Heuristics and the Naturalistic Fallacy

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Falk Lieder and Thomas L. Griffiths (2019) lay out a dynamic and relevant analysis of heuristics and the rationality of using these resource-maximizing cognitive devices. However, throughout this informative discussion, a specter lurks: telos. The authors describe the mind as having an ‘ingenious design’ and point out how well adapted it is for operating in our natural environment (p. 5). However, to try to understand rationality in accordance with this ‘ingenious design’ is to conflate a descriptive ‘is’ with a prescriptive ‘ought’. This use of the Naturalistic Fallacy – which, for the present purposes, I will use interchangeably with the Is/Ought Fallacy – by taking an ‘is’ to be an ‘ought’ is dangerous in a theory of the mind, as we are likely to make inferences not justified by the ‘is’ (Hume, 1738-40/2000; Moore, 1903). If evolution is the dominant background theory for psychology, which is a process by which random genetic mutation provides a procreative advantage thereby passing down the advantageous genes (Hall, 2007; Herron & Freeman, 2013, Hartwell et al., 2013), then we cannot make normative claims about rationality as operating in accordance with designed capacities. There is no prescriptive ‘ought’; there is merely the descriptive ‘is.’

Once the prescriptive and the descriptive have been confused, it should not come as a surprise that, "resource-rationality also allows us to answer teleological questions about the nature of the mind" (p. 57).

The notion of teleology here is one of purpose and design, neither of which is supplied by an evolutionary framework. The standard move would be to back off of the claim and say that it is just the appearance of design, sometimes called teleonomy (Pittendrigh, 1958), or say that we use the metaphor of design as a simplifying assumption – a heuristic – for explanations (Ruse, 2017). However, this is clearly not what the authors have in mind as they list teleological questions like, “what the purpose of goals is” (p. 57).

According to evolutionary theory, the capacity to set goals was not adapted to perform an action or to realize a goal. The evolution-theoretic answer to these questions is simply this: because these developed
capacities were useful in the environment, they provided a comparative advantage which allowed those with the capacities to reproduce and passed down the advantageous genes (Hall, 2007; Herron & Freeman, 2013, Hartwell et al., 2013). To use the analogy of the famed Darwinist, Michael Ruse, “No one would ask about the purpose of the meteorite that smashed into the earth some sixty-six million years ago… It just happened. There was no purpose to it” (Ruse, 2017).

Now, in light of the evolutionary answer, how can we make the claim: "If we were able to derive what people's cognitive capacities should be, this would provide a very principled starting point for resource-rational analysis" (p. 51). It is difficult to make sense of what these capacities should be, because the ‘should be' relies on a purpose or design. As such, unless the authors are moving to a theistic (or similar) framework (Nagel, 2012; Robinson, 2007), the use of purpose must be jettisoned. However, the claim that we can derive what these capacities should be serves as the basis for redefining ‘cognitive bias’ in terms of the violation of ‘resource-rationality’ (p. 50). This results in the dubious claim that when the belief is not immediately important, “having questionable beliefs about X is not inconsistent with being (approximately) resource-rational” (p. 53). Now, the authors struggle to adhere to this new standard as they say, “cognitive scientists must have strong inductive biases to infer cognitive mechanisms from limited data” (p. 2). These cognitive scientists seem to be resource-rational given the limited data, and the authors just redefined these biases as the violation of resource-rationality.

If cognitive biases only apply to those not acting in accordance with resource-rationality (p. 50), and having questionable beliefs can be resource-rational (p. 53), then we find some absurd conclusions. On this view, philosophers, cognitive scientists, physicists, and the like who do not use heuristics to exploit these evolved capacities are cognitively biased, but those who use heuristics to bypass difficult problems are not. Certainly, those they just criticized for the inductive biases are just exploiting an evolved capacity. As such it should not be considered a bias at all as “resource rational analysis will almost invariably favor a simple heuristic over optimization… because it penalizes… the cost of mental effort”
(p. 13). If this is the case, then Timon’s belief that the stars are “fireflies that, uh... got stuck up on that big bluish-black thing” (Allers & Minkoff, 1994) is resource-rational as it manages cognitive resources brilliantly. After all, Timon’s belief is not immediately important and requires little cognitive effort, so this questionable belief can be resource-rational. Now, when compared to Galileo’s dedication of reason to understanding the distant truths, Galileo is clearly not resource-rational (Galileo, 1632). Surely, this is the wrong result.

The problems that I traced out here all develop from the confusion of an ‘ought’ and what is really an ‘is.’ Rationality is normative, and it carries with it prescriptive force. This rationality should be judged by the choice of the tool that is most likely to achieve the most accurate – best – outcome. On this standard view, there are many cases in which using heuristics is rational, for instance trying to catch a baseball (Gigerenzer, 2010). This is because trying to calculate the parabolic curves is computationally intractable. Why is it rational to use heuristics in this case? Because, in this case, the heuristics provide a comparative advantage. However, heuristics are known to fail, and to heavily favor them will not achieve the most accurate outcome. To redefine cognitive bias and rationality to fit the design of these capacities is to take the descriptive fact that we have these capacities and derive the normative claim about rationality. This is the first fruit of an illicit prescription based on the naturalistic fallacy.

12. ALPHABETICAL REFERENCE LIST (APA STANDARD)


