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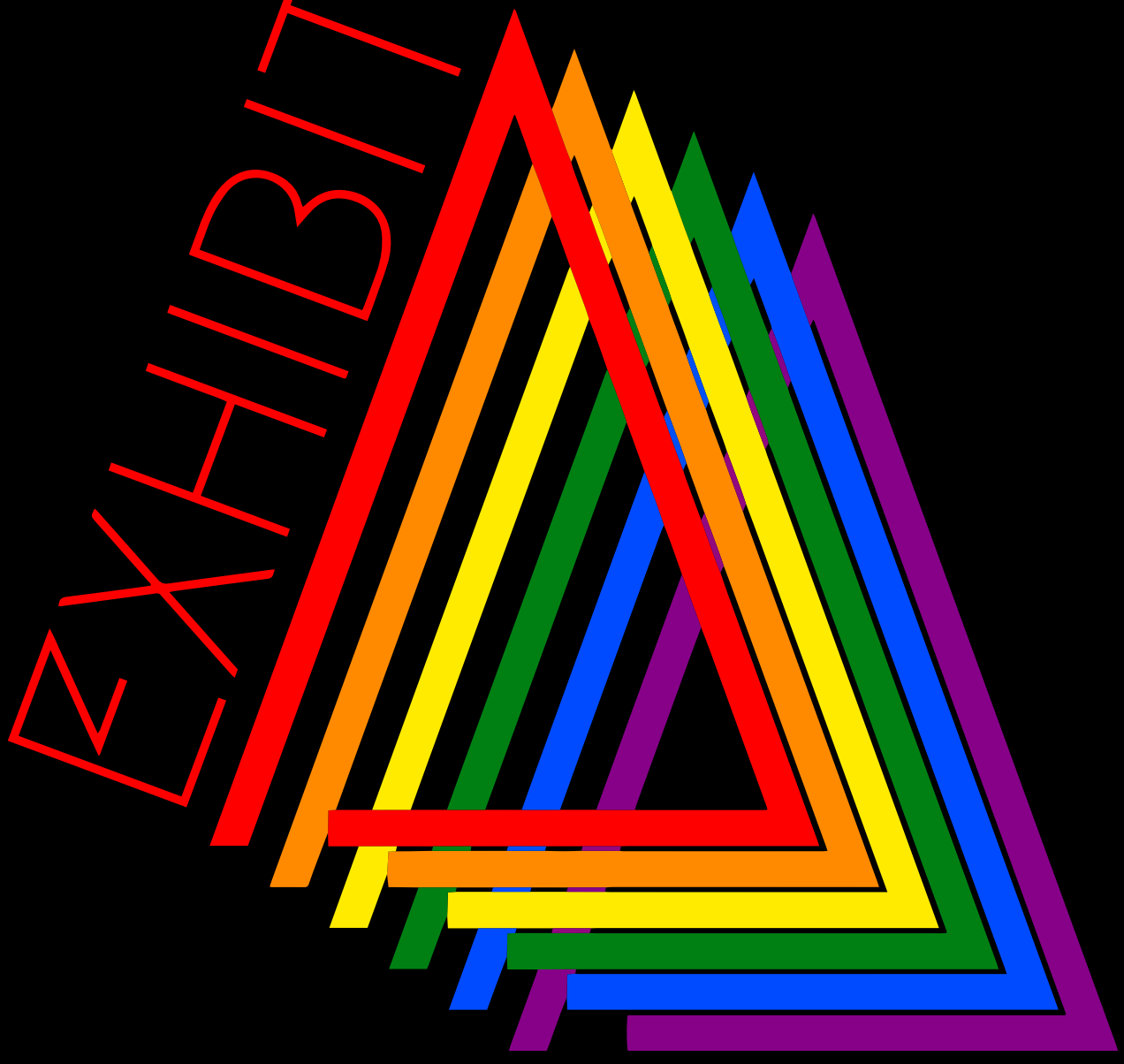


IISER
THIRUVANANTHAPURAM

anVesha

An Interview with Dr Bittu Kaveri Rajaraman

Earlier this month, Anvesha had the opportunity of interviewing Dr Bittu Kaveri Rajaraman (BKR), the HOD of the psychology department and an associate professor of biology at Ashoka University, Haryana. He received his PhD from Harvard University, and is a vocal and passionate activist for trans and queer rights. The interview was conducted and transcribed by Balaram Vishnu Subramani (BVS), B'17. The following is the interview transcript:

BVS: Could you start by telling us a bit about yourself: your research, your activism, and if they are connected in any manner?

BKR: I work on insect communication and fish cognition. I look at sensory systems and the manner in which they have evolved; this is the professional side of my work. The activist side is not about a specific thing, but about a larger connected system of injustice centred around caste, class, gender, and ableism. These two sets of work can occasionally inform each other but have largely been separate so far.

BVS: A report from June 2019 stated that 28% of LGTBQ respondents sometimes considered leaving academia and 20% trans respondents often considered leaving academia. How is it that the generally liberal academic community has created this sort of environment? How does the academic community compare with others in terms of being receptive towards the LGTBQ community and accommodating them fairly?

BKR: I don't find that the academic community is necessarily more liberal than other communities. I think it's just made up of different individuals just like everywhere else. Of course, the academic community is premised on being opened-minded and open to new ideas, but it can also have its orthodoxies. For example, I have found several rural communities in India to be far more understanding and receptive towards queer people than urban communities (including academic communities). I think that a lot just depends on where one is culturally from, how accepting the bounds of that culture are, and so on. I think Indian academia is also informed by a strong sense of Brahmanism, which polices behaviour, occupation and several other things. This framework constrains the actualisation of acceptance when it comes to sexuality and gender.

BVS: It's quite interesting to note that a community which is supposed to thrive on fact-based arguments, often completely disregards the strong scientific framework behind the sexuality and gender spectra. Why does this happen?

BKR: It's also a question of whether or not you've read what's out there. Most biologists haven't read any of the relevant literature. When I was at Harvard, my developmental biology professor was surprised to hear that people can be intersex, which is alarming to hear from a developmental biologist! This is still not something that has been introduced in textbooks for example, and it has been associated with pejorative medicalised terms. So, I think it is a question of exposure. One can also be aware of facts, such as the existence of queer or trans animals, and still be prejudiced against it in a cis/hetero-centric world. Unfortunately, that's what I see quite often. An understanding of the natural variation of gender and sexuality should become a standard part of biology textbooks.

BVS: How do we cultivate a safe-space for LGBTQ individuals in relatively new institutions such as IISER Thiruvananthapuram?

BKR: There's a lot that needs to be done. For queer students, there's a necessity for institutions to go beyond the law, which currently doesn't recognise various forms of queer relationships. To ensure that such relationships have a safe-space, there need to be strong anti-discrimination provisions. Most institutions don't have functional provisions against even recognised forms of discrimination, like casteism, classism, religious discrimination, racism, ableism and so on, let alone gender and sexuality-based discrimination. Such measures are very poorly implemented in university campuses in India. That is something we have tried to push forward through the demand for the Rohith Vemula Act, which is a comprehensive type of anti-discrimination legislation that we have been pushing for in campuses in the wake of his [Rohith Vemula's] death. In addition, for trans students in particular, one needs certain kinds of institutional measures to be in place so that they feel welcomed and comfortable in these institutions, like housing and infrastructure such as restrooms, which are gender-affirming. A trans person being able to even enter the institution is currently difficult as changing one's name and gender in educational documents is near impossible. Inconsistencies in name and gender in these documents often lead to their rejection. So there need to be amendments in this regard, and provisions for non-binary individuals as well. Once a trans person joins an institution, they need to immediately be able to (with full confidentiality) live with the name and gender of their preference without being outed to that community as trans. Anti-discrimination measures and infrastructural changes are required for trans people to be properly accommodated.

BVS: How do your experiences as a trans individual in academia vary between Indian institutions and foreign institutions such as Harvard, where you did your PhD?

BKR: Overall, I think that the US is more transphobic than India. It's always hard for me to distinguish between my experiences as a trans individual in academia and my experiences as a political activist, because I am the same person! For that reason, I've felt that I don't know what discrimination is for what reason. There has certainly been a lot of backlash for my political activities, which include among other things, my openly being trans.

BVS: Would you say that the environment in India is better in comparison?

BKR: The situation is very different for both cases. The cultural transphobia in the US and UK is very bad, I have been attacked in the street more often there than in India for example. But in India, the form of transphobia is not trans-erasure, which is how it is in the west. Here, it is the slotting of trans people into categories within this Brahmanical-patriarchal framework, where everyone falls onto a linear-like scale of superiority and inferiority, based on the assigned categories of caste and gender. Trans people are relegated to the lower reaches of this model of superiority. The particularity of caste-patriarchy, as opposed to the type of patriarchy in the US, is that you prescribe and decide what someone's occupation will be. And so, in India, trans people

have been prescribed to stigmatised and distressed forms of livelihood such as begging and sex-work. The willingness to even consider trans people as employees, be it in a domestic or office space, is not informed by that cultural background in the west. Essentially, it's easier for trans people to get jobs in the US, and the stronger anti-discrimination laws present there make it easier for trans people to sue if they get fired. The livelihood situation is better in the US. But the ability to be trans and to culturally come out and live as a trans person is much better in India than the west. Culturally and historically, trans people in India have carved out a space for themselves, and therefore trans-visibility is not a problem. In the US, cis-hetero men will get enraged just because they see a trans person walking down the street, which is just not possible in India because trans people are everywhere. It's the historical organising of the trans community which has made this place engage less in trans-erasure.

If people in India don't want to come out as trans, it's usually because they don't want to be relegated to the lower rungs of caste patriarchy if they are already in a position of some form of caste privilege. But for people who are already from other marginalised caste backgrounds, they don't have as much to lose when it comes to identifying as trans, and so we have a very strong Dalit-Bahujan and Adivasi-led trans culture in this country which has really stopped trans erasure.

BVS: What are the typical forms of prejudice and discrimination that are faced by LGBTQ individuals in academia? How can we properly address them?

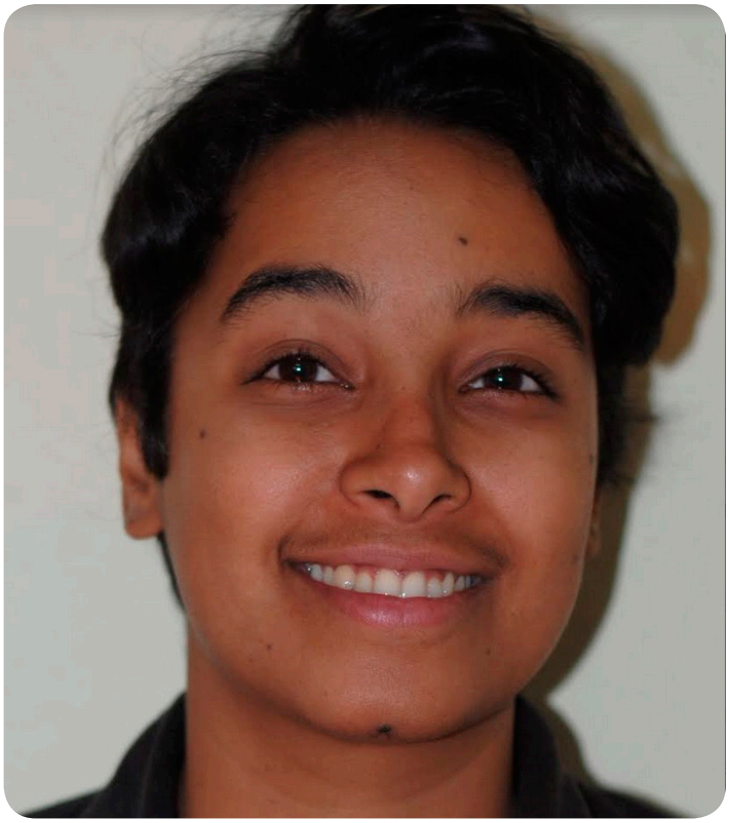
BKR: This is a very large question as there are several forms of discrimination. In general, discrimination starts from not being admitted/hired in universities. A lot of people just don't want to hire someone whom they consider to be 'garbad' (trouble) in some way. If you do get hired, there can be a lot of dismissal of you as not a 'complete human-being' or adult, because you are not within the standard compulsory heteronormative and marriage centred framework. If one does not participate in such societal institutions, then culturally and socially within universities, one is not accorded the same kind of space, and people feel less at ease when compared to their interactions with other cis-hetero individuals. Some just get ignored in departmental dynamics in various forms. Very often, people will talk about you in very strange ways behind your back, you face unprecedented amounts of sexualisation at the workplace, simply by virtue of having to fight around one's sexuality, which is not an open invitation to be sexualized. Trans people in particular face misgendering constantly because academic environments are very rarely sensitive about that. Such microaggressions which occur multiple times a day can be very painful. There are of course several other overt types of discrimination besides these covert ones. Most trans people I know have endured various kinds of acts of criminal violence, myself included, in university campuses.

BVS: Were these acts of criminal violence dealt with properly by the university administrations?

BKR: No. Some of it was because I didn't trust my then institution, the University of Hyderabad, to handle the issues sensitively given the way its role played out leading to the death of my friend Rohith Vemula.

BVS: How can we properly address archaic and pseudoscientific methods such as conversion therapy?

BKR: I think the only way to address all of these issues is to fight it out, right? We really need to point out how problematic they are. Conversion therapy should not be exceptionalised, because it needs to be understood that the vast majority of what passes for psychotherapy, internationally speaking, is not scientifically vetted. For example, in our department of psychology right now, we work with a fantastic teacher of counselling psychology, who roots her teaching of counselling and therapy in terms of what has been scientifically studied, vetted, etc. Therapies like conversion therapy centred around gender and sexuality arise when such an approach is not used, and they're embedded in a larger unscientific framework



that tends to essentially pathologise all kinds of natural human behaviour. I think there's a wider crisis, and we need to ensure that psychology is practiced and taught in a scientific way. The roots of psychology, starting from Freud, have been highly unscientific. So, it's not as if we are dealing with archaic practices creeping their way into psychology, it is psychology itself that has been rooted in archaic practices. The entire field needs a systemic overhaul. The system of categorising things into order/disorder and normal/abnormal needs to be changed. These notions and categories are extremely problematic and have to be completely done away with to encourage a more neurodiverse understanding of the brain and behaviour.

BVS: Are there any policy-based changes that you would like to see enacted in universities to support LGBTQ academics?

BKR: I think affirmative action is very necessary, especially for trans students whose transness is an immediately visible component of their application to even join an institution, so I do think affirmative action is necessary to combat potential discrimination. We have begun some queer-mentoring networks, and you can write me an email to be a part of it.

BVS: How can we increase representation of the LGBTQ community in terms of academic positions?

BKR: I think that affirmative action is one of the many ways to increase representation and visibility in academic institutions. There are a lot of informal structures such as mentoring networks which play a role. And of course, there is a lot that needs to be done in terms of intervening and ensuring that schools are safe places for trans people, so that they don't have to drop out at such an early stage. So, there's a lot more to be done outside academic institutions, in order for affirmative action and inclusion policies to work well.

BVS: How can the inclusion of LGBTQ researchers impact the quality of research, and the choice of research topics?

BKR: It depends on the field. There's a lot that needs to be done in social science and humanities. It also depends on the project that one picks in the sciences as well. In my field, I work with insects and we're surrounded by various queer insects. So, if anyone wanted to work on their queerness and the evolution of those behaviours, that's something we could always take up!

BVS: As researchers and students of science, how can we be of help to the LGBTQ community?

BKR: I think a lot can be done about making it clear that the weight of scientific evidence stands against a lot of unethical practices like conversion therapy and other forms of stigmatisation. That's an important role that scientists must play.

BVS: Are there any final words that you would like to say to LGBTQ individuals in academia?

BKR: I'd just like to make sure that younger people from the community know that there are support structures, and they can always reach out to me so that they don't feel isolated in any manner. You can contact me through email at bittu@ashoka.edu.in.

We have started mentoring networks, we have started a couple of WhatsApp groups for mentoring queer and trans people in academia. As of now, these are informal groups that are student driven, and it also has trans and queer faculty to make sure that we can help LGBTQ students who are facing issues in their universities. This is open to anyone from the LGBTQ community. If you would like to be a part of this, please send me an email.

The Need for Greater Acceptance of LGBTQIA+ Individuals in STEM

Historically, STEM has not been the most inclusive place; women, people of marginalised castes, people of colour and people with disabilities were not seen as competent enough to participate in academia. Another group of people who were generally unwelcome were LGBTQIA+ people, and since June was Pride Month, let us look at why we need STEM to be a more accepting place for them.

LGBTQIA+ people bring to the table diverse viewpoints. This cognitive diversity, which is shaped by experience, can positively correlate with more breakthroughs in research, as discussed by Scott E. Page in his book *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools and Societies.*

LGBTQIA+ people frequently face discrimination, and at its worst, this discrimination and hostile work environment in STEM can cause many to drop out of their careers. According to a survey, 28% of LGBT+ people have considered leaving STEM due to discrimination, and LGBTQIA+ undergraduate students are 7% less likely to complete their STEM degrees than their heterosexual, cisgender peers. As the country is projected to have a shortfall of researchers, losing out on a pool of potentially talented scientists due to bigotry is a great loss. People who are biased against LGBTQIA+ people, either consciously or unconsciously, may not take their LGBTQIA+ peers seriously, or outright dismiss their ideas, which again translates to lost potential.

Some are of the opinion that, in STEM, things such as ethnicity, caste, gender identity or sexual orientation do not have an impact on the research that they intend to conduct, and that a person's technical skill and knowledge are the only pertinent factors. But experiencing discrimination due to one's identity, remaining closeted (a state when someone does not disclose their gender or sexuality) due to a hostile climate, feeling a sense of alienation, all adversely impact a person's mental wellbeing and self-confidence, which in turn affects the quality and quantity of their research work.

Science does not exist in a vacuum and divorcing it from the principles of social justice and equality does not do the discipline any favours. A scientist does more than just publish papers; they actively shape policies within their institutions and serve as mentors for younger researchers. Having faculty who are LGBTQIA+ themselves that serve as someone for LGBTQIA+ youth to identify with, or faculty that openly support the community, creates a welcoming atmosphere for young LGBTQIA+ students and scientists. How can we expect LGBTQIA+ people to work in a system where they do not find support or a sense of belonging?

The points discussed above were utilitarian reasons for greater acceptance of LGBTQIA+ people in STEM fields; about how inclusion increases productivity or reduces the number of dropouts. But in truth the only argument necessary to advocate for supporting our LGBTQIA+ peers, is the plain fact that they, like everyone else, deserve respect, equality and the right to a workplace that is free from discrimination. We have a long way to go before STEM is the level playing field it should be, and each one of us has a role to play in improving the discipline.

—Ira Zibbu, B '19

The Pride of Science

June is the month of Pride, of celebrating equality, dignity, and identity. The field of science is no stranger to the LGBTQIA+ community, yet there are many narrow-minded beliefs left to eradicate. These are the rousing stories of four scientists (by no means an exhaustive account) who have contributed immensely to furthering scientific curiosity.

Dr Alan L. Hart

Dr Hart was a pioneer in the field of radiology and tuberculosis treatment, developing an X-ray process tool for early tuberculosis diagnosis. His books on medical practices contained autobiographical themes, extremely progressive for their time, touching upon his experiences related to sexuality. He was born Alberta Lucille Hart in 1890, one of the first people in the United States to undergo a hysterectomy, a female-to-male transition, after which he lived the rest of his life as Alan L. Hart. He dedicated his professional life to tuberculosis research, publishing several articles on detecting the deadly disease. Early in his career, he faced discrimination and social ostracization, as his former biological sex was revealed or often speculated upon. This forced him to change several cities in an attempt to avoid the threat of discovery. His illustrious educational achievements and ground-breaking research paled in comparison to the supposedly 'salacious' gossip about his gender.

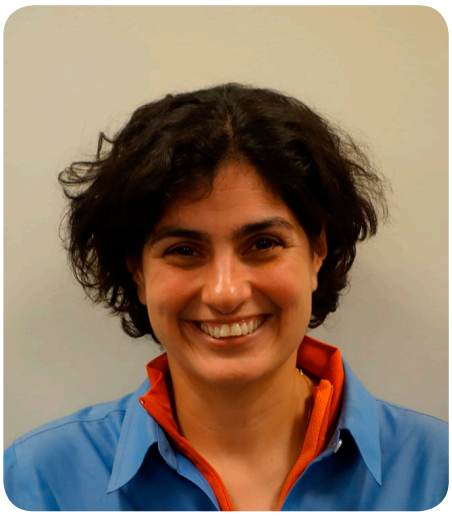
Dr Bruce Voeller

The year was 1963. A husband and father of three children had acknowledged his homosexuality, after which he was caught in a fierce legal battle for child visitation rights. The outcome of this case was a landmark for gay and lesbian parents. This changed the course of his life from academia to campaigning for gay rights. Dr Bruce Voeller was a biologist and researcher, with a doctorate in developmental biology, biochemistry, and developmental genetics. The youngest associate professor at Rockefeller University, he authored numerous articles and four books. Moreover, Dr Voeller fought at the frontlines of the war against AIDS. He was the one who suggested the name Acquired Immune Deficiency Syndrome, instead of GRID (Gay-Related Immune Deficiency), which he considered both stigmatising and inaccurate. Founder of the National Gay Task Force (later the National Gay and Lesbian Task Force), he visualised an organisation that would address issues across the spectrum, from discriminatory laws to the negative portrayal of homosexuality in popular culture.

Rochelle Diamond

Rochelle Diamond is a Member of the Professional Staff at California Institute of Technology (CalTech). She has been the manager of the Flow Cytometry/Cell Sorting facility since 1984, a specialist in cell separation and analysis. A researcher and lab manager at Caltech Professor Ellen Rothberg's developmental immunology group since 1982, she has authored over 25 publications in scientific journals. Moreover, she was also a part of the City of Hope team that cloned the human gene for insulin! Her star-studded academic career aside, she is the chairperson of the National Organisation of Gay and Lesbian Scientists and Technical Professionals (NOGLSTP), and a member of the Steering committee and past co-chair of Los Angeles Gay and Lesbian Scientists.

An astrophysicist, a lesbian, and a Pakistani immigrant, Nergis Mavalvala is a force to reckon with, and an inspiration on multiple counts. Describing herself as an 'out, queer, person of colour', her quiet confidence is perhaps her most enviable quality. She has been a part of the team that discovered gravitational waves, confirming Albert Einstein's prediction in his famed General Theory of Relativity. A recipient of the prestigious MacArthur Fellowship in 2010, Professor Mavalvala worked at the Laser Interferometer Gravitational-wave Observatory (LIGO) laboratory to build sensors. This is not the only feather in her cap; she has also worked on laser cooling of macroscopic objects, and generation of squeezed quantum states of light. Having been a part of the Massachusetts Institute of Technology's physics faculty since 2002, she was elected to the National Academy of Sciences in 2017. Dr Mavalvala is a role model for aspiring female scientists, eschewing traditional gender roles, always unapologetically being herself.



Dr Nergis Mavalvala

—Shreya Venkatesan, B '19

Sources:

Dr Hart [1] , Dr Hart [2]

Dr Voeller

Rochelle Diamond

Nergis Mavalvala [1] , Nergis Mavalvala [2] , Nergis Mavalvala [3]

Beyond the Binary: Understanding Spectra

'Is it a boy or a girl?' is often the first question that people ask when a baby is born. The answer to this question is predominantly determined by the genitals of the baby. When you are born, your sex is assigned medically. However, the sex registered on your birth certificate may not necessarily match your gender identity. When we meet someone new, we subconsciously allot them a gender based on what we see. We even tend to assume their sexuality based on societal stereotypes. These are remarkably influenced by traditional social cues that have been reinforced over multiple generations.

Sex, Gender and Sexuality

The term **sex** is currently defined by the primary and secondary sex characteristics of a person, and is classified as male, female and intersex. In contrast, **gender** is a range of characteristics that contains:

1. **Gender identity**, which is a person's deeply held perception of themselves. This may be being a woman, a man, both, neither, or anywhere else along the gender spectrum.
2. **Gender roles**, which refer to the socially constructed attributes associated with biological sexes. While biological sex is similar across cultures, the understanding of gender often varies (e.g., skirts being feminine or masculine in different cultures). Gender roles can harm an individual's perception of themselves. A gender-nonconforming person does not abide by such gender roles.
3. How a person chooses to express their gender identity is called their **gender expression**. Someone's pronouns, for instance, are a common way of expressing gender.

It should also be noted that sex and gender should not be used interchangeably. The sex and gender of a person need not be the same. If the sex and gender align, the person is **cisgender**, and if they don't, the broad classification is **transgender**. Transgender is an umbrella term that includes gender identities that do not align with someone's biological sex.

Sexuality/sexual orientation refers to a person's capacity for physical, emotional, romantic and sexual feelings toward others.

Not Pink and Blue

Gender norms are imposed on us from childhood. The distinction between feminine and masculine, between pink and blue is made blatantly clear, and we are expected to adhere to our assigned side of the line. The binary construct of both gender and sexuality deters the acceptance of our identities. Both gender and sexuality are very diverse. The gender and sexuality spectrums are incredibly flexible and give you the freedom of who you want to be and whom you want to be with.

The **gender spectrum** contains a vast and dynamic range of gender identities including man and woman. In the spectrum, **non-binary** forms an umbrella that covers any and all identities that are not man or woman. These identities include, but are not limited to, bigender and trigender, agender/gender-neutral or genderfluid.

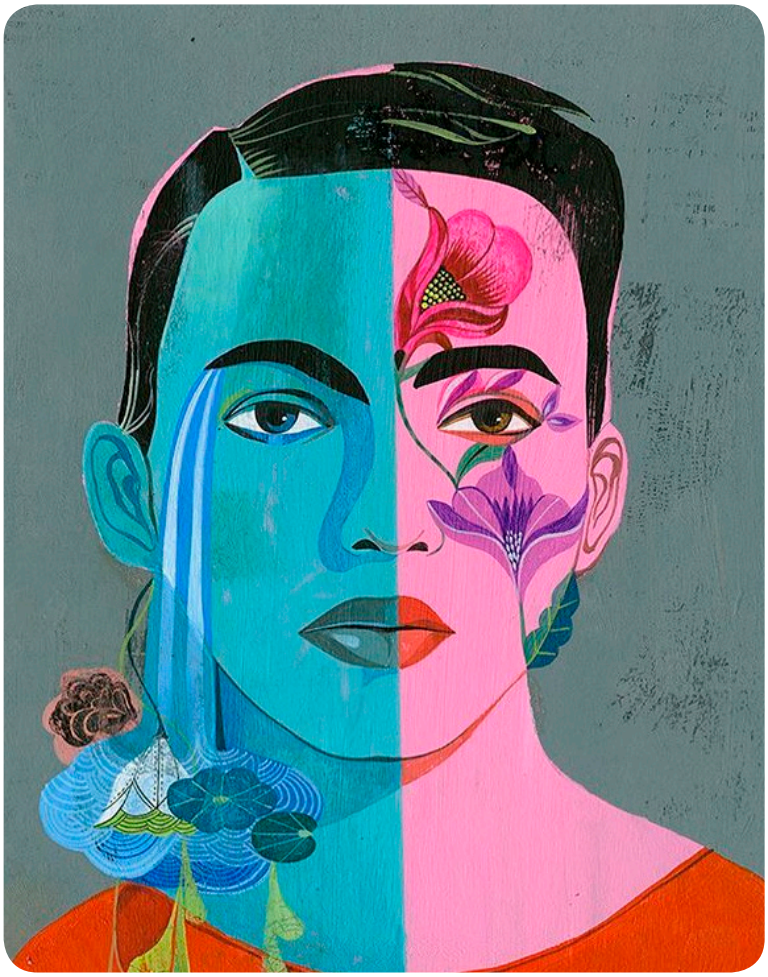


Illustration by Olaf Hajek

Although non-binary individuals' gender identities are different from their biological sex, they may or may not identify as transgender. As *non-binary* is an umbrella term, it is usually paired with another gender identity. Some non-binary people prefer not to label their gender identity. The reader should note that while the terms mentioned above are gender *identities*, terms like androgynous, femme, butch, tomboyish are gender *expressions*. Gender expression is *usually* a reflection of an individual's gender identity, but may not always align with it.

Like gender, sexuality is also not binary. It is a broad range, traditionally formed by homosexuality, heterosexuality, bisexuality and asexuality. Non-binary terms like androphilic (attraction to masculinity) and gynophilic (attraction to femininity) often replace binary terms like homosexual[1] and heterosexual. Sexual orientations also include pansexual (attraction to people regardless of their sex or gender identity), polysexual (attraction to multiple genders), sex-indifferent (neutral about sex/sexual behaviour). These are not all that make up the spectrum[2]. Trans men and women generally identify with the orientation that corresponds with their gender identity. A trans man who is only attracted to women would be straight.

Gender identity, gender expression and sexual orientation are all different, and should not be confused with one another. For instance, a gay person can be feminine, masculine, androgynous, or any from a wide range of expressions, contrary to what has been depicted in popular media for ages. Similarly, a cisgender person is not obligatorily heterosexual. Gender expression does not define someone's sexual orientation.

Understanding Gender Dysphoria

For some people, the difference between the sex allotted to them at birth and the gender they identify with can lead to severe distress, and affect their day to day lives if left unaddressed. Gender dysphoria (previously known as Gender Identity Disorder, GID) is a conflict that stems from an incongruence between one's sex characteristics and their expressed gender. Gender dysphoria can also be caused by pronouns that do not align with one's gender identity. Because these are visual reminders of their sex, they can cause an intense desire to get rid of or hide these. People with gender dysphoria often dislike the gender-conforming features of their body. For instance, menstruation can be very troubling for a trans man. Some trans women engage in *genital tucking*, which is an excruciating practice of minimizing or hiding the contour of their genitals, to appear more feminine. Some trans men also participate in *chest binding*. Although these practices help alleviate anxiety, they can be detrimental if done incorrectly. Gender dysphoria can be resolved by supporting the person in their gender expression, psychotherapy or by physical changes like reconstructive surgery.

What can an ally do?

Taking into account the prevalence of cisnormativity (the belief that being cisgender is the norm), cishet (cisgender + heterosexual) individuals have an indisputable privilege over members of the LGBTQIA+ community. It is our responsibility to acknowledge the existence of this privilege and put it to good use. Although times are changing, stigma and internalized prejudice against the LGBTQIA+ community persists. Here are some things you can do on a personal level:

1. Be mindful of your language; anti-LGBTQIA+ slurs, comments and jokes are harmful. This is essential because language shapes perception and helps clarify misconceptions.
2. Educate yourself and your family about the LGBTQIA+ community and the hardships they face. It is easier and more important to teach younger members.
3. Do not assume people's pronouns; prefer using gender-neutral words. If unsure, it is respectful to ask what pronouns they prefer. Umbrella terms are often harmful to people's identities.
4. Do not assume someone's sexual orientation based on their gender expression; do not assume everyone you meet is heterosexual.

Change starts from home, and it is our responsibility to bring it. Sex, gender and sexuality are all different and none of them is binary.

From pink and blue, to the rainbow.

[1] It should be noted that 'homosexual' is an outdated term and it is better to avoid its use at a personal level.
[2] For a more extensive list of terms: https://lgbtqia.ucdavis.edu/educated/glossary

—Akshita Mittal, B '19

Conversion Therapy: A Heinous Practice

Conversion Therapy, which is also referred to as 'reparative therapy', is an unscientific and inhumane practice aimed at changing an individual's sexual orientation or gender identity. It is a pseudoscience involving methods like shock treatments, hormone injections, physically or emotionally painful stimuli, to make the victims associate those stimuli with their LGBTQIA+ identities.

Many mainstream medical and mental health organisations, including WHO, have called conversion therapy a pseudoscience, because there's no scientific proof that conversion therapy can change a person's sexual orientation or gender identity. They have rejected such practices for decades because of their inhumane nature.

Due to continuing discrimination and societal bias against LGBTQIA+ people, some licensed medical professionals, as well as religious institutions, continue to practice conversion therapy and claim that their process works in 'curing' homosexuality. Minors are the most vulnerable in such situations, and these practices can lead to an individual suffering from PTSD, depression, anxiety, drug and alcohol abuse, homelessness and suicide.

A recent incident that occurred in India in May 2020 shines a light on the underlying issues of homophobia and the persecution of LGBTQIA+ individuals, which are deeply embedded in Indian society even after Section 377 was abolished. Anjana Harish, a 21-year-old queer woman in Kerala, died by suicide after her family rejected her sexual orientation and enrolled her in a 'conversion therapy institution', where she was isolated and tortured into changing her sexual orientation. There are more than hundreds of cases that are unaccounted for, where innocent teenagers were subjected to this inhumane practice.

Anjana's case highlighted the aspect of 'forced consent'. In most cases of conversion therapy, individuals are admitted solely based on their family's request. There lies a lack of free and informed consent. Involuntary and forced treatments violate a person's right to self-determination. The Mental Health Care Act of 2017 stipulates that no patient can be discriminated against by mental health professionals based on gender and sexual orientation. Furthermore, 'informed consent' must be sought from patients before they are treated. The Indian Psychiatric Society declared that homosexuality is not a mental disease or illness and considered it a normal variant of human sexuality much like heterosexuality.

The United Nations' human rights agencies have increasingly drawn attention to the treatment of the LGBTQIA+ community in medical settings, including the practice of 'conversion therapy' and that the failure of the state to take constructive steps in preventing such practices violates their obligation to protect human rights. Landmark legal cases such as NALSA (National Legal Services Authority) vs Union of India and Nautej Singh Johar vs Union of India only provide limited protection to the LGBTQIA+ community in India.

A ban on conversion therapy altogether is not enough. There is a need for laws that provide protection and necessary aid to those who are unwillingly subjected to conversion therapy. There is a requirement of LGBTQIA+ specific laws that not only protect the individual, but also give them equal rights to live with dignity.

A few examples of policy-based changes that would help are:

- Setting up counselling centres and workshops to educate families about sexual identities and to clear any related misconceptions
- Non- discriminatory and anti-bullying policies in the workplace, schools and colleges
- Educating students and providing them with the necessary information and help at school by setting up counselling centres, and
- Using social media & other means of communication to reach out to at-risk LGBTQIA+ individuals

We need to take active steps to make the LGBTQIA+ community an inclusive part of society rather than ostracizing them simply because of their identity.

—@homines_lgbtqia
https://instagram.com/homines_lgbtqia

The Complexity of Biological Sex

Silo and Roy, New York's famous chinstrap penguin couple

The mechanism of biological sex determination and its binary nature is continually being challenged by scientific research in epigenetics, endocrinology, etc. As far we know, there are at least ten different markers of biological sex, including chromosomes, gene expression, external and internal genitalia, brain structure and psychological factors.

The infamous assumption that there is either an XX or XY pair of sex chromosomes, that supports the premise of sex being binary, is flawed. There are at least ten naturally occurring variations in the chromosomes that could be due to the insertion or deletion of single or multiple X or Y chromosomes. About 1 out of every 426 individuals is born with such variations. The sex assigned at birth is mostly based only on the external genitalia, which is not considered an inclusive mechanism to determine sex and gender anymore. The widely noticed shortcoming of this method is the exclusion of intersex individuals who are born with variations in sex characteristics that do not fit into the typical definitions of male and female. At times, the deficiency of an enzyme (5- alpha reductase) leads to the individual being born with external female genitalia, as the development of external male genitalia is hindered at the foetal stage. At the time of puberty, as testosterone is produced, these individuals develop sex characteristics of a male with fully functional internal male genitalia.

Genetics plays a pivotal role in biological sex determination. The SRY gene present on the Y chromosome is responsible for the development of testes in the embryo. At times, mutation in this gene could lead to a sex reversal where individuals are born with female external genitalia. Epigenetics is an emerging area of research, and it has recently been understood that it plays a significant role in the determination of one's biological sex.

The brain is another important marker of biological sex. A study conducted in 2018 concluded that transgender

women's brains resemble that of cisgender women, and that of transgender men resemble that of cisgender men. It is entirely biased to use external genitalia as the sole marker of one's biological sex.

This complexity in sex is not unique to human beings.

The all-female whiptail lizards produce offspring via parthenogenesis. Anemones are inhabited by a male-female pair where females are dominant. If the female member dies, the male undergoes epigenetic transformation and becomes a female. Female spotted hyenas possess a pseudo-penis and are known for their dominating behaviour over their male counterparts. Chickens are capable of undergoing natural changes in sex. Males of seahorse experience the reproductive process in which they carry the fertilized embryos in their pouch. All clownfish are born male; the dominant males turn into females for breeding.

A glance at the animal kingdom shows that biological sex is far more complicated than we initially thought it to be. Almost a quarter of black swans are known for male-male pairing. They steal nests and temporarily associate with a female who is driven away once the eggs are laid. The mighty giraffes are famous for engaging in high frequencies of homosexual behaviour. Two male chinstrap penguins at New York's central park zoo are famous for displaying pair-bonding behaviour. Ostriches and flamingos also show same-sex courtship behaviour and are surprisingly known to raise foster chicks. Sexual interactions between females have been observed in bonobos.

The article doesn't intend to compare the occurrence of homosexual behaviour in humans with other animals. Such behavioural comparisons will not provide coherent conclusions as human society, interactions, feelings, and behaviour are much more complicated than that of other animals. This is just to highlight and inform the reader about the occurrence of homosexuality across the animal kingdom.

Our attempts to understand human sexuality and gender are still in their infancy. Many studies have been contradicted for biased conclusions and methodologies. On the whole, science has embraced the fact that biological sex is more complicated than we thought it was. What was considered as a fully understood concept has now become an area with a lot of unanswered questions that have to be approached with an open mind.

—J. Vishwathiga, B'19

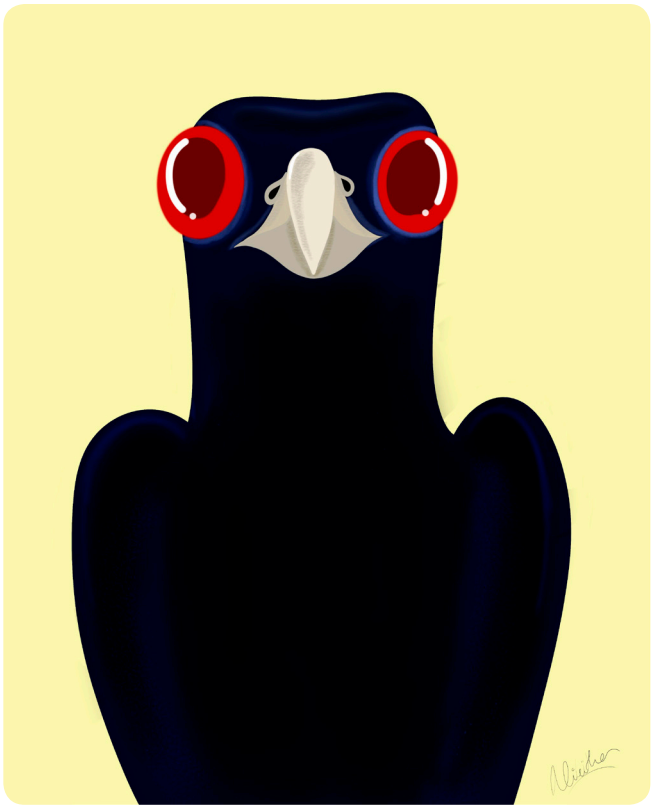
Sources: [1], [2], [3], [4], [5]

ESI Species of the Month: The Asian Koel

Monsoon is the season of cuckoos! The Asian koel is the most widespread variety of cuckoo in the Indian subcontinent. So, here's a guide for you to refer to when you spot a koel.

Description: Adult males are glossy black with a dull lime-green bill; females and immatures are blackish-brown with white spots on the wings and strong streaking on head and throat (4). Adults have ruby-red eyes, while immatures have black eyes (4).

Food: An omnivore, the koel consumes a variety of insects, caterpillars, eggs and small vertebrates (6). Adults feed mainly on fruit (6). Peepal fig (Ficus religiosa), mulberry (Morus sp.), tamarind (Tamarinda indica) etc. are some of their favourite sources (6). Sometimes they defend the trees they forage in and chase other frugivores away (1, 5).



Habitat: Asian koel is a ubiquitous bird found throughout the country in coastal mangroves edges, shrubby areas with tall trees, gardens and woods, town, villages and cities (6). They live in dense thickets of trees or bamboos (6).

Behaviour: They are very vocal in the breeding season (March to August in the Indian Subcontinent), with a range of different calls. The familiar song of the male is a repeated 'koo-Ooo' (5). The female makes a shrill 'kik-kik-kik' call (5). Being a type of cuckoo, they are brood parasites, meaning the females lay eggs in the nests of other birds, including crows, shrikes, and starlings (4). There have also been records of smaller birds like robins and bulbuls trying to feed their overgrown koel chicks.

Social Relevance: The koel is the state bird of the Indian union territory of Puducherry (2, 3, 5). The Asian koel is a common model for poet and writers in India, and its voice is compared sometimes to that of a nightingale (6).

Write-up: Anumit Saralkar, B'17

Art: Nikitha S., B'17

References:

[1], [2], [3], [4], [5], [6]

Our Team:

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Website Design:
Shubham Chury, B '19
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Faculty Representative:
Dr Jishy Varghese

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IISER THIRUVANANTHAPURAM