

Beyond Essentialist Fallacies: Fine-Tuning Ideology Critique of Appeals to Biological Sex Differences¹

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Abstract

A recurring claim made by evolutionary psychologists is that their opponents neglect biological explanations as such for ideological reasons. I argue in this paper that this is a self-immunizing strategy that avoids serious engagement with existing critique by exploiting the long history of essentialist fallacies and anti-essentialist debunking arguments. To argue for this claim, I reconstruct the general form of the essentialist fallacy as well as the history of anti-essentialist debunking arguments and suggest that they play a central role in the persistence of the ideological dimension of the nature-nurture debate. Discussing recent work from evolutionary psychology on how hormones influence female behavior, I show how self-immunizing strategies are used to avoid engagement with existing critique, while reproducing sexist stereotypes at the same time.

Introduction

Evolutionary psychology² has been criticized by feminist philosophers of science for both empirical and methodological inadequacy and for reproducing sexist stereotypes for more than two decades (e.g. Fausto-Sterling 1992; Dupré 2001; Travis 2003; Fehr 2011; 2012; Weaver 2019). Evolutionary psychologists, for their part, have hardly offered convincing responses to these critiques, but keep publishing on the assumed evolutionary roots of sex-specific behavior and cognition (see e.g. Haselton et al. 2005; Buss 2016; Buss and Schmitt 2019). Instead of engaging with the existing critiques, publications frequently start with a remark assuming that possible critics have ideological motives and are in denial about biological explanations as such. Such neglect of the existing critiques of data, methods, and ethical implications is particularly vexing, because works by evolutionary psychologists are not only discussed within the academic community, but tend to reach a broad audience, in recent years particularly because of their prominence within the so-called “intellectual dark web.”

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² Evolutionary psychology can be narrowly thought of as an approach to the study of the biology of human nature that seeks to discover and understand the design of the human mind, using insights from evolutionary biology. In this view, the mind is a set of information-processing machines that were designed by natural selection to solve adaptive problems faced by our hunter-gatherer ancestors in the Pleistocene (Barkow, Cosmides, and Tooby 1992). I use the phrase ‘evolutionary psychology’ to refer to this narrow definition (Buller 2005). I focus on research on sex differences, which has been presented to academic as well as popular audiences.

In this paper I argue that the current prominence of largely outdated views on sex differences in human behavior and cognition in popular science books and throughout the intellectual dark web needs to be analyzed both by feminist philosophy of science as well as by ideology critique. Ideology critique is needed to analyze the self-immunizing strategies that are used to avoid serious engagement with existing critique, but also the ways in which the repetition of essentialist fallacies keeps justifying oppressive structures.

In the first part of the paper, I present a prime example of a recent work from evolutionary psychology that focuses on sex differences in behavior and cognition due to the female hormone cycle. This work is presented to a popular audience as a work belonging to Darwinian feminism, while at the same time reproducing sexist stereotypes, and ignoring existing feminist critique (Haselton 2018). I suggest that in order to deal with the popularity of such work that is poorly supported by evidence and methodologically outdated, we first need to understand the general structure of essentialist fallacies, as well as the history of anti-essentialist debunking arguments, because they play an important role in the persistence of the ideological dimension of the nature-nurture debate. This is what I do in the second and third parts of the paper. In the second part of the paper, I argue that essentialist fallacies exploit folk essentialist assumptions about modal and normative implications of the claim that a feature is in some sense natural, and that this is the backbone of the persistence of the ideological dimension of the nature-nurture debate. In the third part of the paper, I argue that anti-essentialist debunking arguments trace reifications that are an ideologically effective part of fallacious essentialist assumptions. I suggest that it requires both philosophy of science and ideology critique to debunk essentialist fallacies and uncover reifications.

In the fourth part of the paper, I discuss the question of whether there is a grain of truth in the worry of evolutionary psychologists that people reject biological explanations as such. I argue that in recent feminist philosophy of science, and even large parts of academic feminist discussions on gender and sex in general, this tendency is largely absent from the literature. Evolutionary psychologists are attacking a straw figure. In the final part of the paper, I come back to some of the central claims of Haselton's book. While the critique of her methodological approach is well known already, the way Haselton claims to embrace Darwinian feminism, attempts to immunize her work from critique, and reproduces sexist stereotypes is what deserves closer analysis.

1. A Canny Undead: The Popularity of Outdated Views about Sex Differences

Evolutionary psychology has been criticized by feminist philosophers of science for promoting, overgeneralizing, and essentializing claims about sex differences in human behavior and cognition (Fausto-Sterling 1992; Dupré 2001; Travis 2003; Fehr 2011; 2012; Weaver 2019). Critics agree that claims about sex-specific preferences and mating behavior appear to be poorly supported by evidence and tend to reproduce sexist stereotypes. Recent evidence shows that many of the basic assumptions of evolutionary psychologists are clearly outdated.³

The psychologist Martie Haselton, however, has recently published a popular book called *Hormonal* (2018), within which she applies the methods of evolutionary psychology to explain the “evolutionary rationale” that underlies hormonal influences on female behavior. At the same time Haselton calls herself a Darwinian feminist: while “hormonal” is still used as a derogatory attribute for women, she aims to reclaim the expression by revealing the “deep evolutionary intelligence” that she sees at work in the female hormone cycle. She suggests that female behavior is in many ways guided by the hormonal cycle and that a better scientific understanding of how hormones guide behavior will help women to make well-informed decisions. A central claim recurring throughout the book is that females have an increased tendency to go “mate shopping” on the fertile days of their menstrual cycle and that they favor sexual partners with certain phenotypical features for reproductive reasons on these days. The applied methodological framework and the straightforward claims about how hormones bring about sex-specific behavior invite the same kind of critique that has been raised by feminist philosophers of science against evolutionary psychology for more than two decades. Haselton, however, not only calls herself a feminist but is careful to address skeptical worries from the start

Some believe that any biological explanation for a woman’s behavior will keep her from achieving. The thinking is that women and men, if they have any hint of a biological foundation, will doom women to girlish stereotypes, confine them to a maternal role, and smash them up against the glass ceiling. The implication for researchers is that we should keep information about women’s hormones and their behavior on the down low. It’s best not to stir up these stereotypes. (Haselton 2018, 5-6)

It seems startling that Haselton addresses possible opponents as a unified group of people, whom she supposes to be in denial of biological explanations as such. Are there such people?

³ see e.g. recent empirical studies that contradict evolutionary psychologists assumptions about mate choice (Eastwick et al. 2006; Zentner and Mitura 2012), recent work highlighting the role of the environment as a source of transgenerational stability in sex-linked behavior (Fine, Dupré, and Joel 2017), the general demonstration that the view of sexual selection applied by evolutionary psychologists is outdated (Fine 2017), or the general demonstration that the applied view of sex-specific hormones is outdated (Fausto-Sterling 2020).

And more importantly: is “This is a biological explanation!” the first complaint that comes to mind when considering the idea that hormones “nudge” females to go “mate shopping” on certain days of their cycle? Would most people not, first of all, ask, “Really? I thought human behavior was more complex!” or “Really? What is your evidence?”

Things become even more startling when having a closer look at where and how Haselton’s book has received public attention. Haselton has discussed her book on various shows and podcasts. Among them a podcast issued by the period tracking app *Clue*⁴ but also shows associated with the intellectual dark web such as *Making Sense with Sam Harris*.⁵ The intellectual dark web is a loose association of public figures such as Jordan Peterson, Bret Weinstein, and Sam Harris (Weiss 2018). These public figures are known for highlighting their self-proclaimed opposition to mainstream opinion, repeatedly claiming that they have been excluded from public discourse for being free-thinking minds, and favoring the use of social media channels such as YouTube and podcasts over established academic venues.⁶ The intellectual dark web is said to be ideologically diverse,⁷ but it has a clear connection to radical libertarianism and the alt-right movement. Recent reports and evidence furthermore suggest that users systematically progress towards more extreme content. (Roose 2019; Lewis 2020; Ribeiro et al. 2020)

Several associates of the intellectual dark web have an academic background and see themselves as supporters of “real science” and free speech – often against the academic institutions for which they are or were working.⁸ An often repeated claim throughout the intellectual dark web is that feminism as an agenda aiming for political equality is fine, but that feminists tend to ignore certain scientific facts about sex and gender differences for ideological reasons. If one traces the references to “real science,” one finds exactly those works from

⁴ The podcast is called *Hormonal*, as well. It advertises the app as a feminist product “aiming to offer people with cycles scientific information about their bodies” (<https://helloclue.com/podcast/hormonal-podcast-clue/we-are-all-hormonal>).

⁵ https://www.youtube.com/watch?v=fcu_IEZYvME

⁶ See e.g. Sam Harris’s *Making Sense Podcast* or Bret Weinstein’s *DarkHorse Podcast*.

⁷ Some even say that it is one of its most remarkable features that it basically is “a coalition of strange bedfellows,” with not much in common apart from the complaint of being shut out from politically correct mainstream discourse (Blaine 2019; also *The Guardian* 2018).

⁸ Bret Weinstein and Heather Heying resigned from *Evergreen State College* after having opposed a “Day of absence,” in which white students were asked to leave campus for the day in 2017. Weinstein now runs a private homepage with a collection of talks, interviews, and podcasts on which he labels himself “Evolutionary Theorist // Professor in Exile” (<https://bretweinstein.net/>). Jordan Peterson is a professor of psychology at the University of Toronto. He became famous only after having spoken out against Canada’s Bill C-16 in 2016, which proposed amending the country’s human-rights act to outlaw discrimination based on gender identity and expression. Peterson made YouTube videos and went on news shows to advocate for his view (relying on an inaccurate interpretation of the legal implications of the bill) that the bill risked confining free speech by forcing people to use alternative gender pronouns (Weiss 2018).

evolutionary psychology that have been extensively criticized on empirical and ethical grounds by feminist philosophers of science. As Evelyn Fox Keller (2010) has lucidly pointed out, the most striking feature of the nature-nurture debate is that, although it has been declared dead so many times, it stubbornly refuses to die. It presents itself as a particularly canny undead, where authors claim to fight the ideological mainstream with real science, although the science they refer to has been shown to be biased, misguided, and outdated many times over. But the authors in question keep receiving a high amount of attention all over the intellectual dark web.

That being said, how does Haselton fit into the picture? I will argue that in embracing “Darwinian feminism”, while reproducing essentializing claims about sex-specific behavior, Haselton exemplifies the purported “ideological diversity” of the intellectual dark web, but, at the same time, shows what is problematic about it. Such “ideological diversity” increases the need to think about the appropriate tools for discussing the undead remains of the nature-nurture debate, for they tend to appear in seemingly novel ideological guises and attracted a great share of public attention.

Sharpening those tools requires a look back into the history of essentialist fallacies and anti-essentialist debunking arguments. I will look into these in the next two sections, before proceeding to ask whether there is a grain of truth in Haselton’s suggestion that feminists or political activists might be in denial about biological explanations as such. Ultimately, I will suggest that authors like Haselton exploit the history of essentialist fallacies and anti-essentialist debunking arguments not only to make overgeneralizing claims, but to self-immunize their works from critique.

2. Essentialism and the Essentialist Fallacy

As mentioned above, the so-called nature-nurture debate, i.e., the dispute over the degree to which a particular human cognitive or behavioral trait is biologically or socially determined, has been declared dead and buried many times in recent decades. And, indeed, most of the current empirical research on the mechanisms that realize cognitive and behavioral features analyze development, heredity, and evolution in a way that avoids dichotomies of nature versus nurture, genes versus environment, or biology versus culture.⁹ Part of the reason for the persistence of the debate is its political and ideological dimension.¹⁰ It has been the backbone

⁹ See e.g. Schaffner (2016) on behavioral genetics, Jablonka and Lamb (2005) and Griffiths (2017) on the role of epigenetics for development, and Stotz and Griffiths (2018) for a developmentalist approach.

¹⁰ See e.g. Fuss (1989) and Antony (2000) for by-now classic feminist engagements with human nature and essentialism, and Longino (2013), Kronfeldner (2018), and Hannon & Lewens (2018) for more recent critical engagements with human nature.

of many reactionary arguments for calling some social arrangement – be it slavery or male-dominated households – “natural” or “in accordance with human nature.”

Reactionary arguments that draw strong conclusions from the fact that human beings appear to have certain features by nature are familiar from various contexts. They range from Aristotle’s infamous claim that there are natural slaves who lack a deliberative faculty and thus need a master to direct them (*Politics* I.13.1260a12), to arguments raised by scientists in the 19th century claiming that women who aim for a job “struggle against nature” and that giving women the right to vote was, evolutionarily speaking, retrogressive.¹¹ The simplest form of this line of reasoning that runs through many of these arguments is the following:

From the premise

P1: Subject S possesses feature F by nature.

it is concluded that

C1: Feature F cannot be changed.

C2: Feature F should not be changed.

C3: The possession of feature F is intrinsically beneficial to S.¹²

Some arguments only embrace C1, C2, or C3, and some embrace all three. Inferences from P1 to C2 or C3 are potential cases of a naturalistic fallacy, to the extent that they infer normative conclusions from a non-normative premise. Inferences from P1 to C1 are assuming the term ‘nature’ to entail strong modal consequences, e.g., regarding the necessity of certain law-like relations that realize a feature. A slightly subtler version of the argument does not infer anything

¹¹ Debates about supposed natural inequalities between sexes and races are part and parcel of the development of social Darwinism in the second half of the nineteenth century. Walter Bagehot for example speaks about the women’s-rights movement as an attempt to rear “a race of monstrosities” by a process of “unnatural selection” (Bagehot 1879; for further examples see Fausto-Sterling 1992; Chapter 1; for a discussion of sexist bias in Darwin’s work see Richards 1983; 2017; for an overview of Darwinian feminist voices already prevalent in the 19th century, see Brilmeyer 2017).

¹² ‘Possession of a feature by nature’ may also be replaced by ‘lack of a feature by nature’. A slave, according to Aristotle, lacks certain cognitive abilities that they would need to be a good master. That implies that nothing can or should be changed about the lack of the feature: trying to teach a slave to be a good master would be a waste of time. It also would not be beneficial, since it would push the slave to live against their own nature.

from P1 alone but adds a premise that unpacks the essentialist understanding of nature in the modal or normative direction:

P2: A feature possessed by nature cannot be changed.

P3: A feature possessed by nature should not be changed.

Louise Antony (2000) has labeled P2 the deterministic and P3 the paternalistic premise. Each spells out a different part of the classical understanding of an essence: first, a feature that is part of the essence of something cannot be changed (at least not without destroying the entity possessing the feature or changing it into something different); second, it should not be changed. For, according to the Aristotelian understanding of a nature of a being, a thing's nature is normative in that it defines the standards of its well-being and flourishing. So, preventing a thing from what it is inclined to do naturally or, for that matter, changing a thing's natural features, amounts to obstructing its flourishing or well-being.¹³

Once we have unpacked these essentialist premises, we can see what renders them problematic: they almost certainly generate an equivocation fallacy, i.e., a fallacy that exploits an ambiguity. For when we talk about cognitive or behavioral features of humans the claim that a feature is natural can mean many things, but usually not that it cannot or should not be changed (Antony 2000). Being natural is often automatically translated into being universally present, being innate, or having an origin in evolution. But these not only are different things that cannot be inferred from each other, but are also still ambiguous notions (Griffiths 2002). I will discuss each of them in turn.

First, that a feature is "universally present" means that it is present in every individual and in all cultures. But standard candidates for natural features, such as hair or eye color, can be genetically polymorphic. Polymorphic features are not universal in the sense of being present in every individual, but they can be present cross-culturally.

By contrast, that a feature is universal in the sense of being present in all cultures and all individuals does not necessarily imply that it is natural in the sense of being genetically determined or the result of biological evolution. Michael Tomasello, for instance, defends the claim that different human languages include universals in their grammatical structure and that these universals are cultural-historical products created independently by specific cultural groups. They are identical not because grammar is genetically determined, but because certain

¹³ On the connection between the human essence or nature and living well in Aristotle, see EN1097b22–1098a4 and e.g. Shields (2007, 316ff) or Nussbaum (1992).

more basic social, cognitive, and vocal-auditory abilities are genetically determined and because “people all over the world have similar communicative jobs to get done” (Tomasello 2010, 315).

Second, calling a feature “innate” is a vernacular expression that seems to imply that a feature is present from birth. But calling something innate leaves open whether it is a dispositional feature that will develop at a later stage in life, as well as whether it is a monomorphic or polymorphic feature and whether there is evidence for the feature’s being genetically determined or only for its being insensitive to developmental variation. Paul Griffiths therefore suggests dropping the notion entirely and rather replace it with more specific terms (Griffiths 2002).

Finally, that a feature has its origin in evolution is often taken to mean that it is genetically determined and that it has an adaptive function. Evolution, however, takes place on several levels of which the genetic level is just one (Jablonka and Lamb 2005). Furthermore, a feature that results from evolution does not need to be adaptive. A feature might well be genetically determined without having any adaptive function, or it might have several adaptive functions in response to several selective pressures (Gould and Lewontin 1979). This is particularly relevant, because claims about the natural function of a feature are likely to end up in essentialist fallacies, since they tend to suggest normative implications.

Accordingly, that a feature is “natural” might mean many different things: that it occurs panculturally, that it is genetically determined (where that might result in monomorphic or polymorphic traits), that it is an adaptation, that it shows developmental fixity, that it is not learned, or that it is statistically common or even present in all members of a species. None of these understandings of being natural automatically implies the stronger essentialist claims that are expressed in premises P2 and P3 that a trait cannot or should not be changed. They certainly tell us something about the way in which a feature is fixed or susceptible to change. But where the respective explanations are correct, that usually puts us in a better position to change the feature in question. That we think of fertility as largely genetically determined, for example, does not imply that we think of it as a feature that cannot be changed. Rather it implies that we think of the ways to influence, manipulate, and change it in different ways than we would if we took fertility to be largely determined by environmental factors (Haslanger 2012, 211).

Arguments that move from P1 and P2 or P3 to C1, C2, or C3 are therefore highly likely to commit a specific type of equivocation fallacy: *the essentialist fallacy*. Equivocations are informal fallacies that owe their being fallacious to an ambiguous use of a word that reoccurs in at least one premise and one conclusion, and not to their form or logical structure (Hansen

2020). Furthermore, uncovering an essentialist fallacy is usually a non-trivial hermeneutical endeavor, since the premises and conclusions do not necessarily include the word ‘nature’. As we have seen above, claiming that a subject possesses a feature by nature is a particularly ambiguous form of expression that strongly invites essentialist associations. But the claim that a feature is, say, universal, innate, hard-wired, or the result of evolution might have the same effect of inviting further premises and conclusions that imply modal or normative consequences, because of essentialist background assumptions about nature.

This leaves us with a broad class of potential essentialist fallacies: S commits the essentialist fallacy iff S ascribes a feature to a subject, where that feature is described as natural (or innate, hard-wired, evolutionarily acquired, etc.), such that the ambiguity of the overgeneralized description leads to further deterministic assumptions about difficulties in changing the feature or to normative worries about restrictions in how we should or should not change the feature.

Not only is the class of possible essentialist fallacies broad, it is also often hard to decide whether something is an essentialist fallacy or not. P1 makes an empirical claim about a feature’s being natural. It might be highly controversial whether and in what sense P1 is true. But it might also be crystal clear that P1 alone is already fallacious. In this vein Catherine Hundleby suggests to treat biological reductionism with regard to human cognitive and behavioral features as a fallacy of presumption, assuming that “any automatic assumption that a feature has its source in either genetics or in natural selection is fallacious.” (Hundleby 2009). Not many cases will be crystal clear, however, since not even sociobiologists (except maybe when using metaphoric hyperbole) will argue that single genes straightforwardly determine human behavior or that the environment has no influence on behavior and cognition at all. Treating biological reductionism as a fallacy without a detailed discussion is therefore only an option for some very obvious cases of inadequate reduction. The less obvious cases oftentimes need a discussion of whether P1 is empirically adequate or not. Furthermore, what generates the essentialist fallacy is not P1’s being false alone but rather its overgeneralizing the description of the feature in a way that leads to wrong conclusions about its deterministic and normative implications. It is, therefore, not necessarily every claim of the form ‘S possesses the feature *x* by nature’ that automatically generates an essentialist fallacy. Whenever the ambiguous description of what it means to be natural generates fallacious essentialist assumptions about modal or normative implications, we have a clear case of the essentialist fallacy in front of us.

As has been remarked before, many arguments from nature gain their force from making P1 appear to be backed up by science and thereby neutral and uncontroversial, while at the same time preserving the essentialist flavor of the notion of nature (Antony 2000). The essentialist fallacy appears to be a die-hard fallacy, partly because of a ubiquitous kind of folk essentialism (Machery, Lindquist, and Griffiths 2009) and partly because versions of the essentialist fallacy happen to be the backbone of several politically reactionary agendas. It is part of abandoning folk essentialism to hold different claims about what is natural apart, since none of them implies the others. Biological traits change over time, they can be highly sensitive to the environments they are situated in, and they can often be manipulated in ways that permanently alter them. It depends on controversial ethical and political views where and how we draw a line that is supposed to stop us from intervening and manipulating. Folk essentialism has lost its seductive power in large parts of research on behavioral and cognitive features. This is partly due to a history of anti-essentialist debunking arguments that I will sketch in the next section.

3. Anti-Essentialist Debunking Arguments and Ideology Critique

We have seen that reactionary arguments often ground their claims in essentialism. As we will see now, there is also a long tradition of critical engagement with such arguments. These critiques typically aim to show that certain features, such as being a slave or having a particular gender, are not part of an essential, unchangeable nature but rather are in some sense the result of contingent contextual factors (which might be further described as the result of social construction). This history of debunking arguments can be traced back at least to Rousseau's critique of Aristotle's assumption that there are natural-born slaves:

Aristotle was right; but he took the effect for the cause. Anyone born in slavery is born for slavery – nothing is more certain. Slaves, in their bondage, lose everything, even the desire to be free. They love their servitude even as the comrades of Ulysses loved their life as brutes. But if there are slaves by nature, it is only because there has been slavery against nature. (Rousseau 1762/2004, 4)

From the fact that there are people who are born as slaves, it does not follow that there are natural-born slaves. To be born as a slave means to be assigned a certain social role from birth onward. People who appear as “natural slaves” are people who adapted well to the social role that is ascribed to them, not people who differ from their masters due to any inborn faculties.

We can find another *locus classicus* for this type of anti-essentialist debunking argument in Karl Marx's works. Marx criticizes the fact that economists treat economic processes as if natural laws governed them:

the law of capitalist accumulation, metamorphosed by economists into pretended law of nature, in reality merely states that the very nature of accumulation excludes every diminution in the degree of exploitation of labour, and every rise in the price of labour, which could seriously imperil the continual reproduction, on an ever enlarging scale, of the capitalist relation. (*Capital* I, MECW 35, 616)

Economists, according to Marx, create the impression that the growing poverty of the working class is inevitable since the structure of the market demands that companies produce cheaper and cheaper products. Similarly, Marx takes it to be characteristic of capitalism that workers appear to be independent and free to accept or reject contracts with particular employers, while it is not in their power to choose not to be employed. They objectively depend on wage labor, and that is a social fact within a particular economic system. What Marx characterizes as an illusion is that the social fact that workers depend on wage labor within the capitalist system appears to be comparable to the natural fact that human beings typically must work for their food. The position of the worker within the economic structure makes it seem as if the constructed economic relationships were a natural dependence relation (MECW 28, 204ff., James, unpublished manuscript).

The underlying structure of Marx's critique became a basic tool for critical theorists such as Adorno, who quotes the above passage from *Capital* and comments on it:

That the assumption of natural laws is not to be taken *à la lettre*, least of all to be ontologized in the sense of a however stylized design of so-called humanity, is confirmed by the strongest motive of Marxist theory of all, that of the abolition of those laws. (Adorno 1983, 347)

Changing social reality will change the "design of humanity" as well. A similar line of reasoning is prominent in feminist theory. Simone de Beauvoir argues in *The Second Sex* that what people take to be the natural essence of womanhood is, in fact, produced by society and gets reproduced so smoothly because we think of it as involving essential traits of women (Beauvoir 2011). In a similar vein, MacKinnon claims that "Gender, cross-culturally, was found to be a learned quality, an acquired characteristic, an assigned status, with qualities that vary independently of biology and an ideology that attributes them to nature" (MacKinnon 1991, 529). MacKinnon also makes the point that "the more inequality is pervasive, the more it is

simply ‘there.’ And the more real it looks, the more it looks like the truth” (MacKinnon 1991, 101).

The idea that it is part and parcel of oppressive systems to make it seem as if contingent social orders were natural and the respective debunking arguments can be found in Marxism, critical theory, and feminism. It also strongly influenced the ideological dimension of the nature-nurture debate. The concept of reification is central for these views and different forms of ideology critique. Reification occurs where oppressive social relations are particularly pervasive and therefore appears unchangeable to us. This appearance tends to further stabilize the oppressive social system in question. Reification is a side-effect of a smooth functioning oppressive system, where the smooth functioning generates the illusion that relations resulting from historically contingent human action or social construction are “natural” and, therefore, unchangeable (Geuss 1981; Shelby 2003).

Reification is a main reason why certain essentialist fallacies appear to be so seductive. Within a capitalist system the social fact that workers depend on wage labor appears to be an inevitable condition of human cooperation. Within patriarchy dominant behavior of men and submissive behavior of women appears to natural. Tracing and analyzing reifications basically means to debunk essentialist fallacies. As I will demonstrate in the last section, successfully tracing the reifications that current popular science on sex differences relies on needs the united forces of philosophy of science and ideology critique. It needs philosophy of science to evaluate the quality of the relevant empirical work and to show in what sense a trait is described as natural in an overgeneralizing and ambiguous way. And it needs ideology critique to unveil the kind of oppressive structure that is reified, to argue why it is oppressive, how it is the result of historically grown power-relations and not ‘simply there,’ how it came to appear as natural as it does, and how this can be exploited for the ideological purpose of maintaining oppressive structures.

4. Is There a Reversed Essentialist Fallacy?

We have seen that anti-essentialist debunking and revealing reifications has a long tradition and that it is an important part of both feminist philosophy of science and ideology critique. That does not imply, however, that people reject “biological explanations” as such for ideological reasons as Haselton suggests. Still, many readers might think that there is some grain of truth in the claim that part of a politically progressive agenda is a knee-jerk rejection to biological explanations of human cognitive and behavioral traits. In a paper on feminist engagement with evolutionary psychology, Carla Fehr reports: “On occasion, when I lecture on evolution and

gender, the response from some feminist scholars is outright hostility that a feminist would even consider the topic” (Fehr 2012, 67). Is there such a knee-jerk reflex against engagement with biological explanations of sex differences as such or the topic of gender and evolution? Assuming that it does indeed exist, how could it be unpacked?

As has been spelled out in the last two sections, the central reason for a possible knee-jerk rejection of “biological explanations” of cognitive and behavioral traits is the well-grounded suspicion that ambiguous references to biology are likely to commit an essentialist fallacy and that essentialist fallacies have often been used to reify oppressive social relationships. The anti-essentialist debunking arguments presented in the last section do in fact reject reifying explanations. However, they do not reject claims about a feature’s being e.g. panculturally present, adaptive, developmentally fixed, or statistically common as such. Instead, they defend an anti-essentialist agenda on both empirical and political grounds.

Some authors suggest that the review of the works on sex differences up to the present allows for a well-grounded historical inductive argument showing that theories about cognitive differences between the sexes so far are a) poorly supported by evidence and b) have for centuries been used to justify the oppression of women (Fausto-Sterling 1992; Kourany 2010, 5). That suggests that we should be skeptical as to whether future studies will have different effects. Steve Rose has argued with regard to studies on race and IQ that research on cognitive differences has often been justified as being helpful in overcoming disadvantages of the respective group by developing special education programs where in fact the studies practically always have been used to justify the dominant position of white males. Rose furthermore suggests that these studies are always biased in the sense that in a non-racist and non-sexist society it would not occur to people to do these kinds of studies (Rose 2009).

Another argument suggests that research on cognitive differences is practically bound to be misused in ways that restrict the opportunities of the underrepresented group. Social scientists point out that it is very difficult to use scientific evidence to convince the public about issues that are strongly politicized. It is therefore not particularly likely that findings that speak against differences in cognitive abilities would have significant effects. On the contrary, as long as there still are some scientists offering whatever kind of evidence in favor of cognitive differences it is likely that this research will get a disproportionate amount of attention due to bias (see e.g. Meynell 2012 for discussion of an example). If researchers really find cognitive differences, there is a disproportionate danger that these results will be abused to justify discrimination (Kitcher 2001). One possible response to this would be to hold research on cognitive and behavioral sex differences up to particularly rigorous standards of evidence

(Kitcher 1987). Since we have very little knowledge of the actual historical processes that led to the evolution of social behavior, this would dismiss most of the research from evolutionary psychology concerned with sex differences from the start (Fehr 2012, 58). Another possible response to these problems would be to make research about differences in cognitive abilities a low research priority for (justified) ethical reasons (Elliott 2017). Accordingly, we can grant Haselton that a certain kind of research on cognitive and behavioral differences is rejected by many authors for both scientific and ethical reasons. This, however, is very different from rejecting biological explanations as such.

Finally, is there a tendency among progressive voices within the nature-nurture debate to make overgeneralizations and repeat essentialist reifications as part of an anti-essentialist agenda? Do people reject biological explanations of sex differences as such or find any engagement with gender and evolution outrageous? If that was the case, we might speak of a reversed version of the essentialist fallacy. Such a reversed version of the essentialist fallacy occurs, where 1) S assumes that *any* form of natural or biological explanation of cognitive or behavioral features has essentialist implications regarding the modal or normative implications of a feature's being natural and therefore 2) S rejects any version of P1 in order to avoid those modal and normative implications.

We have already seen that biological explanations can be fallacious if they are implausibly reductionist. Hardly any current biologist would question that genes and the environment jointly determine the development of the traits of an organism. Even the explanations offered by Developmental Systems Theory, suggesting that genes are simply one set of resources that causally contribute to the construction of the organism, obviously count as biological explanations though they do not have any essentialist implications (Meynell 2008). Therefore, rejecting biological explanations as such to avoid essentialist implications is certainly fallacious.¹⁴

As we have seen with regard to the essentialist fallacy, it occurs not where a biological explanation is offered, but where an overgeneralized, ambiguous (and potentially false) description of a feature's being natural produces fallacious essentialist inferences about the modal or normative implications of that feature's being natural. The reversed version of the fallacy overgeneralizes well-justified anti-essentialist worries to explanations that need not have essentialist implications.

¹⁴ One might feel tempted to call this reversed fallacy the anti-essentialist fallacy. I prefer to call it the reverse essentialist fallacy, because I take essentialism to be a misguided view. What makes the reverse essentialist fallacy a fallacy is the suspicion of essentialism in the wrong place not the false application of anti-essentialist reasoning.

A second version of this reversed fallacy assumes that any description of a feature as being the result of learning, or social construction entails that it is by that fact less stable. The second version of the reversed essentialist fallacy occurs where 1) S assumes that *any* description of a feature as socially constructed avoids all kinds of modal or normative implications, since whatever results from social construction is a) less stable than natural features, b) can be successfully changed by us, and c) there are no principled reasons not to change the feature in question, 2) S prefers a social constructivist explanation, because S automatically assumes a), b), and c) to follow from this. It is, again, not difficult to see, why such reasoning is fallacious. We have seen that one possible meaning of a trait's being natural is that it is developmentally fixed, i.e., that it develops more or less stably under varying environmental conditions. But it does not follow from the claim that a trait is dependent on environmental factors that it is in an interesting sense more susceptible to change than a trait that is developmentally fixed. The two explanations mainly make different suggestions of where and how we should intervene if we wanted to change the feature in question. Recent studies suggest that sometimes sex-linked behavior (e.g. in rats) can be stabilized cross-generationally more effectively through effects from the environment than via assumed proximal mechanisms of genetical or hormonal sex (Fine, Dupré, and Joel 2017).

Things do not get easier when we assume that the relevant environment is a complex human social environment. Whether and to what degree complex social mechanisms or systems are malleable or susceptible to change is a complex question. Theorizing about social mechanisms suggests that we should expect the construction of social kinds to have both stability and instability as its result (Mallon 2003, 350, Kroeger forthcoming). We can tell from experience with economic predictions and interventions, however, that social constructions can reach a level of complexity that makes prediction and intervention just as difficult as they tend to be with regard to biological phenomena.

Now we know how possible versions of the reversed essentialist fallacy would look like. But can they be found in the relevant feminist philosophy of science-literature of recent decades? There is a complex discussion within feminism about how to spell out the sex/gender distinction. One prominent complaint raised by recent feminists against the earlier generation is that by distinguishing sex from gender the authors have reified, naturalized, or essentialized what sex is. Where this critique is justified, it involves cases of the reversed essentialist fallacy. Most prominently, Butler argues that cultural conceptions about gender figure in "the very apparatus of production whereby sexes themselves are established" (Butler 1999, 11). Many introductions to feminism mention the slogan "biology is destiny" to pin down the essentialist

agenda being criticized (Jenainati 2019). The critique of this slogan is sometimes accompanied with the implicit assumption that progressive accounts should refrain from biological explanations of all sorts and put as much explanatory weight on the gender and social-construction side of the story as possible. But usually, where those worries are made explicit, they turn out to be justified worries about wrong essentialist assumptions and essentialist fallacies and not rejections of biological explanations as such.

The vast majority of current feminist debates take it for granted that biological traits are influenced by social factors. Furthermore, most current feminists do not think of biology as destiny but rather acknowledge that “[w]ith the aid of synthetic hormones, immortal tissue cultures, and delicate pipettes the very biological processes of human fertility, and even the sexual form of the body as male and female, became profoundly manipulable” (Murphy 2012, 1).

I have thus traced the grain of truth that one might suspect is present in Haselton’s claim that people reject biological explanations as such, with the following results: there are good reasons to debunk essentialist fallacies, not for their appeal to biology, but for their fallacious essentialist implications with potentially harmful consequences. There are also good reasons to be skeptical about the ethical value of research on cognitive differences between different groups of humans. Finally, there might here or there be a tendency among anti-essentialists, certain schools of feminism, or social constructivists to overgeneralize the anti-essentialist agenda and thereby commit reversed versions of the essentialist fallacy. The relevant overgeneralizations, however, appear to be a rather rare phenomenon within the current debate since the vast majority of authors would agree that they rest on outdated views. That leaves us not exactly where we started, but very close to where we started: it seems that Haselton is attacking a straw figure: not an entirely fictional creature, but certainly not a charitable portrait of her most significant opponents either.

5. Mate Shopping and Ideology

Among philosophers of science the Galileo-Defense is known as the claim that while one is doing excellent science, one is persecuted because of ideology and ignorance (Lloyd 2003). Where theories that rely on insufficient data and outdated methods use the Galileo-Defense it turns into a strategy of self-immunization. Such self-immunization is omnipresent in evolutionary psychology and it turned into a powerful tool, particularly when selling essentialist

fallacies with sexist implications to a broader audience.¹⁵ Here, the Galileo-Defense is used to sell reactionary ideology as an objective truth that is contested by the opponents for ideological reasons alone.

Haselton, however, complicates matters even further by both using the Galileo-Defense and, at the same time, calling herself a Darwinian feminist. That raises the question of how the strategy of self-immunization relates to her feminist agenda. The label “Darwinian feminism,” is closely connected to feminist evolutionary biologists like Sarah Blaffer Hrdy, Barbara Smuts, and Patricia Adair Gowaty who all have addressed androcentric bias in their field as part of their work (e.g. Smuts 1985; Hrdy 2000). These researchers are unified in their contestation of the traditional view of natural selection as functioning only through the inheritance of genes (Gowaty 1997). Apparently in line with this, Haselton points out that we need more research

¹⁵ See e.g. the beginning of Buss’s book *The Evolution of Desire*: “Many feminists worry that evolutionary explanations imply an inequality between the sexes ... encourage stereotypes about the sexes, perpetuate the exclusion of women from power and resources ... For these reasons feminists sometimes reject evolutionary accounts” (Buss 2003, 17-18). For an explicit discussion of the relation of evolutionary psychology and feminism that ignores the scientific dimension of feminist critique entirely, see Buss and Schmitt 2011; for a critique of Buss, see also Fehr 2012.

See also the neuroscientist Baron-Cohen’s work on psychological sex-differences, according to which the male brain is predominantly hard-wired for understanding and building systems, while the female brain is predominantly wired for empathy. Addressing a broader audience, he claims: “The 1960s and 70s, whilst socially liberating, also made an open-minded debate about any possible role of biology contributing to psychological sex differences impossible. Those who explored the role of biology – even whilst acknowledging the importance of culture – found themselves accused of defending an essentialism that perpetuated inequalities between the sexes, and of oppression. Not a climate in which scientists can ask questions about mechanisms in nature. (Baron-Cohen 2005, 23). Baron-Cohen claims to have detected such mechanisms in the different organization of male and female brains due to the release of hormones during pregnancy. The so-called brain organization hypothesis has been proven to be poorly supported by evidence by several authors (see e.g. Jordan-Young 2011; Fine et al. 2015). Baron-Cohen, however, defends his hypothesis in a popular science book with the title *The Essential Difference* (in which the speculative status of the hypothesis is not made particularly clear), and uses the initial poorly established hypothesis, to draw conclusions about why more men than women study math and physics (Baron-Cohen 2012) That is a clear case of an essentialist fallacy that makes it seem as if a reified social fact was an essential difference in nature. His work gets frequently cited in public discussions against gender-mainstreaming within academia. See e.g. the speech of Harvard’s President in 2005, former Google employee James Darmore’s internal memo. Baron-Cohen’s ideas seem to be omnipresent (often without being explicitly quoted) in countless texts and podcasts within the entourage of the intellectual dark web. See e.g. Jordan Peterson’s often repeated claim that women are ‘more agreeable’ and empathetic, which is good when taking care of children but not when wanting to ‘build a political system’ (<https://www.youtube.com/watch?v=sWbj-2DRLps>).

on the female brain and body, since we know far too little about women's hormones (Haselton 2018, 4-5). The general complaint that Haselton raises here is indeed an old but still important one: for decades of medical research, males have been the standard model organism on which many theories have been developed (Longino 1990). Furthermore, the word "hormonal" is still being used in a dismissive way and is only attributed to women. "Going hormonal," according to Haselton, is not about becoming irrational; instead, there is "evolutionary wisdom" to be found in the way our hormones guide us through life (Haselton 2018, 10). Reclaiming a concept that picks out assumed female-specific features and has been used in a derogatory way sounds like a classic feminist move as well. But what is the proffered positive picture of how hormones guide us through life?

One of Haselton's main claims is that hormones nudge females on the fertile days of their cycle to go "mate shopping": "the discoveries from my lab suggest that fertile women seek out the most attractive men – just as it happens among female and male primates, hamsters, and many species in between" (Haselton 2018, 19-20). This boldly generalizing assumption about female mating behavior across the species relies on a very particular version of sexual selection theory that is supposed to bolster the idea of "strategic female sexuality." Haselton considers this to be a feminist point as well. She quotes the work of Martha McClintock (1978), who discovered that the mating behavior of female rats is much more active than was previously thought by studying it in the wild. McClintock has suggested that this crucial difference has been overlooked because of stereotypes regarding activity and passivity that biased research concerned with sex-related stereotypes.

But it is not particularly clear how Haselton wants to relate her own findings to that of McClintock; in fact, on a closer look, the reference to McClintock seems misleading in an almost bizarre way. It is certainly true that McClintock stands in a tradition of feminist research that has unveiled gendered biases that attribute activity to male mating behavior and passivity to female mating behavior in research up to the present. It is also true that this bias can be traced back to Darwin's theory of sexual selection (Richards 2017). Feminist researchers have lucidly analyzed the reified Victorian gender stereotypes that appeared so natural to Darwin that he saw them at work all over the animal kingdom: "wherever you look among animals, eagerly promiscuous males are pursuing females, who peer from behind languidly drooping eyelids to discern the strongest and handsomest. Does it not sound like the wishfulfillment dream of a proper Victorian gentleman?" (Hubbard 1979, 55)

Haselton suggests that her findings that women walk more, dress up more, or make unconscious mating choices which follow an "evolutionary rationale," show that women

actively pursue a strategy in their mating behavior. She appears to believe that this reveals an active/passive bias in a similar way than McClintock's findings or Ruth Hubbards's analysis. I think this suggestion is misleading for three reasons.

First of all, we usually take human beings to act on decisions rather than an evolutionary rationale. The finding that human females unconsciously follow an evolutionary rationale, if it were true, would therefore not reveal an active/passive bias in the way that McClintock's findings did. Second, suppose we grant, for the sake of the argument, that the findings that women tend to walk more, dress up more and that their voice rise in pitch during the fertile days of their cycles will be successfully replicated in different settings and cross-culturally within the next years. Even then, the fact that careful studies need to be done to find some evidence for a pattern like that at all, is grist to the mill of the standard position within anthropology that Haselton wants to question. If human males were primarily attracted to females during ovulation or if females were primarily attracted to a certain type of males during ovulation then that would most likely be easily seen and demonstrated. What appears instead to be obvious and eye-catching is that human sexuality is largely decoupled from hormonal control and that our sexual activity stands out as especially diverse and unproductive (Fine 2017). None of Haselton's findings are fit to doubt this standard position.

Finally, what generates a whole cascade of essentialist fallacies are not Haselton's findings but her straightforward application of Trivers' version of sexual selection theory to them (Trivers 1972). Trivers suggests that all over the animal kingdom we see that females invest more in the production of offspring, since they produce only one egg within a cycle compared to a huge amount of sperm that the males of most species are able to produce within the same time. Beyond the production of gametes gestation, lactation, and nurturing also count as investments. Trivers concludes that the costs of a "poor-quality mating" are significantly higher for a female than for a male, assuming that males can simply ejaculate and move on. Accordingly, we should expect females to pick their mates carefully, whereas males would do best to compete with other males in order to mate with as many females as possible. Trivers hypotheses indeed enjoyed the status of universal principles for many years and became the bedrock of evolutionary psychologist' claims about evolved sex differences in human behavior. They have, however, been questioned for several reasons in the last decades. When comparing the behavior of different species it turns out that neither competition nor promiscuity are the preserve of male reproductive success (Fine 2017). Furthermore, Trivers' parental investment theory assumes that the best strategy for males, who face more mating competitors than females, is to invest more heavily in weaponry, ornaments or other traits that increase their

access to mates, where in fact there is a diverse range of male strategies to be found among animals that sidestep aggression and armory (see e.g. Kokko and Jennions 2008). Finally, again, human sexual activity including mating strategies stands out as especially diverse and unproductive.

Haselton's straightforward application of Trivers' principles, however, allows her to interpret behavior that could just as well be understood as a performance of local gender stereotypes as the expression of an underlying evolutionary rationale:

He's aggressive and confident, loud, a bit egoistical, and physically larger than others, but he's 'the one.' Whether we're talking about wolves, birds, nonhuman primates, or humans, this is the mate-selection behavior that emerges across the species over and over again: females at high fertility showing a preference for dominant males. (Haselton 2018, 155)

What generates an essentialist fallacy here is the misleadingly overgeneralized description of a female preference that is assumed to be present all over the animal kingdom for adaptive reasons. Haselton suggests throughout the book that women can learn to understand the way hormones nudge them on the fertile days of their cycle and choose to 'go with the flow' or not. Accordingly, Haselton is not drawing fallacious normative conclusions from the overgeneralized premise but modal one's: the sexual desire for dominant men is an essential part of female nature, we can decide to ignore it, but unlearning it seems like a task unlikely to accomplish. This is nothing, however, that follows from her data but rather from the misleading interpretation of the data within a highly controversial theoretical framework.

A closer look at Haselton's Darwinian feminism reveals that her work is a prime example of what the ideological diversity that is ascribed to discussions about feminist topics in the intellectual dark web often looks like: the activist agenda that Haselton references simply does not apply to the central claim of her work. Obviously, we need to know more about female hormones to be able to offer certain medical treatments. But even if it were true that human females on fertile days were busy in finding male partners with particularly symmetrical features, the medical value of knowing that this is the case remains opaque. At the same time, the permanent repetition of stereotypes, such as the "trade-off between choosing Mr. Sexy and choosing Mr. Stable" (Haselton 2018, Chapter 5), as parts of an evolutionary rationale throughout the book is a clear case of taking reified social facts for essential parts of human nature. Understanding hormonal nudges, the argument goes, can help women to understand themselves better and make the right decisions. That would presuppose, however, that the empirical evidence and the reflection of the applied method would be much better than they

actually are. Instead, Haselton's revival of outdated theories of sexual selection allows her to present the reified stereotypes of females desiring dominant males as essential parts of human nature. This reifying description of sexual preferences is what brings Haselton's work close to works prominent among the members of the intellectual dark web.

Finally, Haselton exploits the complex history of anti-essentialist arguments to immunize her work from both epistemic and moral critique. We have seen that this is a familiar move to sell essentialist fallacies to a broad audience and one that enjoys particular prominence among members of the intellectual dark web. Haselton goes one step further, however, in claiming to pursue a feminist agenda herself and relating her own work to work of feminist scientists. This move blurs the fact that Haselton is selling stereotypes, while ignoring the methodological critique that feminist scientists have been raising against such work for decades.

6. Conclusion

I have argued that the frustrating permanence and prominence of largely outdated views on sex differences in human behavior and cognition needs to be analyzed and criticized both by feminist philosophy of science as well as by ideology critique.

I reconstructed the general form of what I call the essentialist fallacy, an equivocation fallacy that presupposes that a subject has a feature "by nature" and infers fallacious modal and normative consequences from the ambiguous understanding of "nature." I also reconstructed the history of anti-essentialist debunking arguments. Anti-essentialist debunking arguments trace essentialist assumptions that take reifications to be "natural" or "simply there." I suggested that it requires both philosophy of science and ideology critique to debunk essentialist fallacies and uncover reifications. In the fourth part of the paper, I discussed the question of whether there is a grain of truth in the worry of evolutionary psychologists that people reject biological explanations as such. I argued that in recent feminist philosophy of science literature, and large parts of academic feminist discussions on gender and sex, this tendency is largely absent. Evolutionary psychologists are attacking a straw figure to immunize their works from critique. An example for this is the popular book on female hormones by Martie Haselton. While the scientific critique of Haselton's methodology is well known already, what deserves attention in terms of the underlying ideology is the way Haselton embraces a Darwinian feminist agenda while at the same time reproducing sexist stereotypes related to outdated theories of sexual selection and immunizing her work from critique by accusing others of being in denial about biological explanations as such.

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