NSF SBE Grand Challenge: Beyond Essentialist Thinking

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24 Sep 2010

Abstract:
The most revolutionary idea in the past 150 years may be Darwin’s having taken individual variation as data, rather than having averaged over it (Darwin, 1859; Dennett, 1995). This idea has been slow to be incorporated into behavioral studies, where individual differences are still typically taken as uninteresting noise. The issue is important from two sides: The subject matter is made of variation, and our theories must move toward describing categories as comprised of those variations rather than imposing categories on them. A grand challenge, therefore, is to incorporate this important yet unaccustomed approach into research throughout the social, behavioral and economic sciences, both in the object of study and in the fundamentals of our scientific theories.

For centuries, the dominant mode of thought in science was essentialist. The properties of natural kinds (species, chemical elements, galaxies) were thought to be distinct and immutable, with variation within categories being an obstacle to understanding the essences. However, the natural world does not conform to this thinking, and this led to a great many impasses in understanding phenomena ranging from “liquid phase” (comprising immiscible liquids as well as uniform liquids) to “species” (with pervasive hybridization, especially in the lower organisms) to “society” (with social boundaries seeming to be clear-cut to insiders but not necessarily to scientists). In the social and economic sciences, these issues are fundamental. How do categories get formed by individuals when only the scattered examples of daily life are encountered? Are these categories established because they are biologically favored whether or not they agree with reality? Is it possible to overcome our (possibly inborn) inclination to expect categories whether they exist or not? Is it desirable to do so? Research has shown both universal and particular influences on cognition (Medin & Atran, 2004). Our challenge is to devise theories that allow enough influence of non-essentialist reality on our essentialist inclinations in order to understand cognition, and to have non-essentialist categories in our theories themselves.

Our ability to fathom human cognition depends on answers to these questions. Our ability to apply non-essentialist thinking in the sciences will be illuminated by the answers. It may be that there are, as some have postulated, unanswerable questions. Or it may be that we need to devise new tools to help us achieve a new way of thinking. The hold that essentialist thinking has on our thought processes is clearly strong. Darwin, for one, showed that it is possible to go beyond it. Will new technologies assist in this effort? Can we devise new machines that will promote non-essentialist thinking? Will those machines themselves blur the category line between the human and the machine worlds? Every field of the social and behavioral sciences must ultimately grapple with these issues. There is enough progress to build upon that addressing this challenge is both possible and urgent.


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