Emerging plurality of life

Assessing the questions, challenges and opportunities

Abbott, Jessica; Persson, Erik; Witkowski, Olaf

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EDITED AND REVIEWED BY
Peter David Tolmie,
University of Siegen, Germany

*CORRESPONDENCE
Erik Persson
✉ erik.persson@fil.lu.se

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Editorial: Emerging plurality of life: Assessing the questions, challenges and opportunities

Jessica Abbott[1], Erik Persson[2]* and Olaf Witkowski[3]

[1]Department of Biology, Lund University, Lund, Sweden, [2]Department of Philosophy, Lund University, Lund, Sweden, [3]Earth Life Science Institute, Tokyo Institute of Technology, Tokyo, Japan

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Editorial on the Research Topic
Emerging plurality of life: Assessing the questions, challenges and opportunities

Research groups around the world are currently busy trying to invent new life in the laboratory, looking for extraterrestrial life, or making machines increasingly more life-like. In the case of astrobiology, any newly discovered life would likely be very old, but when discovered it would be new to us. In the case of synthetic organic life or life-like machines, humans will have invented life that did not exist before. Together, these endeavors amount to what we call *the emerging plurality of lives* because we see a future where we are surrounded by, and interact with, life of many different origins, as well as entities that we have not traditionally seen as being alive. In the future these entities will likely possess properties that we so far have only associated with living beings, thereby transcending and perhaps blurring the borders between life and non-life.

There are reasons to believe that we are ill-prepared for the challenges, as well as the opportunities, that the emergence of this plurality of lives undoubtedly will create. It will have profound effects on a wide range of issues that all depend on how we look at life, including how to frame research questions in chemistry, biology, and astrobiology, *via* legal and political questions, to philosophical and theological perspectives (Persson et al., 2019).

In this special issue, ten authors from different disciplines have approached these challenges in the form of eight articles from their own different perspectives.

Balkenius and Johansson recapitulate the history of human-like robots, defending the idea that there is no need for humanoid robots to exactly imitate life. It is enough to imitate some emotional and cognitive functions in their bodily motion and gaze, to facilitate meaningful interactions. The authors also discuss the motivation behind the attempts to create androids and humanoid robots and other important components such as body language, gaze in coordination with actions, and lastly remark on how life-like the robots will feel once all these features are perfected.

Rédei discusses Mary Shelley's creation of Frankenstein, the monstrous scientist with whom we have grown to identify or even sympathize despite his flaws and unethical course of action. In other words, she created the modern Prometheus, where it is the scientist who is the human-monster, or monstrous human. This idea of the modern Prometheus has reached an immense audience, though multiple aspects of the original message have been altered along the way. The paper emphasizes how Shelley's conception of the monstrous was more complex than today's when the narrative has undergone large deformations.

One of the goals of astrobiology is to understand how life on other planets might arise and evolve. But we have also sent out messages to extraterrestrial life forms, trying to communicate what life on Earth is like. But what is it we are really communicating? Capova's contribution examines what two of these messages, carried by the Pioneer and Voyager probes, say about us. She describes the contents of the messages and shows how the choice of images and sounds reflects the values and norms of the creators of the messages.

Damiano and Stano's contribution deals with embodied artificial intelligence (EAI), the idea that our bodies and sensory interactions with the external world are important for shaping our cognitive abilities, and that artificial intelligence, therefore, needs some kind of embodiment beyond mere algorithms, including sensors to internalize world information. An ongoing discussion concerns whether this has to take the form of a real (hardware) body or if it can be simulated (as software). The authors present a third option, namely wetware in the form of a chemical model of the body based on techniques from synthetic biology.

How do we interact with machines that get more and more of the properties we traditionally only associate with life? One such property is really advanced intelligence. As machines are getting smarter, ethics, law and national and international policy is struggling to keep up.

A number of policy statements have been produced by the European Union related to the regulation of AI. Hedlund reviews them, together with the idea of responsibility, and what different obligations entail. The paper reviews various issues connected to AI and responsibility, and proposes a distinction between backward- and forward-looking responsibility, including AI ethics, ethical design, machine personhood and rights, superintelligence, human oversight, value alignment, and transparency. These issues are discussed in the context of EU policy statements.

Melin's contribution reviews and critically evaluates the debate around risks associated with synthetic biology. He found evidence of both overstatements and understatements of risk within the published literature on the topic and called for a more objective description of the risks associated with various technologies within synthetic biology. He concludes by arguing that even low-probability risks need to be taken into account if the harmful consequences are substantial.

In Persson's contribution, the question is whether a future human ability to create life will affect the value of life. After discussing a selection of arguments, he concludes that although there is a risk that the value of created life may be seen as lower than the non-created life, the value of life in general or the value of non-created life will not be affected by a human ability to create life.

Self-organization and goal directedness are properties strongly associated with life. Non-conscious life do not formulate their goals like we do but life can, in one sense, be said to function as its own goal by constantly maintaining and reproducing itself. In Veloz contribution, he discusses goals as emergent autopoietic processes. An important part of this paper is his discussion of different definitions of "emergent" based on their operationality for this particular purpose. The author concludes that a special approach to emergent autopoietic processes called Chemical Organization Theory (COT) can be used for operationalising goals as an emergent process.

What these papers, as well as the special issue as a whole, have done is identify a number of issues relating to the emerging plurality of lives, and provide suggestions for how to think about these issues. It is way too early to provide any definitive answers to these questions and maybe some of them will never have a definitive answer, but our hope is that the discussion that has now been initiated will continue and thrive in order to prepare us for a future with a plurality of lives.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

References

Persson, E., Abbott, J., Balkenius, C., Cabak Redei, A., Cápová, K. A., Dravins, D., et al. (2019). How will the emerging plurality of lives change how we conceive of and relate to life? *Challenges.* 10, 32. doi: 10.3390/challe10010032