Call for Papers

Special track at 20th conference of the Society for Philosophy and Technology
June 14-17, 2017 – Darmstadt, Germany

The Philosophy of Biomimicry
Track Chairs: Vincent Blok (Wageningen University), Henry Dicks (University Jean Moulin Lyon 3)

Faced with the growing ecological crisis, Janine Benyus (1997) has argued that we can draw on the "3.8 billion years of research and development" already carried out by Nature in order to inhabit the earth sustainably, an approach known as biomimicry. This approach promises "soft chemistry" (Bensaude-Vincent 2002), working in water and at ambient temperatures, solar energy generation based on natural photosynthesis, the transition to circular economies in which everything is recycled, and much else besides. While biomimicry has been hailed as the "mantra of Silicon Valley" (Despommier 2011), a "revolutionary concept" capable of underpinning a "second industrial revolution" (Mathews 2011), only a relatively small number of philosophers of technology have thus far paid attention to it (cf. Bensaude-Vincent 2002, 2011; Mathews 2011; Blok & Gremmen 2016; Dicks 2016a). Mainstream philosophy of technology, by contrast, has generally preferred to concentrate on more controversial and ethically sensitive issues, such as synthetic biology, transhumanism, military technologies, artificial intelligence, and big data. The result is that biomimicry remains "philosophically under-developed, descriptive and ad hoc in its approach and accordingly piecemeal in its results" (Mathews 2011). In addition, since biomimicry has not been adequately theorized, it is also not entirely clear how it differs from and overlaps with other longstanding approaches to nature-inspired innovation, namely biomimetics, bionics, and bio-inspiration. The situation thus calls for a more systematic engagement with biomimicry on the part of philosophers of technology.

One promising path for going beyond the current "piecemeal results" produced by biomimicry is to explore its "grammar", understood as the structural rules and principles that govern the production of complex sustainable systems based on natural models. After all, it is one thing to develop industrial fibres modelled on spider's silk, high-speed trains modelled on the bill of the kingfisher, and solar cells inspired by tree leaves, but quite another to fit these innovations together to form complex systems. In the context of the SPT conference, "The Grammar of Things", the following questions are thus of particular interest:

- The grammar of biomimicry. In order to be sustainable biomimetic innovation will need to go beyond the imitation of isolated natural models, in order to consider the structural rules and principles that govern their articulation into complex sustainable systems. To adapt an expression of Braungart and McDonough (2009), it is not enough just to imagine "buildings like trees", for one must also imagine "cities like forests". But can the workings of ecosystems provide the basic "logic" or "grammar" that would allow us to articulate biomimetic technologies with one another? And what would be the role and the place of humans in the emergence and continued existence of complex artificial systems modeled on Nature (e.g., biomimetic cities, biomimetic economies)?
- Nature as engineer. Engineers working in biomimicry and related fields have placed great hopes in including Nature's "technologies" in the problem-solving tool TRIZ, thus giving rise to "Bio-TRIZ", which would contain all known "engineering solutions" deployed by life on

earth (Vincent 2002, 2006; Bogatyrev & Bogatyrev 2009). But while Bio-TRIZ may help "regularize" the transfer of function between natural and artificial technologies, can it help us connect all these technologies together? And are there not philosophical problems involved in reducing Nature to little more than a database of isolated "engineering solutions"? Do we not need to see Nature *as Nature*, rather than *as technology* (Dicks 2016, Blok 2016)?

- <u>The concept of mimesis</u>. Scientists and philosophers frequently invoke and discuss various poetic and linguistic concepts – *mimesis*, interpretation, translation, inspiration, analogy, metaphor, etc. – when discussing the transfer between natural model and technological imitation. Can we productively transpose philosophical analyses of these and other relevant concepts from the spheres of linguistics and poetics to the interface between the natural sciences and technology? And how might these concepts inform the "grammar" of biomimicry?

- <u>The diversity of mimesis</u>. Bensaude-Vincent (2011) has argued that the current rise of biomimicry is accompanied by the counter movement of "technomimicry", whereby living beings or systems are engineered in order to behave more like technological systems, as is the case in synthetic biology. And Dicks (2016a, 2016b) has argued that prior to the emergence of biomimicry, which sees Nature as "model, measure, and mentor" (Benyus 1997), humanists saw Man as "model, measure, and mentor", a position he describes as "anthropomimicry". But how do all these different forms of mimicry relate to each other – historically, conceptually, ethically... – and can biomimicry be seen as a new paradigm for technological innovation or is it just one type of mimicry amongst others?

Given the emerging importance of biomimicry but also the relative lack of critical attention currently paid to the concept, this conference track aims above all to deepen our understanding of the philosophical underpinnings of biomimicry, understood as nature-based technology. We therefore encourage submission of papers that tackle a broad range of questions, including (but not limited to) the aforementioned areas of special interest. For more information about the content and focus of the track, please contact Vincent Blok (<u>vincent.blok@wur.nl</u>) or Henry Dicks (<u>henryjdicks@gmail.com</u>).

References

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TO CONTRIBUTE...

350-word abstracts for individual papers should be submitted by Dec 5 at https://easychair.org/conferences/?conf=spt2017. When submitting, please tick the option "Special Track: Biomimicry (V. Blok, H. Dicks)".

Timetable
- December 5th 2016: Deadline for the submission of abstracts
- March 1, 2017: Expected notification of acceptance
- June 14-17, 2017: Conference dates