understanding” (or “intellect”) are related but different and at times even at odds (Rapp et al., 2001). Again, the disciplines dealing with rationality—philosophy, statistics, and the cognitive and social sciences—have different agendas and therefore use different concepts. It is common to say, for instance, that philosophy deals with rationality

only from a normative point of view, whereas psychology is merely descriptive. Historical inquiry can reveal how this view came into existence but also why it is historically as well as philosophically problematic.

In the following analysis, I focus on a number of exemplary authors writing up until the early 20th century. In doing so, I concentrate on the *concept* of rationality (and *theories* in which it figures) in relation to the descriptive–normative distinction instead of mere terminology or etymology. Also, the discussion will be *problem centered*: When, where, and why did the descriptive–normative distinction emerge? What assumptions and arguments make it possible? How is it related to accounts of rationality? What problems has it faced, and what debates has it led to?

One can distinguish between three main phases here. I start, in section 2, by showing that from antiquity through early modernity, despite important contributions to theories of rationality, the descriptive–normative distinction existed at best implicitly and thus never became a topic of discussion. Next, section 3 argues that it was only through a mixture of new metaphysical and scientific developments, and importantly a struggle over the nature of rationality, that the descriptive–normative distinction became prominent, refined, and problematized. This started in moral philosophy, through David Hume’s famous is–ought divide. This, however, is fraught with problems. In Immanuel Kant, we find more sophisticated uses of the is–ought distinction, partly fed by the beginnings of empirical research into thinking and decision making. Finally, section 4 is devoted to how the distinction became sharpened but also contested in the late 19th century, within the psychologism debate, paving the way for current attitudes toward it.

2. Antiquity: An Implicit Distinction

Ancient Greek philosophy has been described as the arduous attempt of moving from mythical to rational accounts of the world and our place in it (Buxton, 2002;

Guthrie, 1952). Indeed, the writings of ancient philosophers are replete with discussions that influenced subsequent debates concerning rationality (Frede & Striker, 1996). Considering the most influential of those authors, Plato and Aristotle, will provide a basis for later ideas. It will also show the way ancient thinkers argued over how far rationality can control other faculties but not over whether facts and norms of reasoning are related or not.

2.1 Plato: Logos, the Theory of Forms, and the Good

In Plato's dialogues, several expressions, such as *logos*, *nous*, or *dianoia*, are used when discussing aspects of rationality, in varying and sometimes confusing ways.² However, some basic points are uncontroversial. Plato's teacher Socrates emerges as a defender of rationality against the senses, passions, and mere obedience to authority. This notion of rationality does not, therefore, merely exclude religious or mythical accounts, although it does that, too. When speaking of the *logos*, *nous*, and so on, Socrates and Plato refer to faculties of *thinking*: something over and above perceptions, passions, or feelings; something we *do* to reflect on or take a critical stance toward such mental states or dispositions. This idea has roots in common ways of talking and acting we encounter throughout the ancient world, as seen already in Homer's work. With the advent of philosophy, the relevant notions became technical terms and part of theories with substantive and controversial assumptions (Frede, 1996b).

For Plato, rationality is not merely a faculty of the mind. He thinks that we can exercise rationality because we take part in a cosmological order that is itself governed by a *logos*. That order guarantees that someone who reasons well will be right. But how is such taking part in the order of the cosmos possible? Plato's answer is, by means of "forms" or "ideas" (*ideai* or *eide*): abstract entities that make objects what they are.³ While not all dialogues contain this same doctrine of "Platonism" or of Platonic forms (Patzig, 1970/1996b; Ryle, 1966), some (*Phaidon*, the *Republic*, or *Theaitetos*) defend the influential claim that perception (*aisthesis*) is insufficient to guarantee knowledge (*episteme*) of true reality, as it only provides access to particular passing appearances (e.g., to sensations of color, tastes, or smells). Forms, in contrast, can be grasped by the *logos*, now understood as a mental faculty, and they capture invariant and general features of reality. Among other things, forms enable us to gain mathematical knowledge—for Plato, as for many others, a paradigm of nonempirical knowledge.

Plato's account of reason can be further explained by reference to his doctrine of three powers of the soul: first, a rational part (*to logistikon*, serving to find the true and the good and designed to rule the other powers of the soul); second, a power of will or courage (*to thymoeides*); third and finally, an appetitive or desiring part (*to epithumetikon*, directed toward procuring nourishment and sex) (*Republic* IV.435b–445b). When the rational power rules the soul, the person flourishes, enjoying a healthy soul and true happiness. In the early dialogue *Protagoras*, Socrates even argues that having rational insight into the good and the right *guarantees* that one will act accordingly and that therefore weakness of the will (*akrasia*) is impossible (although in later texts, this position shifts). There is, then, no sharp division between theoretical and practical rationality; insight into the true and insight into the good are intimately entwined with one another.

2.2 Aristotle: Logic and Science

Aristotle famously criticizes Plato's doctrine of forms, assigning perception or experience a stronger role in his epistemology and also separating theoretical from practical rationality more clearly (*akrasia*, for instance, is a definite possibility for him). More important here, he understands *nous* as a power of intuitive insight into basic truths of logic, mathematics, and reality, whereas *logos* is a capacity for judgment and for combining judgments in arguments or syllogisms. Without these insights gained via *nous*, our reasoning would never come to an end and have no foundation.

One of Aristotle's most lasting contributions to Western philosophy is his development of (syllogistic) logic (Lear, 1980; Patzig, 1968). He delivers not only a systematic account of deduction—the study of correctly inferring conclusions from premises on the basis of purely formal features—but also already a modal logic—possibilities, necessities, and degrees. Furthermore, in his *On Sophistical Refutations*, Aristotle develops a taxonomy of "disputed" (*eristikos*) or sophistic arguments that do not really justify the conclusions they claim to. For example, the fallacy of "affirming the consequent" contains a genuine violation of deductive logic. As Aristotle explains, using an example, "since after rain the ground is wet in consequence, we suppose that if the ground is wet, it has been raining; whereas that does not necessarily follow" (*De Sophisticis Elenchis*, chapter 5). He is fully aware that people easily produce flawed arguments, but he does not enter into any deeper empirical explanations of why this is so or how facts about human reasoning could be related to its normative rules.

Aristotle's views about *nous* and *logos*, together with his theory of syllogism, furthermore shape his influential account of science (*episteme*). Deductive validity is not enough for science; what is also needed is reasoning that amounts to *demonstration* (*apodeixis*; see *Analytica Posteriora*). This requires a rigorous regime of reasoning. For instance, one needs to structure knowledge in such a way that arguments are reordered to begin from initial premises that are “better known by nature” (*gnorimoteron phusei*; e.g., *APo* 71b33–72a25; cf. *EN* 1095b2–4) or that are necessarily true and known to be so. This does not mean that all initial premises must be known intuitively, or through *nous*, although ultimately such a state of intellectual insight is preferred by Aristotle (*APo* 99b20–100b17; Barnes, 1994). Moreover, scientific demonstrations not only report facts but also *explain* them and, again, explain them in a way that organizes the plurality of explanations so that we start from those that are best known. Science is thereby given an axiomatic structure. The ideal of scientific rationality does not mean for Aristotle that all good reasoning must proceed from necessary principles; in many areas, we do not (yet) have such starting points. We must start with widely shared opinions (*endoxa*), which, if not shared by everyone, must at least be shared by the majority or by experts (again, at least in their majority) (*Top.* 100b21–23). From *endoxa*, we then reason our way toward beliefs about controversial matters by means of dialectical arguments (which must also respect the doctrines of syllogistic logic).

One problem for Aristotle's views might arise from his claim that observation is a genuine source of knowledge—a point vivid in *De partibus animalium* or *Historia animalium*, in which he claims that systematized observations prepare even knowledge of axioms. However, while he affirms this, he also emphasizes that true knowledge or science essentially depends on his strong notion of rationality (Frede, 1996a). Another issue concerns whether we can say that Aristotle understands his ideal of scientific rationality as a model for the representation of scientific knowledge and its justification, instead of how to proceed in inquiry (Barnes, 1975). Not all followers of Aristotle agree here, and it might be anachronistic to read him this way. In any case, his ideal had a lasting influence, shaping the views of Descartes, Leibniz, the *Logique de Port-Royal* (Arnauld & Nicole, 1662/1992), Thomas Hobbes, and much later authors like Bernhard Bolzano (cf. De Jong & Betti, 2010). This is so even though it was increasingly challenged, especially through recognition of the fallibility of theories that had stood for millennia.

2.3 Why Was the Descriptive–Normative Distinction Not Debated?

Ancient authors thus developed determinate, as well as quite divergent, views on what rationality is in theory and practice. In addition, authors adopted normative viewpoints, partly in response to the possibility of error. Plato, Aristotle, and others are clear that failures of rationality do occur, even frequently (e.g., in Plato's *Republic* 438d–439e). In his *Nicomachean Ethics*, Aristotle talks of *right* reason when he declares that to “act according to the *orthos logos* is a commonplace, and should be assumed” (*EN* 1103b31–2). Still, while flaws of human reasoning and their sources (such as passions or sensory illusions) were noted, this did not lead to a discussion of how reasoning proceeds as a matter of fact compared to how it *ought* to proceed. Why was there no *explicit* discussion of the distinction and relation between descriptive and normative perspectives on rationality?

No literature addresses this question, but we can imagine possible explanations. One might point to the widely held assumption that human rationality participates in a cosmological order governed by the *logos*—understood now as a principle of the world's rational structure. Another explanation relates to influential assumptions of Aristotelian metaphysics: the nature of all beings is determined by their form; forms are also always *final* causes. In the case of living beings, the form thus determines what the animal is supposed to become and do under normal circumstances. If we observe dogs for long enough, we discover that they bark, as they should, or else they are not truly dogs. If we observe humans for long enough, we realize that, *qua* rational animals, they will usually reason as they ought to, despite occasional mistakes, or else their rational nature is in doubt. Thus, ancient philosophy possessed bridges between “is” and “ought.” Normativity seemed to be rooted in reality or nature: a foundation safe enough for thinkers from antiquity to the Middle Ages. Even though views on rationality or reason evolved,⁴ novel assumptions had to emerge for the descriptive–normative divide to become fully explicit and a topic worthy of serious debate.

3. Early Modernity: Toward an Explicit Distinction and Debate

Fast forward to early modernity. Few developments had a greater impact on the history of philosophy and science than the so-called Scientific Revolution (despite being a contested concept) (Henry, 2008; Wootton, 2015). After murmurings in the late Middle Ages, its course spanned

the work of Copernicus, Kepler, Galileo, Newton, and numerous others. It overthrew Ptolemaic cosmology, Aristotelian physics, Galenic medicine, and other long-accepted belief systems. It changed metaphysical assumptions, and it invited renewed debates about what counts as legitimate knowledge and what methods can rationally support it.

Three points matter most for the subsequent history of the is–ought distinction. First, developments in philosophy and science undermined the idea that our rationality somehow participates in a cosmological order guided by the *logos* or by God. Reason or rationality increasingly became understood as merely a faculty of individual, typically human, minds. In addition, the “new science” undermined the Aristotelian view of final causes as a metaphysical bridge between “is” and “ought.” Scientific explanations were only to be given in terms of efficient causality. Second, the Scientific Revolution expanded into new domains, such as anatomy, chemistry, economics, or psychology. We will see examples of this in specific contexts. Third, and most important, rational criticism was applied to ever broader domains. The Scientific Revolution prepared the way for the Enlightenment of the 18th century: the movement that, in Kant’s expression, encouraged human beings to “think for themselves” by using the “freedom to make public use of one’s reason in all matters,” in order to overcome their “self-incurred minority” (Kant, 1900ff., volume VIII, pp. 35, 37). Ancient philosophy already contained the germ of such a critical function of reason, but it had not spread widely. Now, Enlightenment ideas became known all over Europe and beyond. In particular, criticism became applied to reason itself. The is–ought distinction first became fully recognized within a lively dispute over reason’s nature, potential, and limits, in both theory and practice; then it was refined, revised, or criticized. This required several arduous steps in philosophical reflection and debate; consider René Descartes, David Hume, and Immanuel Kant.

3.1 Descartes: Rationalism without a Theory of Rationality

Descartes, the founder of modern rationalism (Hatfield, 2008/2018; Williams, 1978), offers a radical reaction to the Scientific Revolution. He is highly optimistic about reason’s powers and opens the *Discourse on Method* (1637), if somewhat jokingly, describing “good sense” (*bon sens*) or “reason” (*raison*) thus:

Good sense is of all things in the world the most equally distributed, for each thinks himself so abundantly provided with it, that even those most difficult to please in all

other matters do not commonly desire more of it than they already possess. It is unlikely that this is an error on their part; it seems rather to be evidence that the power of forming a good judgment and of distinguishing the true from the false, which is properly what we call Good sense or Reason, is by nature equal in all men. Hence too it will show that the diversity of our opinions does not come from some men being more rational than others, but solely from the fact that our thoughts pass through diverse channels and the same objects are not considered by all. (Descartes, 1964ff., volume VI, pp. 1–2)⁵

This equally distributed faculty of reason is the main tool for Descartes’s most influential project: *Meditationes de prima philosophiae* (1641). Here, he proposes that every serious thinker, once in a lifetime, can and should think through the possibility that all beliefs about reality are completely false. If beliefs about, say, the positions of the Earth and the Sun, the motions of wandering and fixed stars, or the whole Ptolemaic system are based on but a gigantic perceptual illusion, why think that any other beliefs handed to us by tradition are better off? Therefore, Descartes argues, one ought to start from scratch if one wants to “establish any firm and permanent structure in the sciences.” He views it as a demand of “reason . . . to withhold my assent from matters which are not entirely certain and indubitable” (Descartes, 1964ff., volume VII, p. 18). Accordingly, his first arguments in the *Meditations* involve a radical thought experiment: there might be a demon who deceives us about everything we believe—particularly our empirical beliefs about reality. This skepticism needs to be countered before one can take controlled steps that erect a new foundation of knowledge.

In this, Descartes builds upon his earlier views about what rules one should follow in the exercise of one’s own reason. One ought to proceed in a clear order by first breaking down all problems into their most simple versions, for which one can find simple and clear answers. His view on such answers employs the Aristotelian distinction between *nous* and *logos* in a Latinized form: *intuitio* and *demonstratio* are two main sources of rational knowledge; the former immediate, the latter derivative. In the early *Regulae ad directionem ingenii*, Descartes writes that “intuition is the undoubting conception of a clear and attentive mind, and springs from the light of reason (*rationis luce*) alone” (Descartes, 1964ff., volume X, p. 368). In his later work, “clear and distinct perception” adopts the role of *intuitio*, but the core idea remains the same: we can know some things with absolute certainty because they represent simple, directly evident starting points for all inquiry. Ideally, all other knowledge can be

derived from them via chains of highly controlled steps of reasoning (Descartes, 1964ff., volume VI, p. 19).

The famous *Cogito* and *Sum* offered in *Meditation II* (cf. Perler, 1998, pp. 139–149; Williams, 1978, chapter 3) are instances of such basic certainties: our conviction in them “is so strong that we have no reason to doubt” (Descartes, 1964ff., volume VII, pp. 144–145). Descartes adds to these certainties the claim that we are equally certain about the *contents* of our mental states. Even when the demon might deceive me that there is a light before me, I can still be certain that *I believe that I see such a light*. The same with all contents of our beliefs: we might be mistaken that they are true, but we cannot be mistaken that we hold them when we do. There are, then, three basic Cartesian certainties: I can be absolutely certain that I exist, that I think, and what I think. No more is achieved at that stage. When Descartes wonders, “What am I?” looking for further information about his thinking self, and considers the traditional idea of the human being as *animal rationale*, he declares,

Shall I say a rational animal? No; for then I should have to inquire what an animal is, and what is rational; and thus from a single question I should insensibly fall into an infinitude of others more difficult. (Descartes, 1964ff., volume VII, p. 25)

The rationalist Descartes does not begin from a *theory* of rationality. One consequence of this is that he is not clear about the status of basic certainties: they surely cannot be a result of voluntary decisions (Newman, 2007). Are they, then, something one is *psychologically* compelled to accept? Am I compelled to believe that *I think* whenever I consider the possibility of an evil demon deceiving me, or am I *justified* in being certain that *I think* whenever I entertain radical doubt? Descartes does not consider this vital question. However, the former option would seem too weak, as he needs real certainty. But what could guarantee *that*? He points out that overcoming radical doubt requires that one has entertained all possible reasons against a proposition. But in order to be more than the consideration of doubts a thinker happens to entertain, a systematic account of rationality would be required. As we have seen, Descartes believes that this would be too problematic a starting point. Instead, in *Meditation III*, he famously sets out that these certainties ultimately depend on the existence of a benevolent God, and he therefore presents a proof of God’s existence and perfection.

Thus, paradoxically, Descartes’s rationalism is not founded on a theory of rationality but on philosophical theology. This is a burden that scholars agree his arguments cannot bear (e.g., Perler, 1998, pp. 187–202;

Williams, 1978, chapter 5). While Descartes defends the priority and authority of reason over the senses with arguments that must be taken seriously (Frankfurt, 1970; Loeb, 1990), and while he allows for a role of the senses in science, once reason’s authority is granted, he offers no satisfactory rational basis for our beliefs. He is not even clear about the status of our most deeply held convictions. He simply assumes that there is a “natural light” (*lumen naturale*) of reason that we can rely on: that all humans are endowed equally with the power of reasoning and that we can and should “apply it well.” His approach lacks a systematic and critical account of the nature, foundations, and limits of reason.

3.2 Hume: Practical Reason and the Is–Ought Distinction

We can take a step forward by turning to Hume. His system of empiricism is meant to achieve two things at once: to undermine rationalist metaphysics and to promote the idea of a thoroughly empirical “science of human nature”—hence his celebrated title, *A Treatise of Human Nature: Being an Attempt to Introduce the Experimental Method of Reasoning Into Moral Subjects* (1739–1740/1978; cf. Garrett, 2015; Stroud, 1977). Hume feels obliged to consider the nature and limits of reason in two main respects: What can reason deliver concerning *knowledge*? How can it guide our *actions*? His answer to the second question presupposes that to the first but not the other way around. Both answers include a severe restriction of the powers of reason, and they ultimately lead him toward his is–ought distinction.

Concerning its relation to knowledge, Hume claims that reason is “the discovery of truth and falsehood.” More specifically, reason can discover knowledge of either “matters of fact” or “relations of ideas” (Hume, 1739–1740/1978, pp. 448, 458): empirical knowledge (which is contingent and uncertain) or a priori knowledge (the contradictory opposite of which is impossible). The latter can—using the *intuitio–demonstratio* distinction—be either intuitively or demonstratively certain. Hume also assumes that all we can know empirically must be based on sensory “impressions,” and thus, all our claims about the future or past, and about what causes impressions, have at best the status of probable belief. Most important, he rejects the idea that reason can deliver *metaphysical* knowledge (e.g., of God, or of a difference between mind and body). To demonstrate this, he develops skeptical arguments concerning the possibility of such allegedly rational knowledge in three areas: causal or inductive inference, the existence of material bodies, and personal identity. Nonetheless, Hume thinks that human nature

means we must hold beliefs on these topics. This is not a rational “must” or “ought”; it is simply something we unavoidably do in our normal lives. Thus, although there is no demonstrative proof of the “principle of induction,” we cannot but form inductive beliefs based on habits and experiences (Winters, 1979, pp. 26–29).

As to action, two points are paramount. On the one hand, against the tradition going back to Socrates, Hume rejects the idea that we have rational control over our passions or desires. He famously declares, “Reason is, and ought only to be the *slave of the passions*, and can never pretend to any other office than to serve and obey them” (Hume, 1739–1740/1978, p. 415) and offers colorful examples:

’Tis not contrary to reason to prefer the destruction of the whole world to the scratching of my finger. ’Tis not contrary to reason for me to chuse my total ruin, to prevent the least uneasiness of an Indian or person wholly unknown to me. ’Tis as little contrary to reason to prefer even my own acknowledg’d lesser good to my greater, and have a more ardent affection for the former than for the latter. (Hume, 1739–1740/1978, p. 416)

Some important clarifications are needed here. First, although reason is entirely inactive concerning *passions*, it can still help to direct our *actions*. Based on our best beliefs concerning cause–effect relations, we can determine rational ways to realize our passions (Hume, 1739–1740/1978, p. 459). This is called *instrumentalism* about practical reason (e.g., Audi, 2001, p. 5; Korsgaard, 1996, p. 312), but this instrumentalism involves reason as only a passive, cognitive faculty. It therefore cannot provide a foundation of morality. It is precisely at this stage of his thought that Hume introduces his famous is–ought distinction:

In every system of morality, which I have hitherto met with . . . the author proceeds for some time in the ordinary way of reasoning, and establishes the being of a God, or makes observations concerning human affairs; when of a sudden I am surprised to find, that instead of the usual copulations of propositions, *is*, and *is not*, I meet with no proposition that is not connected with an *ought*, or an *ought not*. This change is imperceptible; but is, however, of the last consequence. For as this *ought*, or *ought not*, expresses some new relation or affirmation, ’tis necessary that it should be observed and explained; and at the same time that a reason should be given, for what seems altogether inconceivable, how this new relation can be a deduction from others, which are entirely different from it. But as authors do not commonly use this precaution, I shall presume to recommend it to the readers; and am persuaded, that this small attention would subvert all the vulgar systems of morality, and let us see, that the distinction of vice and virtue is not founded merely on the relations of objects, nor is perceived by reason. (Hume, 1739–1740/1978, p. 469)

Hume thinks that the is–ought distinction—“Hume’s Guillotine” (Black, 1964)—subverts theories of ethical rationalism such as those of Samuel Clarke (1675–1729) or (perhaps) John Balguy (1686–1748),⁶ which start from factual assumptions about human conduct or—more subtly—about how actions are related to one another in an imagined rational order (created by God). For instance, giving a gift is “in agreement with” gratitude, or committing a crime is “in agreement with” punishment (Balguy, 1729, pp. 7–8). Balguy thought that reason affords, through comparing ideas of actions, (partly self-evident) knowledge of what actions agree or disagree with one another and *hence* what our obligations are. Hume claims that such an inference constitutes a fallacy and that, once this is recognized, rationalistic moral theories are left hanging in the air. For Hume, reason is a purely cognitive faculty: all it provides us with is knowledge of either empirical “matters of fact” or analytical “relations of ideas.” Neither option provides knowledge of how humans *ought* to act. The real basis of “ought” statements must therefore be sought outside reason: in the passions.

Hume’s views have attracted many followers. Bertrand Russell accepted instrumentalism about reason—albeit not in terms of “passions” but of “ends”:

’Reason’ has a perfectly clear and precise meaning. It signifies the choice of the right means to an end that you wish to achieve. It has nothing whatever to do with the choice of ends. (Russell, 1954, p. viii)

More recently, Robert Nozick has noted that instrumentalism is “powerful and natural”: indeed, the “default theory” of practical rationality (Nozick, 1993, p. 133).

In its explicitness, Hume’s is–ought distinction constitutes a historical novelty. It provoked critical reactions, for instance, from Adam Ferguson (1769) or Thomas Reid (1788/1827) and other, more positive reactions, such as those of 20th-century ethical emotivists (e.g., Stevenson, 1944). Hume paved the way for discussions on the relation between facts and norms, descriptions and prescriptions, and similar issues. However, neither his instrumentalism nor the is–ought distinction are unproblematic. I now present two problems concerning each of these two ideas (cf. Hepfer, 1997, pp. 115–126; Setiya, 2004; Stroud, 1977, pp. 154–170).

First, even though the is–ought distinction appears to express a clear, logically valid point, there may be counterexamples to it. Consider the following:

1. Beer drinking is common in Belgium.

Therefore, beer drinking is common in Belgium or all banks ought to be socialized.

Such an argument seems to refute the universal validity of Hume's Guillotine. Debates about such examples continue (cf. Hudson, 1969; Pigden, 2010; Schurz, 1997, 2010; Singer, 2015; Wolf, 2015), but Hume's view may be an overgeneralization. However, this misses a core point of his argument. Not only do such counterexamples use tricks (such as extension by disjunction), but it is also doubtful that Hume wanted to establish a completely general is–ought distinction. He has a distinct target: rationalistic ethical theories that derive moral norms from facts about behavior or from alleged necessary relations between ideas of actions. Hume gives an account of what reason can and cannot do, and on the basis of that account, he views the inference to "oughts" as unwarranted.

The second problem concerns Hume's assumption that any "ought" is derived from passions. Even if one grants that reason cannot determine or control passions, one may doubt that these can justify any "ought" statements. To say that passions have strong causal force and that we feel pushed by them to carry out certain actions does not imply that we therefore *ought* to perform those actions. Conversely, even if there are instrumental reasons to perform an action (e.g., we ought to avoid unhealthy food if we want to stay healthy), it does not follow that we will be motivated to do so. If Hume throws the is–ought distinction at rationalists, they can throw it back at him just as well.

A related point comes from Thomas Reid. He attacks Hume by claiming that ethical theories do not start from factual premises but from normative ones: from basic, "self-evident" insights into our duties from which normative conclusions can be deduced (Reid, 1788/1827, p. 661). If one accepts this strategy, the fallacy is circumvented. However, this requires a convincing account of the normative basis of reason. Otherwise, one might end in skepticism concerning the normativity of practical reason *in general*—not only noninstrumental or moral but instrumental reason as well. There is suggestion that Hume is forced to adopt such skepticism (Hampton, 1995; Korsgaard, 1996, pp. 312–314; Setiya, 2004).

Third, one might claim that reason functions not only to steer actions toward the realization of goals but also to systematize our plurality of goals. An assessment and hierarchical ordering of ends serves the long-term or enlightened self-interest of agents and helps to exclude certain forms of irrationality. For these reasons, one should incorporate this requirement (as current theories of rational choice do). Hume, however, as we have seen, maintains that it is not "contrary to reason for me to chuse my total ruin" and "as little contrary to reason to prefer even my own acknowledg'd lesser good to my

greater" (Hume, 1739–1740/1978, p. 416). This follows from his assumptions that reason *only* functions cognitively and that passions never represent objects and so cannot be true or false (Hume, 1739–1740/1978, pp. 415, 458). This might be questioned as well: even though passions cannot be true or false, they have an "intentional" character—they concern what states of affairs we intend to bring into existence. Such intentions, at least many of them, might be evaluable by reason too (Stroud, 1977, pp. 162ff.).

Finally, is instrumentalism about reason a *descriptive* or a *normative* claim? The problematic answer is: it is both. In line with his "science of human nature," Hume aims to discover an empirically correct conception of the relation between reason and passion (Hampton, 1995; Winters, 1979). One might push this further by saying that his goal is not to *justify* "oughts" but merely to *explain* them. That is, Hume would only be interested in telling us why people speak in normative terms in their moral conduct, without endorsing the validity of such talk. However, his writings are replete with normativity. He introduces his instrumentalism as a claim that reason "*is, and ought to be*" the slave of the passions. Given Hume's Guillotine, the phrase "*is, and ought to be*" can hardly be a slip of the tongue. Furthermore, his instrumentalism is directed against rationalistic ethical theories that have, of course, normative pretensions: "Every rational creature, it is said, is *obliged to regulate* his actions by reason; and if any other motive or principle challenge the direction of his conduct, he *ought to oppose* it, till it be entirely subdued, or at least be brought into conformity with that superior principle" (Hume, 1739–1740/1978, p. 413, italics added). If Hume's instrumentalism regarding practical reason is merely a descriptive thesis, then ethical rationalists can reject it as irrelevant—and perhaps false, by claiming that we can (sometimes) control our passions, even if it is difficult. The arguments that Hume develops against such a view must express more than just empirical truths about reason and passion. Indeed, his considerations seem more fundamental. Hume's Guillotine appeals to a basic logical distinction. Similarly, his assumption that passions are never representations of objects, and so cannot be true or false, does not look like an empirical claim either. Hume wants to be a scientist of human nature. While this leads him to grapple with the problem of how descriptive and normative claims concerning morality are related, he adopts no clear and convincing stance on it. Perhaps this is because he introduces the is–ought distinction in order to attack versions of ethical rationalism. Hume lays the ground for the distinction between the descriptive and the normative, but

he does not consider its extent or think through its implications. Most important, he has no convincing account of the sources of normative rationality.

3.3 Kant: Applying the Is–Ought Distinction in Philosophy and Science

The “all-crushing Kant” (Moses Mendelssohn) delivers an even more devastating criticism of rationalistic metaphysics, as represented especially by Leibniz, Christian Wolff (1679–1754), and their followers. Kant radically reconceptualizes reason, restricting its theoretical functions and expanding its role in practical philosophy (see Guyer, 2006). In doing so, he understands and uses the is–ought distinction in more sophisticated ways than Hume. Although the debate over the foundations of morality remains important (Guyer, 2016), Kant’s use of the distinction also goes beyond that domain. He repeatedly claims that while certain disciplines or sciences deal with facts of human thought, desire, and action, others are concerned with irreducibly normative questions concerning such mental activities, and he thoroughly addresses the sources of normativity.

In his opus magnum, the *Critique of Pure Reason* (1781, 2nd rev. ed. 1787),⁷ Kant argues that reason cannot arrive at knowledge claims about reality independently of experience. Attempts to prove metaphysical claims (about an immaterial soul, the existence of God, etc.) lead to “transcendent illusions.” Pure reason, through its infinite quest for explanations and justifications, leads us to fall prey to these illusions (Kant, 1781/²1787/1998, A vii). We cannot avoid them, just as we cannot avoid perceptual illusions (Kant, 1781/²1787/1998, A295/B351–352, A297/B354), even when we grasp their illusory nature.⁸ Therefore, metaphysics is an inescapable consequence of human reason (Willaschek, 2018). However, we can learn to see through illusions of reason by scrutinizing the reasoning patterns that lead to them. It is this project that leads Kant to think that reason is not only there to criticize existing systems of belief and conduct but that in order to do so properly, it must critically examine itself.

Such self-examination, to pick out the central constructive doctrine of the *Critique*, leads Kant to determine the boundaries of all possible knowledge claims by means of a system of synthetic a priori principles: principles (such as the principle of causality) that are necessary for making “objective” knowledge claims (i.e., claims that are determinately true or false about real objects). Synthetic a priori principles are *not* a product of reason but of cooperation between “pure understanding” (*reiner Verstand*) with its concepts, the so-called categories, and “pure sensibility”

(*reine Anschauung*) with its a priori forms of space and time. Kant describes understanding, alongside the faculties of judgment (*Urteilkraft*) and reason, as the “higher” cognitive faculties (and sometimes speaks of reason in confusing ways where he means understanding⁹). Traditional rationalist metaphysics violates the limits of possible knowledge determined by synthetic a priori principles.

Having refuted traditional rationalist metaphysics, Kant thinks that he needs to show that reason has wholly different tasks. This can be connected to the is–ought distinction. While he agrees with Hume that the distinction between “is” (*Sein*) and “ought” (*Sollen*) is deep, fundamental, and in principle easy to recognize, Kant connects it with quite different accounts of reason. First and foremost, he uses the is–ought distinction to separate theoretical from practical philosophy: the former concerns only nature, the realm of things as they are in fact, whereas the latter concerns only how things ought to be (Kant, 1781/²1787/1998, A319/B375, A633/B661). This is a distinction between the main *domains* of philosophy, and Kant also states that reason is a “lawgiver” for each of them: laws of nature for theoretical and laws of morality for practical philosophy (A840/B868). Second, and cutting across this basic divide, Kant applies the is–ought distinction at the level of our making *judgments*, or even of pursuing systematic or scientific investigations within these two domains. Thus, in theoretical philosophy, although its claims concern *Sein*, we can nonetheless make normative claims too and actually have to: theoretical disciplines such as logic provide norms for good reasoning about facts. Here, Kant applies the is–ought distinction via warning that one cannot derive the laws of logic from psychological laws of actual human thinking. It is a frequent Kantian claim that when dealing with recognizably different tasks, one ought to treat them in different disciplines: we “do not enlarge but disfigure sciences, if we allow them to trespass upon one another’s territory” (Kant, 1781/²1787/1998, B viii).

Kant’s sophisticated use of the is–ought distinction has advantages over Hume’s. Given Hume’s project of an empirical “science of human nature,” perhaps he wishes only to explain why people make demands or state obligations, without considering the normative validity of such talk. But Hume’s instrumentalist account of practical reason certainly looks normative, and as argued above, he makes many other normative claims too. In contrast, Kant recognizes that we make normative judgments and that such discourse can then be studied either descriptively (and empirically) or normatively (ethically). This provides greater clarity.

Now, in moral philosophy, Kant's specific concept of "pure practical reason" plays a strong, constitutive role. While Hume uses the is–ought distinction to fight ethical rationalism, Kant applies it to defend his own rational ethics. For Hume, practical reason is at best applied theoretical reason; for Kant, it governs a territory where it sets up its own, irreducibly normative, moral laws of conduct. Reason, he argues in *Groundwork to the Metaphysics of Morals* (1785), helps to identify and justify the basic principle of morality: the "categorical imperative."¹⁰ We understand moral rules as *universal* and *necessary*. First, if a moral norm is valid, then it is valid for all agents in similar situations: making an exception for oneself is immoral. The fact that we often observe people deviating from norms does not invalidate them. Second, a moral rule does not describe, but *demand*s, certain courses of conduct; this "ought" character constitutes its necessity. Kant combines these claims with different disciplines studying rational action. Thus, "anthropology" studies human actions empirically; ethics or the "metaphysics of morals," in contrast, considers how we ought to act (Kant, 1900ff., volume IV, pp. 389, 411–412; volume VI, pp. 216–217). Note that when Kant speaks this way, he means only moral normativity. As should be emphasized, he also makes room for "merely" instrumental normativity, in his terminology, "hypothetical imperatives"; also, despite differences in detail, he agrees with Hume that such imperatives can be grounded in empirical means–ends knowledge (Kant, 1900ff., volume IV, pp. 413–419).

How does Kant, again in contrast to Hume, also come to use the is–ought distinction within *theoretical* philosophy? As indicated above, the Scientific Revolution led to the idea that not only the physical but also the mental world might be studied scientifically. Kant is quite familiar with ideas of a distinct empirical science of human thinking, feeling, desiring, and acting (Sturm, 2009, chapter 4). Such studies were usually called "empirical psychology": a pet project of Wolff and his disciple Alexander Baumgarten (1714–1762), but also of critics such as Johann Nikolaus Tetens (1736–1807). They refined folk-psychological or folk-philosophical theories of the architecture of mental faculties. At the same time, some psychologists developed the first experimental and quantitative studies of mental processes. Thus, Gottlob Friedrich Hagen (1710–1774) measures the "perfection" of the power of reason by the number of extended syllogisms one can understand and repeat and by how many demonstrations one can produce (Hagen, 1733, §§12–14). Kant emphasizes that such empirical psychology contains factual, contingent statements and explanations (Kant,

1900ff., volume XXV, pp. 243, 473). Because of this, it would be misguided to use psychology in logic:

Logic is a science of reason . . . a science *a priori* of the necessary laws of thought . . . hence a science of the correct use of the understanding and of reason in general, not subjectively, however, i.e., not according to empirical (psychological) principles for how the understanding does think, but objectively, i.e., according to principles *a priori* for how it ought to think. (Kant, 1900ff., volume IX, p. 16)

This richer background distinguishes Kant from Hume, who is unclear about how far his "science of human nature" is descriptive, normative, or both. Still, whether the Kantian view of logic is convincing became much disputed in the next century (cf. section 4).

Alongside ethics and logic, a further area where Kant brings the is–ought distinction into play is in his philosophy of science. "Reason," now in the sense of an alleged power of metaphysical knowledge, produces its own concepts and principles (Kant, 1781²/1787/1998, A289–290/B355–356). As noted, even when Kant claims that we should not view such "ideas of pure reason" as representing possible knowledge of real objects, he thinks that we cannot avoid having them. Do these ideas have any other function, then? The critical examination of reason leads Kant to redefine one of reason's functions: ideas of God, the soul, or the world as a whole play a positive role in our theoretical knowledge by becoming used not "constitutively" (i.e., referring to objects) but "regulatively" in scientific research (Kant, 1781²/1787/1998, A311/B368, A647/B675): they *prescribe* to us how to systematically connect pluralities of empirical judgments into systematized bodies of theories. Thus, judgments about stellar positions, motions, velocities, and the structure of the planetary system become unified in the theories of Copernicus, Kepler, Newton, and in Kant's own cosmology (containing his famous nebular hypothesis), all guided by the notion of the world as a systematic whole governed everywhere by the same laws. The normative aspect here is that we ought to aim at such systematized bodies of knowledge. Moreover, there are certain normative rules, such as Occam's razor ("Do not multiply entities beyond necessity") or continuity of forms (e.g., "Make division of things in chemical, biological, or psychological taxonomies as complete as possible"), for doing so (Kant, 1900ff., volume V, p. 182). We might never arrive at a truly finished theory in any domain; in Kant's view, science is forever an open-ended enterprise. However, that we ought to pursue that aim is reasonable: it supports scientific progress (cf. Neiman, 1994, chapter 2; Wartenberg, 1979).

What to think of Kant's claims concerning the is–ought distinction? I will briefly consider here two objections concerning his ethics. First, he claims that reason is not a purely passive, cognitive capacity but “has causality, or that at least we can represent something of the sort in it” and that this “is clear from the imperatives that we propose . . . in everything practical” (Kant, 1781/21787/1998, A547/B575). Hume would reject this claim about a “causality” or activity of practical reason, and we might wonder on whom the burden of proof falls here. Kant's qualification “at least we can represent something of the sort in it” shows he is perhaps not certain about the causality either. In his ethical works, he develops deeper accounts of “pure practical reason”—although it is disputed whether he succeeds with them.

Second, and related to this, his notion of pure practical reason seems too idealistic to provide norms that are realistic for human beings. Can we really follow moral norms? Is Hume not right that reason is—and ought to be—dominated by passions? This popular objection might explain why Kant's notion of pure practical reason did not become incorporated into modern theories of rational choice or economic decisions, which usually tried to be ethically neutral (but see Bjorndahl, London, & Zollman, 2017; Churchman, 1970).

Partly, this criticism rests on a limited understanding of Kant's practical thought. He does not maintain that empirical study of human history or society treats thought or action as arational processes. His “pragmatic anthropology” aims to study the human being as an animal endowed with reason (Kant, 1900ff., volume VII, p. 119; Sturm, 2009, chapter 8). In this, Kant accepts that human beings can be *imperfectly* rational: the possession of the faculty of reason is one thing; its improvement is another. In this vein, he writes that the human being is not an *animal rationale* but an *animal rationabile* (Kant, 1900ff., volume VII, p. 321). Anthropology can teach us how to improve our rationality—not the basic competence that normal human beings all possess but our performance in following its norms (or developing better ones)—in “pragmatic” ways, that is, in ways that in the long run might even support the realization of morality. This requires a historical and social process. Still, Kant insists that one cannot derive categorical moral norms from such pragmatic anthropological knowledge.

To sum up: while Descartes neither has an account of rationality that could ground his normative pretensions nor states the is–ought distinction, his attempt to establish metaphysical truths provokes Hume as well as Kant to develop accounts of reason that enable them to attack such metaphysics. Against this background, Hume uses

his strictly cognitive notion of reason to argue that ethical rationalism fails, among other things, because reason cannot establish any moral “oughts.” Kant, who accepts the is–ought distinction, develops its uses further by applying it both to distinguish the two realms of theoretical and practical reason and to distinguish between descriptive and normative investigations within each domain. The background motivation for this is his sustained attempt to understand reason and all its potential as well as its limits. While his account can be considered an advance on Hume's, it is not without problems either.

4. The Psychologism Debate

Two major developments determined the subsequent evolution of the debate over the is–ought divide, primarily within contexts of theoretical philosophy. To understand why they matter for us, we must keep in mind that rationality has traditionally been connected to the theory of logical inference.¹¹ In Kant, this is the most basic and uncontroversial notion of reason, and his view of logic is unapologetically normative and antipsychologistic. Even in the 20th century, much cognitive psychology concerning reasoning starts from experiments involving logical tasks (see Sturm, 2012; chapter 1.2 by Evans, this handbook).

The first development consists in the rise of neo-Kantianism in the late 19th century, after a phase of dominance of German idealism (Heis, 2018). Philosophers such as Eduard Zeller (1814–1908) or Hermann Cohen (1842–1918) demand that the metaphysics of Hegel and his followers be replaced by a logic married to *Erkenntnistheorie* (“epistemology”: a term invented in the early 19th century; Vaihinger, 1876). As Zeller declared in an influential speech, idealists view logic as “not only knowledge of the forms of thought but knowledge of reality as well” (Zeller, 1877, p. 480).

The second development concerns the further advance of scientific psychology. In the 19th century, this led to the formation of the first academic professorships, institutions, and societies of psychology (Gundlach, 2005). Much of the work began with perception, but it also became wedded to previous empiricist conceptions of logic and reasoning. As Zeller (1877) declares, there was “an older” notion of logic “concerned with the activity of thought as such” (pp. 479–480). Indeed, many early modern thinkers saw logic as normative but *nonetheless* dependent on actual mental processes and their laws (Hatfield, 1997). John Stuart Mill, for whom logic is the “science of reasoning” and studies “the operations of the human understanding in the pursuit of truth”

(Mill, 1843/1973–1974, p. 6), declares that knowledge of laws of thinking is based on “the ordinary methods of experimental inquiry” (Mill, 1843/1973–1974, p. 853) and maintains that “the general laws of association prevail among these more intricate states of mind” (Mill, 1843/1973–1974, p. 856). A similar view can be found in Wilhelm Wundt (1832–1920), the influential organizer of psychology in the late 19th century.

Against such conceptions, Zeller emphasizes the strictly formal character of logic and demands it to be separated from both metaphysics and psychology and connected with epistemology instead. Thus, he declares logic to be “the scientific methodology” that is presupposed in any “investigation of the real” (Zeller, 1877, p. 481), pointing to Kant for this (Zeller, 1877, p. 490). The rise of neo-Kantianism and academic psychology thus leads to a clash over the status of logic (and, thereafter, of epistemology and philosophy of science). The psychologism debate involves numerous contenders; only some major positions and arguments can be considered here (Carl, 1994, chapter 1; Kusch, 1995, 2007/2015).

For instance, Theodor Lipps (1817–1881) criticizes the Mill–Wundt view that logic, while based on empirical laws of thinking, is a normative discipline. Lipps describes logic “as the physics, not the ethics, of thinking” (Lipps, 1880, p. 529). In addition, he argues that we must distinguish between prescriptivity and normativity: logical rules are not the result of a voluntary decision or an “authoritative will” and so should not be called prescriptive. Instead, laws of logic are like “norms of nature,” and therefore logic is “the physics of thinking or it is nothing at all” (Lipps, 1880, p. 531). Wundt responds that Lipps presents a false dichotomy, since logic can be based on descriptive laws insofar as “our thinking is not influenced by anything which interferes with its being governed by these laws” (Wundt, 1882, p. 345).

One of the most influential antipsychologism positions—often characterized as decisive—stems from the philosopher–mathematician Gottlob Frege (1848–1925). Frege is viewed as the founder of modern logic and of analytic philosophy. His main project was to show that mathematics or, more specifically, arithmetic could be reduced to logical laws. Since the logics as Frege found them were insufficient to support such a reduction, he created a novel, axiomatized predicate calculus with innovative tools for complex quantification.

Frege’s antipsychologism concerning logic (cf. Carl, 1994, chapter 1) is based on the claim that the *validity* of logical laws is independent of how people *actually* think and reason (Frege, 1956). As he explains, “We can inquire, on the one hand, how we have gradually arrived at a given

proposition and, on the other, how we can finally provide it with the most secure foundation” (Frege, 1879/1972, Preface). This may seem like a merely gradual distinction, but it is not. To begin, Frege points out that the “first question may have to be answered differently for different persons; the second is more definite, and the answer to it is connected with the inner nature of the proposition considered” (Frege, 1879/1972, Preface). With the latter point, what Frege refers to is what logic should be all about. Logical rules determine whether inferences from premises to conclusions are truth preserving. Whether the premises of an argument are true often cannot be decided by logic alone, but logic tells us which inference patterns guarantee that if the premises are true, then the conclusion will also be. The validity of logical laws has to do, among other things, with the meaning of the logical connectives¹² such as “ \rightarrow ” (“if–then,” interpreted as the material conditional) and “ \neg ” (negation). Thus, *modus ponens* ($p \rightarrow q$; p ; therefore, q) and *modus tollens* ($p \rightarrow q$; $\neg q$; therefore, $\neg p$) are deductively valid under any interpretation of the propositional variables p and q . That human reasoning sometimes violates and sometimes conforms to such valid patterns is, from Frege’s point of view, irrelevant for their logical validity.

As seen in Mill and Wundt, psychologism can be combined with the view that logic is normative—something Kant would have denied. Conversely, proponents of anti-psychologism do not necessarily think of logic as normative or as a kind of “ethics of thinking.” Frege writes more cautiously that logic is “different from psychology, related to ethics” (Frege, 1979, p. 1): he avoids calling logic a *kind* of ethics. He does not view the laws of logic as inherently normative but descriptive. Descriptive of *what?* Logical rules purport to be universal and timelessly true. Frege (1956, p. 302) speaks of a “third realm” (*drittes Reich*) beyond the material world and our subjective mental representations. This is much disputed (Carl, 1994, chapter 8), but what matters is the innocent point accepted since Aristotle: given that we can make mistakes in our reasoning, we ought to correct them, and this can involve logical laws. So, these laws have a prescriptive function, but in themselves, Frege views them as strictly descriptive.

Frege’s antipsychologism, his distinction between an explanation of the genesis of our beliefs and a possible justification of their grounds, revived Kantian views. While his and others’ (especially Edmund Husserl’s) arguments became widely accepted, the status of logic remains an open question. Logic after Frege has become enriched not only by deontic and modal logics but also by more specialized or applied theories such as relevance

logic or defeasible reasoning. These address special problems of human reasoning where classical logic often fails (see, e.g., sections 3, 5, 6, and 7, this handbook).

5. Conclusion: Toward the 20th Century

While Frege focused on logic, his views became influential beyond this domain, especially through the epistemology and philosophy of science of the Vienna Circle. Not all reasoning, after all, is deductive. Many non-deductive inferences, for instance, about scientific hypotheses, use probabilities. Logical Empiricists such as Hans Reichenbach (1938) or Rudolf Carnap (1950) tried to do for probability theory or “inductive logic” what Frege had achieved for deductive logic: design an axiomatic system with clear tasks, limits, and structure. They spoke of epistemology and philosophy of science as “logic of science.” However, this requires that all philosophical claims about knowledge or science are formal or logical truths, which is highly implausible. Still, even critics of the Vienna Circle, like Karl Popper, viewed the distinction between “is” and “ought” as basic for (not as identical to!) both that between “discovery” and “justification” of beliefs (Reichenbach, 1938, chapter 1) and that between tasks of psychology and epistemology. They thereby tried to carve out a territory for philosophy of science and its theories of confirmation, falsification, scientific explanation, and so on (Peckhaus, 2006). With the advent of naturalistic and historicist approaches in philosophy of science, the is–ought, the descriptive–normative, and the discovery–justification distinctions have become questioned again (e.g., Giere, 1989; Hoyningen-Huene, 1987; Kitcher, 1992; Schickore & Steinle, 2006).

I have argued that the divide between the descriptive and the normative has an interesting and instructive history. Meanings, together with debates over them, often depended on competing assumptions about what rationality is, as well as on agendas and assumptions in metaphysics, ethics, logic, and the sciences. Bringing this history to light should enable us to understand better and to reconsider our current situation. The divide often poses challenges for current approaches to the study of rationality, particularly in interdisciplinary contexts. In any case, the demand to reflect critically on the normative authority of rationality and its relation to empirical studies of human reasoning is alive and well.

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Notes

1. I do not here consider the view that reason and rationality should be distinguished, in a way that approximately mirrors the distinction between instrumental, means–ends reasoning and (moral) reasoning concerning ends themselves (e.g., Elster, 2009; Rawls, 1980; Sibley, 1953). For criticisms of such distinctions, see Patzig (1994/1996a) and Sturm (2019). In collaboration with others (Erickson et al., 2013), I have argued that the term “rationality” gained popularity during the 20th century, tending to push “reason” into the background. “Rationality” often became understood as a mechanical or “mindless” application of formal and optimizing rules, exemplified by logic and rational choice theory, whereas “reason” referred more to a mindful or reflective use of the faculty of thinking. The terminology has not always followed this trend, however. Here, I will speak primarily of “rationality” and resort to “reason” and related terms when this is more appropriate for the source texts.

2. For example, *logos* has many meanings, such as “speech,” “explanation,” “ratio,” “computation,” “reckoning,” “argument,” and “law,” to mention but a few from the entry in Liddell–Scott’s Greek–English Lexicon. Moss (2014) argues that *logos* in Plato’s and Aristotle’s works should often be translated as “reason,” related to explanatory accounts.

3. The masterful analogies of the sun, the divided line, and the cave (*Republic* VI. 507b–511e; VII. 514a–520a) present the theory of forms in vivid ways.

4. Cf. Frede and Striker (1996) and Rapp et al. (2001). In an independent philosophical tradition, namely Chinese, we find related philosophical problems (e.g., about norms for our practical lives and an awareness that these can be violated), but again, there is a lack of philosophical reflection on the is–ought gap even beyond the Middle Ages (Marchal & Wenzel, 2017). How far the emergence of a discussion of the is–ought gap is an exclusively Western development deserves further investigation.

5. While the references use the standard Adam–Tannery edition, translations are from the edition by Haldane and Ross (Descartes, 1934ff.), with minor improvements.

6. It is not certain that Hume knew Balguy’s views. However, they provide an illuminating background, since Balguy debated the basis of moral obligations with an anonymous critic. The

critic's objections were published together with Balguy's replies (Balguy, 1729). For instance, the critic argued that if we do not already have the idea of obligation or "ought," then the inspection of ideas such as "Gratitude, Ingratitude, and Bounty" by reason, independently of sentiments, "could never so much as afford us a general Idea of Obligation in itself; or inform us what is meant by that Term; much less could we be able to deduce the particular Obligation to Gratitude from these Ideas" (Balguy, 1729, p. 8 [Art. IV of the criticism]; cf. pp. 9–16). This is an anticipation of Hume's is–ought distinction and similar to other aspects of his ethical theory.

7. Citations from Kant's work refer to the Academy edition (Kant, 1900ff.) and the standard edition of the first *Critique* but using the English translations (Kant, 1992ff.).

8. A similar analogy is drawn in current heuristics-and-biases psychology but with more contested examples of cognitive illusions (see Margalit, 1986; Sturm, 2012).

9. Kant distinguishes several meanings of *Vernunft* (cf. the relevant entries in Willaschek, 2015). Only in the broadest sense of *Vernunft*, in which it is the "highest faculty of the mind" and opposed to experience (Kant, 1781/1787, A835/B863), is it true that understanding is part of reason.

10. In fact, each special moral duty is a categorical imperative. When Kantians speak of *the* categorical imperative, they refer to the principle underlying *all* moral norms.

11. Today, many argue that logic not only *prescribes* how to reason well but is even *constitutive* of rationality (as an interpretation of, e.g., Kant's position, see Hanna, 2006). One may also claim, more weakly, that only *some* logical rules are constitutive of rationality (Cherniak, 2001); rationality is constituted not only by logic but also by other formal systems, especially probabilistic and decision-theoretic rules (Stein, 1996; for historical background, see Erickson et al., 2013); not only logic but also the semantics and pragmatics of language matter for good reasoning (Grice, 2001; this is also accepted by the bounded rationality program of Gigerenzer, Todd, & ABC Research Group, 1999); or logic is not constitutive of rationality at all (Mercier & Sperber, 2017).

12. I do not use Frege's logical notation but the more familiar Hilbert–Ackermann notation.

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