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The function of reasoning: Argumentative and pragmatic alternatives

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Abstract

The question of the function of reasoning is drawing increased attention. One suggestion is that the function of reasoning is argumentative: to find arguments to convince others and to evaluate others' arguments. Darmstadter (2013) offers an alternative. According to this pragmatic theory, the function of reasoning is to minimally adjust our beliefs so that they remain sound guides for action. This theory is similar to the classical view, which sees reasoning as a way of improving the reasoner's beliefs and decisions. The pragmatic theory shares the classical view's flaws as a theory of the function of reasoning: it does not define reasoning strictly enough, it does not offer a convincing evolutionary rationale for reasoning's existence, it does not make predictions based on this rationale, and it does not properly test these predictions. Darmstadter also points out the importance of the phenomenon of deliberation failures. While I argue that documented deliberation failures are compatible with the argumentative theory of reasoning, Darmstadter's work usefully draws attention to the importance of studying reasoning outside the laboratory and in particular in argumentative situations.

Keywords

Argumentative theory, Pragmatic theory, function, deliberation

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5 The psychology of reasoning and evolutionary psychology make strange
6 bedfellows. The former has traditionally looked at reasoning as a domain general
7 mechanism with a very broad—and taken for granted—function of improving beliefs and
8 decisions. The latter views the mind as a set of domain specific modules specialized to
9 accomplish a well-defined function. Cosmides' (1989) well-know interpretation of the
10 behavior of participants faced with the Wason selection task as resulting from a dedicated
11 cheater detection module instead of domain general reasoning mechanisms offers a
12 striking example of this contrast. However, Cosmides' work didn't bear on what
13 psychologists of reasoning mostly care about: humans' seemingly domain general ability
14 to reason about anything (sometimes referred to as 'System 2'). Instead, she investigated
15 one of the many 'System 1', or intuitive heuristics human possess. The question of how
16 evolutionary psychology could address reasoning remained open.

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19 The argumentative theory of reasoning (abbreviated here as ATR) is an attempt to
20 bring an evolutionary approach to reasoning proper (Mercier & Sperber, 2011a). It does
21 so by 1) defining reasoning as a specific cognitive mechanism, 2) suggesting an
22 evolutionary rationale for the existence of such a mechanism in humans, 3) deriving from
23 this rationale the existence of specific traits of reasoning, and 4) reviewing the empirical
24 literature to gauge the validity of these predictions. In the present issue, Howard
25 Darmstadter offers an alternative account of the function of reasoning, one based on the
26 principles of pragmatism (or PT, for pragmatic theory). However, this account falls short
27 on each of the four points above.¹

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31 *1) Specification of a cognitive mechanism.* According to the ATR, reasoning is a
32 specific metarepresentational mechanism that produces and evaluates reasons. Because it
33 is metarepresentational, reasoning can process inputs from many different domains:
34 reasons to vote for someone, to quit one's job, to accept a new scientific theory.
35 However, it remains highly specialized. Reasoning only deals with representations by
36 opposition with, for instance, perceptual information. Moreover, reasoning only looks at
37 one property of representations—whether they are a good reason to accept or reject a
38 given conclusion—and not, say, who holds a given representation (mentalizing's
39 function). By contrast, the PT sees reasoning as a general mechanism of belief revision
40 aimed at establishing a belief system that can guide sound actions while minimizing the
41 effort involved in belief revision. One issue with such a definition is that it somehow
42 allows Darmstadter to lump under the umbrella of reasoning many different mechanisms
43 such as planning, strategic thinking, or even some type of intuitions (e.g. adjusting to the
44 delivery time of one's newspaper). This is problematic in general, as there is little hope of
45 ever understanding such an omnipotent mechanism. This is also problematic in the
46 specific comparison of the ATR and the PT, since it enables Darmstadter to confront the
47 ATR with results that seem to violate the ATR's predictions regarding reasoning

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54 ¹ One could argue that Darmstadter's goal is not to offer an evolutionary account of
55 reasoning. However, he pits his theory as a complement or an alternative to the ATR—an
56 explicitly evolutionary account. Moreover, he talks of functions and of the adaptative
57 value of different features of reasoning. Unless one considers reasoning as an artifact, any
58 functional, or adaptative, value it has must have evolved through natural selection.

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3 performance simply by using different definitions of reasoning. For instance, the ATR
4 predicts that individual reasoning should regularly have negative epistemic consequences.
5 That some cognitive mechanism allows Darmstadter to figure out on his own that his
6 newspaper is delivered later on weekends does not count as a violation of this prediction,
7 since reasoning—as defined by the ATR—is not responsible for this positive outcome
8 (see Mercier & Sperber, 2011b).
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12 2) *Finding an evolutionary rationale.* Humans rely hugely on communication.
13 However, communication poses a difficult evolutionary problem (Dawkins & Krebs,
14 1978; Krebs & Dawkins, 1984). Individuals who send information often have an
15 incentive to cheat on those who receive information by manipulating them or lying to
16 them. To solve this problem, humans evaluate communicated information. To this end,
17 mechanisms of epistemic vigilance have evolved that gauge the trustworthiness of
18 informants and the plausibility of statements (Sperber et al., 2010). Argumentation
19 complements other mechanisms of epistemic vigilance by providing senders with means
20 to convince a skeptical audience, and the audience with means to evaluate the speaker's
21 position. The speaker can offer reasons for her claims, reasons that can be examined by
22 the audience in order to decide whether to adopt the sender's view or not (Sperber, 2001).
23 The ATR is thus soundly grounded in standard evolutionary theory, more specifically in
24 the theory of the evolution of communication. By contrast, the PT has no specific
25 evolutionary rationale. As Darmstadter notes, the PT's view of the function of reasoning
26 is similar to the standard view. Indeed, even though Darmstadter focuses on the action-
27 guiding role of beliefs, reasoning according to PT operates in a way reminiscent of
28 Fodor's central processes (1983). Both Fodor and most evolutionary psychologists agree
29 that such central processes cannot be adequately explained by standard evolutionary
30 theory. For Fodor this is an argument to reject evolutionary approaches. For evolutionary
31 psychologists this is an argument to reject Fodor's view of central processes, as they
32 point out that such a view of central processes is implausible on computational and
33 evolutionary grounds (see Sperber, 1994; Tooby & Cosmides, 1992). While I believe the
34 arguments of evolutionary psychologists to be overwhelming, in any case the PT faces a
35 quandary: it defines reasoning in a way that makes it either impervious to evolutionary
36 approaches or evolutionary implausible.
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43 3) *Making functional predictions.* One of the advantages of adopting an
44 evolutionary perspective is that it enables making predictions based on a functional
45 analysis. To do so, one must explain how a given mechanism or trait could have
46 improved the fitness of its bearers. For instance, the ATR suggests an adaptive
47 explanation for the confirmation bias that goes along these lines. In the environment
48 humans evolved, successful cooperation led to increased fitness. Communication is
49 essential for successful cooperation. Argumentation makes communication more
50 efficient. Reasoning is the cognitive mechanism that makes argumentation possible.
51 When it is used to produce arguments, reasoning's function is to find arguments that
52 convince an audience. Arguments that support the speaker's point of view are more likely
53 to achieve this goal. Ergo, when reasoning produces arguments, it is adaptive to have a
54 confirmation bias. Although there are many steps, each is—we contend—well supported
55 and makes evolutionary sense. By contrast, the PT, as presented by Darmstadter, suggests
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3 implausible functions for some of reasoning's traits or effects. For instance, it is
4 suggested that group polarization serves an epistemic goal by allowing groups to explore
5 extreme hypotheses, since one of these extreme hypotheses might turn out to be right. It
6 is indeed possible that group polarization plays such a positive role, but for that to be the
7 case at least two conditions have to be met: 1) the correct answer must lie outside the
8 bounds of the initial opinions and 2) there must exist a mechanism that can tell which of
9 the extreme opinions is correct. Science sometimes meets these conditions, making group
10 polarization between competing laboratories or schools potentially useful. However,
11 these conditions are unlikely to have been met with any regularity throughout human
12 evolution: in general, the correct answer is much more likely to be arrived at by
13 averaging than by polarization (Larrick & Soll, 2006), and when this is not the case, a
14 mechanism to tell which answer is correct is unlikely to be found (indeed, one could
15 argue that only modern science possess a reliable way to perform this feat). In this case,
16 Darmstadter seems to confuse a mechanism that might serve some function in society
17 with a function in the biological sense.
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23 4) *Confronting the prediction with data.* One of the advantages of evolutionary
24 psychology is that psychologists have proven very skeptical of it. This has pushed
25 evolutionary psychologists to examine a broad range of evidence to support their claims,
26 looking for instance at developmental trajectories and cross-cultural robustness.
27 Arguably, the ATR is a good case in point, as it sought to find robust patterns emerging
28 from various experimental psychology literatures (reasoning and decision making, social
29 psychology, developmental psychology, cross-cultural psychology, moral psychology,
30 psychology of expertise) and data from outside the laboratory (psychology of science,
31 sociology, history) (see Mercier, 2013a). While Darmstadter gracefully acknowledges the
32 wealth of data offered in support of the ATR, he does little to match it. Instead, the PT is
33 supported by personal anecdotes, single references plucked out of whole fields, and
34 admittedly contradictory data. While it is obvious that a single short article cannot match
35 the breadth of a dozen articles, the PT should have been defended by pointing out robust
36 phenomena for which strong supporting data exists, phenomena explained by the PT but
37 not the ATR. This would have been the equivalent of the confirmation bias or the good
38 performance of groups in reasoning tasks for the ATR, two well-established phenomena
39 for which the ATR has an arguably better account than the classical view of reasoning. A
40 possible explanation for the absence of such data from Darmstadter's defense of the PT is
41 that there is no such data.
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46 Having criticized the PT as a theory of the function of reasoning on
47 methodological grounds, I now turn to what Darmstadter suggests is the most significant
48 advantage of the PT over the ATR: the PT's ability to explain why people hold on to
49 some well-entrenched (or 'framework') beliefs, even in the face of good arguments.
50 Although Darmstadter's account of the extent of such deliberation failures is debatable,
51 all that is needed here is to grant that deliberation sometimes fail to change people's
52 mind, even when seemingly sound arguments are presented. This phenomenon can have
53 many different causes, two of which seem particularly relevant here.
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55 As Darmstadter notes, some beliefs are the result of a lifetime of experience. If
56 someone has encountered a large amount of evidence supporting a given belief, has been
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3 given many arguments for this belief, or holds many other beliefs coherent with it, it is in
4 no way surprising that a few arguments encountered in the course of a short discussion
5 fail to completely alter this belief. Evolutionarily, it is generally beneficial for individuals
6 to reject too much rather than too little communicated information (Mercier, 2013b). It
7 would be surprising if a short bout of discussion, sometimes held with strangers, could
8 shatter a strongly supported belief—a point Darmstadter grants. While the ATR predicts
9 that good arguments should have some effect, it doesn't predict that they will always
10 have a strong effect. If the arguments are good, the ATR predicts that the person should
11 incrementally adjust her belief in the direction supported by the new arguments—a move
12 that might be difficult to measure using standard scales.

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14 However, it would be hard to deny that people sometimes hold on to beliefs even
15 though these beliefs have never had much support in the first place. Darmstadter
16 dismisses without any argument one potential explanation for this phenomenon: that
17 people are not always primarily interested in the truth. This dismissal flies in the face of
18 work by social psychologists, sociologists and political scientists, who have shown that
19 people can profess to hold some beliefs (and sometimes come to genuinely hold them) to
20 increase their acceptance in a group (e.g. Asch, 1956; Collins, 2004; Sears, Lau, Tyler, &
21 Allen Jr, 1980). Political creeds are a prime example of beliefs that are subject to massive
22 social pressures. Kahan and colleagues provide an example with belief in global warming
23 (Kahan et al., 2012). If a person is surrounded by staunch skeptics, her acceptance of
24 global warming could have dramatic social consequences: she could be shunned by her
25 friends, her colleagues, even her family. By contrast, holding a true belief about global
26 warming makes a minimal practical impact: neither recycling more thoroughly nor voting
27 for a green political party will lead to a strong improvement in a person's environment.
28 To the extent that beliefs with few practical consequences (at the individual level) and
29 high social consequences existed throughout human evolution, one would expect humans
30 to be endowed with mechanisms that make them adopt beliefs that can increase their
31 social acceptance at little practical costs. Such beliefs should be relatively impervious to
32 standard forms of argumentation, since their holders do not care whether the belief is
33 correct or not.

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35 The ATR is a theory of reasoning. To explain and predict behavior in any given
36 situation, it has to be complemented by an understanding of other relevant cognitive
37 mechanisms. For instance, a group discussion can be dominated by arguments, but also
38 by jokes, stories, seduction attempts, and so forth, which will involve a variety of
39 cognitive mechanisms. These mechanisms can overshadow reasoning either by making
40 people stop to produce arguments, or by making them not pay attention to the arguments
41 produced. For instance, if the discussants' main goal is to affirm their identity in front of
42 their peers, then they have little incentive to take heed of each other's arguments (note
43 that such goals would generally be unconscious). Explaining when a given cognitive
44 mechanism is activated is as important as explaining how it works once it is activated.

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46 Darmstadter rightly draws our attention to 'real life' deliberation—deliberation
47 outside the laboratory, deliberation among people who are not the standard participants in
48 psychology experiments—and to its potential failures. For a psychological theory to have
49 some validity, it has to hold under such circumstances. Contrary to Darmstadter, I believe
50 this is the case for the ATR (see Mercier & Landemore, 2012), but one can hope that
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3 Darmstadter's work contributes to moving the focus of the psychology of reasoning away
4 from content- and context-free problems towards more engaging contexts and contents—
5 towards argumentation.
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