

Facilitator Notes

Invisible Women, Exposing Data Bias in a World Designed for Men

Parts 3 & 4

By Caroline Criado Perez

&

Breaking the Barriers, Women's Retention and Progression in the Chemical Sciences

A report by the Royal Society of Chemistry



B O O K C L U B

DISCUSSION BOOKLET 2 - CRIB SHEET

"Women belong in all places where decisions are being made. It shouldn't be that women are the exception"

Ruth Bader Ginsburg

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Thinking back - What challenged/surprised you from the chapters?

This could be something pertinent or something that really grabbed your attention and made you think twice.

This is an open question that we will likely use in some form in all the sessions. It is a good opportunity to gauge the feelings and understanding of the group.

Last session we look at “the default male”, the myth of meritocracy and how being gender-blind is not always the best option especially when it comes to snow, safety and STEM representation. This session we will consider how women have been ignored and excluded in the development of initiatives and products; and the result of this approach. Along the way we will also consider how Criado Perez ignores transgender and non-binary communities when discussing gender. Finally, we will discuss if Science itself has been biased by men dominating research and consider using Arnstein’s Ladder to enfranchise women and minority groups.

Discussion

How does the “Plough Hypothesis” link to unpaid work and the way output is measured? *Re-read page 145-149*

Think about who benefits when; the monetary value of a crop is measured verses calorific output (p. 147), or crop production is mechanised (p. 149).

The plough hypothesis argues that ploughs are used by men due to increased strength while smaller, less efficient hand tools can be used by all. Ploughing is also not so easily stopped, while using a hoe or digging stick is - so is favourable to women who have more unpaid work such as child-care. Furthermore, ploughing is more efficient so allows for more time to do other things such as produce income elsewhere or engage in education.

Therefore, although energy expenditure is comparable between men and women – output measured by income or crop production is not. This is further compounded by mechanisation that is only affordable to wealthier (often) male farmers who are no longer subsistence farmers like their female counterparts.

This disparity in farming means that men favour high output, high income crops verses calorific considerations or ease of production favoured by women (p. 151).

How does the “Plough Hypothesis” and Criado Perez’s discussion exclude transgender and non-binary individuals? Re-read page 145-149

A more in-depth critique of “Invisible Women” by Criado Perez in relation to its transgender and non-binary individual “blindness” is discussed in the appendix (“Invisible transgender & non-binary individuals”).

The plough hypothesis does this by focusing solely on biological differences between cis-men (i.e. men who were assigned male at birth) and cis-women (i.e. women who were assigned female at birth) and ignores transgender and non-binary individuals.

Criado Perez also does this and fails to consider non-binary and transgender individuals, see appendix.

What are some of the reasons given for not engaging with women?

Think about individuals, companies and institutions etc.

The reasons could perhaps be broken down into three areas;

1. Women are excluded by circumstance and initiative design i.e. literacy, wealth or language barriers (p. 150).
2. Active avoidance/discrimination – considering women as not educated enough to bother engaging with i.e. stove development (p. 153)
3. Creating for the “default male” i.e. piano design or mobile phone screen size (Chapter 8 – One-Size-Fits-Men)

“Nevertheless, the main and repeated recommendation of the report was to fix the women, rather than the stoves. The women needed to be educated on how great the ‘improved’ stoves were, rather than stove designers needing to be educated on how to not increase women’s already fifteen-hour average working day.”

Page 153-154

“What women need, he said, was ‘lengthy training’ – if only women ‘were willing’ to submit to it.

Page 163

What are some of the outcomes, highlighted by Criado Perez, of not engaging with women?

A UK minister once said a “diversity of thought” was what matters.¹ Why is it important to have women and people from minority backgrounds participating in decision making and not just a “diversity of thought”? Is “diversity of thought” equal to a diversity of individuals?

When women are not consulted or not involved in design or management, negative outcomes can occur. For example;

- Not engaging with older women when designing fall detection devices, despite fall rates being higher in women and the population of older women being higher than men (p. 177-179)
 - Health workers in Cape Town (p. 179)
 - Car safety (p. 185-191)

As Criado Perez points out even well-intentioned men do not understand the lived experiences of women, for example the design of VR systems (p. 181-182).

“In conclusion, a more accurate headline for the report would be ‘Improved vehicle design brings down death rates in the seat most likely to be occupied by men, but who knows about death rates in the seat most likely to be occupied by women, even though we already know women are 17% more likely to die in a car crash.’”

Page 189-190

“They [doctors] are the products of a medical system which, from root to tip, is systematically discriminating against women, leaving them chronically misunderstood, mistreated and misdiagnosed.”

Page 196

What does the thalidomide scandal and the data gap on SARS (SARS-CoV, a coronavirus), show us about the attitudes to women in medical research?

It is notable that after the thalidomide scandal the FDA banned testing on women of childbearing potential – is this counterproductive? (p. 201) Are we collecting gender-disaggregated data for Covid-19 (SARS-CoV-2, another coronavirus)?²

Pregnant women are excluded from clinical trials due to unknown effects on unborn babies and this causes a substantial data gap. The attitude is ‘we can’t collect the trial data so there’s nothing we can do about it’, rather than trying to make up for this by collecting gender-disaggregated data or to systematically track and record pregnant women’s health outcomes. For example, not gathering data from pregnant women in 2002-2004 SARS pandemic in China means we had a poor understanding about pregnant women in the current SARS-CoV-2 pandemic.

Reflecting

Does male dominance in the Sciences bias research and affect outcomes for female patients?

“...just 9% of chemistry professors in the UK are women. This means that between undergraduate study and reaching senior positions in academia, the relative proportion of female chemists drops by 35 percentage points.”

RSC Report³

“The widest pool of scientists results in the best science. Excluding or diminishing any section of society weakens science.”

RSC Report Respondent³

“Modifying experiments to include both males and females costs money and requires a duplication of time and effort—time that researchers might not have to spare or that might be better spent conducting other research—that is rarely practical or scientifically warranted.”

R. Douglas Fields in Scientific American⁴

Multiple examples from dysmenorrhea trials (p. 230-231), to scientists arguing that sex differences don't exist (despite evidence) and are too expensive to care about, show bias in a research system dominated by men. This is further compounded by low participation of female humans and rats in research trials (p. 200-216).

This leads to medical doctors misdiagnosing women (Yentl Syndrome) because of medical curricula based on the “male default” (p. 196) that ignores biological sex differences (p. 198-199) and drugs not working effectively for women (p. 232).

Criado Perez and others argue that male dominated funding (p. 232) and review panels (p. 231) may contribute to the above bias and ensuing problems.

Application – Arnstein’s Ladder (1969)

Sherry Arnstein developed a model for citizen engagement, often termed “Arnstein’s Ladder” after her.⁵ It is possible to place engagement activities, such as committees and workshops, and even organisations on this ladder to constructively map engagement, consider greater engagement and see who has power in decision making.

1 Manipulation and 2 Therapy. Both are non-participative. The aim is to cure or educate the participants. The proposed plan is best, and the job of participation is to achieve public support through public relations.

3 Informing. A most important first step to legitimate participation. But too frequently the emphasis is on a one-way flow of information. No channel for feedback.

Citizen Control
Tokenism
Nonparticipation

8. Citizen Control

7. Delegation

6. Partnership

5. Placation

4. Consultation

3. Informing

2. Therapy

1. Manipulation

4 Consultation. Again, a legitimate step often delivered through, attitude surveys, neighbourhood meetings and public enquiries. But Arnstein still feels this is just a window dressing ritual.

5 Placation. For example, co-option of hand-picked 'worthies' onto committees. It allows citizens to advise or plan ad infinitum but retains for power holders the right to judge the legitimacy or feasibility of the advice.

6 Partnership. Power is in fact redistributed through negotiation between citizens and power holders. Planning and decision-making responsibilities are shared e.g. through joint committees.

7 Delegation. Citizens holding a clear majority of seats on committees with delegated powers to make decisions. The public now has the power to assure accountability of the programme to the leadership.

8 Citizen Control. Have-nots handle the entire job of planning, policy making and managing a programme e.g. neighbourhood corporation with no intermediaries between it and the source of funds.

Summary of Arnstein's Ladder rungs adapted from David Wilcox⁶

Where do women, minority groups and you sit on Arnstein's Ladder in the university and department?

Think about representation in your own department and university; how could women and minority groups be better engaged, enfranchised and represented? Note that a person's place on Arnstein's Ladder may vary by committee, meeting or role.

This is an opportunity to critically evaluate the level of participation afforded women and minority groups in the university and department. It may also be worth comparing this with the level of participation afforded to the majority group (likely white men).

Once participants have placed themselves on Arnstein's Ladder, it would be useful for participants to consider how they can move between rungs and can this occur without external support from others on the ladder (such as allies and colleagues).

It is worth noting that while the level of participation is likely disparate, the fact that it may not be the intention of the current leadership does not make it any less real, especially for those on the

Additional Notes;

Invisible transgender & non-binary individuals

While Criado Perez provides an excellent discourse on the lived experiences of cis-women (i.e. women who were assigned female at birth), this is not the case for transgender and non-binary individuals. Therefore, there has been some contention around the book within the public sphere, and in the spirit of the book club, we want to highlight this.

Criado Perez, in the Preface, initially sets out to separate “sex” from “gender”;

“Throughout this book I will refer to both sex and gender. By ‘sex’, I mean the biological characteristics that determine whether an individual is male or female. XX and XY. By ‘gender’, I mean the social meanings we impose upon those biological facts – the way women are treated because they are perceived to be female. One is man-made, but both are real.”

Preface XIII-XIV

While “...perceived to be female”, could be considered a trans-inclusive statement. Criado Perez does not follow the separation of gender and sex throughout the book, as explained by Siltha, a blogger reviewing *Invisible Women* (quoted below and highlighted in grey);⁷

““The result is that when ‘brilliance’ is considered a requirement for a job, what is really meant is ‘a penis’.” [Page 100]

This sentence makes it seem as if your genitals achieve something for you and give you privilege. What gives cis men privilege is how the world perceives them to be. Trans women or non-binary individuals with penises don’t get any of the privilege cis men get, because genitals have zero to do with that.

“British female police officers report being bruised by their kit belts; a number have had to have physiotherapy as a result of the way stab vests sit on their female body; many complain there is no space for their breasts.

[...] thirty-five years after women were first admitted to US military academies, that the first uniforms were designed that accounted for women’s hips and breasts.” [Page 127]

Not only women have breasts, and a bunch of cis women barely have breasts or have lost them. This could have been rephrased as “Due to not having space for their breasts, many British police officers...” and “accounted for hips and breasts”. Instead of that, Caroline Criado-Perez chooses a transphobic and non-inclusive language.”

Siltha also discusses how Criado Perez implies there are only two genders;

““He is the standard, unmarked gender, not the atypical (other) one.” [Page 15]

This quote, as the previous ones, assumes two genders, erasing all non-binary individuals. If it’s bad getting ignored in meetings due to being a woman, imagine having to fight for your existence to be recognised, let alone fight for your rights in a society that denies your existence.”

Furthermore, Criado Perez’s definition of “sex” is flawed – “sex” is not binary. “Sex” is determined by phenotypic (genitals, hormones etc) or genotypic (genetic makeup) sex characteristics.⁸

However, Criado Perez defines sex solely by genotype i.e. XX or XY karyotypes (a person's chromosomes); however there are multiple sex chromosome compositions beyond XX and XY. For example, XXY (Klinefelter syndrome affecting 1 in every 660 males)⁹ or X only (Turner syndrome affecting 1 in every 2000 females).¹⁰ Additionally, people can be genotypically male/female but phenotypically female/male, for example, XX male syndrome (de la Chapelle syndrome) where the person is phenotypically male despite an XX karyotype or XY androgen insensitivity syndrome where a person is phenotypically female but genotypically male. While ovotesticular disorder, where the person has both testicular and ovarian tissue, may have XX or XY karyotypes. The sex of some of the above individuals may be defined as intersex, with the "Campaign for Intersex Inequality" estimating that 1.7% of the population are intersex or approximately "as common as having red hair".¹¹ By not discussing this within the book, even if perhaps unintended, Criado Perez makes numerous individuals "invisible" too.

The booklet cited here,¹² by the RSC on trans-inclusive workplaces may be useful.

References;

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