

# Confronting Variation in the Social and Behavioral Sciences

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I pose problems for the views that human nature should be the object of study in the social and behavioral sciences and that a concept of human nature is needed to guide research in these sciences. I proceed by outlining three research programs in the social sciences, each of which confronts aspects of human variation. Next, I present Elizabeth Cashdan and Grant Ramsey's related characterizations of human nature. I go on to argue that the research methodologies they each draw on are more productive resources for social scientists than their competing characterizations of human nature.

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**1. Introduction.** Philosophers and social scientists defend various accounts of human nature that are labeled nonessentialist. Such accounts are claimed both to characterize the object of inquiry for the social and behavioral sciences and to constrain and guide research (Machery 2008; Griffiths 2011; Samuels 2012; Cashdan 2013; Ramsey 2013). The conceptual debate over whether there are defensible nonessentialist accounts of human nature is ongoing (see, e.g., Dupre 1998; Machery 2008, 2012, forthcoming; Lewens 2012, 2015; Samuels 2012; Kronfeldner, Roughley, and Toepfer 2014). Here I present some problems for the view that human nature should be the object of study in the social and behavioral sciences, as well as the idea that a concept of human nature is needed to guide or constrain the social and behavioral sciences. I conclude that pursuing a concept of human nature is not a productive

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approach to confronting human variation. Further, I conclude that some proposed characterizations of human nature are better understood as competing evolutionary approaches to confronting human variation. I begin by outlining three research programs in the social sciences, each of which confronts aspects of human variation via what I call a variationist approach. This approach does not rely on an account of human nature.

**2. Variationists in the Social Sciences.** Variationists in the social and behavioral sciences accept that variation is pervasive and confront it head on.<sup>1</sup> They document variation and seek to explain its sources. Variationists come from many fields. Variationist work is more like work in population genetics or evolutionary ecology than it is like much work in anthropology or cognitive psychology.<sup>2</sup> In contrast to the variationist approach, much work in cognitive psychology is carried out under the assumption that there are shared, basic psychological capacities that underlie our behavior and that characterizing these basic capacities serves an explanatory function. Also, much work in anthropology is carried out under the assumption that there are human universals and that the main aim of anthropology is to delineate these universals. Here I outline the work of three variationists in the social sciences.

*2.1. Stanovich on Reasoning.* Much work in the psychology of reasoning is taken to support the conclusion that we are irrational or at least deficient in our reasoning capacities (see, e.g., Cohen 1981; Stich 1990). Well-known experiments, often used illustratively in philosophy classes, are taken to reveal that we cannot reason deductively very well or that we are susceptible to fallacies such as ignoring base rates. There are a number of hypotheses about what mechanisms underlie our reasoning that would produce such results in experimental situations. One view is that we have an innate deductive reasoning mechanism and, like our innate language capacity, the mechanism gives us a competence, but our performance falls down in empirical situations (see, e.g., Macnamara 1986). Stanovich takes a different approach to the results of the experimentation on reasoning than most of his colleagues in cognitive psychology: he emphasizes data about individual differences, saying that this is “a type of empirical data that has been underutilized . . . in the debate about human rationality” (1999, 2).

1. James Tabery (2014) labels some social science researchers “variation-partitioners” in contrast with “mechanism-elucidators.” Variation-partitioners consider the issue of how much variation can be attributed to various candidate causes of variation. The group identified here as “variationist” includes both Tabery’s variation-partitioners and mechanism-elucidators, along with others in the social sciences who confront and seek to understand human variation.

2. In this regard, the variationist approach is closely aligned with populationist thinking, which Sober (1980) distinguishes from typological thinking.

He says that parties to the rationality discussion in psychology overemphasize modal responses and ignore patterns of difference in responses, including the occurrence of the correct response in all experiments. Stanovich (1999) presents the study of human reasoning as the study of variation and individual differences in reasoning.

Various forms of the Wason selection task (Wason 1966; Wason and Johnson-Laird 1972) are used in experiments on deductive reasoning (see fig. 1). In more abstract versions of the task, such as the card removal task, experimenters find that very low percentages of subjects provide the “correct” answer. The “correct” answer in the deductive reasoning literature is the answer that would be obtained by using only valid deductive inference. Stanovich (1999) averages over findings from a number of abstract Wason-style selection tasks and finds that around 10% of subjects provide the correct answer. On selection tasks with more contextual cues, subjects perform much better, but a significant percentage of subjects still do not provide the “correct” answer. Stanovich performs various comparative studies in an attempt to find patterns in the variation. For example, he compares subjects’ performance on SAT tests with their performance on various reasoning tests.

2.2. *Henrich and WEIRD People.* Many in the cognitive sciences proceed on the assumption that there are basic psychological capacities, whose

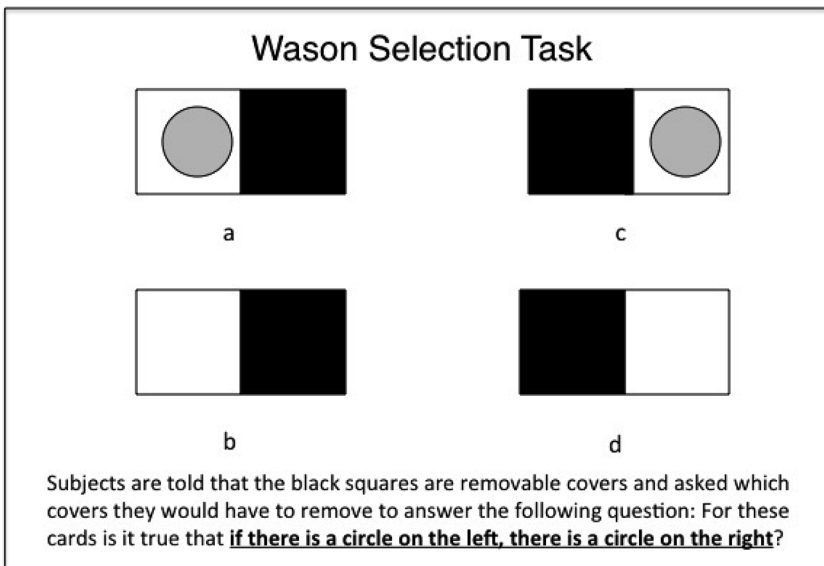


Figure 1.

existence is demonstrated by experimental work. Henrich, Heine, and Norenzayan (2010) argue that there is far less support for basic psychological capacities if experiments are performed on subjects from countries other than Western, educated, industrialized, rich, and democratic (WEIRD) countries. The bulk of psychological experimentation is performed on subjects from WEIRD countries, and Henrich et al. question why these subjects should be presented as “representative of the species” as opposed to subjects from any other population.<sup>3</sup> In a recent study Henrich et al. (2010) collected results from experiments performed on subjects from non-WEIRD countries and compared them to the results from the same experiments on subjects from WEIRD countries. What they reveal is a great deal of variation in subject responses. They conclude that “members of WEIRD societies, including young children, are among the least representative populations one could find for generalizing about humans” (Henrich et al. 2010, 61). They also warn that “we need to be less cavalier in addressing questions of *human* nature on the basis of data drawn from this particularly thin, and rather unusual, slice of humanity” (61).

Henrich et al. (2010, 64–65) present one study that indicates cross-cultural variation in our responsiveness to the Müller-Lyer illusion. The Müller-Lyer illusion is taken to be extremely robust and thought to reveal underlying constancies in our visual processing. These assumptions contribute to the illusion’s important role in Fodor’s (1983) argument for the modularity of the visual system. Henrich et al. present the results from Segal, Campbell, and Herskovits’s (1966) cross-cultural study on visual perception. Segal et al. tested responses to the Müller-Lyer illusion along with several other well-known perceptual illusions, such as the Sander parallelogram, on subjects from a wide range of cultures (Henrich 2008). They found that the strongest effect of the Müller-Lyer illusion is on what Henrich et al. now call WEIRD people (see also Henrich 2008).<sup>4</sup> Henrich et al. present the results of many other studies that show differences between WEIRD and non-WEIRD subjects’ responses to psychological tests. For example, there is evidence of variation in spatial cognition across cultures (Henrich et al. 2010, 68) and variation in the way in which people from different cultures play ultimatum games (65).

3. Rebecca Dresser (1992) poses and discusses a related question: how did white males become the prototype research subject in the medical sciences?

4. There were a few follow-up studies (Davis and Carlson 1970; Jahoda 1966) conducted at around the same time as the Segal et al. (1966) study that produced partial replication of the Segal et al. results and challenged Segal et al.’s explanatory hypotheses for the relevant variation. These studies used subjects from a non-WEIRD population and subjects from a WEIRD population but did not repeat the Segal et al. study in the same range of populations. (These studies were brought to my attention by Joe Henrich and Edouard Machery, personal communication.)

2.3. *Cashdan and Variation in Women's Waist-to-Hip Ratios.* A well-known evolutionary psychology hypothesis about human mate selection is that men are attracted to women with a waist-to-hip ratio (WHR) close to 0.7 (Singh 1993; Singh and Luis 1995). Singh (1993) and Singh and Luis (1995) proposed that 0.7 is the optimal WHR as it is the WHR most prevalent in young women of child-bearing age. Their claim is not just that men are most attracted to women with optimal WHRs, but that they have an evolved module for detecting such optimal WHRs and this module is part of the human male mate-selection suite of evolved modules. Evolutionary anthropologist Elizabeth Cashdan (2008) focuses on different aspects of WHRs. She documents a huge amount of variation in WHR. This variation occurs across different dimensions; there is variation among young women, variation among older women, and variation between different populations. There is also variation in women's lifetimes; in most cases young to old implies low to high WHR. Second, Cashdan (2008) finds an important variable, or set of variables, that might contribute to explaining some of this variation in WHRs: the ratios between women's hormone levels, for example, the ratio of androgen levels to other hormone levels. Finally, Cashdan documents variation in what WHRs men find attractive (also shown in Yu and Shepard 1998). Cashdan (2008) discusses the very interesting result of preferred WHRs increasing during hard times or times of low resources in both Western and more traditional societies. This indicates that men are tracking something other than just low WHR and implies that they do not have an inflexible module for picking out low WHR. In other words, there is variation in what men from different cultures find attractive with respect to WHR, and there is variation within subjects in what they find attractive with respect to WHR depending on available resources. Cashdan concludes that likely the least interesting claim in the WHR literature is that men are universally attracted to women with lower WHRs.

What all these variationists have in common is that they attempt to discover patterns in the variation of human traits and propose hypotheses about what could explain these patterns of variation. In this way their work is closer to work in population genetics than to human nature-based research in the social and behavioral sciences.

**3. Variation-Sensitive Accounts of Human Nature.** I now turn to two accounts of human nature that are developed to confront human variation: Elizabeth Cashdan's norm of reaction account and Grant Ramsey's life-history trait cluster account. First, I will briefly outline Edouard Machery's (2008, 2012, forthcoming) and Richard Samuel's (2012) accounts of human nature, as it is useful to contrast them with accounts that emphasize variation.

*3.1. Machery's and Samuels's Nonessentialist Accounts of Human Nature.* Machery (2008) distinguishes two independent notions of human nature: the essentialist notion, which he rejects along with Hull and others, and the nomological notion, his new proposal. The nomological notion says that “human nature is the set of properties that humans tend to possess as a result of the evolution of their species” (Machery 2008, 323). On this account bipedalism is part of human nature but supporting Liverpool Football Club is not. Machery refers to this part of his account as the evolutionary proposal but adds that the nomological notion has nothing to do with defining species membership. His nomological account of human nature is not essentialist and is not intended as a proposal for delineating our species. He also maintains that being common among humans is a necessary condition for being part of human nature. He refers to this as the universality proposal of the nomological account. His idea is that traits that arise purely as a result of local cultural circumstances are very unlikely to be common among humans. So his account contains two central proposals: the evolutionary proposal and the universality proposal.

Samuels offers a related view to Machery's, which he dubs the “causal essentialist” account of human nature. He says that “human nature is a suite of mechanisms that underlie the manifestation of species-typical cognitive and behavioural regularities” (Samuels 2012, 2). For Samuels human nature picks out a “set of phenomena that will form a focus of empirical enquiry for some region of science” (4). Samuels claims that his characterization of human nature is “a conception on which human nature can play its customary causal-explanatory function” (18) and hence should be adopted over Machery's nomological account.

*3.2. Cashdan's Norm of Reaction Account of Human Nature.* Cashdan, like many evolutionary thinkers, emphasizes variation (see Cashdan 2008, discussed above). Cashdan's approach to anthropology is grounded in behavioral ecology. Behavioral ecologists strive to understand and explain behavior without resorting to appeals to underlying psychological mechanisms or underlying genetic systems. Behavioral ecologists focus on relations between organisms' behaviors and aspects of their environments. Anthropologists relying on this approach have presented and defended interesting hypotheses about human parenting, food acquisition and distribution, and variation in age-specific traits. In contrast, competing hypotheses from evolutionary psychology about the same phenomena are to be couched in terms of shared, evolved, internal psychological mechanisms that are causally responsible for the relevant behavior. This approach is rejected by behavioral ecologists, who emphasize variation over commonality.

Cashdan rejects the assumption, held by many in her field of anthropology, that “human nature is found solely in its universals—in the traits found

in every society” (2013, 71). Those who hold this assumption (e.g., Brown 1991) go on to say that traits found in some cultures but not others are “culturally constructed and without an evolutionary foundation” (Cashdan 2013, 71).<sup>5</sup> In contrast, Cashdan grounds her approach on the assumption that we evolved to be flexible. She goes on to propose that we ask how natural selection shaped that flexibility. She says that “we cannot understand our universal human nature without understanding the variability in its expression” (71). Cashdan does aim to reveal our nature but argues that our nature is neither a set of underlying causal mechanisms (see Samuels 2012) nor the collection of traits that we have as a result of evolution (see Machery 2008). Rather, our nature is to be found in patterns of variation. Cashdan proposes to reveal these patterns in variation by invoking norms of reaction, which are “the pattern of expression of a genotype across a range of environments” (2013, 71). Norms of reaction are standardly presented by plotting the relation between a trait value and an environmental factor for specific genotypes (see fig. 2). According to Cashdan, all the reaction norms for all our genes in all environments together constitute our nature.

*3.3. Ramsey’s Life-History Trait Cluster Account of Human Nature.* Ramsey (2013) sets up his account of human nature by responding to Machery’s nomological account of human nature. He asks, “why should we presume that it is the *sameness* across individuals that is of interest to scientists, and not their variation?” (Ramsey 2013, 986). He goes on to conclude his first argument against Machery by saying, “it is a mistake to hold that only traits universal (or nearly universal) in the human species are of scientific interest and should be included within human nature” (986). Here he echoes Cashdan’s criticism of her colleagues’ overemphasis on universals in anthropology. For Ramsey, like Cashdan, our focus in the social sciences should be accounting for variation. He proposes to do this guided by a nonessentialist account of human nature that he believes improves on Machery’s nomological account.

For Ramsey “individual nature is defined as the pattern of trait clusters within the individual’s set of possible life histories,” and “human nature is defined as the pattern of trait clusters within the totality of extant human possible life histories” (2013, 987). He calls this the life-history trait cluster (LTC) account of human nature. Different possible life histories for organisms result from the range of possible developmental responses organisms make to differing environmental circumstances. He also proposes that “characterizations of features of human nature are merely descriptions of patterns

5. This distinction is clearly maintained in Machery’s (2008) account of human nature (see also Machery, forthcoming).

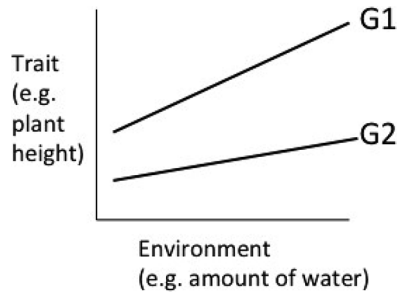


Figure 2.

within the collective set of human life histories” (988). According to Ramsey, the LTC framework shows that “there are patterns within and across human heterogeneity” (992).

There are others who defend accounts of human nature that encompass variation. For example, Clark Barrett (2015) defends a related notion of human nature to Cashdan’s and Ramsey’s, proposing that human nature is the sum total of variation in our lineage. Also, Paul Griffiths (2011) defends a notion of human nature derived from developmental systems theory and aimed at accounting for the whole range of human diversity. The details of Cashdan’s and Ramsey’s accounts given here will suffice to support the arguments in the next section that apply to all defenders of biological accounts of human nature.

**4. Accounts of Human Nature and Confronting Variation.** Characterizations of human nature are proposed both to set the object of inquiry in the social sciences and to guide that inquiry. Alternately, characterizations of human nature can be seen as serving various functions, the most relevant here being a descriptive or an explanatory function.<sup>6</sup> Cashdan’s, Ramsey’s, and related characterizations of human nature all have the same problem: each account amounts to the assertion that an enormous collection of traits constitute human nature. This type of account is anticipated by various critics of human nature who argue that such accounts are not theoretically interesting (see, e.g., Hull 1986; Futuyma 1998; Buller 2005). I apply these criticisms to Cashdan and Ramsey below and also argue that these criticisms can be recast to make the point that the relevant accounts of human nature fail to perform an explanatory function.

6. See Samuels (2012) and Machery (forthcoming) for more on the various functions characterizations of human nature should serve.



Cashdan and Ramsey propose that all of the traits that can arise as a result of our lifelong interaction with our environments constitute human nature. Their approaches are structurally very close to David Hull's disjunctive notion of universality, which he invokes as an account of human nature that might be proposed to confront variation. Hull uses the example of blood type: "blood type can be made universal among human beings only by defining it in terms of having some blood type or other—a disjunctive character" (1986, 5). Hull calls this move "universality on the cheap." The idea here is that simply expanding the list of traits in our nature disjunctively does not result in an explanatorily useful notion of human nature. While it is certainly true that we can discover a wide variety of human traits, and that a norm of reaction approach or life-history theory helps us understand just how wide that variety of traits may be, drawing a line around all of these possible traits does not result in a theoretically useful characterization of human nature. An explanatorily useful notion of human nature should be expected to shed light on the variation in human reasoning, WHRs, or human cognitive function outlined in section 2. What Cashdan's and Ramsey's accounts can offer is the observation that all this variation is part of human nature, and this alone does not provide any explanatory purchase on all of this variation.

Most of Cashdan's and Ramsey's critical points against rival human nature accounts such as Machery's and Samuels's are on target. For example, claims that we should not conceptualize human nature in terms of universality, that we should emphasize variation over similarity, and that we should not limit our accounts by including only internal properties of organisms all have merit. Their criticisms of alternate accounts of human nature are undermined by their presentation of their own approaches as alternate characterizations of human nature. As we have seen, their accounts have drawbacks. Further, their accounts of human nature do not provide guides for research in social and behavioral sciences. Rather, their positive accounts are all best understood as alternate, important, and productive approaches to studying human variation derived from different areas of evolutionary thought. They present and defend alternate clusters of evolutionary methods and explanatory assumptions that can be productively applied by social and behavioral scientists confronting human variation. Life-history theory or a norm of reaction approach could shed important light on variation in human reasoning capacities, WHRs, or depth perception. In contrast, accounts of human nature in terms of variation are not likely to increase our understanding of these phenomena. The valuable explanatory potential in Cashdan's and Ramsey's accounts comes not from their accounts of human nature but from the alternate evolutionary resources they draw on in constructing their accounts.

There is a very tight relationship between each characterization of human nature outlined above and distinct clusters of methods and explanatory assumptions. As we have seen, Cashdan and Ramsey both characterize human

nature in terms of different approaches in evolutionary biology. Machery and Samuels also explicitly align their characterizations of human nature with alternate explanatory approaches in the social sciences. Machery's nomological notion is designed to be consistent with the research methodology of evolutionary psychology, and to some extent sociobiology (2008, 328), and Samuel's notion is designed to be consistent with the research methodology of cognitive psychology and cognitive neuroscience (2012, 27). Perhaps Samuels does not have variation in his sights because cognitive psychologists' primary focus is not on variation. Stanovich's and Henrich's work, discussed above, can be viewed as an attempt to change the focus of their cognitive science colleagues toward variation, but, this work notwithstanding, Samuels is right that the main focus in the cognitive sciences is on revealing shared underlying cognitive mechanisms. In contrast, Machery, like Cashdan and Ramsey, draws on an avowed evolutionary approach, and one central aim of evolutionary biology is the delineation of variation and the explanation of its causes (see Hull 1986, 5). The puzzle here, then, is why adopting an evolutionary approach points Machery toward commonality rather than variation.

Machery draws on an approach to evolutionary psychology articulated and defended by Leda Cosmides and John Tooby (see, e.g., Tooby and Cosmides 1990, 2005), among others. Cosmides and Tooby draw an illuminating contrast between evolutionary psychology and behavioral genetics (2005, 39). They argue that while behavioral geneticists focus on traits that vary, evolutionary psychologists focus on traits that are now universal and do not vary. These traits are the product of evolutionary processes that occurred during the Pleistocene era.<sup>7</sup> Machery does not have to adopt this approach to the letter to still claim that evolutionary biologists confront and account for both traits that vary and traits that vary very little (see Lewens 2015). This is true: evolutionary dynamics account for both the fixing of traits and the sustenance of variation. The problem here is that contrary to Cosmides and Tooby's assumption, human traits that vary sufficiently minimally and are widely enough distributed to be included in Machery's nomological human nature cluster are unlikely to lead to interesting and useful explanations of human traits of interest to social scientists. It is hard to establish that cognitive mechanisms are universal adaptations (see Buller 2005; Henrich et al. 2010), but we can point to highly invariant human traits such as bipedalism and the size of calcium ion channels. Unfortunately, such traits provide no basis for productive explanations in the social and behavioral sciences.

All the characterizations of human nature discussed above closely track different methodological approaches. Cashdan, Machery, and Ramsey all

7. Barrett (2015) promotes an approach to evolutionary psychology that does focus on variation and criticizes his colleagues for uncritically assuming that universal traits should be the focus of evolutionary psychology.

propose a characterization of human nature that draws heavily on their favored evolutionary approach. What these approaches all have in common is to offer alternate evolutionary approaches to social scientists, but only the approaches offered by Cashdan and Ramsey will help in the quest to account for and explain human variation.

**5. Conclusion.** Adopting a variationist approach is the more productive strategy in the social and behavioral sciences than the search for human universals or traits in common that constitute our nature. Cashdan and Ramsey agree with this outlook as they all agree that the explanatory target of each of their approaches should be human variation. Cashdan and Ramsey propose fruitful ways of explaining human behavior, but I argued that their most fruitful contributions are not their alternate characterizations of human nature. Rather, they each provide alternate, evolutionarily influenced frameworks for understanding and explaining human variation, both of which are valuable resources for social scientists confronting human variation. In contrast, Machery backs an evolutionary approach that does not contribute to understanding and explaining human variation.

There appear to be almost as many notions of human nature as there are clusters of methods and explanatory assumptions in the social and behavioral sciences, and I take this to undermine the idea that there should be one notion of human nature rather than support it. Productive social and behavioral science is a broad-based interdisciplinary project. Participants in this project would have plenty of important and productive work left to do if they abandoned the quest for an account of human nature and focused on human variation and the attempt to account for why it arises and is sustained throughout human populations.

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