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Title:	Rethinking inheritance, yet again: inheritomes, contextomes and dynamic phenotypes
Authors:	Prasad, N.G. (/jspui/browse?type=author&value=Prasad%2C+N.G.)
Keywords:	cultural evolution epigenetics extended evolutionary synthesis nongenetic inheritance
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Citation:	Journal of Genetics, 94(3)
Abstract:	<p>In recent years, there have been many calls for an extended evolutionary synthesis, based in part upon growing evidence for nongenetic mechanisms of inheritance, i.e., similarities in phenotype between parents and offspring that are not due to shared genes. While there has been an impressive marshalling of evidence for diverse forms of nongenetic inheritance (epigenetic, ecological, behavioural and symbolic), there have been relatively few studies trying to integrate the different forms of inheritance into a common conceptual structure, a development that would be important to formalize elements of the extended evolutionary synthesis. Here, we propose a framework for an extended view of inheritance and introduce some conceptual distinctions that we believe, are important to this issue. In this framework, the phenotype is conceived of as a dynamic entity, its state, at any point in time resulting from intertwined effects of previous phenotypic state, and of hereditary materials (DNA and otherwise) and environment. We contrast our framework with the standard gene-based view of inheritance, and also discuss our framework in the specific context of recent attempts to accommodate nongenetic inheritance within the framework of classical quantitative genetics and the Price equation. In particular, we believe that the extended view of inheritance and effects on the phenotype developed here is particularly well-suited to individual-based simulation studies of evolutionary dynamics. The results of such simulations, in turn, could be useful for assessing, how well extended models based on quantitative genetics or the Price equation perform at capturing complex evolutionary dynamics.</p>
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