

On the Nature of Variation: Random, Biased, and Directional

Anfiteatro da Fundação FCUL, University of Lisbon, 3-4 October 2017

Invited speakers:

Eva Boon (Technische Universiteit Eindhoven, Holland), Leonore Fleming (Utica College, USA), Gerd Müller (Universität Wien, Austria), Arlin Stoltzfus (Institute for Bioscience and Biotechnology Research, NIST, USA).

Description:

Adaptationism pervades all aspects of biological thinking. One crucial challenge to adaptationism stems from recent genomic analyses suggesting that non-adaptive processes such as drift and mutation dominate genome evolution. A different challenge to adaptationism comes from studies of phenotypic evolution suggesting that developmental processes co-determine the direction of evolution. One way to capture the common theoretical thread of these two challenges is the following: genomic and phenotypic variation bias evolutionary outcomes because they are not “random”. If variation is not random, then it is either biased or directional. If the processes of generation of genomic and phenotypic variation were biased, then evolutionary outcomes would depend not solely on natural selection, but on the nature of these biases: mutational and developmental biases would therefore be processes of fundamental evolutionary importance. If the processes of generation of genomic and phenotypic variation were directional, then evolutionary outcomes would depend not solely on natural selection, but on the capacities of the organisms to respond adaptively to environmental challenges.

Call for abstracts:

The present call for abstracts is directed to philosophers of biology, philosophers of science, historians of biology, evolutionary and theoretical biologists. The aim of the conference is to provide an interdisciplinary context for evaluating the historical, empirical and theoretical dimensions of the debate concerning the nature of variation and the proper role for variation in evolutionary explanations, how the debate has unfolded and how it shapes current evolutionary thinking in the life sciences. We particularly seek contributions that tackle the following issues:

1. How useful is the doctrine of variational randomness? And how should it be characterised?
2. In what sense would the existence of processes of generation of biased or directional variation challenge (empirical) adaptationism?
3. Is phenotypic variation random in the same sense as genomic variation?
4. Are all processes of genomic change random in the same sense?
5. How can evolutionary thinking benefit from concepts of randomness used in other sciences (e.g., mathematics, physics)?
6. To what extent do indeterministic processes play a role in mutation?

7. What mutation systems other than CRISPR-Cas violate current notions of randomness?
8. How can evolutionary thinking benefit from an analogy with cultural processes of variation-generation?

Dates:

Deadline for submission: 15.07.2017

Notification of acceptance: 05.08.2017

Proposals should be approximately 500 words long.

Please send them to Davide Vecchi <dvecchi@fc.ul.pt>.

Convenors:

Elena Casetta, Silvia Di Marco, Jorge Marques da Silva, Carina Vieira da Silva, Davide Vecchi.

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For more information, please visit: <http://onthenatureofvariation.campus.ciencias.ulisboa.pt/>