The "why" of human reasoning and communication:

Cognitive capacities through the evolutionary lens

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Introduction

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Two cognitive skills that are often considered to set humans apart from their evolutionarily closest relatives are on the one hand our outstanding capacity for reasoning, and on the other our profound communicative abilities. Broadly considered to be unmatched in the animal kingdom are on the one hand our sophisticated reasoning abilities and on the other hand our communication using languages that are infinitely creative in enabling the production of complex sentences (Cheney and Seyfarth, 1997).

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Our reasoning and communication are intertwined with each other in different ways; it is hard to imagine our communication without reasoning. In our everyday lives, a lot of the content we intend to convey to others, we relay pragmatically: we do not literally spell out these things, but rather hope and expect our interlocutors to infer the intended message from the communicated content. When I ask my dinner partner if they can pass me the salt, they infer that I am not interested in learning about their ability to pass me the salt but rather that I am requesting to be passed the salt. When I give feedback on an interlocutor's behavior, I first reason about how my words will come across to her in order to minimize social conflict.

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It is thus easy to see that reasoning and communication are intricately linked. But what is exactly the extent and nature of this link? In 2011, Hugo Mercier and Dan Sperber proposed a revolutionary theory of reasoning that intended to account for a number of issues in the experimental psychology of reasoning. According to their *argumentative theory of reasoning*, the main function of reasoning in humans is argumentative; that is, reasoning evolved in humans in order to devise arguments and evaluate those of others. Their theory is able to explain a number of properties of human reasoning, such as poor performance on historically standard reasoning tasks such as the Wason selection task; confirmation bias; and the phenomenon of motivated reasoning leading to attitude polarization.

can I say that?

In the words of Mercier and Sperber,

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> Reasoning has evolved and persisted mainly because it makes human communication more effective and advantageous. (Mercier and Sperber, 2011, p. 60)

In this thesis, I intend to scrutinize this position and take it further, in order to ultimately answer the question of whether advanced reasoning skills in humans evolved because they facilitate more advanced communication.

In order to answer this research question, after addressing methodological considerations on functions and explanations in evolutionary biology, I will at length consider the argumentative theory of Hugo Mercier and Dan Sperber (Mercier, 2016; Mercier and Sperber, 2011, 2017). Then, an exploration of the origins of human communication is in order (Benítez-Burraco, Ferretti, and Progovac, 2021; Moore, 2017; Scott-Phillips, 2017, 2018; Tomasello, 2008).

1 | The chicken and the egg: exploring the evolutionary approach

Before we are able to answer any *why*-questions about humans' cognitive capacities, some groundwork needs to be laid out. For what does it mean for some trait to evolve 'because of' or 'for the purpose of' another trait? Are we even justified in using this kind of terminology when it comes to evolution, which is a process which cannot be said to be intentional nor purposeful? And what questions will we need to ask ourselves in order to ultimately answer that big *why*-question? This chapter attempts to answer these questions. It by no means provides an overview of issues in evolutionary theory; this is a large field of research in its own right, with widely diverging opinions on a number of specifics of evolution (see Ariew, Cummins, and Perlman (2002) and Uller and Laland (2019) for overviews of topics in evolutionary theory). This chapter will merely serve to get a number of issues out of the way before we can continue our investigation into the cognitive mechanisms that make us human.

1.1 The legitimacy of evolutionary psychology

In order to answer our question, we will first zoom out to consider the field of evolutionary psychology as a whole. What is the merit, and the validity, of adopting an evolutionary approach in our endeavor?

The field of evolutionary psychology concerns itself with trying to understand human behavior through evolutionary theory, by looking into the past and considering how our ancestors must have adapted to their environment. Researchers in the social sciences and humanities have historically been a tad wary of using evolutionary approaches to study human behavior, because evolutionary theory has been abused for prejudiced ends in the past (Laland and Brown, 2002, pp. 19–20).

In order to explain humans' evolved psychological mechanisms, evolutionary psychologists look to the concept of an *environment of evolutionary adaptedness* (EEA); they maintain that for our psychological mechanisms to be as complex as they are, they must have evolved slowly and a considerable amount of time prior to the present. The EEA is then the environment in which the psychological mechanisms must have come to be; usually the EEA is identified as hunter-gatherer cultures on the African savannah in the Pleistocene (Laland and Brown, 2002).

It is important to note here that not only biological evolution, but also cultural evolution can be said to have played a role in shaping human behavior and human cognitive

capacities: this is a joint endeavor facilitated by nature and nurture. In this thesis, I will not attempt to delineate between what features are due to biological evolution and which are due to cultural evolution; for the purposes of this investigation, I believe I am justified in broadly considering them under the umbrella term of 'evolution'.

1.2 Teleological notions in evolutionary theory

Next, it is useful to scrutinize the terminology that I will be using throughout this thesis.

1.3 Causation in evolution

Now, we will dip our toes into the topic of causation in evolution.

1.4 An evolutionary foundation

Now that we have gathered sufficient puzzle pieces, it is time to take the score and lay the groundwork.

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