

SEXUAL IDENTITY AND NEUROSEXISM: A CRITIQUE OF REDUCTIVIST APPROACHES OF SEXUAL BEHAVIOR AND GENDER

*Laura Dick Guerim*¹

*Fabício Pontin*²

*Camila Palhares Barbosa*³

*Bruna Fernandes Ternus*⁴

Pontifical Catholic University, Rio Grande do Sul

Abstract: This paper will unfold in two different critiques, first dealing with how neuroscience has sexed the brain, ignoring cultural elements of gender formation, and further focusing on the masculine bias of neuroscience research, which, we claim, adopts male physiological and social patterns as “normal”. In order to do so, we will start our investigation with some insights on the sex/gender debate and how it is of consequence for research on neurosciences of sexuality. Secondly, we will critic the way studies are focusing on differences rather than similarities between genders, and how such strategy re-enforces gender biases. Finally, we use contributions from social cognitivist theory and feminism to support a more complex view of body, identity and gender performance.

Keywords: Gender; Neurosciences; Sexism; Behavior.

Introduction

We claim that a large part of cognitive neuroscience has been ignoring cultural elements in identity formation, assuming over-innatist perspectives of gender identity and even sexual practices, establishing stereotypical patterns of sexed behaviors as allegedly natural and determined by biology alone. Our hypothesis is that a neuroscientific perspective of sexual behavior and gender identity is better understood through a social-cognitivist

¹ PhD Candidate, Medicine Department, Neurochemistry and Psychopharmacology Lab, Pontifical Catholic University, Rio Grande do Sul

² PNPD-CAPES Post-Doctoral Fellow, Brazilian Centre for Research in Democracy, Philosophy Department, Pontifical Catholic University Rio Grande do Sul

³ PhD Student, Philosophy Department, Pontifical Catholic University, Rio Grande do Sul

⁴ Undergraduate Research Assistant, Philosophy Department, Pontifical Catholic University, Rio Grande do Sul

approach, integrating both anthropological and neurological aspects - thus allowing a more complex view of body, identity and gender performances as well as sexual-social practices.

The question of whether or not brain is sexed, that is, searching for biological markers distinguishing a female and a male brain, has been studied for a very long time and yet, especially in neuroscientific studies, the "gender" and "sex" terminology has not been clearly defined, though there is an unwritten convention among neuroscientists that "sex" differences relate to reproduction and "gender" differences relate to cognition. Due to those conceptual disagreements, we adopted the combined term sex/gender (Bluhm, 2013) in order to maintain both biological and social approach to the subject.

Researches in neuroscience regarding sex differences, as found in Tranel, Damásio, Denburg and Bechara (2005), often take a stereotypical background of gender roles, which are then taken to be confirmed by the data analysis, and thus confirming gender asymmetries and behaviors. The problem here is that quantitative evidence rarely confirms anything related to gender roles in these researches, and often presents no statistical difference between the genders. As Cordelia Fine (2011) argues, "such claims, quite independently of their scientific validity, have scope to sustain the very sex difference they seek to explain". As Catharine MacKinnon (1987) has pointed, the gender treatment is considered truly as a matter of difference, instead of treating these differences as gender role markers.

The differences we attribute to sex are lines inequality draws, not any kind of basis for it. Social and political inequality are, I think, basically indifferent to sameness in difference. Differences are inequality's post-hoc excuse, its conclusory artifact, its outcome presented as its origin, the damage that is pointed to as the justification for doing the damage after the damage has been done, the distinctions that perception is socially organized to notice because inequality gives them consequences for social power. Distinctions of body or mind or behavior are pointed to as cause rather than effect, without realising that they are so deeply effect rather than cause that pointing to them at all is an effect (MACKINNON, 1987, p.8).

Even with a "sexed brain" consideration, neuroscientific findings concerning the basics on sexual orientation (including hormonal features) for instance, are, by no means, conclusive. For example, Swaab (2005) argued that "not only our gender identity (the feeling of being a man or a woman) but also our sexual orientation is programmed into our brain structures when we are still in the womb", however in his reading, the questions of a more complex view into sexual identity and aspects of cultural impact for our comprehension of Self are ignored.

Affirming that gender, sex and sexual orientation are defined *in utero* and are not influenced by cultural impositions contradicts one of the most important characteristics of the brain: neural plasticity, which is the ability of the human brain to morphologically and functionally change and adapt when in contact with environmental influences. Therefore, one could argue that continuously impositions of certain behaviors just because you are a woman or a man, will make your brain adapt and change to fit in this 'proper' behavior of gender. Having said that, it is imperative to consider socialization and culture in the formation of women and men's brains and how their respective roles, decision-making processes and moral intuitions develop. That is, the difference observed as biologically materialized can be the result of a socialization process.

Sexed brain in neuroscience: how mainstream neuroscience is ignoring culture

There are many researches looking for sexed brain evidences, take, for example, Tranel and Bechara et al in "Does gender play a role in functional asymmetry of ventromedial prefrontal cortex?" (2005) and "Sex-related functional asymmetry of the amygdala" (2009). Through these analysis, the aforementioned researchers claim that morphological aspects of the female brain (its smaller size, for example), or functional aspects of women's brains (their inter-hemispheric function, as opposed to a male intra-hemispheric function) explain sufficiently the different strategies and preferences taken by different individuals because of their sexual and biological constitution. For these researchers, such intrinsic neurobiological characteristics trump socio-cultural explanations regarding social practices such as career, child caring and relationship dynamics (Gilligan, 1993).

Tranel and Bechara (2005) seem to suggest that distinctions in decision making between men and women are a reflection of brain anatomy and morphology alone. Initially, Bechara suggested this in the context of a comparative study between subjects, in Iowa, that had suffered similar dorsolateral strokes. Because these individuals vary their behavior post-trauma, but go through the same "biological" incident, Tranel and Bechara concluded that the distinct behavior between these individuals should be understood in terms of morphological distinctions in the brain. That is, because there are different neural correlates for action in men and women after the same biological incident, the changes in behavior must be an effect of the distinctive characteristic of the "male" and the "female" brain. This first analysis taken by authors in the context of dorsolateral strokes was recently taken by Bechara in

an attempt to explain distinct strategies and behavior between men and women without any apparent brain injury.

Bechara has concluded that women are more “in tune” with the sentimental side of the brain, and are therefore more prone to conducts that are reflective, less aggressive and are generally more patient. He has also suggested that the “normal” female brain will have these characteristics, meaning that women are prone to have mental representations that are more reflective, affective and social. Men, on the other hand, are more “in tune” with instinctive and short-term aspects of action. The “normal” male brain will therefore be prone to maximization of immediate gain, instinctive behavior, and individualistic action. It is important to note that Bechara himself never deal with these questions of sexuality or gender behavior as anything but innate. Women behave like women and decide like women because they have a certain kind of structure of the ventromedial prefrontal cortex that, on its turn, determines the kind of social and moral intuitions women will have. Men behave like men for the same reasons. Intuitions of any sort are different for men and women not because of the way they are socialized, but because of the kind of brain they have.

Moreover, when Bechara and Tranel (2009) claim that the simple biological fact that women bear children and men do not, means that there are sex-related differences when it comes to how they “apprehend, process and execute emotional information and solve social problems”. It seems that the fact that women and men have different parental abilities (or responsibilities) is exclusively biological.

This view finds further support in many researchers in evolutionary psychology who have pointed out that those differences presented in the male and female brain supports the evolutionary way that women and men developed their abilities with cognitive and emotional situations. Pinker (2003), for example, argues that male sexual behavior is correlated with their evolutionary strategies for reproduction. The “instinctive” sexual behavior of the sexes, therefore, would depend on several characteristics, such as reproductive age and mating strategies. When Pinker argues that forced copulation is a reproductive strategy used by men in the past - and still today by some species of flies - he is rationalizing male sexual acts in order to explain them instead of actually question the cultural aspects that influence our behaviors in society (e.g. rape culture).

Cahill (2006), argues that sex differences has an important impact in neuroscience studies, since “the picture of brain organization that emerges is of two complex mosaics — one male and one female — that are similar in many respects but very different in others”. In this sense, for Cahill, the

differences presented by this sexed brain cannot be ignored or neglected by neuroscience, because sex influences the function of the brain and, therefore, represents different social behavior in males and females.

Regardless of the ultimate evolutionary explanations, it seems incontrovertible that males and females evolved under some similar, and some very different pressures. We should therefore expect a priori that their brain organization will be both similar in some respects, and markedly different in others. This is precisely the situation suggested by the sex difference literature (CAHILL, 2006, p.4).

It is important to address that these researches have an actual and immediate social impact. Many reactionary perspectives seeking to naturalize gender roles and access to the job market have claimed that such research revalidates essentialist positions about sexual differences. Bechara, for example, has recently argued in a similar manner, regarding sexual practices and perceptions - men are more aggressive and need more sex because of testosterone, women like flowers and cuddling because of estrogen.

Sexual behavior and the way we learn it, whether we do it alone or with someone else, is also shaped by culture and previous sexual experiences. From tantric sex to sadomasochistic practices, sexual pleasure can be found in all kinds of forms and intensity, and can also be negative, which is something that may explain different types of dysfunctions and other sexual difficulties. Georgiadis et al. (2012) found, after an extensive review about mechanisms and cortical areas involved in sexual arousal, that vmPFC is substantially coupled to such phenomenon. Actually, several cortical areas are linked to sexual related phenomena, like the posterior insula and the striate. Therefore, sex is not entirely primitive and can also be learned, changed and controlled by prefrontal socio-moral templates of what is and what is not sexually allowed. In another study conducted by Georgiadis (2012a), a gender (as the author puts) difference was found in the stronger activity among men of ventral occipito temporal cortex (visual cortex), and a stronger activity of left dorsal fronto parietal areas among women; a difference that might be explained by "the building of a different mental representation that women make of sex", and not necessarily a biological predisposition to not like sex (when in comparison with men).

A relevant aspect of the current gender and sexual analysis in the neuroscientific field is the fact that the referential standards are always the male structure, function and psychology. For example, when Swaab (2010) argues that the male brain suffers an effect of intrauterine testosterone and the

female brain suffer from the absence of such hormone, he is considering this hormone as standard, and, consequently, the other is identified by the absence of that. Through his argument, therefore, girls will never be similar to boys because they miss the hormone that defines men's manhood.

The narrative of the sexed brain in neuroscientific researches seems to be looking for confirmations of stereotypical gender behavior instead of questioning this heteronormative and a priori biological conceptions. In what follows, we will focus on the research of neuroscientists, who are, interestingly, women, and who have called attention to the sexism within the aforementioned researches in the neuroscientific field. We support their claim that this neurosexism has been misleading data and suffering from several biases. Because of that, neuroscience is still looking for differences when it should be looking for similarities that would bring science closer to real life social problems, and might diminish the gender asymmetry we see in all realms of society.

Neurosexism: misleading empirical data through gender differences perspectives and the search for similarities

Why does the neurobiological approach to gender issues is always considered through the matrix of difference? In "Gender Similarities Hypothesis", Hyde (2005) argued that it was misleading to consider only differences when approaching gender and sex in neuroscientific studies. Therefore, it is time to consider our similarities, or intra-gender group differences, in order to find answers to these sexed conundrums.

According to Cordelia Fine (2013) "scientific claims reinforce and legitimate gender roles in ways that are not scientifically justified", therefore supporting essentialist perspectives. Similarly, Hyde (2005) argues that gender analysis depends on context, as "gender differences can be created, erased, or reversed, depending on the context". In this sense, it seems that biological markers and ideas of natural standards can also be related to influences from culture and social context, as Bluhm (2013) suggests: "the structure and the function of the brain can change so much in response to experience, differences in the brain may well be the product of culture (that is, gender differences), despite being biological".

In that matter, Anelis Keiser et al (2009) bring what they call the "right tool for the job". Neuronal plasticity, they say

is a crucial factor in elucidating the question of sex/gender differences in the brain. [...] The concept of neuronal plasticity describes the experience-driven modification of neuronal

networks. [...] Based on such assumptions, sex/gender differences [...] appear not as fixed and immutable in the cerebral organization but rather open to any kind of experience during life. [...] In other words, sex differences in the brain themselves are not evidence of a pure material dimension, but reflect gendered behavior as learned and incorporated, in social context. once incorporated into the brain, gender differences become part of our cerebral biology (KAISER *et al*, 2009, p.56-57).

Kraus (2012) also claims that gendered behaviors are being brained by neuronal plasticity, reflecting social impositions that are not biological at all. Through the neuroplasticity argument it is impossible to ignore in researches regarding gender differences the impact that our environment has on the formation of the brain structure, sexual behavior and identity. The characteristics we see in fMRI images might be caused by socio cultural impositions, such as gender socialization. For example, when Bechara describes the decision-making processes of men and women in his research, the differences on strategy and emotional correlations between the sexes can be explained by the stereotypical social roles those individuals perpetuate. It is therefore possible, even within a cognitivist perspective, to resort to a broad, non-reductionist, account of decision-making and gender differences. Fine (2012) showed evidences that “gender stereotypes influence perception and behavior”.

We therefore argue that gender is also related to performance. The way that society teaches girls and boys to behave will certainly impact the morphological and physiological characteristics of the brain, and, consequently, the way boys and girls will have different social cognitions. Prinz argues in this direction when he writes that

the fact that women are more empathetic than men is, I suggested, a consequence of social roles that emerge under conditions of male dominance. This raises an urgent question: is the empathetic orientation in women’s morality a useful tool for liberation or does it rather serve to sustain the inequality from which it springs? There are reasons to suspect that the latter might be true to some extent. Liberation, it seems, requires outrage: total intolerance to oppression and a correspondingly aggressive pursuit of change. If 'aggression' is treated as a bad (and phallogocentric) word, and replaced by a moral stance that is predominantly empathetic, inaction may result. If the emotional response to gender inequality is to feel empathic sadness for

those who are adversely affected, the resulting interventions may be limited because sadness tends to reduce motivation, rather than increasing it. If, in contrast, critics of inequality, get angry or 'uppity' (as the anger of the oppressed is called), more radical change may be actively sought. A feminist morality bent on liberation should not be an empathy-based morality if that label is meant to describe a morality that makes empathy into the primary emotional resource. An outrage-based morality might be more effective (PRINZ J. in COPLAN, GOLDIE, 2011 p.225).

This implies that normal man-like or woman-like performance, which is constructed socially, informs our basic intuitions, which, in turn, shape the kind of strategy, emotion, cognition and personal relations that these individuals will use in decision-making, for example. These performances, can be found in researches that Fine (2012) will call "baby X studies", that aim to point to gender behavior in infants. In such studies, different toys are offered to those infants, and based on their gender, they would choose different kind of toys. Fine argues, however, that "mothers of girls under-estimated both crawling ability and risk taking, while these were overestimated by mothers of boys". The gendered relation infants assume towards society, seems to be stimulated by their mother and father from a very young age, which defines what will be seen as gendered performance.

We argue that sex distinctions taken to be natural and necessarily determined by the brain are based on gender biases that are "confirmed" by some neuroscientific researches as "innate", These gender biases may be misleading interpretations made by some researchers regarding what is taken as innate distinctions in emotional traits between male and female individuals, explainable purely by neurological circumstances. Our point here is that we cannot differentiate a male brain from a female one by looking individually, but if you do know the sex/gender of the subject lying in your MRI machine you will attribute to him/her a whole background of sets of preference and gender-like behavior. In order to do so, Bluhm claims that

The fMRI studies resort to ad hoc explanations of data that don't fit with gender stereotypes, ignore alternative, better, explanations, of the data, or develop complex, ad hoc methods of analysis in order to find sex/gender differences in the first place (2013, p.878).

Despite being able to correlate socialization with sex differences in the brain, Hyde (2005) shows that "men and women, as well as boys and girls,

are more alike than they are different". Through a "gender meta-analysis", Hyde demonstrate results that indicate that "78% of gender differences are small or close to zero". Furthermore, Hyde found that while gender differences in mathematics performance during childhood is small or non-existent, "the male advantage appeared beginning around the time of puberty". This data, seems to support our argument that the socialization will influence the male-like and female-like behavior. One important question here, however, is why mainstream neuroscience still looking for sex differences within the brain, instead of looking for those 78% of similarities claimed by Hyde?

It seems that this is a complicated paradigm to overcome. As we mentioned before, all science regarding human behavior and physiology was build based on sex differences. With neurosexism it is no different, since there are "unjustified claims furnished support for traditional gender stereotypes and roles" (FINE, 2013, p.397). Even when Hyde talks about differences, the behaviors she is analyzing - specially the sexual ones - can also be explained from a cultural point of view. There are no biological explanations for why men masturbate more than women, for example.

António Damásio agrees with such cultural influence, but does not address how culture is gendered. He says that

[...] reward and punishment scales applied to infants, children and adolescents vary remarkably in different families, schools and social circles; the conformation of the events that constitute the past history of an individual and his anticipated future is controlled largely by the social environment; the rules and principles of behavior that govern the cultures in which the autobiographical self is developing are under the control of the social environment; the same is true of knowledge in which individuals organize their autobiography, ranging from models of individual behavior to cultural facts (2015, p.187)⁵.

We suggest that gender analysis must integrate how environmental influences compose what neuroscience claim as biological differences, since our brain's physiology and structure can be transform due to neural plasticity. When we talk about our bodies and our brains, we must include important notions, such as identity and performance, in order to fully comprehend how

⁵ Our translation from the original: "as escalas de recompensas e punições aplicadas a bebês, a crianças e a adolescentes variam notavelmente em diferentes famílias, escolas e meios sociais; a conformação dos eventos que constituem o passado histórico de um indivíduo e seu futuro antevisto é controlada, em grande medida, pelo meio; as regras e princípios de comportamento que governam as culturas em que um self autobiográfico está se desenvolvendo se encontram sob o controle do meio; o mesmo se pode dizer dos conhecimentos segundo os quais os indivíduos organizam sua autobiografia, que vão de modelos de comportamento individual aos fatos de uma cultura".

gender and society are constantly interacting and changing each other. A contribution from Social Cognitive Theory shows precisely the importance of such interaction. According to this theory, psychological and cognitive sex differences can be a result of "males and females receiving different rewards and punishments for their behaviors, people's tendency to imitate same-gender models, and cognitive processes such as attention and self-efficacy" (HYDE, 2014). Through a cognitive perspective, we want to introduce the discussion of how culture impacts our mental representations, and, therefore, how it influences gender performances.

Body, identity and performance: gender stereotypes and some contributions of social cognitive theory

Through the discussion of body, identity and performance, we believe that a more complex and fruitful contribution to gender inequality can be made. Understanding the morphology of the "male brain" and "female brain" does very little to help us understand the reality of social inequality between genders and the very material hardships that an essentialization of gender differences brings to the table. It seems that a neuroscientific narrative that does not look at social reality will, in fact, give a scientific permission to establish and maintain social distance and discrimination, but we want to insist that such perspective is basically bad science, or, as we showed above, neurosexism.

There can be no understanding of sexual differences without an understanding of how mental representations (as first level intuitions) are resignified, semantically, in everyday practices that allow us to really attach meaning to these representations. So, whatever is being chemically constituted as an intuition, this is only understood in terms of normative/meaning-like action and behavior in socialization. There are no evidences to sustain a narrative of gender or sex, or gender practices and sexual practices as in the brain, alone. As a matter of fact, several practices of appropriation and resignification of gender roles and even of biological constitution seem to point that though we do have a sexual biology this sexual biology is meaningless and thin without socialization - and is, ultimately, the result of very concrete political and social interactions in everyday life.

Prinz (2012) argues that cognitive science is concerned with how perception of concepts and principles can be acquired through experience rather than being present at birth, as a way to overcome inatist presuppositions. Through these experiences, mental representations are perceptions of representations caused by environmental stimuli, so "our ability to represent things contributes to an explanation of our ability to behave in

ways that are sensitive to those things” (PRINZ, 2004, p.4). Elsewhere, Prinz suggests that

what we consider masculine or feminine seems to be partially determined by culture. In Western culture, femininity is associated with such arbitrary symptoms as dresses, love of flowers, manicured nails, and the color pink. More disturbingly, femininity has been associated with submissiveness, manners, and frivolity. Being feminine is being placed under a label that carries with it a set of characteristics, appearances, and behaviors. Femininity is a role. Its players don't always realize that they are playing out culturally ordained behaviors, but they are. Gender roles require choices that are not rendered obligatory by biology (2004b, p.132).

For a similar effect, and using moral emotions as an example, Moll et al (2002) argue that there is a connection between mental representation of a certain moral action X with a homeostatic state of the body Y. The event that connects a moral intuition X to a psychological state Y, shapes a certain moral valuation of that specific event. Moll qualifies these visual stimuli normatively and qualitatively, which means that to an specific scene there is a normal behavior to be expected.

Within a cognitive perspective, both suggest that there is more to intuitions than the central nervous system, and external information and socialization are paramount to our understanding of gender differences and sexual behavior. Bandura's classic account of moral disengagement points at how important the history of one's society and upbringing are to one's understanding of the meaning of one's intuitions. The point here being that there can be no understanding of sexual differences without an understanding of how mental representations (as first level intuitions) are resignified, semantically, in everyday practices which allow us to really attach meaning to these representations.

Bussey and Bandura's account for the gender development and differentiation states that

gendered roles and conduct involve intricate competencies, interests and valued orientations. A comprehensive theory of gender differentiation must, therefore, explain the determinants and mechanisms through which gender-linked roles and conduct are acquired (1999, p.685).

Also, within the social cognitive theory he points that there are three main modes of influence that promote the gender development. Bussey and Bandura explains them by saying that

the first mode is through modeling. A great deal of gender-linked information is exemplified by models in one's immediate environment such as parents and peers, and significant persons in social, educational and occupational contexts. In addition, the mass media provides pervasive modeling of gendered roles and conduct. The second mode is through enactive experience. It relies on

discerning the gender-linkage of conduct from the outcomes resulting from one's actions. Gender-linked behavior is heavily socially sanctioned in most societies. Therefore, evaluative social reactions are important sources of information for constructing gender conceptions (1999, p.685).

The first and second modes seem to suggest that environmental influences will have certain impacts in gender roles since the early stages of life, by stimuli received from the parents, for example. Therefore, in order to understand the embodied perception of gender, we must also conceive how those roles provide a normative behavior of performance to manhood and womanhood. Although Butler is not a cognitivist, her approach to gender performance can endorse Bussey and Bandura's assumptions. Butler (2015) argues that these gender performances are categorized towards a body generalization - between male and female - and, moreover, this body would presuppose an inertia to receive external and cultural stimuli. For Butler, in this sense, sex and gender performance is instead a continuum process of appropriation and resignification of environmental information, through which, gendered bodies would not be presented as a consolidated concept, but as a battlefield to self-comprehension. To say that performance matters to the understanding of both body and identity, does not mean that certain material characteristics and limits will not be correlated to sex differences, what does change is the meaning within how science perceive this gender embodiment and behavior in unequal contexts of socialization.

Bandura and Bussey introduce the third mode by saying that "people have views of what is appropriate conduct for each of the two sexes". They then state that

the third mode [...] serves as a convenient way of informing people about different styles of conduct and their linkage to gender. Moreover, it is often used to generalize the informativeness of specific modeled exemplars and particular behavioral outcome experiences (1999, p.685).

The impact of those three modes of influence depend on the social structuring of experiences and the developmental period in which the individual lives. Moreover, Bandura and Bussey stress how these influence modes interact in a very complex way, always oriented "toward promoting the traditional forms of gendered conduct". However, since the several changing views on gender, the source of influence remarkably diverse. Therefore, according to Bandura, "gender development is straightforward under conditions of high social consensus concerning gendered conduct and roles".

Butler (2015) argues that intelligible genders are those that institute and maintain coherent and continuous associations between sex, gender, sexual practice and desire. Throughout this paper, we presented the strict

notion of woman and man, but we should take in consideration all other forms that gender acquires as a continuum - transsexuality, transvestism and several other gender identities that are not being taken in consideration in any neuroscientific research.

In order to take gender and sex differences into account in neuroscientific researches, some definitions must be established, such as what does sex and gender mean, and how these two concepts are different. It is also important to be cautious with sexist and heteronormative assumptions that may mislead results and reproduce notions of gender roles within a dominant and oppressive sexist dynamic.

Conclusion: enculturation, neural plasticity and feminism

In this essay, we presented the works of several neuroscientists who believe that we should take culture into consideration when dealing with the brain. Enculturation, or the way we learn the traditional content of our culture and all its rules and values, influences the brain directly. It is not possible to consider our brain as an innate expression of genes that has been deciding for millenniums female and male roles and performances. Therefore, a behavioral analysis that does not take in consideration the social status of its subjects has no use, especially when focused on sexual behavior or sexuality.

Neuronal plasticity, for example, is a well established tool to explain how social and environmental influences can alter our brain's morphology and functions. It is very likely that the differences we observe between our brains are a result of social conditions and cultural pressures that ultimately categorize people as women and men. The mainstream neuroscientific field, besides ignoring other gender identities, assumes that those categories have a normative and proper women and men-like behavior.

In a way, the sex difference assumption misguides science to seek biological explanations for those differences rather than questioning stereotypes and performances associated to expected gender roles. As mentioned before, from a very young age, boys and girls are taught to be different and to perform gendered behaviors.

The sexed brain critique is mainly influenced by feminism - and the fact that most researchers who criticize it are women is not a coincidence. The very term neurosexism was developed to address another form of sexism and inequality found in our society, the one that happens in neuroscience researches. The feminist movements have questioned all forms of knowledge production and how they perpetuate oppression and domination. In a work about the feminist theory in science, Deboleena Roy (2004), argues that by "bridging feminist critiques of science with practical transformations in

science” we might be able to make things change, not only in a methodological sense, but also in an epistemological one. When Helen Longino (1987) asks if we can in practice do science as feminists, she immediately answers that no, “not until we change the social and political context in which science is done”. Here we presented an answer that includes science as tool for such social and political changes. We need to practice science as feminists, questioning our methods and our parameters in order to overthrow sexist paradigms. It is time to question gender roles and stereotypes and not look for ways to prove (or invent) its biological origin.

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