Linking the Normative and the Descriptive: Bounded Epistemic Rationality

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Abstract

Epistemic rationality is a type of rationality directed towards cognitive or epistemic goals, such as true beliefs, knowledge, or understanding. Epistemology is primarily concerned with normative questions about how one should form and update beliefs, reason and inquire to be rational; on the other hand, empirical disciplines, such as psychology, investigate how inquiries and belief formation occur in real life. The question arises as to what the relationship between the normative and the descriptive in the study of epistemic rationality should be. This paper proposes a notion of bounded epistemic rationality as a hybrid, non-ideal concept that encompasses both normative and descriptive elements. Drawing upon Herbert Simon's bounded rationality and Robin McKenna's non-ideal epistemology, bounded epistemic rationality is characterized by requiring satisficing instead of maximizing; acknowledging our cognitive, environmental, and practical limitations; its ecological nature; and its focus on the process of inquiry. As such, bounded epistemic rationality is a good starting point for proposing epistemic advice that is achievable for real cognizers and helps them improve their epistemic position.

1 Introduction

Epistemic rationality is one of the main topics of epistemology. It refers to epistemic attitudes, states, and processes [1], mainly focusing on rationality of beliefs, and is directed towards reaching cognitive or epistemic goals, such as true beliefs, knowledge, or understanding [2, 3, 4]. One of the central tasks of epistemology has been to propose epistemic norms about how one should form, update and revise beliefs to be rational. Although it is acknowledged that humans are not ideal agents – there is ample empirical evidence, gathered by disciplines as cognitive psychology, showing that we are limited by our cognitive architecture and the nature of cognitive processes, such as computational power and speed, predictive abilities, working memory and attention [5, 6, 7] – traditional analytic epistemology still often relies on idealized models of human cognizers [8], with the consequence that it frequently imposes epistemic norms such as logical omniscience, consistency between beliefs, and immediate updating of beliefs by conditionalization [9].

Philosophy, including epistemology, is predominantly concerned with the normative questions about justification, rationality and other epistemic appraisals of our cognitive activities and doxastic states, while empirical disciplines, such as psychology, empirically investigate how human cognition, inquiries and belief formation occur in everyday life. With normative theories on the one hand and empirical research on the other, we are faced with the question of the relationship between the two approaches towards studying rationality.

The aim of the paper is to propose a concept of bounded epistemic rationality as a hybrid notion that may help us bridge the gap between the normative and the descriptive. By adopting a concept that is – to some extent – grounded on empirical data about human cognition but does not dispose with the normative questions about epistemically good cognition, we can propose epistemic norms and epistemic advice that are achievable for real human cognizers and can help them improve their epistemic situation.

2 Normative and descriptive theories of rationality

Philosophical understanding of rationality is deeply intertwined with the notion of normativity. There are different views on how to define and justify epistemic normativity and which epistemic norms we should endorse. We can understand rationality as a system of rules or requirements: it requires from us, for example, not to hold contradictory beliefs, to draw a conclusion by modus ponens [10], to have deductive closure [11], or to follow rules of logic, probability and decision theory [12]. Rationality is thus normative in the sense of employing certain norms and rules according to which we can judge correctness of a belief [13]. Nevertheless, a genuine normative question of rationality requires us to determine if those rules or requirements are necessarily accompanied by a reason to conform to them, or, in other words, if we *ought* to conform to them [13, 14].

In addition to the debate about genuine normativity of rationality, there is an ongoing discussion about how epistemic norms or principles should be formulated and what they should

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prescribe. According to Engel, there are some conditions such principles should satisfy to be genuinely normative: they should have normative force, a potential to regulate or direct our inquiry and beliefs, and normative freedom – a possibility to be violated. If we accept these conditions, many normative principles that are often employed are not adequate. A rule that says, for example, that one should not believe p and not p, tells us something about a characteristic of a rational belief, but gives us no guidance on how to achieve it [11]. Such rules are more of a description of a belief or believer in ideal conditions than genuine normative principles. A similar point is put forward by Robin McKenna in his book Non-ideal epistemology [8]. He claims that mainstream epistemology mostly proposes epistemic norms based on various types of idealizations, for example about cognitive capacities of epistemic agents and the nature of epistemic environment. He calls such an approach to epistemological theorizing ideal epistemology and contrasts it with non-ideal epistemology which tries to avoid such idealizations. The issue with the norms proposed by ideal epistemology is that they are too detached from real world issues, too demanding and unachievable for real human cognizers. Another, even more important issue is that they provide bad epistemic advice: if we try to achieve or approximate proposed ideals and norms, we will often worsen rather than improve our epistemic situation. McKenna uses an example of the ideal of objectivity in scientific inquiry: trying to achieve objectivity as detachment – in a sense that scientists are not personally invested and interested in the topic of inquiry and try to detach research process from non-cognitive values – leads to worse, not better, scientific inquiry. Instead of trying to be objective, scientific inquiry should be informed by the right values [15]. A similar argument can be made for our everyday inquiries: if we, for example, always aim to reason in accordance with a norm proposed by ideal theory, such as logic and probability theory, this will likely lead to worse epistemic outcomes than occasionally using less complex, heuristic processes [16]. This means that ideal theory is failing as a normative theory because its prescriptions often do not help us achieve our epistemic goals, such as obtaining true beliefs, knowledge or understanding, and cannot serve as regulative ideals. For this reason, the ideal approach should in certain situations be replaced by a non-ideal one [8].

McKenna's non-ideal epistemology grounds its theorizing in empirical literature on human cognition, knowledge-producing institutions and epistemic environment, and is therefore an example of a framework that incorporates descriptive and normative elements. While McKenna claims that descriptive questions should be a starting point for answering normative questions, he does not argue for a strong form of naturalism or for the replacement of epistemology by empirical science, but merely suggests that there should be a closer connection between epistemology and empirical disciplines than is currently the case [8].

3 Bounded rationality

Although many authors who investigate rationality or epistemic norms explicitly acknowledge that humans are limited agents and that our boundaries should put a constraint on epistemic norms, only a few philosophers have drawn on the notion of bounded rationality. Bounded rationality was introduced by political scientist Herbert A. Simon and has importantly influenced many disciplines investigating rationality, such as psychology and economics. Simon argued that global, idealized theories of rationality should be replaced with a notion of rationality that is compatible with cognitive capacities of the subjects and the features of the environment in which they are embedded. As our cognitive capacities, for example predictive and computational capabilities, working memory and attention, are limited, human rationality can be only an approximation of an ideal rationality that is assumed in models of decision theory. If we want to comprehend human rationality, we should not focus only on internal characteristics of human cognition, but also on the structure of the environment. Simon illustrated this with a metaphor of scissors: "Human rational behaviour (and the rational behaviour of all physical symbol systems) is shaped by a scissors whose two blades are the structure of task environments and the computational capabilities of the actor." [17, p.7]. Simon argued that human rationality was satisficing, not optimizing – meaning that humans do not seek for best possible solutions of a problem or best possible outcome of a decision situation, but for solutions that are merely good enough – and he urged to dispose of the notion of optimization as a criterion for rationality. He also emphasized that bounded rationality is procedural, meaning that it does not focus solely on the outcomes, but also on the process leading to them; an agent is therefore rational if her behavior stems from an appropriate process of deliberation [17-21].

4 Bounded epistemic rationality

According to Sturm [22], philosophical aspects of bounded rationality have not yet been systematically investigated; nevertheless, the role of bounded rationality in epistemology has recently been explored by David Thorstad [7]. He describes five characteristics of bounded rationality as a paradigm, the first one being that bounds are important. As opposed to practical philosophy where it is universally acknowledged that our physical limitations put constraints on the norms of rational action, this is not necessarily the case for epistemic rationality. Thorstad claims that bounds are equally important for our understanding of rational cognition than of rational action and that we should be normatively required to perform only those cognitive operations that we are capable of. Secondly, theories of rationality should consider not only the final beliefs and other doxastic states, but also the processes that led to them, which is directly derived from Simon's notion on procedural nature of bounded rationality. The third and fourth characteristics refer to the claim that rationality is not bound only by our cognition, but also by environmental factors and that the use of rules of thumb or heuristics can be more rational than using more complex reasoning strategies. Drawing on the work of Gerd Gigerenzer and ecological rationality [6, 16], Thorstad claims that heuristics may in many situations or environments provide more accurate predictions than other, more sophisticated strategies. Finally, bounded rationality is compatible with a so-called programme of vindicatory epistemology, which states that what we usually consider as a violation of rationality norms is a consequence of a deliberation process that is merely boundedly rational. Although we do not comply with traditional epistemic norms as coherence

and deductive closure, we are often inquiring and reasoning in the most rational way possible considering our limitations.

Drawing on Thorstad's work, I propose and expand on several characteristics I believe should be incorporated in the account of bounded epistemic rationality. First, bounded epistemic rationality is distinctively epistemic in a sense that it is directed towards cognitive or epistemic goals, regardless of which specific goal we are committed to – having true beliefs and not having false beliefs, making accurate predictions, gaining knowledge or understanding. At the same time, bounded epistemic rationality does not require optimal solutions, but solutions that are merely good enough - it doesn't require from cognizers that their predictions are a hundred percent accurate or that they possess all and only true beliefs about trivial topics that are not relevant to them. Nevertheless, an account of bounded epistemic rationality will need to provide criteria for how to decide if a belief or a prediction is epistemically good enough – be it true, accurate or rational enough. I believe this can be done in one of three ways. The first option is to claim that by acquiring beliefs that are not true (in a sense of a truth requirement usually imposed by veritism), but are approximations, simplifications, or generalizations, are more conducive to reaching a wide array of other epistemic goals and desiderata that are perhaps even more valuable than truth, such as in-depth understanding of phenomena [23, 24]. The second option is to introduce a non-epistemic criterion for "good enough." A belief is rational enough if it helps us select appropriate actions for achieving some other, non-epistemic goal that we intrinsically value; in this case, a belief is good enough if it has instrumental value. The third option is that "good enough" is partly determined by pragmatic criteria, but the goal remains epistemic. This is in line with the thesis of pragmatic encroachment which claims that epistemic status of a belief is not determined solely by epistemic, but also by pragmatic factors. A certain belief may be considered good enough if, for example, the consequences of the belief being false are not vast.

Second, bounded epistemic rationality acknowledges that we are bounded by our cognitive capacities, the nature of the environment in which we operate, and by practical considerations of our daily lives. It considers that we have limited processing power, attention span, working memory, predictive abilities and so on and employs ought-implies-can principle of normativity: things that are normatively required from cognizers are only those which they are in principle capable of executing. Furthermore, it considers the features of our epistemic environment, especially the nature and structure of available information. Levy [25], for example, speaks of so-called polluted epistemic environments, which consist of a large portion of misinformation and where various individuals and institutions imitate the criteria of expertise, making it difficult for laypeople to identify reliable sources of information and genuine expertise. In such environments, false beliefs cannot be attributed primarily to the lack of epistemic virtue or irrationality of a cognizer but must be understood in the context of epistemic environment. Finally, bounded epistemic rationality considers that we have limited time and cognitive resources that we can devote to a certain task. Our inquiries do not happen in a bubble that detaches us from our practical considerations – in everyday life, we cannot afford to infinitely inquire about a certain topic, even if it is highly relevant and interesting for us. Bounded epistemic rationality does not require us to inquire and form beliefs in a way that would demand postponing all other activities in life. Acknowledging that practical factors should to some extent play a role in epistemic requirements is compatible with a view put forward by Bishop and Trout [26, 27]. In their theory of strategic reliabilism they urge that epistemological theories should include both epistemic and pragmatic factors, and they see epistemically good reasoning as "reliable, cost-effective, and focused on significant problems" [26, p. 106].

Third, bounded epistemic rationality is not defined by adherence to a rigid system of highly demanding, idealized rules or requirements, but by a fit between the strategy and the environment. Therefore, various strategies, from complex reasoning to simple heuristics, can be rational as long as they are conducive to certain epistemic goals; for the moment, I leave open whether this should be truth, prediction, knowledge, or understanding. Bounded epistemic rationality is thus consequentialist, as it promotes a form of cognitive success [28], and ecological, as it emphasizes the fit between a strategy and the task [6, 16].

Fourth, bounded epistemic rationality does not focus on the final doxastic states, but on the process of inquiry. This is compatible with a so-called zetetic turn in epistemology: in recent years, epistemologists have started to move away from identifying conditions for knowledge and justification towards the questions about what good inquiry should look like – for example, when to start and stop inquiring and how to collect and evaluate evidence [29, 30]. Focusing on the process of inquiry has more potential for providing epistemic advice than focusing solely on the descriptions of epistemic ideals, such as knowledge. Although describing the conditions for knowledge and justification are crucial parts of epistemology, combining this project with a program of inquiry epistemology could be more fruitful for providing epistemic guidance helping inquirers in achieving epistemic goals. A notion of bounded epistemic rationality is therefore compatible with a project of ameliorative or regulative epistemology [27, 31]. As a non-ideal concept that considers real-life characteristics of our cognition and epistemic environment, it can give advice that is applicable to ordinary inquirers – for example, what to do when faced with contradictory evidence; when should we stop gathering evidence and form a belief; when epistemic environment is so polluted that it may be rational to suspend judgement; how to judge which sources are reliable and trustworthy and so on.

4.1 Norms of bounded epistemic rationality

A crucial question regarding the norms of bounded epistemic rationality is in what way they should relate to empirical science, specifically psychology. Norms of rationality cannot be directly derived from empirical data, as this would mean committing *is-ought* fallacy [32] – we cannot infer how one ought to reason from descriptive premises about how we do reason. Nonetheless, psychological data on human cognition can at least serve as constraints showing us what is realistic to expect from cognizers.

Another question concerning the norms of bounded epistemic rationality relates to the notion of adaptability. Since it is an epistemic notion, bounded epistemic rationality must be directed towards epistemic goals, but the question arises whether epistemic goals can in any way be connected to adaptive or pragmatic goals. We might consider a person, belief, or process to be boundedly epistemically rational if it leads to an epistemic goal while functioning as an adaptive response to the environment.

Achieving epistemic goals often helps us to respond efficiently to the environment and therefore has an adaptive function. Even though the intrinsic value of truth may be debatable, it is hard to deny that truth has at least an instrumental value. Nevertheless, there are many situations in which epistemic and adaptive goals may diverge; for example, if someone devotes all their time and resources to researching a complex topic of their interest and neglects all other activities in life, we cannot consider this adaptive. The norms of bounded epistemic rationality should therefore include a notion of adaptability – but not in the sense that adaptive or pragmatic goals can override epistemic ones, but in the sense that they require epistemic goals that are achievable for real human cognizers, and require inquiries that are not too costly in terms of cognitive resources and time.

5 Conclusion

Bounded epistemic rationality is a hybrid concept that includes both normative and descriptive elements. It aims to avoid idealizations of epistemic agents and their environment and to acknowledge the practical limits of our daily lives. Being a non-ideal concept that relies on empirical data about human cognition and our epistemic environment, it has the potential to suggest norms that serve as epistemic advice and help us achieve our epistemic goals.

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