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# The Female Turn: how evolutionary science shifted perceptions about females

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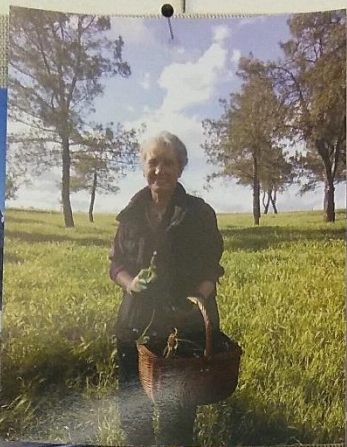


## Evolutionary biologist and gender researcher

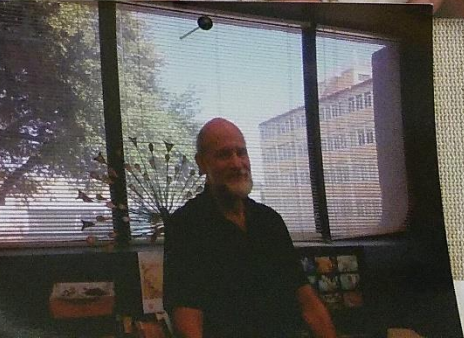
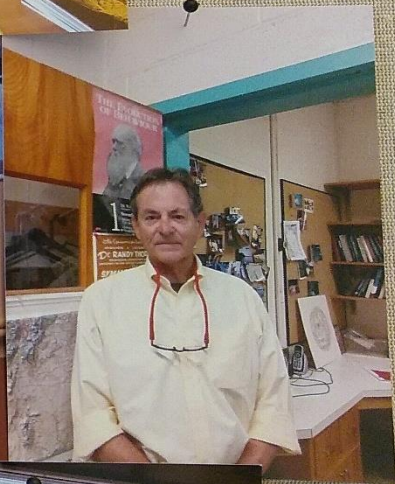
- PhD Zoology, Stockholm University, Sweden
- Uppsala University, UCLA (USA), Macquarie University (Australia), University of Marburg and Humboldt University of Berlin (Germany)
- “Insider & outsider” in relation to the field of evolutionary biology

# A science study of sexual selection

- Females traditionally assumed to be “coy”, passive and mating with only one male
- Shifted to acknowledging that females can have active sexual strategies, initiate mating, be fiercely aggressive and frequently mate with multiple males
- How and why have these perceptions changed in the international research community of evolutionary biologists?
- *Financed by the Swedish Research Council*

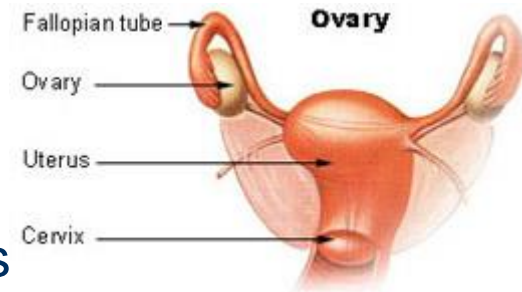


En het bok.



# Feminist critique of natural sciences

- Scientific endeavor is not an apolitical, value-neutral and objective process
- Who does science affects the knowledge produced
- Natural sciences as cultural and social processes
- All knowledge is partial, context-dependent and based in lived experience



# Charles Darwin's theory about sex differences

- Charles Darwin presented the theory of natural selection 1859
- The theory about sexual selection 1871
- Described women as morally superior to men, but intellectually inferior
- *“...the male is the more active part in the courtship. The female, on the other hand, with rare exceptions, is less eager than the male... she is coy, and may often be seen for a long time endeavouring to escape from the male...”*

CAMBRIDGE LIBRARY COLLECTION  
THE DESCENT  
OF MAN AND  
SELECTION IN  
RELATION TO SEX  
VOLUME 1  
CHARLES DARWIN

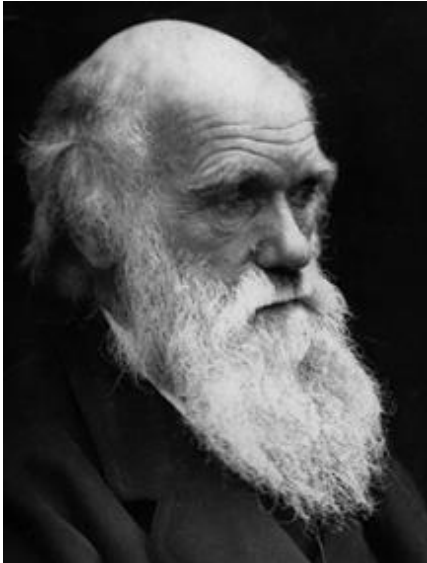


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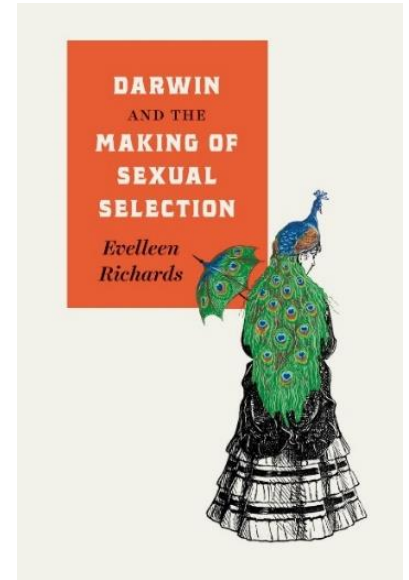


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# Charles Darwin and his context



- Formed his theory about the evolution of sex differences both in line with and against contemporary Victorian ideals
- "The woman question" – argued against John Stuart Mill
- Female choice → evolution of male traits
- View of women a logical effect of his theory about inheritance and embryogenesis



## Epistemology of ignorance/Agnotology

- The study of how knowledge is ignored, delayed or forgotten
- “Ignorance is often not merely the absence of knowledge but an outcome of cultural and political struggle” (Londa Schiebinger 2004)
- Who knew and who did not know about active, multiply mating females, and why?



# Early change in Primatology



Sarah Blaffer Hrdy

- Influx of women into Primatology  
1960/70s
- Infanticide as a male sexually selected  
behavior
- Female multiple mating as a female  
counter-strategy
- “The woman that never evolved” (1981)
- Questioning assumption of “coy”  
females (1986)
- Perception of females shifted towards  
including female agency, aggression,  
dominance

# Japanese Primatology



Photo by Asteiner [Creative Commons Attribution 3.0 Unported](#).

# A female turn in ornithology

- Birds “the paradigmatic taxon” of sexual selection research
- Female birds were assumed to be monogamous
- New molecular tools enabled investigations of female multiple mating
- “The Polyandry Revolution” – supposedly monogamous females were shown to be mating with multiple males
- Early explanations focused on male strategies

# Feminist interventions in ornithology



## → Acknowledgement of active females

- 1988 Susan Smith questioned assumptions about female passivity – mating in home-range and indiscriminately
- Field study of black-capped chickadees showed that females seek extra-pair copulations in territories of males of higher rank



# Male precedence

- Research starts with male-centric investigations or explanations and thereafter include female-centric equivalents
- A kind of androcentrism
- Partly due to biological patterns, e.g. common elaborate traits in males
- Androcentrism is one way in which ignorance about females is produced

# Insect research – knew about female multiple mating



## Geoff Parker – Sperm competition



- Extended sexual selection theory to competition after mating
- “was interested in both males and females, focusing on individual selection”
- Chose to study yellow dung flies because he knew the species and was fascinated by the fights between males
- Easier to look at males, focusing questions on males, perhaps due to his “male perspective”
- In line with sexual selection theory
- In the dungfly system – dominated by male-male competition, last male precedence



# Randy Thornhill coined “Cryptic Female Choice” 1983



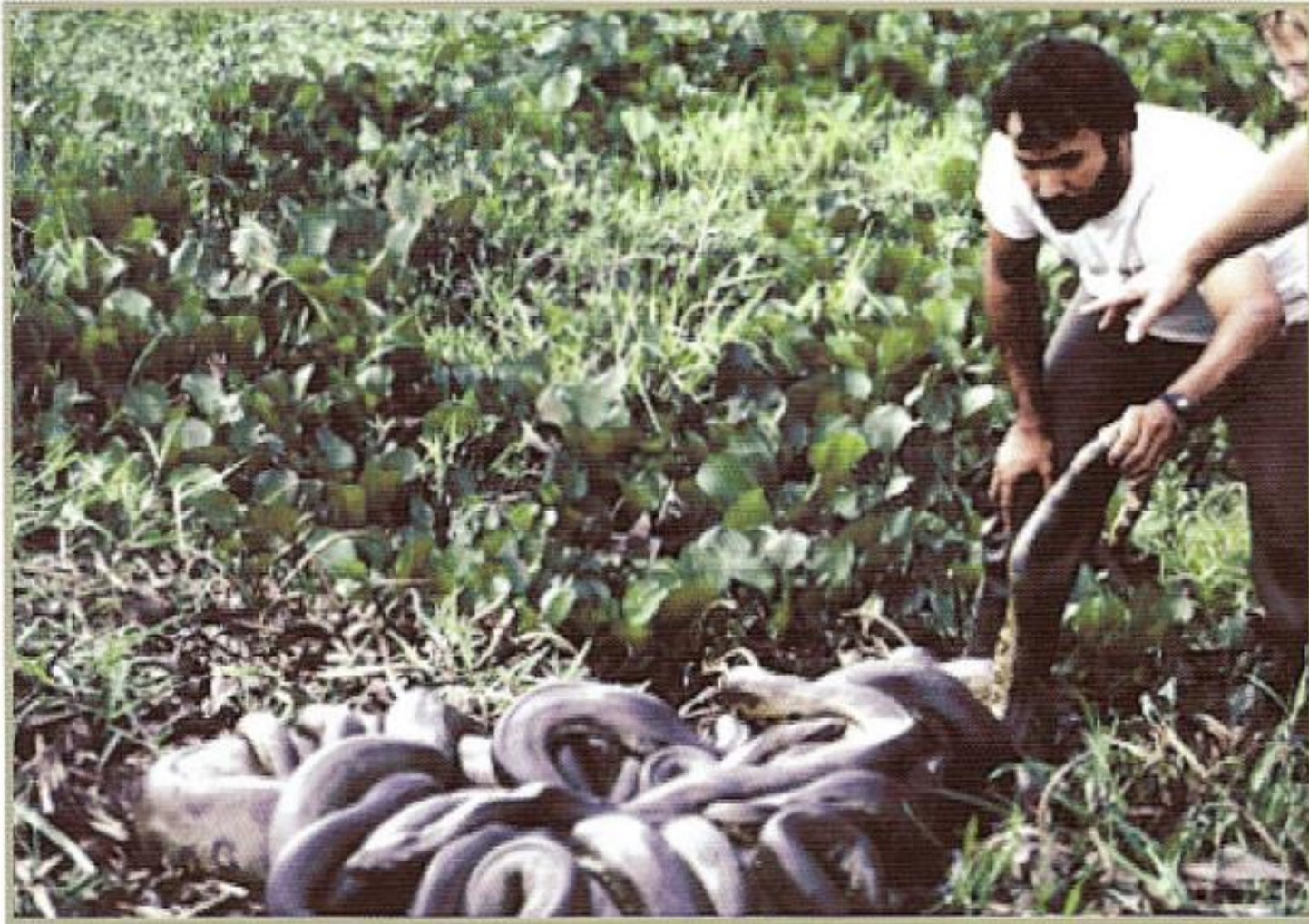
- Females can control which sperm fertilize the eggs
- Suggested by author of “*The Natural History of Rape*”
- Based on his studies of hanging flies and scorpionflies
- Describes females as active – they avoid males without “nuptial” gifts, they manage to break free from males that attempt to copulate by force, return to sexual receptivity quicker and “somehow cause low insemination rate” when forced

# Snake research – Rick Shine

- Snake studies did not follow assumptions of coy females
- Hard to follow in field – mating patterns still little known
- Investigated selection pressures on males and females
- Changed his view of female multiple mating, from passive cost-avoiding to active and beneficial
- Male snakes incredibly choosy



# Shift in snake research – Jesús Rivas



 Tony Rattin

**Fig. 1.** A breeding female *Eunectes murinus* (410 cm TL; 44 kg) courted by 12 males.

# Frog research – Mike Ryan

- Combining neurobiology, behavioral experiments and phylogeny
- Trying to understand mate choice “through the brain of the female”
- Emphasized female agency

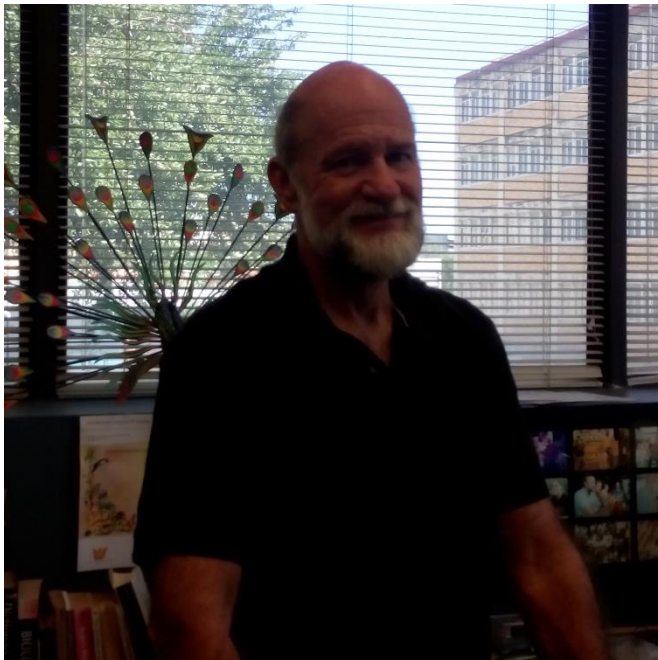
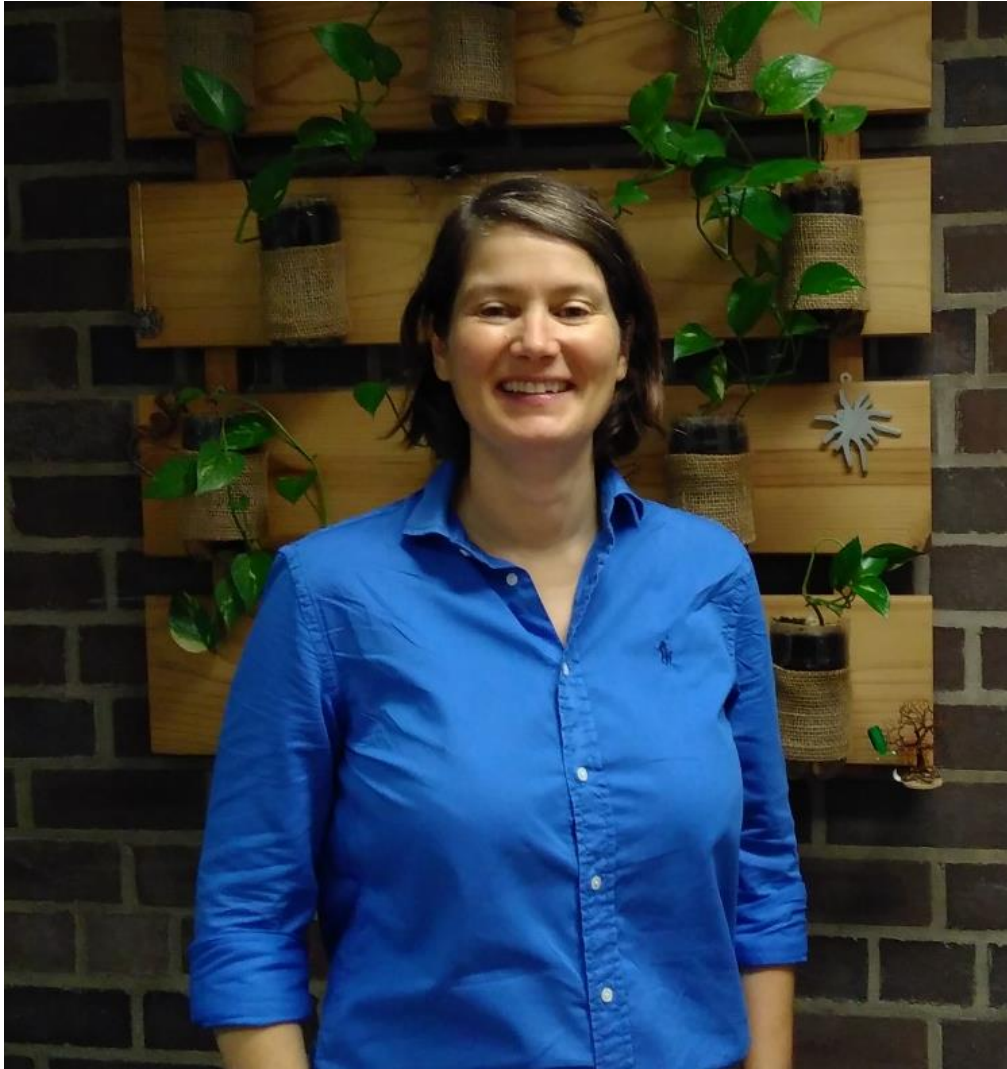


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# Spider research – Marie Herberstein



# Production of ignorance about females in sexual selection

- A repeated pattern of *male precedence*
- Loss of acquired knowledge
- Undermining the authority of certain knowers
- Widely acknowledged citation hierarchy/taxonomic ignorance



# Gender and science

- Professionalization of science excluded/marginalized women
- Progress of feminist movement, influx of women in science
- Both women and men challenged assumptions about females
- No direct relation between the gender of the researcher and being an initiator/proponent of female-centered hypotheses
- Feminist scientists identified gender bias and expressed an outspoken strategy to investigate female animals

# Influence of study animals

“I think her [Gowaty’s] perspective comes from maybe working on the paired organism, so that you’ve got [a] male-female dynamic where they’re sharing care duties, whereas for me... I’m left with wondering what the point of a male peacock is, they don’t do anything, they’re just quintessentially the useless individuals. So, I don’t sort of have a female resistance to male control dynamic in my own organism.” (Marion Petrie interview)



## Situated knowledges (Haraway 1988)

- The researchers' different “specific ways of seeing”
- Their partial, context-specific knowledges, based in lived experiences
- In social sciences and humanities widely used to acknowledge social/cultural/political situatedness
- Using situated knowledges as an analytical lens to understand the different researchers' partial knowledges

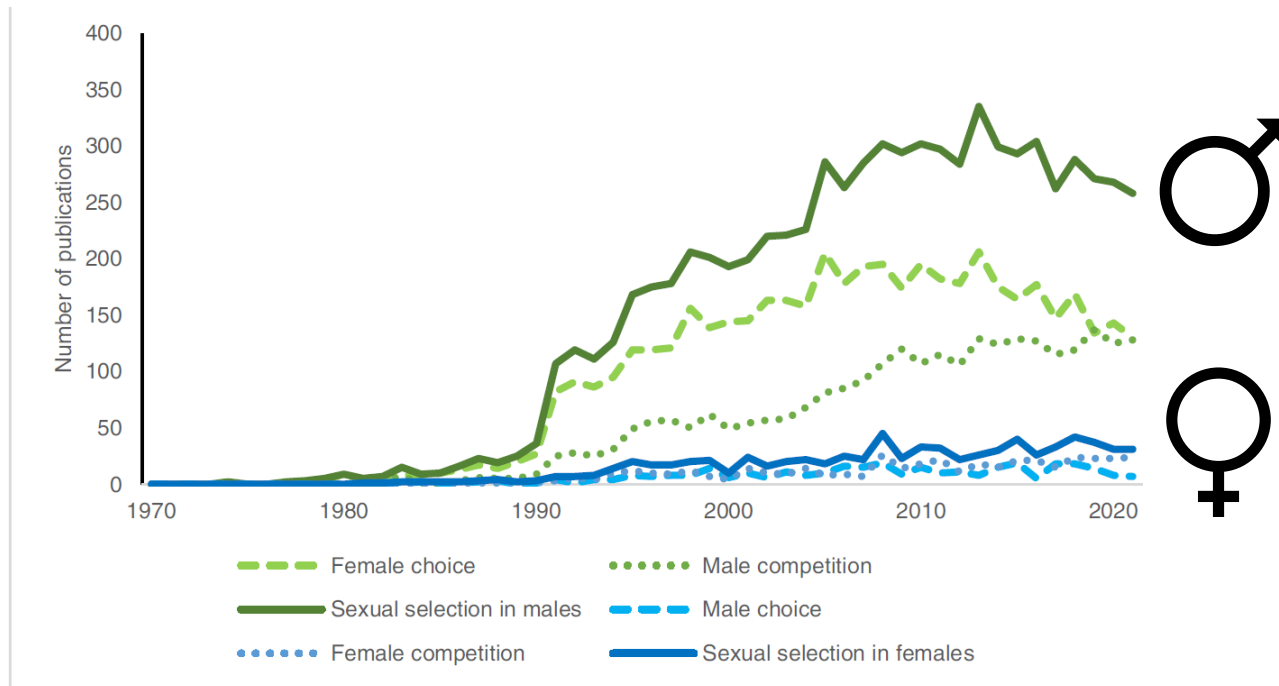
# Combining Epistemology of Ignorance and Situated knowledges

- Ignorance is also situated
- What prevented certain scientists from engaging with female sexual agency?
- What spurred some scientists on to see females as active?

# The researchers' situated knowledges

- As feminists, as engaged in “female perspectives”
- Due to particular methodologies
- Knowledge from other research fields
- Cultural context – Japanese versus western primatology
- Influence of study animals
- – made certain researchers particularly engaged in forwarding females as active, aggressive and variable
- A discovery becomes knowledge after critical reception of a community of knowers (Helen Longino)
- Social and political context – feminist movement, sexual revolution

# Continued ignorance about females: sexual selection in males versus females



nature communications



Perspective

<https://doi.org/10.1038/s41467-022-34770-z>

**The history of sexual selection research  
provides insights as to why females are  
still understudied**

# The Female Turn is still an ongoing process

- Knowledge about sexual selection in females is still hindered by:
- The assumption that sexual selection in females is weaker/non-existent
- The prevalent definition of sexual selection – excludes many ways in which females compete for reproduction
- It is often harder to study sexual selection in females – internal fertilization, follow females in the field – compared to studying males – or methodology has not yet been developed
- Male precedence/androcentrism

# My situated knowledges

- How my position influences my knowledge making
- Feminist point of departure, background in the field and knowledge about methodologies, gender analyses of evolutionary research as well as expertise in feminist science studies – have formed my research question about females
- In relation to my interviewees – a younger colleague in Evolutionary Biology, but also someone with a reputation as a feminist biologist – may have influenced who I got access to interview, what they chose to tell me
- From my position as “insider & outsider” – with my analytical tools – written this historiography about recent sexual selection from a gender perspective
- Writing history is also negotiating knowledge

# Conclusions

- The inclusion of a plurality of perspectives as well as research on a diversity of species have broadened our understanding of nature
- Illuminates the interaction between society and the scientific process – science is social knowledge (Longino 1990)
- Repeated pattern of male precedence (androcentrism)
- Female turn at different times in the sub-fields – depending on specific circumstances
- Technical innovations, entrance of women in science, study species, feminist progress in society
- What hinders studies of sexual selection in females? Male precedence, the predominant definition of sexual selection, practical matters?

# Questions?

Publications available at [academia.edu](https://www.academia.edu)

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[The Seminar Series Gender, Gender Equality and Natural Sciences](#)

