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The Nature-Nurture Controversy: The Nucleo-Genre Paradigm as a Means of Understanding Gender

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ABSTRACT

The relation between the sexes has long been founded on the basis of masculine domination. Interpreting biological differences as evidence of male superiority, social institutions - the family, religious and educational institutions as well as the state - have succeeded in grounding this culture in the collective unconscious so that it has come to be viewed as natural. As a result, dominated women internalized this vision and believed in their unworthiness and inability to compete with the dominating male gender. Even the changes in the condition of women brought about by feminist movements obeyed the logic of the traditional sexual division. Such a division, Pierre Bourdieu notes, extends to homosexuals who emulate the relations of domination among heterosexuals. Biological studies, on the other hand, proved that sexual orientations are based on genetic or hormonal differences. The tendency to naturalize the social and socialize the natural has thus created a gender dilemma, reinforcing the binary division of gender and masculine domination. In this context, Alaa Abd al-Hadi's *Nucleo-genre Paradigm* (2008), a world poetics paradigm for the study of literary genres, offers a new way of understanding gender that helps resolve the age-old nature-nurture controversy through its distinction between the "Homogeneous Medium" without which gender does not ontologically exist, the "Isomers" or epistemological structural elements that are shared by various genders, and the "Isotopes" or infinite number of aesthetic characteristics that differ from one individual to another. Moreover, it predicts the formation of new gender identities through its notion of the "Arch-isomer," which results from the union of two different isomers.

1. Introduction

The relation between the sexes has long been founded on the basis of masculine domination. Interpreting biological differences as evidence of male superiority, social institutions - the family, religious and educational institutions as well as the state - have succeeded in grounding

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this culture in the collective unconscious so that it has come to be viewed as natural. Grounding patriarchal practices on the basis of biological differences, the family structure was built with the father as the authority figure and bread winner, and the mother as the bearer and carer of children. Male domination at home carried over into religious institutions with leading positions reserved only to men, and women demeaned and viewed as incapable of decision making. As for the educational system, it maintained the same discrimination between the sexes based on what was viewed as biological differences. Thus, the faculties of medicine and law suited men while humanities and social sciences suited women. Within the humanities, philosophy and sociology suited men while psychology and literature suited women. Even within each discipline, synthetic and theoretical studies suited men while analytical and practical ones suited women. To complete the patriarchal structure, the state reserved high leading positions to men and low administrative jobs to women. All these discriminatory practices were justified by the so-called biological differences between man and woman.

However, the biological differences used for centuries as a justification for masculine domination are themselves a social construction symbolized by the top/ bottom, straight/ curved, hard/ soft dichotomies that aim at establishing the social status of men and women. Pierre Bourdieu (2001) explains this circular causality as follows:

> Because the social principle of vision constructs the anatomical difference and because this socially constructed difference becomes the basis and apparently natural justification of the social vision which founds it, there is thus a relationship of circular causality which confines thought within the self-evidence of relations of domination inscribed both in objectivity, in the form of objective divisions, and in subjectivity, in the form of cognitive schemes which, being organized in accordance with these divisions, organize the perception of these objective divisions. (pp. 11-12)

In the Middle Ages, Mondeville asserted that female genitals were similar to the male ones, but inverted (Pouchelle, 1990, p. 181). For two millennia, the one sex model persisted: there were no words for the ovary and the vagina. The representation of male and female sexual organs as two variants, superior and inferior, of the same physiology continued until the Renaissance. By late eighteenth century, the one-sex model gave way to the two-sex model that emphasized biological differences. However, traces of the one-sex model could still be detected in early nineteenth century, as the following verse attests to:

> Though they of different sexes be,
> yet on the whole they are the same as we,
> for those that have the strictest searchers been,
> find women are but men turned outside in.
> (qtd. in Laqueur, 1990, p. 4)

Early nineteenth century anatomists tried to find in female genitals justification for their social representation as passive and inferior (Bourdieu, 2001, p. 15). By the late nineteenth century, prominent Professor of Biology, Patrick Geddes, used cellular physiology to account for different social behaviour: anabolic cells made women "more passive, conservative, sluggish and stable" than men, while catabolic cells made men "more active, energetic, eager, passionate, and variable" (qtd. in Laqueur, 1990, p. 6). Explaining social behaviour in terms of biological differences served to naturalize the social and embed it into the collective unconscious. As Bourdieu (2001) points out, “The particular strength of the masculine sociodicy comes from the fact that it combines and condenses two operations: it legitimates a relationship of domination by embedding it in a biological nature that is itself a naturalized social construction” (p. 23).

Accordingly, social practices that isolated women, assigned them menial tasks, taught them how to hold their bodies, and excluded them from male space, came to be viewed as natural, justified by biological differences that are themselves socially constructed. The problem is that women internalized these acts of masculine domination, and believed that they were naturally consigned to what is low and menial. Therefore, they developed a sense of self-deprecation, shying away from what is socially perceived as a man's career, and submissiveness exemplified in their attraction to older and taller men who wield power and authority. Even after decades of feminist gains – the right to vote and access to all forms of education and occupations – women continued to practice self-exclusion, which attests to the power of a culture of masculine domination "durably embedded in the bodies of the dominated in the form of schemes of perception and dispositions" (Bourdieu, 2001, p. 40). Feminist movements mistakenly believed that raising of consciousness was the means of the liberation of women, forgetting that the culture of masculine domination is durably embedded in the bodies of the dominated. As Bourdieu (2001) argues, "the relation of complicity that the victims of symbolic domination grant to the dominant can only be broken through a radical transformation of the social conditions of production of the dispositions that lead the dominated to take the point of view of the dominant on the dominant and on themselves" (pp. 41-2).

Not only woman but also man suffered as a result of this embedded social structure that conferred upon him what came to be called male privilege. Having to assert his manliness and virility, man finds himself obliged to enter the games of violence such as wars and violent sports. Sometimes he is even forced to defy all safety measures and endanger his life for fear of losing face in front of the group. American sociologist Michael Kimmel describes such harmful male behaviors related to aggression and sexuality using the term "toxic masculinity". Such behaviors stem, as Michael Flood notes, from "expectations that boys and men must be active, aggressive, tough, daring, and dominant" (2018, para. 1). Just as women experience bodily insecurity as a result of being constantly under the male gaze, so do men spare no effort to rise to the female conception of masculinity and the well-shaped, muscular body image that attracts women.

Contrary to expectations, homosexual relations are not excluded from the culture of masculine domination. Raised as heterosexual, homosexuals internalize the dominant point of view. Thus, they enact the male and female roles with the affirmation of masculinity taken to extremes as a reaction against the dominant effeminate style. Unlike women who suffer from the male gaze, the form of domination homosexuals suffer takes the shape of "invisibilization," or refusal of legitimate, public existence. As a stigmatized social group, homosexuals oscillate between the fear of being unmasked and subjected to the feeling of shame from the dominant point of view, which regards feminization of the masculine as sacrilegious, and the desire of inverting the sign of the stigma and turning it into an emblem, like "gay pride" to gain social acceptance and recognition.

Laqueur summarizes the sex-gender controversy as follows:

> The analytical distinction between sex and gender … has always been precarious. In addition to those who would eliminate gender by arguing that so-called cultural differences are really natural, there has been a powerful tendency among feminists to empty sex of its content by arguing, conversely, that natural differences are really cultural. (1990, p. 12)

By distinguishing sex from gender, feminist theory disputed the naturalistic explanations of sex which assume that biology dictates social and cultural constructions of masculinity and femininity. Judith Butler notes,

> The distinction between sex and gender has been crucial to the long-standing feminist effort to debunk the claim that anatomy is destiny; sex is understood to be the invariant, anatomically distinct, and factic aspects of the female body, whereas gender is the cultural meaning and form that that body acquires, the variable modes of that body's acculturation. (1986, p. 35)

2. Literature Review

First coined by psychologist John Money in 1955, the word “gender" has ever since been used to refer to “the socially constructed characteristics of women and men – such as norms, roles and relationships of and between groups of women and men” (WHO, para. 1). Money hypothesized that biological sex neither anticipates nor guarantees gender. Accordingly, he advised the parents of David Reimer who lost his male sexual organ during a failed circumcision operation to raise Reimer as a girl. After a sex reassignment surgery, Reimer got female genitals and was never told he was biologically male. During puberty, Reimer was given female hormones and his sex reassignment was followed up by Money. Despite his sex reassignment and upbringing as a female, Reimer experienced gender dysphoria, rejected female identity as a teenager and suffered severe depression that eventually led to suicide at the age of thirty-eight (Gaetano, 2017).

2.1. Feminist Theories

Earlier, French existentialist Simon de Beauvoir wrote in *The Second Sex* (1949) what came to be a famous feminist slogan, “One is not born, but, rather, *becomes*, a woman” (p. 301). What Beauvoir emphasized was that gender is culturally constructed and has nothing to do with natal sex. Interpreting Beauvoir's words, Judith Butler maintained: “gender is in no way a stable identity or locus of agency from which various acts proceed; rather, it is an identity tenuously constituted in time - an identity instituted through *a stylized repetition of acts*” (1988, p. 519). Butler argued that if gender is neither biologically determined nor permanently stable, gender identity, which is constituted through performative acts, can undergo transformation. However, gender identity is not completely self-styled but socially constructed and historically constituted. As Butler (1988) points out:

> To be female is … a facticity which has no meaning, but to be a woman is to have become a woman, to compel the body to conform to an historical idea of 'woman,' to induce the body to become a cultural sign, to materialize oneself in obedience to an historically delimited possibility, and to do this as a sustained and repeated corporeal project. (p. 522)

In other words, becoming a “woman" is conditioned by what is socially constructed throughout history. Doing one's gender is a reenactment of socially constructed notions of what that gender is. Gender is neither a free individual choice nor a socially imposed construct. Butler explains: “Just as a script may be enacted in various ways, and just as the play requires both text and interpretation, so the gendered body acts its part in a culturally restricted corporeal space and enacts interpretations within the confines of already existing directives” (1988, p. 526).

Although the term “gender” was meant to address the potential discrepancy between individuals’ natal sex and their attribution of identity to themselves, it failed to do so because gender builds on sex, and sex is a given. Suzanne Kessler and Wendy McKenna (1978) note: “Gender is an anchor, and once people establish what you are, they interpret everything you do in the light of that" (p. 6) The weight in this anchor is sex, or genitalia. Gender attribution is thus genital attribution. Laqueur (1990) criticizes the tendency of feminists to empty sex of its

meaning by arguing that natural differences are cultural. In his opinion, much feminist scholarship is caught "between nature and culture, between 'biological sex' and the endless social and political markers of difference" (p. 12).

In her seminal work, *Gender Trouble* (1990), Butler draws attention to the complexity of gender identity, she writes:

> If one "is" a woman, that is surely not all one is; the term fails to be exhaustive, not because a pregendered "person" transcends the specific paraphernalia of its gender, but because gender is not always constituted coherently or consistently in different historical contexts, and because gender intersects with racial, class, ethnic, sexual, and regional modalities of discursively constituted identities. As a result, it becomes impossible to separate out "gender" from the political and cultural intersections in which it is invariably produced and maintained. (p. 3)

The dilemma of black women is even greater than that of white women. Race intersects with gender to oppress black women and subjugate them. Collins notes in her most highly acclaimed book, *Black Feminist Thought* (1990), even black culture contributes to the oppression of black women by admiring the beauty of white women. As Harriet Jacobs (1861) wrote, "That which commands admiration in the white woman only hastens the degradation of the female slave" (p. 46).

Butler's view that gender identity is free and flexible laid the foundation for queer theory. Rejecting the binary view of gender, Butler emphasized the multiplicity of gender and the autonomy of LGBTQ+. Pointing to the performativity of gender, she wrote: "There is no original or primary gender a drag imitates, but *gender is a kind of imitation for which there is no original*" (1990, p. 313). In other words, Butler counters the view of heterosexuality as the norm against which homosexuality is to be judged, and binary genders as the proper genders of which LGBTQ+ individuals are merely a copy. Rather, all gender identities and relations are performative acts characterized by repetitiveness and instability. Gender is all there is, that is, there is no self preceding a gendered self. In Butler's view, "the social construction of the natural presupposes the cancellation of the natural by the social" (1993, p. 5). Biological sex is as much a social construct as gender.

2.2. Biological Theories

In contrast to feminist theories of gender which assert that gender is a social construct and even go so far as to claim that biological sex is socially constructed, biological theories provide scientific evidence that gender is determined by two biological factors: chromosomes and hormones (Fisher, 2017). Studies on homosexual men, for example, Mustanski et al. (2005), Sanders et al. (2015) and Sanders et al. (2017) found evidence that regions on chromosome 8 were linked to male sexual orientation. In a study on a large sample of homosexual men and women, Ganna et al. (2019) found five loci of genetic variants known as SNPs on five chromosomes (4, 7, 11, 12, and 15) associated with sexual orientation. Twin studies that used genetic modeling techniques to estimate the variance in sexual orientation, for example (Bailey, Dunne & Martin, 2000; Kirk, Bailey & Dunne, 2000), reported significant and moderate genetic contributions for sexual orientation among identical twins compared to fraternal twins.

However, it has been found that sexual behavior is only indirectly caused by genetic sex and that hormones play an important role in inducing it prenatally. According to Bailey et al. (2016),

> The sexuality of the body and behavior of mammals does not appear to be directly affected by their genetic sex (XX vs. XY). Rather, it is an indirect consequence of

> genetic sex— namely, whether ovaries or testes develop prenatally. Testicular release of steroid hormones, specifically androgens such as testosterone, act early in life to induce the formation of male genitalia (penis, scrotum, etc.) and alter the developing brain to promote male sexual behavior in adulthood. The absence of these testicular secretions leads to the development of female-typical genitalia (clitoris, labia, vagina, etc.) and brain organization that, in adulthood, is more likely to drive female-typical sexual behavior. (pp. 69-70)

The presence of SRY (sex-determining region Y gene) in the Y chromosome causes the gonads of the embryo to develop as testes after week 6. The testes release testosterone, which is the primary androgen receptor-activating hormone that masculinizes the fetal brain. Bailey et. al. (2016) hypothesized that homosexual men receive little testosterone levels or experience some fluctuations during the prenatal phase, while homosexual women receive high levels of testosterone. This hypothesis was supported by studies on the finger digit ratio of the right hand. Breedlove (2017) found that lesbians have significantly more masculine digit ratios, which proves their exposure to high levels of testosterone, a finding which was replicated in numerous cross-cultural studies. Experiments exposing animals to sex hormones during gestation, for example (Adkins-Regan, 1988) and (Henley, Nunez & Clemens, 2011), have shown lifelong male-typical behavior in females, and female-typical behavior in males.

What supports the nature hypothesis is that cases of hormonally typical males who were reassigned as females due to penis loss during surgical accidents consistently showed attraction to females when they grew up (Diamond and Sigmundson, 1997; Bradley et al., 1998; Reiner & Gearhart, 2004; Reiner & Kropp, 2004). As Bailey et al. (2016) comment, “These results comprise the most valuable currently available data concerning the broad nature-versus-nurture question for sexual orientation” (p. 73).

Thus, it appears that the source of all trouble is socializing the natural and naturalizing the social. To resolve the nature-nurture controversy, Bourdieu calls for a new approach to theorizing and researching gender

> To break the relationship of deceptive familiarity that binds us to our own tradition. The biological appearances and the very real effects that have been produced in bodies and minds by a long collective labour of socialization of the biological and biologicization of the social - combine to reverse the relationship between causes and effects and to make a naturalized social construction ('genders' as sexually characterized habitus) appear as the grounding in nature of the arbitrary division which underlies both reality and the representation of reality and which sometimes imposes itself even on scientific research. (2001, p. 3)

3. *The Nucleo-genre Paradigm*

Alaa Abd al-Hadi’s *Nucleo-genre Paradigm* seems to provide an explanation of gender beyond the nature-nurture dichotomy. Derived from the Latin prefix *Nucleo* and the French term *Genre*, the *Nucleogenre Paradigm* was written with an aim to unify the different poetics of any genre. Based on the mathematical set theory and qualitative logic of Lutfi Zadeh's “Fuzzy Sets” (1975, p. 407), it posits that there are stable structural elements common to various cultural manifestations of a single genre across time and space. It is these common structural elements, which help decide whether a certain manifestation belongs to a certain genre, that allow for cross cultural communication and understanding while respecting cultural specificities, manifested by an infinite number of aesthetic elements. *The Nucleo-genre Paradigm*

distinguishes between two levels of genre: the poetic level of production and the aesthetic level of reception. It gives primacy to reception, which is often disregarded in genre theories.

According to Alaa Abd al-Hadi (2022), the nucleo-genre consists of two main components:

> 1. A nucleus by which we mean the "Homogeneous Medium" without which the artistic work does not ontologically exist.
> 2. The structural elements that are present in thousands of manifestations of some genre. These structural elements are common to the various manifestations belonging to different cultural poetics. They are what remains after discarding the historically aesthetic elements which differ from one place to another and one culture to another. Without these structural elements, a work loses its original artistic identity that distinguishes it from other works. They are the elements that together constitute the nucleo-genre, a state we call "Possibility." (p. 46)

The H.M. (Homogeneous Medium) of any literary or artistic genre is the nucleus without which the genre does not ontologically exist. It can be shared between more than one genre; for example, spatio-temporal relations are the H.M. of both theatrical performances and real scenes. What distinguishes real scenes from theatrical performances is what Abd al-Hadi calls "the Isomer," the conceptual set of structural elements common to manifestations of a genre. Abd al-Hadi points out that there are two theatrical isomers: 1) possible worlds and secondary reality, which simply means receiving the possible worlds presented on the stage as secondary reality even if they were not so, 2) duality of the spatial sign and the stage, which is a direct result of the existence of possible worlds. Abd al-Hadi explains, "It suffices to receive the spatial sign and theatrical space as secondary reality to have this duality" (2022, p. 80). Accordingly, real scenes on the street do not belong to the theatrical genre because they are not received as secondary reality. According to Abd al-Hadi, the theatrical isomer remains a pure theoretical level until received. Upon reception, the theatrical isomer turns into Isotope 0. Since the Aristotelian dramatic, epic and lyric share the same theatrical isomers – they were all performed in front of an audience and received as secondary reality with the duality of the spatial sign and the stage, it follows that they all belong to the theatrical genre. Their differences are mere aesthetic differences; in other words, they represent theatrical Isotopes of the same theatrical genre. Isotopes are aesthetic elements that are not integral to the theatrical nucleo-genre including costumes, light, music and decorations etc. In contrast to the finite isomeric set, isotopes are infinite: every new performance of a single dramatic text is a different isotope. As for the nucleo-genre membership function, it is a function that identifies the degree of membership rather than membership itself. Therefore, the nucleo-genre membership function "N" always lies between 0 and 1 without reaching any. This is Abd al-Hadi's amendment to Lutfi Zadeh's "Fuzzy Sets." The reason for this amendment is that the membership to the set is decided by a prior ontological identification of the Homogeneous Medium of the genre.

The gender dilemma lies in treating the aesthetic characteristics of the culturally constituted concept of gender, such as a curvy or muscular figure, as if they were fixed structural elements. In fact, genitals have traditionally been used to determine the new born sex and follow a certain form of upbringing accordingly. However, as is demonstrated by the literature reviewed above, genitals cannot accurately be used for sex determination and gender assignment. The research questions that need to be asked then are: 1) What is the "Homogenous Medium" of gender, that is, the nucleus without which the culturally constructed concept of gender cannot ontologically exist? What are the gender "Isomers," that is, the structural elements that are common to all genders?

To those who question the relevance of the *Nucleogenre Paradigm* to gender studies, we cite Paul Ricoeur who regarded the self as a narrative identity that "appears both as a reader and

the writer of its own life" (1987, p. 246). According to Ricoeur (1987), the individual is both the interpreter and the interpreted, as well as the recipient of the interpretations. Therefore, it makes sense to speak about the poetics of gender identity and to use a comparative poetics paradigm to understand the ubiquitous concept of gender.

4. Methods

To answer the above-mentioned research questions, Abd al-Hadi's *Nucleogenre Paradigm* will be used as a theoretical framework. First, medical studies will be surveyed to identify the "Homogenous Medium" of gender, that is, the nucleus without which the culturally constructed concept of gender cannot ontologically exist. Next, cultural studies on identity will be analyzed to identify the gender "Isomer," that is, the structural element that is common to various gender identities and that remains a pure theoretical level until received, as well as the historically aesthetic gender characteristics, which differ from one place to another and one culture to another.

5. Data Analysis

To identify the H.M. without which gender cannot ontologically exist, we turn to anatomy of the brain because recent studies, for example (Zup & Forger, 2017), have shown that it is hormones, not sex chromosomes, that are primarily responsible for sexual differentiation. The evidence is that XY embryos that lack receptors to anti-Mullerian hormone develop as intersex individuals, possessing testes and fully differentiated Wolffian duct derivatives, as well as uterus and fallopian tubes. Similarly, XY embryos that lack androgen receptors become "androgen-insensitive." They develop testes and produce plenty of testosterone that elicits no response due to the absence of androgen receptors, but the Wolffian ducts fail to develop and the external genitalia are completely feminized.

First discovered in rats (Gorski et al., 1978), the sexually dimorphic nucleus of the preoptic area (SDN-POA) in the hypothalamus was found to be the best characterized sex difference in the mammalian brain. The mechanisms for this sex difference are largely driven by the effects of estradiol early during the postnatal period (Gorski, 1986). (Arai et al., 1996) found that in adult male rats, aromatase expressed in the SDN-POA converts circulating testosterone to estradiol, which in turn inhibits apoptosis in the SDN-POA resulting in a larger volume. (Hofman and Swaab, 1989) found that the SDN-POA was larger in males in at least nine different species. Moreover, (Alekseyenko et al., 2007) found that bilateral damage to the SDN-POA in male ferrets changes the male-typical preference into female-typical preference.

LeVay (1991) reported that INAH3 (third interstitial nucleus of the anterior hypothalamus), a sexually dimorphic region that is similar in some ways to the SDN-POA, was more than twice larger in heterosexual men than in homosexual men, whose INAH3 volume was similar to that of heterosexual women. (Byne et al., 2000; Byne et al., 2001) replicated LeVay's experiment on heterosexual subjects, and found that the INAH-3 of heterosexual men had both more neurons and larger volume than heterosexual women. Poeppl et. al. (2016) have shown that the anterior and preoptic areas of the hypothalamus in humans are part of a neural circuit that determines sexual preferences. A study of transgender individuals by (Garcia-Falgueras & Swaab, 2008) found that male-to-female transgender individuals' INAH-3 have a typical female size and number of neurons, and that female-to-male transgender individuals' INAH-3 have a typical male size and number of neurons. Thus, the size and number of neurons of the INAH-3 corresponded to the gender the subject identified with rather than their biological or chromosomal gender. In a review of recent studies on the neurobiology of gender identity and sexual orientation, (Roselli, 2018) concluded the following:

> Structural and functional differences of hypothalamic nuclei and other brain areas differ in relation to sexual identity and sexual orientation, indicating that these traits develop independently. This may be a result of differing hormone sensitivities and/or separate critical periods, although this remains to be explored. (p. 9)

6. Results and Discussion

From the above, it seems that the INAH3 (third interstitial nucleus of the anterior hypothalamus), the sexually dimorphic region that is homologous to the SDN-POA, is the H.M. without which gender does not ontologically exist because lesion or damage to this nucleus may result in a change of sexual orientation, without affecting human physiology. If the INAH3 is the Homogeneous Medium of gender, it follows that assigning gender at birth based on sex chromosomes (XY for males and XX for females), the gonads (testes for males and ovaries for females), and external genitalia is a grave mistake. Accordingly, individuals who are diagnosed as cases of gender dysphoria, defined by Diagnostic and Statistical Manual of Mental Disorders as marked incongruence between experienced or expressed gender and the one assigned at birth (2013), might turn out to be cisgender upon the examination of their INAH3. In fact, “studies focused on brain area differences,” Lavorato, Rampino & Giorgelli (2022) note “suggested that cerebral architecture of individuals with Gender Dysphoria resembles the one of individuals with the same gender identity rather than those with the same biological sex” (p. 268). From the above, it can be concluded that the INAH3 which is analogous to the SDN, or the sexually dimorphic nucleus located in the preoptic area of the hypothalamus in animals, is the Homogeneous Medium without which gender cannot ontologically exist.

Although gender cannot ontologically exist without the Homogeneous Medium, the INAH3, it is hasty to conclude that gender identity is biologically determined and claim the support of the natural hypothesis. As Butler convincingly argues, individuals do not naturally or freely constitute their gender identity because it is determined to a large extent by their place within language and convention. Gender identity, Butler explains, is not a given but an illusion created "through language, gesture, and all manner of symbolic social sign" (1990, p. 519). Abd Al-Hadi agrees with this concept, he writes: “In one of its most important dimensions, identify is a form of fictional narrative of some reality; each reality, from a cultural perspective, is a mere possibility, that is, a ‘Possible World’ in philosophical terms, a world that oscillates between necessity and possibility” (2007, p. 294). Awareness of one's role and performing it to serve one's interests, Abd Al-Hadi notes, is the locomotive that oscillates reality between the poles of necessity and possibility. Although identities differ in terms of authority and ability to change reality, Abd Al-Hadi maintains, they all share common structural elements (p. 295). Comparing various manifestations of identity, Abd Al-Hadi concludes that “the entity for symbolic projection and consumption by an individual or a group is the [structural] element that gives the “Fictional” the opportunity to work in a physical space” (p. 304). Abd Al-Hadi calls this structural element that is common to various manifestations of identity the “Isomer," and notes that it is tied to the concept of time, not as represented in collective consciousness as historically stable, but as a “Vector,” with value and direction (p. 306). According to Abd Al-Hadi, “the entity for symbolic projection and consumption” is epistemologically linked to “the cultural field," a constantly changing field constituted by the intersection of the ethnic, dogmatic, social, sexual, linguistic and professional fields (p. 295). Abd Al-Hadi notes: “The membership function of an individual or a group to these fields differs according to the time and place the individual or the group exists in" (p.293). It is reception that turns identity from the theoretical level of the Isomer into an infinite number of “Isotopes,” or manifestations of identity. Identity, in Abd Al-Hadi's view, is thus fictional rather than historical, a malleable rather than a stable construct.

If the Isomer that is common to various manifestations of identity is "the entity for symbolic projection and consumption," it follows that it is the Isomer of gender identity, a cultural field that intersects with the other five cultural fields, creating upon reception an infinite number of Isotopes. The entity for symbolic projection and consumption can be animate or inanimate, real or imaginary.

Table 1.
Entities for Symbolic Projection and Consumption

Real/ Imaginary **Animate Entity for Projection**	**Real/ Imaginary** **Inanimate Entity for Projection**
Human (male, female, hermaphrodite)	An image
Animal	A doll/ A sex object
Plant	An abstract figure

Reception plays a crucial role in turning the theoretical Isomer of gender identity into an Isotope. The moment the entity for symbolic projection and consumption is received (whether perceiving the act as sexually or not, e.g., by a child, positively or negatively, e.g. by a wife, willingly or otherwise, e.g. by an unwed woman), the state of "possibility" turns into a state of "Possibility in Action;" that is, the Isomer turns into Isotope 0. All subsequent isotopes are formed from the H.M., the Isomer, and one additional aesthetic characteristic. The number of possible isotopes is infinite.

H.M. = INAH3 (third interstitial nucleus of the anterior hypothalamus)

Isomer = INAH3 + Entity for Projection and consumption

Isotope 0 = INAH3 + Entity for Projection and consumption + reception

Isotope 1 = INAH3 + Entity for Projection and consumption + one characteristic (e.g., color) + reception

Isotope 2 = INAH3 + Entity for Projection and consumption + one characteristic (e.g., language) + reception

Gender identity thus intersects with the ethnic, dogmatic, social, sexual, linguistic and professional fields (p. 295) creating an infinite number of Isotopes. The intersection of gender identity with these fields makes it malleable: it changes over time (which explains why one might develop a homosexual identity in adulthood). It is the repetitive performativity of gender Isotopes that gives gender its fixed character at the micro as well as the macro levels, and turns the cultural into natural. Thus, if one repeatedly projects on a same-sex entity, one develops a homosexual gender identity. Similarly, if a community's projection on same-sex entities is repetitive, they develop a collective homosexual gender identity. Repetitiveness and diffusion explain why heterosexuality and the binary division of sex formed an "Archisotope" that came to be culturally regarded as the norm: it is because the heterosexual Isotope has been highly repetitive by the majority of humans and diffused worldwide. The repetitiveness of heterosexuality and its diffusion gave it fixity in collective consciousness that it turned into a doxa, in Bourdieu's own words, or an "Arch-isotope" in Abd Al-Hadi's own terms. In this regard, language plays an important role in an individual's awareness of gender identity; the use of pronouns indicates one's difference or conformity to the "Arch-isotope" of gender.

However, the *Nucleo-genre Paradigm* does not merely help identify the Homogenous Medium without which gender cannot ontologically exist, and the Isomer or the structural element common to all genders, thus resolving the nature-nurture controversy; it can also predict the future formation of new genders. According to Abd al-Hadi (2022), it is possible for two isomers to merge, thus forming an "Archisomer." Suppose science produces a sexed robot (half

human and half mechanical) in the future, will that sexed robot have gender? Will our present understanding of gender differ? Will the Homogeneous Medium of gender change? The answer the *Nucleo-genre Paradigm* offers is: a definite NO. The sexed robot will be formed of two isomers merged into one "Archisomer." Such Archisomers will be the subject of gender studies in the future.

7. Conclusion

From the above, we conclude that Abd Al-Hadi *Nucleo-genre Paradigm* (2008) offers a new way of understanding gender that helps resolve the age-old nature-nurture controversy through its distinction between the "Homogeneous Medium," the INAH3 without which gender does not ontologically exist, the "Isomer" or the entity for symbolic projection and consumption that is common to thousands of manifestations of gender identity, and the "Isotopes" or infinite number of aesthetic characteristics. According to the *Nucleo-genre Paradigm*, each gender identity is an Isotope for a constantly deferred origin. In other words, the binary division of gender into male and female is not the origin against which other genders are to be compared; rather, the male and female genders are themselves Isotopes. Not only does the *Nucleo-genre Paradigm* help settle the nature-nurture controversy, it also predicts the formation of new gender identities through its notion of the "Arch-isomer," which results from the union of two different isomers. It thus provides a unifying approach to the study of gender identity poetics.

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