Metaphors and operative definitions. The case of adaptive radiation

Alfonso Arroyo-Santos*[1,2] and Mark Olson[3]

[1]Center for Geoprospective Information (CIG) – Berlin 29B, Coyoacán. 04100 Mexico City, Mexico, Mexico

[2]Facultad de Filosofía y Letras, UNAM (FFyL-UNAM) – Facultad de Filosofía y Letras. Circuito Interior. Ciudad Universitaria, s/n. 04510. México City, Mexico

[3]Instituto de Biología, UNAM (IB-UNAM) – Instituto de Biología, U.N.A.M. Circuito exterior s/n, Ciudad Universitaria, 04510 Mexico City, Mexico

Abstract

We introduce a metaphor account in which metaphors become scientific objects by grouping in one inclusive variable many different phenomena. In this grouping capacity, metaphors serve as umbrella variables for relating different phenomena. We argue that this grouping capacity is the result of the construction of numerous operative definitions inspired by the metaphor. We develop the case of adaptive radiation and discuss how, despite its popularity in evolutionary biology, adaptive radiation is not a natural phenomenon but is instead an umbrella variable. Despite not being a natural phenomenon, adaptive radiation has driven decades of productive scientific investigation; our account of metaphors as umbrella variables helps explain how concepts can be metaphoric but nevertheless have central roles in science. Our framework is both a contribution to the study of metaphors and to the new interest on operationalism. In our account, operative definitions have been shown to drive volumes of crucial scientific research but also to create artificial concepts concretized via numerous conceptions. Our work illustrates how the operative definition framework not only accounts for the dynamic processes by which objects of research are conceptualized and investigated but can also help us evaluate the nature of problematic concepts

*Speaker