

What's it like? The science of scientific analogies: a review of Surfaces and Essences: Analogy as the Fuel and Fire of Thinking by Douglas Hofstadter and Emmanuel.

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Title: What's it like? The science of scientific analogies: a review of Surfaces and Essences: Analogy as the Fuel and Fire of Thinking by Douglas Hofstadter and Emmanuel Sander

Author(s): Chris Edwards .

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Basic Books, 2013. 592 pps. \$35.00 ISBN-13: 978-0465018475 To FULLY UNDERSTAND THE SIGNIFICANCE of the argument made by Douglas Hofstadter and Emmanuel Sander in their new book Surfaces and Essences: Analogy as the Fuel and Fire of Thinking, one must first be familiar with the fence (not a wall) separating mathematics and science from the humanities. Physicists, for example, are trained to see mathematics as the only "real" way of understanding scientific phenomena. Many great physicists explain their concepts to lay audiences using metaphors and analogies, but often regard this process as sharing Platonic shadows with those who could not comprehend the ideal. As a

brief aside into the history of analogical thinking in philosophy will show, a good many serious thinkers have been widening the gaps in this fence for a while now. However, not only do Hofstadter and Sander want to tear the fence down--they seek to have the humanities annex mathematics entirely. Central to their argument is that even Einstein's insights came to him primarily in the form of analogy. While the authors answer no significant philosophical or theoretical questions, their argument does open new pathways for approaching these questions. (1) As is often the case in philosophy, the analogical approach has intellectual ancestors. Perhaps the first statement about the concept can be attributed to the Enlightenment philosopher Joshua Reynolds, who in 1776 wrote: The counterintuitive idea here is that if a thinker wants to advance in an academic field, then she should study widely outside that field in search of analogies that can then be superimposed on problems from the original field. Here Reynolds is identifying the centrality of analogical thinking for the sciences. Although Ludwig Wittgenstein's famously impenetrable 1921 *Tractatus Logico-Philosophicus* continues to spark controversy--largely because of its vagueness--modern forays into epistemology rescue the core of Wittgenstein's philosophy. He wrote, for example: (3) 2.063 The total reality is the world. 2.1 We make to ourselves pictures of facts. 2.11 The picture presents the facts in logical space, the existence and nonexistence of atomic facts. 2.12 The picture is a model of reality. 2.13 To the objects correspond in the picture the elements of the picture. 2.131 The elements of the picture stand, in the picture, for the objects. 2.14 The picture is a fact. 2.15 That the elements of the picture are combined with one another in a definite way, represents that the things are so combined with one another. This connexion of the elements of the picture is called its structure, and the possibility of this structure is called the form of representation of the picture. 2.151 The form of representation is the possibility that the things are combined with one another as are the elements of the picture. 2.1211 The picture is linked with reality; it reaches up to it. 2.1512 It is like a scale applied to reality. Here Wittgenstein presages Leonard Mlodinow and Stephen Hawking's theoretical position of Model-Dependent Realism (MDR) by noting that the mind makes models based upon "atomic..."

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Explaining the abundance of distant analogies in naturalistic observations of experts, the phenomenon of crowd adsorbs the extended liberalism.