Kojonen's The Compatibility of Evolution and Design

with Zachary Ardern, "The Contentious Compatibility of Evolution and Design: Introduction to the Book Symposium"; David H. Glass, "An Evaluation of the Biological Case for Design"; Meghan D. Page, "Thomist or Tumblrist: Comments on The Compatibility of Evolution and Design *by E. V. R. Kojonen"; Peter Jeavons, "The Design of Evolutionary Algorithms: A Computer Science Perspective on the Compatibility of Evolution and Design"; Denis R. Alexander, "Evolution, Chance, Necessity, and Design"; Bethany N. Sollereder, "Response to* The Compatibility of Evolution and Design*"; Mats Wahlberg, "Divine Design and Evolutionary Evil"; and Erkki V. R. Kojonen, "Response: The Compatibility of Evolution and Design."*

THE CONTENTIOUS COMPATIBILITY OF EVOLUTION AND DESIGN: INTRODUCTION TO THE BOOK SYMPOSIUM

by Zachary Ardern (iD)

Abstract.   In the recent book *The Compatibility of Evolution and Design*, E. V. R. Kojonen argues that a biological design inference is still possible in light of mainstream evolutionary theory and that evolution and design need not be in explanatory tension. This collection of essays is the product of a symposium held in March 2022, which interacted with the claims of the book. Contributors come from diverse academic backgrounds across philosophy, science, and theology, and both critique and extend Kojonen's argument. Here, each contribution is introduced along with some important connections between them and key questions which remain open.

Keywords: design; evolution; teleology

Charles Darwin's greatest supporter in the United States during his lifetime was the Harvard botanist Asa Gray, a theologically conservative presbyterian and leader in early American science. Gray is often spotlighted as a canonical early example of theistic evolution. Less well-known is that Gray defended not just the compatibility of Darwin's theory and theism, but of Darwinian evolution and inferences to divine design. Was this question,

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debated among the leading scientists of the nineteenth century, buried effectively at that time; or could it still have life today?

In *The Compatibility of Evolution and Design*, Rope Kojonen (University of Helsinki) revives a version of Gray's long-neglected argument (Kojonen 2021). It is received wisdom among both evolutionary biologists and opponents of evolutionary theory that design and evolution are in explanatory tension. Kojonen argues against this, opposing it not with mere possibility, but with multiple reasons to think that adding design as an additional metaphysical level of explanation is explanatorily useful. These are contentious claims, not least among my colleagues in evolutionary biology, but deserve reconsideration in light of the significant progress made in our mechanistic understanding of evolutionary processes. Whatever one thinks of the possibility of divine involvement in life's history, putting developments in evolutionary theory in conversation with philosophy of science, probability theory, and the recent reinvigoration of natural theology promises to open up large realms of new intellectual territory. In March 2022, a group of scholars from across philosophy, theology, and the natural sciences gathered at Corpus Christi College, Cambridge, to discuss this book, resulting in the articles of this special edition. Here, I will briefly introduce each article and some connections between the different contributions. One of the dominant themes across the articles is the role of chance in evolution and evolutionary explanations—a theme that should be of significant interest to evolutionary biologists (Ramsey and Pence 2016).

The first philosophical contribution is from computer scientist and philosopher David Glass (Ulster University). Glass (2012, 2021) brings expertise on conjunctive explanations and inference to the best explanation to a discussion of ways in which a design explanation could be joined with an accepted evolutionary explanation. He helpfully points out that the evolutionary design advocate could locate design either as a cause of evolutionary contingency or as a cause of the more "lawlike" entities or processes typically appealed to in adaptive evolutionary explanations, such as fitness landscapes. Kojonen takes the second, but exploring the first could be productive, and Glass gives good reasons to find it attractive. The second contribution from philosophy is by Meghan Page (Loyola University Maryland), whose research is in the philosophy of science, particularly historical science (Page 2021), as well as overlaps between the philosophies of science and religion (Page 2018). Page raises a number of objections to Kojonen's approach and design arguments more generally; these include apparent bad design and disputing whether a relevant kind of conjunctive explanation can be achieved. Page also disputes whether there really is an "explanandum remainder" left over after evolutionary theory, providing work for a design argument to do. Further, precisely what is meant by the "biological teleology" which is intended to be explained is queried, and it

is argued that some of the implied metaphysics is so contentious that it undermines the case being made. I think that Kojonen has started to make a good case for the reality of an explanandum remainder, but agree that there will be more work to do in fleshing out many of these topics. The other articles, for example, by Peter Jeavons and Mats Wahlberg, contribute to this.

The computer scientist Peter Jeavons (University of Oxford) has led significant work on evolutionary search and theoretical evolutionary biology (Nichol et al. 2019; Kaznatcheev, Cohen, and Jeavons 2020). The problem of evolutionary search as encountered in biology is a subset of a larger class of possible searches considered in computer science. Here Jeavons discusses constraints on the much vaunted success of evolutionary algorithms. He takes the established results in the field as supporting the general idea that "fine tuning" of various aspects of an algorithm is plausibly required for the success of evolutionary searches. He discusses both the properties of fitness landscapes and the search algorithms applied to these landscapes that are needed for search success. If Jeavons and Kojonen are right, it is a profound irony that the algorithmic nature of Darwinian evolution that has been forcefully proposed as the basis of why evolution is a design replacement (Dawkins 1986; Dennett 1995) actually provides material for a revived "Grayian" design argument. Jeavons' contribution is just one example of the kind of scientific work that could in future be brought into the discussion. The biochemist Denis Alexander (University of Cambridge) has published extensively in science and religion, and on issues of purpose in biology (Alexander 2008, 2018). In this article, Alexander focuses on clearing the ground for Kojonen's kind of project. He does this through an analysis of different senses of chance—rhetorical, epistemic, ontological, and metaphysical; and related concepts of randomness in biology. He argues that the strong sense of chance appealed to by many materialist interpreters plays no role in evolutionary biology, as biological systems are not "free" but instead characterized by functional integrity. To many biologists, however, stochastic processes such as genetic drift, mutation, or the insertion of various genomic elements do appear to be "chancey" in quite a strong sense. Alexander notes that the role of chance in evolution has been debated since the very beginning, with the distinguished polymath John Herschel objecting to Darwinism as the "law of higgledy-piggledy," with chance playing such a large role that it ends up looking miraculous. This concern of Herschel's and Alexander's discussion intersects nicely with David Glass's article in this collection.

From theology, Bethany Sollereder (University of Edinburgh) raises further challenges. Sollereder suggests objections concerning design metaphors, as well as from evolutionary biology and the cognitive psychology of religion. For example, it is argued that if the environment does all of the real work in evolution, then Kojonen's argument will effectively

collapse into a cosmological fine tuning argument. In making this case, Sollereder extends "the environment" beyond natural selection to include the physical laws, thus subsuming structuralist and selectionist explanations. In my view, a broad concept of the environment may indeed suffice to cover most evolutionary explanations. However, if the environment needs to be set up precisely in order to get the evolution of biological teleology, then we do have something beyond a standard cosmological argument. That type of argument concerns the existence of a minimal life permitting or supporting universe with features such as the formation of stars, rather than biological or evolutionary phenomena per se. The relationship between these two arguments is, however, worth unpacking, and Bethany Sollereder's article can assist with this. Also from theology, Mats Wahlberg (Umeå University) discusses options for divine intervention and approaches to accounting for bad design, which are both critical for full explication of the argument. Regarding intervention, Wahlberg shares similar concerns to David Glass, and their essays can usefully be considered in conjunction. A critical question that seems to still be open is whether contingency can legitimately be appealed to within evolutionary theory, or constitutes an embarrassing explanatory gap. Aside from this, many important issues regarding freedom and intervention are raised that will be very useful for future work in developing the argument.

This collection of articles is diverse, and they all raise important points for the project of showing the compatibility of evolution and design. Some of the objections raised are also found applied to design arguments or natural theology in general. Such objections have been discussed extensively in the literature (Hawthorne and Isaacs 2018; Waller 2019; Barnes 2020), and Kojonen has interacted with many in his book. Given wide mainstream interest in cosmological fine tuning and widespread recognition that it may provide evidence for theism, the relative lack of additional objections here is encouraging for the project of evolutionary design arguments. Aside from the many critiques which will hone future versions of the argument, these articles also substantially advance the project. With *The Compatibility of Evolution and Design*, Rope Kojonen has provided a resource of significant benefit for philosophy and theology, but also raised questions that can be used to stimulate research at the leading edge of theoretical biology. The contributions to this special edition illustrate well the diversity of fields that can contribute to and benefit from this revived conversation, and I look forward to its future (guided) evolution.

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