Niche Construction and the Insides and Outsides of the Modern Synthesis

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Abstract

Does niche construction challenge or extend the Modern Synthesis? The major assumption of the Modern Synthesis is that the internal mechanisms that govern mutation are random with respect to the external factors that govern environmental change (Lewontin 1983, 1985, 2000, 2001). Inspired by Richard Lewontin, scientists (Odling-Smee, Laland, Feldman, Day, O'Brien, etc.) and philosophers (Godfrey-Smith, Sterelny, etc.) argue that niche construction constitutes a significant challenge because it undermines this internalist/externalist presupposition. However, these scholars adopt a causal reading of niche construction that merely denies that the two mechanisms are causally autonomous. I argue that it does not follow that the two mechanisms are thus not random with respect to each other. Therefore, the current development of niche construction theories do not challenge but merely extend the Modern Synthesis. In this paper, I will show that Lewontin's account is fundamentally different from these later developments and, based on his views, I develop a model of niche construction that genuinely challenges the Modern Synthesis. Niche construction demonstrates that the selective environment of a population constitutively depends on the variation between each member's ability to interpret and alter the environment. If so, changes in the external selective environment are not random with respect to changes in the variation between individuals, rejecting the Modern Synthesis presupposition. As the impact of niche construction relies on the way individuals passively interpret and/or actively alter the environment, this implies that the special features of living systems are essential to evolutionary theories in biology.

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