

Précis of A Philosophy for the Science of Animal Consciousness

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Précis of *A Philosophy for the Science of Animal Consciousness*

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Abstract

A Philosophy for the Science of Animal Consciousness aims to advance Donald Griffin’s vision of the “final, crowning chapter of the Darwinian revolution” by firmly integrating animals within the science of consciousness. Although this field has largely neglected the questions of when and why consciousness evolved, this book champions a Darwinian philosophy where the experiences of other animals are put centre-stage in investigations of consciousness. This synopsis offers a summary of the book’s core arguments for the advancement of a truly biological science of consciousness. This approach allows for an empirically rigorous investigation into what it is like to be a bat, a crow, a bee, or an octopus.

Keywords Animal consciousness · Animal cognition · Animal minds · Animal behavior · Philosophy of mind · Evolution of consciousness

1 Introduction

A Philosophy for the Science of Animal Consciousness brings together and expands my writings over the last few years on animal consciousness, offering us an empirically rigorous way towards developing a genuine science of something as elusive as the subjective experiences of other animals. While the so-called “science of consciousness” emerged over the last 30 years or so, this interdisciplinary field could at best be described as a science of human consciousness. This is not meant to disparage the field, after all, I am deeply sympathetic to the goal of studying consciousness in a rigorous manner, but rather that we have largely focused on developing theories, models, and tests of human consciousness, rather than consciousness more broadly as a natural phenomenon (see also Ginsburg & Jablonka, 2019). One of the main motivations for writing this book has thus been to remove some of this focus

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on humans to think much more broadly about what the experience of animals only very distantly related to us could be like.

Admittedly, the last decade has seen an explosion in interdisciplinary interest in the question of animal consciousness. Without the recent work of Godfrey-Smith (2016, 2020), Ginsburg and Jablonka (2019), as well as Feinberg and Mallatt (2016), who similarly to me seek to explain the origins of consciousness in a bottom-up manner during the Cambrian explosion, I doubt I would have taken the risk to write a book and PhD thesis on the evolution of consciousness. But as so often in science and philosophy, we stand on the shoulders of giants, hoping to see further than they have themselves. Throughout the book I unashamedly draw and borrow from the ideas of others, acknowledging their influence on my own work, and making tweaks and improvements where I think they have gone wrong. In many ways, this book is a work in synthetic philosophy (Schliesser, 2019, 2024), where I try to synthesize the ideas, theories, and empirical results from a variety of fields and thinkers through a Darwinian lens in order to get us closer to making sense of the place of consciousness in nature.

While the conscious experience of animals has of course been frequently been speculated about, much of this work has treated animal consciousness in a top-down manner, where theories of consciousness derived from humans can simply be applied to other animals. In opposition to this, my book seeks to revive Donald Griffin's (1998) largely forgotten vision of the "final, crowning chapter of the Darwinian revolution" (p. 14) by advocating a thorough evolutionary bottom-up approach to the study of consciousness. This is why my book is titled *A Philosophy for the Science of Animal Consciousness*. Instead of treating consciousness as an enigmatic, binary property impervious to scientific inquiry and limited to a singular species, I treat consciousness as a multi-dimensional and evolved phenomenon - no different in principle from other biologically complex traits.

In such a Darwinian science of consciousness, the evolutionary origins, functions, and phylogenetic diversity of consciousness transition from the fringes of the discipline to its central focus. This reshaping allows for the integration of consciousness within an evolutionary perspective of life. Consequently, *A Philosophy for the Science of Animal Consciousness* pursues two primary objectives: (i) to advocate for the importance and feasibility of an evolutionary bottom-up approach, explaining consciousness through the evolutionary emergence of a novel ecological *animal lifestyle* that rendered consciousness beneficial, and (ii) to present a thesis on the function of consciousness that can help us to understand the experiences of the species around us now. Below I outline the chapters of my book and offer a brief description of their contents.

1.1 A Darwinian Philosophy for the Science of Consciousness

As per the title, the aim of this chapter is to argue that the science of consciousness is in dire need of a Darwinian philosophy that treats human consciousness as an evolutionary recent and special case of a broader phenomenon shared by a vast range of the animal kingdom. I defend the view that any biological examination of

consciousness should tackle the teleonomic question of how consciousness, in its various varieties and gradations, has provided adaptive benefits for animals within their typical ecological habits and the natural environments they've evolved for. I argue that this kind of activity isn't equivalent to telling mere "just-so stories", nor impossible, but a vital activity in order to advance a true Darwinian study of consciousness.

Furthermore, the chapter introduces a hypothesis concerning the role of consciousness that will guide readers through the book: the Pathological Complexity Thesis, which states that "The function of consciousness is to enable the agent to respond to pathological complexity" (Veit, 2023a, p. 2), which can be understood as the life-history complexity of alternative life-history strategies (involving all trade-offs in organismal design as well as decision-making). Originally introduced in a commentary in *Brain and Behavioral Sciences* (Veit, 2022b) and a target article in *Biological Theory* (Veit, 2022a), this theory builds on the old Darwinian idea that pleasure and pain may have constituted the original building blocks of consciousness by helping organisms to effectively deal with and register those events that are beneficial and respectively harmful for their health. By treating health as a natural phenomenon - the optimal point in the design of a species - rather than an all-or-nothing matter, we can think of fitness as the ultimate metric or common currency for which trade-offs are optimal in a species' design and life-history strategy. Similarly, I argue that sentience - the capacity to feel pleasure and pain - has provided animals with a proximate common currency to deal with trade-offs in their own decisions. The rest of the chapter offers a general overview of the remaining chapters, before I move on to Chap. 2, in which I introduce my concept of "phenomenological complexity".

1.2 The Explanandum: Animal Consciousness and Phenomenological Complexity

Building on my focus on the diverse healthy and pathological manifestations of consciousness, this chapter asserts that any biological framework on consciousness should encompass the full diversity and complexity of conscious experiences both within and among species, which I coin as "phenomenological complexity." Philosophers have long mistakenly treated consciousness as if it was an all-or-nothing property, and yet, subjective reports as well as tests from humans with pathological conditions, the neurodiverse, as well as the general population should have long made clear that our subjective experience can vary widely depending on the individual. Some humans can see smells in their visual field, others can echo-locate, and others again are incapable of feeling pain. To make progress, the science of consciousness must centre this diversity of experiences and study their gradations. To do this, of course, we must focus on all conscious animals, which will involve far greater phenomenological complexity and a multi-dimensional approach to distinguish the different dimensions along which subjective experience can differ. Drawing on the work of Birch et al. (2020), this chapter distinguishes between five different dimensions of consciousness and discusses a vast range of different experimental paradigms that have been developed to provide us with rigorous empirical evidence regarding the experiences of other animals. Among many consciousness researchers as well

as animal behaviorists, there has remained a strong skepticism regarding our very ability to make any progress in our understanding towards the experiences of other animals; that we are in no better position than at the time of Darwin and Romanes when speculation about animal consciousness was rampant. By going in depth into the experimental paradigms developed for the study of consciousness, this chapter hopes to eliminate this radical skepticism and provide us with the tools to begin an investigation into the plausible evolutionary origins of experience in Chap. 3.

1.3 The Origins of Consciousness or the War of the Five Dimensions

Expanding on a previously published article (Veit, 2022c), this chapter makes use of the distinctions between five dimensions introduced in the previous chapter to disentangle the complexity of consciousness and investigate its plausible evolutionary origins. Instead of treating consciousness as an all-or-nothing phenomenon in which all of its features must come together, I am here taking an evolutionary reverse-engineering approach in which we consider the adaptive benefits of various forms these dimensions may take on their own. Each dimension is examined as a plausible candidate for the first sparks of subjective experience, peeling away one layer of what are better candidates for later innovation or “outer layers” of consciousness.

This strategy of conceiving consciousness as something similar to an onion enables us to bridge the mysterious gap between matter and mind by tracing the step-by-step evolution of these capacities without any need for a sudden appearance of consciousness as a single trait. Moreover, after considering competitors - such as a sensory-representational view of consciousness as well as a self-awareness view of conscious experience - this chapter defends a hedonic view, in which the first subjective experiences were constituted by simple feelings of aversiveness and attraction that provided the foundations for the other features we associate with consciousness.

1.4 Pathological Complexity and the Dawn of Subjectivity

This chapter’s purpose is to shed light on the evolutionary origins of consciousness by explicating the pathological complexity thesis. The emergence of hedonic evaluation is explained as an evolutionary adaptation to a computational explosion in pathological complexity during the Cambrian period due to greater degrees of freedom in the range of actions organisms could take. It is here that we see the evolution of/or major transition towards a more complex form of biological agency where biological systems have to deal with decision trade-offs among their competing functional demands and competing actions. This new form of animal agency involved richer forms of behaviour and sensory-motor processing that made an investment into a proximate common currency reflecting the values of competing actions worth having.¹ This idea is indebted to many thinkers

¹ Since this chapter can be seen as the heart of the book, it is perhaps unsurprising that authors such as Spurrett (2023) and Jablonka and Ginsburg (2023) have forced me to think about some of the aspects of my framework in more detail. My response to their critiques can be found in Veit (2023b).

especially Godfrey-Smith's earlier environmental complexity thesis as a framework to think about minimal cognition (Godfrey-Smith, 1996), Dennett's emphasis on how we need to answer what kind of complexity is worth caring about from an evolutionary perspective (Dennett, 2017), and Cabanac's earlier arguments for the identification of the origins of consciousness in the evolution of pleasure and pain as a common currency (Cabanac, 1992, 1996).

Furthermore, I argue that sensory experiences evolved as a representational enrichment of more basic discriminatory capacities, while the origins of self-awareness lie in further enrichments of these sensory experiences to distinguish between internal and external stimuli. It is only within the context of a basic hedonic system that it makes sense for such capacities to be consciously experienced, giving us an explanation of why some information-processing in the brain is felt, whereas most simply goes on unconsciously. With this framework established, the next chapter aims at using it to provide animal behaviour and cognition researchers with practical guidance for how to study animal consciousness.

1.5 Pathological Complexity Meets Phenomenological Complexity

The goal of the penultimate chapter of my book aims to put the pathological complexity thesis to the test by addressing a recent proposal by Godfrey-Smith (2020) that there might exist a phylogenetic divide between animals only capable of hedonic experience and those that only have sensory experiences. He suggests that gastropods fall in the former category, while insects fall in the latter, which would of course suggest that there could perhaps exist another evolutionary path for consciousness via a sensory-route, thus constituting a challenge for the pathological complexity thesis. The chapter expands on a previous article criticising Godfrey-Smith's suggestion (Veit, 2022d), by diving in depth into the literature on insects to challenge the idea that they only have very basic evaluative capacities, ultimately undermining the idea that they couldn't have evaluative experiences and repudiating this challenge to the pathological complexity thesis.

Furthermore, the chapter goes far beyond my previous article to explore the life histories of octopuses, fish, non-avian reptiles, and corvids to challenge anthropocentric assumptions we may have about the other dimensions of consciousness. The chapter jumps back and forth between pathological conditions in humans to discuss whether different forms of experience could provide adaptive benefits for different ecological lifestyles we may find in animals very different from us. Examples discussed include the possibility of two independent streams of experience in fish, the self-awareness of octopuses lacking a stable body-image, as well as the extremely rich memory capacities of corvids. Importantly, the pathological complexity thesis provides us with a framework that goes in two directions. Not only are we provided with plausible hypotheses for the subjective experience of non-human animals, but also the ability to test hypotheses about the experiences of animals through recourse on their life-histories and tests discussed in Chap. 2. By engaging in this back and forth, consciousness can be firmly integrated in biological science, leading to what Griffin (1998) described as the "final, crowning chapter of the Darwinian revolution" (p. 14).

1.6 The Final, Crowning Chapter of the Darwinian Revolution

In the final chapter of *A Philosophy for the Science of Animal Consciousness*, I take stock on how far we have come towards the establishment of a Darwinian science of consciousness. I also offer a summary of the core arguments of the book and assess whether we have reached the goals I set out to meet in the first chapter. Finally, the book ends with further reflections on how the pathological complexity framework could be refined, how we can use it to improve animal welfare, and even how animal minds research may help us to understand AI minds in the future (see also Browning & Veit, 2023). Much work, of course, remains to be done and I hope that the book can help us to take the first steps towards a true Darwinian study of consciousness in which animal cognition researchers and cognitive ethologists come to uncover the subjective worlds of the animals we share this planet with. Finally, I look forward to the critical commentaries on my book.

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Declarations

Conflict of Interest The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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