

Fred Keijzer (reviewing Moreno and Mosseo): English comments on *Philosophy of Microbiology*
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Phenomena in need of concepts

In her book *Philosophy of Microbiology*, Maureen O'Malley discussed a variety of philosophical issues derived from microbiology and one of the main messages I picked up from her book is best described by Bachman–Turner Overdrive: 'you just ain't seen nothin' yet.' The living world is more rich, diverse and strange than anyone had imagined until recently (and undoubtedly will remain so for a long time). The common-sense classification in animals, plants and 'the rest', like fungi and bacteria is totally insufficient to account for the many different and often weird life forms and the ways in which they live. In contrast to common sense, those familiar animals and plants are not prototypical examples of life: both are outrageously large constructions made up from – and by – huge chimerical (eukaryotic) cells that generate extensive extracellular structures where they live together with huge populations of various other microbes. As O'Malley stresses, 'the biological world in general is microbial' (2014, p. 3); macrobes like us, other animals and plants are exceptions.

On page 483 of: Keijzer, F (2016) Matching concepts and phenomena: a review of 'Biological Autonomy'. *Adaptive Behavior*, 24(6): 479-486.