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Stephen J. Gould's Legacy: Nature, History, Society

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Gould and adaptation: San Marco 33 years later

Abstract

Stephen J. Gould's concern for the wide variety of explanations for evolutionary change was one of his chief intellectual contributions. His many essays in *Natural History* magazine illustrating historical, correlational, by product, and phyletic evolutionary explanations, which he contrasted with adaptationist explanations, informed the public and evolutionists of the importance of nonadaptive approaches. Gould's arguments regarding the risks of adaptationist thinking were summarized in one of his most famous papers, "The Spandrels of San Marco", which he co-authored with Richard C. Lewontin, named in honor of Venice's own most gloried basilica. In this talk, I take a more formal approach to discussing his analysis of evolutionary explanations, now 33 years later.

My analysis rests on the logic of research questions, and contrasts what I have borrowed from recent philosophers, and call a "methodological adaptationist" approach, to the "evolutionary factors" approach. In the former, the key research question is: "What is the function of this trait?" while in the latter, the research question is: "what evolutionary factors account for the form and distribution of this trait?" I use my case study on the evolution of the female orgasm, which Gould defended in his column, and was one of his favorite examples, to illustrate how the methodological adaptationist approach can lead scientists astray. (Reports of the demise of the byproduct account, based on recent poorly-designed twin studies, are greatly exaggerated). Biases induced by methodological adaptationism have led biologists to fail to see the byproduct explanation as a distinct positive causal hypothesis, and as one that can have evidence in its favor. They therefore fail to compare the byproduct hypothesis against an adaptive one with regard to the evidence. Perhaps, then, it is past time to take Gould's advice, and reevaluate whether methodological adaptationism is truly as benign as it is commonly assumed to be.