The (Happy) Partnership between Feminism and Sustainability.

Exploring the potential of filling the gaps in sustainability education with feminist concepts, theories and methods.

Brynn Szukala

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A thesis submitted in partial fulfillment of the requirements of Lund University International Master's Programme in Environmental Studies and Sustainability Science (30hp/credits)

LUCSUS
Lund University Centre for Sustainability Studies

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Abstract:

In the near future, our species, and many others, face an upcoming shock in the global climate, one that could result in the potential extinction of much more than just the human race. In order to combat this issue, the field of sustainability emerged throughout different sectors of society. One of the places that this topic has blossomed is within academia, as there are few things more important than training the future generations to deal with the issues of climate change, to help the planet, and our species, survive. Scholars within the field, however, have found that sustainability education does not live up to it's name- with a distinct gap between what it should be, and what it is. These scholars have stated that the reason for this can be seen within very structure of our education system itself, a structure that has and continues to, according to some, reinforces the issues we deal with today.

In the next 40 pages I will bring you through the process of my own research on the subject, starting with a theoretical investigation into the conflicts between the concepts necessary for sustainability education, and norms which are prominent within academia. After finding that there are substantial tensions between the two, I attempt at understanding the problem further by diving into preliminary research on the application of these concepts in sustainability masters programs, via document analysis, finding that there is a gap between theory and practice.

After this problem formulation, I bring you to my solution, which is the incorporation of feminist work within sustainability education. Concluding that feminism and sustainability have many conceptual similarities, I conduct a survey with those who have studied the two jointly in a sustainability master's program environment. The results show us that applying and learning feminist methods, theories, and concepts in a sustainability education atmosphere is highly beneficial, and some respondents even argue, necessary. When observing the gaps in sustainability education along side the areas in which feminism supplements the topic most, we see an area of overlap, offering a potential pathway to improve upon and work towards a more holistic and cohesive implementation of sustainability education.

Keywords: sustainability education, feminism, norms of academia, critical theory, creative writing

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you tell me to quiet down cause
my opinions make me less beautiful
but i was not made with a fire in my belly
so i could be put out
i was not made with a lightness in my tounge
so i could be easy to swallow
i was made heavy
half blade and half silk
difficult to forget but
not easy for the mind to follow

-rupi kaur

First of all, I want to thank my parents, because without them I would not be here.

I want to thank my grandfather for being my idol. I am here doing my Masters because I have always wanted to be like you, even though I know I could never be a smart and quick witted.

I want to thank my grandmother for being my inspiration. For showing me I can be fiercely strong and determined, and but also happy, full of wonder, and love and creativity.

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I want to thank the LUMES program (is that a thing I can thank?), because, even though I will be immensely critical in the next 50 pages, I am only able to do that because of the flexibility and open mindedness of the faculty and the stellar education I've received in the past two years

I want to thank Tessa for letting me borrow her computer when mine broke in the middle of thesis writing (seriously thank you).

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Setting the Scene

Unless someone like you cares a whole awful lot,

nothing is going to get better, it's not.

– Dr. Seuss, The Lorax

In an era of crippling environmental predictions as humanity's 'doomsday' rapidly comes to fruition (United, 2017; Le Grange, 2011), what is more important than training the younger generations to both prepare for this transformation and teach them to salvage what can be salvaged? As a species, we desperately need to change our lifestyles and train leaders who will help the planet survive, and with the planet, ourselves. Recognizing this need, in the past decade, sustainability education has blossomed around the world (Christie, Miller, Cooke & White, 2013; Mebratu, 1998). This field is said to be education for a sustainable, resilient, and long-term existence which will enable an ecological revival and ensure the future of our species (Christie, et al, 2013; Colucci-Gray, Camino, Barbiero, & Gray, 2006; Singleton, 2010). And yet, the education itself fails to meet the criteria that is set out for it by scholars around the world (Colucci-Gray, et al, 2006; Gough, 2002; Le Grange, 2011); and if we fail to properly educate future change makers, we will fail to save more than just the human species…

Key dramatic intro music here

The Beginning.

Welcome. Grasp a sturdy walking stick as I invite you into my mind, taking you on an expedition of research which I myself have traveled in the past year. This thesis will proceed chronologically, following my own pathways of exploration and discovery as they happened, and allowing you to see the process of research which brought me to the conclusions I will make by the end of this narrative. I am strategically rejecting some of the traditional categories for writing used for these projects; would it not be hypocritical to pay obeisance to the very norms of academia which I intend on criticizing? Acknowledging this, I ask you to keep an open mind.

This in itself is one of my greatest hypocrisies, as I am here, writing a thesis, as many have done before me, to get a degree. Yet once you finish this essay, you may understand that to me, it was not simply a thesis.

It began in February of 2017. A group of students and I had just started a 'Knowledge to Action'[1] project, focusing on the lacking connection between gender and sustainability. Inspired by the research of our project, I proceeded on my own independent study of demographics and trends within the classroom, specifically related to space, representation, and domination within the learning environment. My findings were bleak, though not unfamiliar, and forced me to realize the existence of a trend which I had believed not to exist in a program such as mine; a trend which mirrored the dominant discourse of power which we see in the fabric of society. These findings turned me to questioning the integrity of my education; allowed me to see that when I thought we, as a group, were questioning and resisting these discourses, we were really just reinforcing them. From here, I started to look more critically at my courses, literature, and curriculum in an attempt to observe patterns within our program. This formed the founding notions for my thesis.

Svend Brinkmann (2014) states that as researchers, the vital moment of learning happens when we "allow ourselves to stay unbalanced for a moment longer than what is comfortable" (p. 724). He addresses the idea of "stumble data", expanding upon critical inquiry and how we 'stumble' upon our topics of research in daily life, arguing that this is one of the most authentic methods of research (Brinkmann, 2014). I understand the progression in a similar way. When unbridled from stringent

[1] Knowledge to action course description: https://www.lumes.lu.se/programme-outline/2nd-semester/knowledge-to-action

[2] Gender and sustainability is a course offered by LUMES as an elective class. It touches on the interplay between gender, feminism, and sustainability. I will later use this as a basis for my second portion of study. Course link found here: https://lumes.prodwebb.lu.se/programme-outline/3rd-semester/gender-and-

standards of investigation and laws of study, curiosity is left to create a genuine pursuit of knowledge, simply for the sake of that knowledge itself.

The majority of my research was characterized by this notion, although throughout the paper you will find manifestations of the structure and organization that is required within an academic setting, as much for the sake of face value and simplicity as it is for my own lingering desire for format and objectivity. The mode of writing which I employ follows this attempt at fluidity, treading on the tracks left by previous feminist researchers who have emphasized the importance of the process, and the inclusion of the *making* of the research, not just the product of it (England, 1994).

Something to note, is my position is a white, western, middle class, intersectional, feminist [Although I use the term western throughout the paper in the sense that it means both "stemming from greco-roman traditions" (Western, n.d.) and coming from the continents of Europe and North America, I want to acknowledge the problematic essence of the phrase rooted in colonialism, power, and discourse (Hall, 1992) and my intention of leaving it lower-case in order to avoid further privileging the term]. I have tried during this process to look inwards and use my experience to understand and explain phenomena which I am intimately related to and feel I have the authority to address. I am applying Sandra Harding's standpoint theory (1992) with the intention of bringing my background to the forefront. This being said, I acknowledge my use of western literature and paradigms of the world, and strive to bring light to the bias that is ingrained in my way of seeing, knowing, and acting. While I have grown to have a more critical perspective, this does not make me infallible, nor obliterate the impact that growing up and being thoroughly educated in a western culture has had on my perspectives.

Returning to the subject at hand, I started planning for thesis time and had to formulate my thoughts in the shape of proposals and outlines. My interest was instantly directed towards these dominant discourses, and how to balance, remedy, and even extinguish them. I started from a mindset of frustration at the academic institution, and a continual desire to do something about it. It was after this, at the end of my "Gender and Sustainability"[2] course that my eyes opened to a new possibility for a systemic shock: the incorporation of feminist work within sustainability science. These paradigms highlighted the problems which I struggled with prior, and demonstrated the potential to

[2] Gender and sustainability is a course offered by LUMES as an elective class. It touches on the interplay between gender, feminism, and sustainability. I will later use this as a basis for my second portion of study. Course link found here: https://lumes.prodwebb.lu.se/programme-outline/3rd-semester/gender-and-sustainability

see how these dominant discourses could indeed be questioned and critiqued, rather than reinforced.

And yet, my analysis of gaps within my own sustainability education was not far reaching enough to make a larger scale generalization about sustainability programs. My frustration was, while productive, perhaps not well placed. How could I make a well formulated hypothesis relating to patterns in sustainability education without first measuring these patterns in more programs than just my own?

From this query, I formulated two research questions.

1. *First, what are the patterns in masters programs of sustainability that may indicate an adherence to traditional paradigms of learning and restriction to the strict norms of academia?*

2. *Second, how can teaching feminist work balance these patterns to be more in line with the values of sustainability and pre-described necessities of sustainability education?*

In the next pages, I intend for you to float slowly through my characterization of sustainability education and its relationship to the norms of academia, then drift towards seeing how feminism has the tools to help address this tension through the words of those who have studied both together.

I want to reinforce that this thesis was borne out of my exploration of the potential for feminist work to be included within sustainability. This is my primary point of departure, and the intention of the thesis is to observe this connection and the potential for it, so a critique which is founded upon "I don't believe in feminism" is outside of the scope of my research.

And so begins the first stage of research.

1 The Problem

In order to answer my first research question, I needed to understand the values of sustainability education. Who decided what sustainability education must include, what are the topics, what is the curriculum, is it critical, practical or both?

This topic was a major source of frustration for me. Having done a research paper on the quandary of feminist academics, learning about a variety of feminist theories, methodologies, epistemologies, and, specifically, critiques of science, my mind was filled with critical pedagogy and approach to education. As I perused papers on sustainability education, I started picking out patterns which were similar to ideas presented by feminist academics. The catch was that most of the papers I discovered did not reference the possible feminist origins of these ideas.

This led me to ground my approach towards this thesis in feminism.

I apply a broader theoretical basis for the paper, focused upon feminism, which is classified as a perspective within ´critical theory´ (Horkheimer, 1982). Critical theory is a realm of social critique that focuses on emancipatory goals, power structures, and inequalities (Horkheimer, 1982). Feminist theory, in some texts, can be defined as such (Horkheimer, 1982), along with postcolonial theory, critical race theory, and more. As feminism has a primary focus upon gender equality, I must expound that the concept of gender is a social structure which can be in flux, and via this pathway, I must also articulate the political importance of difference among people of different genders, identity, race, class, sexuality, and religion, aka intersectionality[3] (Weldon, 2008).

Feminism is one of the few theories that can consolidate a variety of overlapping intersections, oppressions, paradigms of knowledge, power structures, and standpoints. It spans many different realms of scientific inquiry (from social theory to biology) as well as civil society, politics, social movements, and individuals (Hesse-Biber, 2011). The diversity in different ways, methods, and descriptions of feminism is unique in that it offers a medley of possible problem formulations, perspectives, and potential solutions.

Returning to the question at hand, I attempted to understand what some literature defines the necessities of sustainability education to be. I must provide a definition of sustainability education to clarify what this ambiguous word represents, as well as provide you with a basis to critique

[3] Intersectionality is a feminist concept which explains how different intersections of identity (class, gender, sexuality, race, etc) cause different interlinking impacts of oppression (Hesse-Biber, 2011)

education. It may be difficult to find consensus on what sustainability education should be, so I acknowledge that the definitions and themes which I will formulate here are based specifically off the literature I review, of which has been crafted by academics throughout the field.

1.1 What is Sustainability Education

First, Littledyke & Manolas (2010) affirm that sustainability education must be post-positivist, and reject traditional positivist epistemologies that are prominent within science education. They warn of reductionist approaches and call for sustainability to "contradict the positivism, objectification, reductionism and determinism of modern science" (Littledyke & Manolas, 2010; p. 291). They specifically outline the detrimental effects that positivism has had on shaping the functioning of institutions and individuals, which has also been an element within sustainability education (Littledyke & Manolas, 2010). One aspect outlined as imperative for teaching sustainability is a critical learning approach and an interdisciplinary atmosphere (Medrick, 2010; Littledyke & Manolas, 2010; Singleton, 2010). Christie, Miller, Cooke, & White, (2013) also promote critical thinking, post-positivism, and reflexivity[4] as essential approaches to sustainability education. They define critical thinking as "a process that involves interpretation, analysis, evaluation, inference, explanation and self-regulation" (Christie et al, 2013: p. 398). And yet, their research on pedagogies used within the classroom indicate that these approaches remain majorly unused (Christie et al, 2013). In fact, they state that the pedagogies that are encouraged in literature for sustainability education are rarely exercised within an academic context (Christie et al, 2013).

Colucci-Gray, Camino, Barbiero, & Gray (2006) dive further into the necessity of reflexivity and subjectivity within science education. They argue that the lack of discussion around production of knowledge within current science education results in a variety of issues, such as instrumental view of nature, a focus on economic productivity, and a separation of science from society (Colucci-Gray et al, 2006). They imply that scientists' failure in understanding the complexity of the natural world comes from an epistemological inaccuracy that can be remedied by including contextual, personal, and cultural reflections as part of research (Colucci-Gray et al, 2006). They state that:

[4] Reflexivity, for the purpose of this thesis, describes research which "appreciates and explores the social, political and normative dimensions" (Miller, 2012; p. 280) of sustainability issues. More specifically, it refers to self reflection, and the reflection of one's own views on the process, product, and perspectives on the science (Colucci-Gray et al, 2006; Littledykye & Manolas, 2010)

> "recognizing the role of context, the influence of culture and the limits of an approach based on linear thinking, has important implications in relation to the production of knowledge and to its applications." (Colucci-Gray et al, 2006)

They further call for an understanding of personal standpoint as a necessity within sustainability education, in order to perceive the effects that worldview and thought processes have on scientific thinking (Colucci-Gray et al, 2006; Singleton, 2010). Gough (2002) expresses the need for such processes in environmental education through a critique of western science and the global discourse it has created. He observes a neo-colonialist discourse within environmental education that "systematically privileg[es] western interests and perspectives" (p. 1218). The dangers of reductionism within sustainability education remain prominent, especially when addressing complexity (Gough, 2002). We can see a deeper level of analysis, focusing upon European imperialism, and its sway in validating western science, providing it with the façade of rationality, objectivity, and universal truth (Aikens, McKenzie, & Vaughter, 2016; Aikenhead, 2001; Gough, 2002). Gough (2002) accuses scientists and policy makers of scientific illiteracy due to this, pointing out those who "heap scorn and derision on any sociologists, feminist, post colonialists and poststructuralists who have the temerity to question the androcentric, Eurocentric and capitalist determinants of scientific knowledge production" (p. 1224). A solution to this, and an obligation within sustainability, is to accept a form of cultural relativism and reflexivity within the scientist themselves, as well as embrace transdisciplinary learning environments and focus on understanding different attitudes to knowledge production (Gough, 2002).

Others also express concern over the integrity of sustainability education, conveying the allegation that sustainability has been instrumentalized by and for neo-liberal discourses along with a variety of global organizations, governments, educations, corporations, and curriculums (Le Grange, 2011; Sipos, Battisti & Grimm, 2008; Aikens, McKenzie, & Vaughter, 2016; Glasson, Mhango, Phiri, & Lanier, 2010). In fact, according to Sipos, Battisti & Grimm (2008) some of the social, economic, and ecological crises that our society faces today are in part the fault of higher education and those within it, specifically the reinforcing of dominant discourses and power structures (Aikens, McKenzie, & Vaughter, 2016). Adding to this, Broadhead & Howard (2011) state "that it is precisely the form and foundations of western science that provide the circumstances and conditions that lead to unsustainable attitudes and practices" (p. 303).

In 1998, Desta Mebratu warned about sustainability education, specifically the tendency of reductionist methods of thinking, even within interdisciplinary environments, and recommends a

new method of knowledge production and critique of science. This critique is furthered, stating that this fragmentation of knowledge has caused conflicts within and outside of academia (Sipos, Battisti & Grimm, 2008). Sipos, Battisti & Grimm (2008) infer that the norms of academia and prescribed format of education is rooted in rationalism, objectivity, and universality, which has resulted in the perception of value-free knowledge, while essentially continuing an even more value-laden curricula. Again, they call for critical reflection, interdisciplinary, critical pedagogy, and reflexivity to be adopted within sustainability education.

Transdisciplinarity and interdisciplinarity are the concepts which I have fallen into most commonly (Lang et al., 2012; Jerneck et al., 2011; Yarime et al, 2012: Miller, 2012). It seems as if these concepts, in some way, support the others. While doing transdisciplinary research, researchers must be critical and participate in reflecting upon their, as well as others', position within the process, simply due to the character of the work (Lang et al., 2012: Miller 2012). Lang et al. (2012) also mentioned some downfalls of such research, many which seem to come from ideas of objectivity and universality; some examples being "lack of legitimacy of transdisciplinary" processes (p. 38) and difficulties finding a standard of quality within research between the researchers and other participants. Related to this problem is the importance of co-production of knowledge and examination of that knowledge in different forms (Lang et al., 2012)

Jernek et al. (2011) maintain that sustainability science must question "scientific inquiry", focusing on bridging the divide between academia and society. This relates to the concept of knowledge production, and the feminist question of 'science for whom and by whom'. Sustainability is meant to address this through transdisciplinary and participatory research processes, in which the criteria for quality remain in fluid transformation (Jernek et al., 2011). They also acknowledge the necessity of a critical approach to research as well as problem-centered research (Jernek et al., 2011). While doing so, Jernek et al. (2011) briefly allude to the essence of this technique by stating that it is

> "... a reflexive approach for breaking out of a particular reference frame in order to reap the benefit of seeing beyond its boundaries" (p. 78-79).

Building upon this, Thaddeus Miller (2012) calls for a more "democratic and reflexive research agenda for sustainability" (p. 279). He addresses how the "epistemic power of science, especially when presented or perceived as value-free, can come to dominate normative and political concerns" (p. 298), and states how this is one of the tensions of sustainability science, especially in observing knowledge production and different perspectives. Interdisciplinarity and transdisciplinarity are also promoted as crucial sections of sustainability science, considering the deep social and political issues

which sustainability science addresses. Miller further states how "sustainability problems present deep challenges to traditional scientific analyses and the role of science in society" (p. 290). He expounds upon the deep epistemological questioning of science's ability to produce usable knowledge about sustainability problems, relating to the necessity to examine knowledge production and promote reflexivity.

Based upon this literature, I started to pick a few key concepts which seem to recur, and which I later focus on when observing master's programs of sustainability before undertaking my research. These are: interdisciplinarity or transdisciplinarity, critical learning, reflexivity, and knowledge production. In addition to these concepts, I want to include two of my own genres which impact my research: indigenous or traditional ecological knowledge (TEK), and femin* or gender.

When I began my thesis process, I dove into a generous amount of literature on sustainability education. Of all the frameworks and concepts encouraged, I happened upon articles which encouraged the inclusion of indigenous 'ways of knowing' and science within education and solutions. While this was fraught with many more theoretical issues, I found that, in literature, it was offered again and again as a solution to the presence of 'imperialist' science and positivistic ways of seeing the world within education (Aikenhead, 2001: Aikens, McKenzie, & Vaughter, 2016; Broadhead & Howard, 2011; Colucci-Gray, Camino, Barbiero, & Gray, 2006). I was interested in exploring the existence of this solution within education to see if these recommendations ever came to fruition on a larger scale.

In terms of the inclusion of feminist knowledge, my experience in the gender and sustainability course had shown me the potential for this field to inform and improve sustainability science, and yet, unlike indigenous knowledge, there are few articles encouraging its use within sustainability education, offering a promise gap in research to explore.

In order to understand these critiques and recommendations, I had to dive further, and start looking in to this nature of academia that has continued to arise, leading us to our next pathway of thought.

1.2 Norms (of academia)

While different academic institutions, countries, programs, and regions all have a variety of formal and informal legislations on how one in academia must function, there are some attempts at

consolidating these ideas into a normative structure[5]. This brings us to our first theoretical investigation in this case, *what are norms*?

Norms can be described as rules of social conduct which shape individuals actions within a group or community and are created by the traditions, values, and belief systems, within this group (Sherif, 1936). They are generally informal, but agreed upon and understood by the members of that society (Cialdini & Trost, 1998). They emanate from the societal structure and culture, and in some cases can be argued to function as a mechanism for benefiting the group (Sherif, 1936; Cialdini & Trost, 1998). However, these norms often contribute to social hierarchies which enforce structures of racism, sexism, and cultures of unsustainability, as well as alienate people who live outside the group or deviate from the established norms (McDermott, 2007).

These norms are a large part of creating a phenomenon which Emile Durkheim[6] (1982) describes as the social ´fact´. These ´facts´, which are not created by the individual, nor written by politics, exist in a realm outside of the individual and yet constitute a strong coercive power to dictate that individuals actions, beliefs, thoughts, and feelings (Durkheim, 1982). The presence of these facts remains hard to detect if left unquestioned, but the moment an individual attempts to function outside of, or against, the flow of this social pressure, the existence of this phenomenon becomes obvious (Durkheim, 1982). The components which create social facts are the views, propensities, norms, and routines which are adopted by a collective group (Durkheim, 1982). These facts are then adopted by new members (whether they are brought up in the group, raised to believe these facts, or coerced to conform to them) due to a perception of these facts' legitimacy- usually coming from an authority which education teaches individuals to respect (Durkheim, 1982). These facts exercise control over the individual, manifesting themselves through individual conformance with the social reality (Durkheim, 1982).

Durkheim goes on to explain this phenomenon in the context of child's education:

[5] With the purpose of having a deeper analysis, I will be focusing more upon the norms of research and ´science´, and less upon the broader norms of academia.

[6] I understand that including Durkheim within my theoretical reasoning is interesting to say the least, especially due to his presence as a very positivist researcher who calls for stoic objectivity. However, my use of him here is purposeful, and his theory of e 'social fact' is very helpful in understanding the similar core of dominant academic inquiry (and norms). Additionally, positivism is not always at conflict with feminist scholars, and many feminists call for the 'strategic' use of positivist methods within research (Hesse-Biber, 2011)

> "...all education consists of a continual effort to impose upon the child ways of seeing, thinking and acting which he [or she] himself would not have arrived at spontaneously...The pressure to which the child is subjected unremittingly is the same pressure of the social environment which seeks to shape him in its own image" (1982; p. 53)

With this, we can understand how these norms, power structures, and social facts, exist within academia, and, more specifically, science.

Braxton (2010) states that "communality, disinterestedness, organized skepticism and universalism" (2010, p.246) are the norms of which must be adhered to by scientists in order to "safeguard the welfare of... knowledge" (p.246) created by academia (see Table 1 for an explanation of these norms).

Table 1: Table illustrating the Norms described by Braxton (2010) and their descriptions. *Own Illustration, 2018.*

NORM	DESCRIPTION
Communality	Necessity of sharing the findings with the academic community
Disinterestedness	Research motive mut only be for knowledge prodcution, not personal gain
Organizaed Skepticism	Necessity of peer reviews
Universalism	Judgement of academic quality solely on the basis or merit.

These norms are instruments of what Braxton (1990) refers to as social control, or in Durkheim's (1982) definition, social facts which exert social control; an essential aspect of ensuring that the norms are followed within the profession of academia. In fact:

> "conformity to these norms augments the goal of science: the advancement of knowledge...compliance with the norms of science is in the best interests of the client [academic discipline and the cause of learning] of the academic profession: the knowledge base of an academic discipline." (Braxton, 1990; p. 462)

After stating this, the author maintains the necessity for academia to not deviate from these informal norms in order to retain sovereignty and autonomy as a profession. Others have touched on these norms of academia, and, contrary to Braxton, have more critical perspectives towards their function.

Objectivity is one of the most commonly cited norms of academia (Lowe and Benson, 1984; Braxton, 1990; 2010; Jenkins, 2014; Benschop & Brouns, 2003; Sipos, Battisti & Grimm, 2008), however, the understanding of this word differs, presenting a major conceptual issue. Within academia, this concept has been interpreted to imply disinterest and value-neutrality, resulting in a repercussion which I will elaborate on, but which can be defined as the negative perception of any program working towards social change or political action (Lowe and Benson, 1984; Jenkins, 2014). This relates to the concept of disinterestedness, in which a researcher must be separated from their field of inquiry (Braxton, 1990; Benschop & Brouns, 2003).

Another norm is the tendency to be reductionist (Jenkins, 2014; Mebratu, 2005; Littledyke & Manolas, 2010; Gough, 2002; Broadhead & Howard, 2011). The grouping of specific topics into areas of study can marginalize the programs, concepts, and research, which fail to fit within stricter, more traditional boundaries (Jenkins, 2014).

Jenkins (2014) mentions the necessity within academia of legitimizing your own research by referencing 'canonical texts'[7]. This relates to Braxton's (1990; 2010) idea of universalism, in the sense that the basis of merit is often related to the authors utilization of widely accepted literature which embodies widely accepted norms. In many cases, the nature and age of these texts suggests that they may have an integrated 'conceptual hostility' (Jenkins, 2014; p 266) towards ideas which inherently question the social structure or order, making it even more difficult to achieve merit within the academic systems (Jenkins, 2014: Pilcher & Whelehan, 2016). There is a prerogative towards specific ways of thinking within academia which creates a difficult environment for individuals who intend to depart on more critical or non-traditional methods of scholarship, as well as causes underrepresentation of minorities in the field (Jenkins, 2014; Sipos, Battisti & Grimm, 2008: Pilcher & Whelehan, 2016; Aikens, McKenzie, & Vaughter, 2016).

One thing that may not be considered a ´norm´, but is undeniably a trend within the academic setting, is the current and historical marginalization of minorities within higher academia (Benschop & Brouns, 2003; Jenkins, 2014; Levit, 2000; Moore, 2005; Aikens, McKenzie, & Vaughter, 2016; Glasson, Mhango, Phiri, & Lanier, 2010). This trend continues to endure, especially in relation to

[7] From my understanding of this phrase, canonical texts are texts which are widely accepted as the principle or rule of the referenced discipline. This is based upon the definition of canon which, in this case, is "a sanctioned or accepted group or body of related works" (canon, n.d.)

professorial and doctoral levels within an institution (Benschop & Brouns, 2003; Levit, 2000). While this may not be a 'norm' specifically, it is an aspect of the academic institution which reinforces social hierarchies as well as, if looked at critically, enables the continued existence of the norms listed above.

In order to certify that these norms are maintained, social control exerted by peers within the academic discipline in the form of self-regulation is the most important aspect to control and create conformative, rather than deviant, behavior within academia (Braxton, 1990; 2010). This reflects the concept of the social fact (Durkehim, 1982) as well as Foucault's (1977) analysis that creating individuals and individual identity through social facts is the most compelling system of achieving social control. Universities' role as some of the most dominant axises of social control within society reflect this structure (Lowe and Benson, 1984; Benschop & Brouns, 2003). Still, universities are not solely knowledge hubs, their function as political and economic institutions reveals their vested political and economic interest, which "in many ways serves the interest of those who benefit from our present social system" (Lowe and Benson, 1984; p. 179; Gough, 2002; Le Grange, 2011; Sipos, Battisti & Grimm, 2008; Aikens, McKenzie, & Vaughter, 2016). Lowe and Benson (1984) go so far as to state that the research done in academia is for the purpose of social stability, particularly in both reinforcing and justifying existing social structures and hierarchies (Benschop & Brouns, 2003; Gough, 2002; Broadhead & Howard, 2011).

And yet, the academics' position in society is no longer to conform to and reaffirm the social consciousness or collective truth (Foucault and Deleuze, 1977), which is both created by and creates these norms and social facts. Academics' goal must be to struggle against this power that forces the intellectual themself to become an "instrument" of the discourse, and subsequently fight to bring to light the most insidious and imperceivable currents of power (Foucault and Deleuze, 1977). This sentiment goes against Braxton's (1990; 2010) implication that academics must conform to these norms in order to maintain their autonomy.

In an article discussing the issues of implementing sustainability science in higher education, a similar sentiment is implied, referencing an approaching "academic revolution" which focuses on changing the imperatives of higher education towards addressing sustainability issues through collaborations and interdisciplinarity (Yarime et al, 2012).

On that note...

1.3 Tensions that matter.

Sustainability education calls for reflexivity, critical thinking, questioning knowledge production, and inter/transdisciplinary learning environments. However, these concepts, as I define them, seem to be at odds with the norms and trends of academia.

The idea that an individual must learn about and be critical towards the production of knowledge within academic institutions is problematic when the basis of merit (universalism) is centered upon traditional sources of knowledge (canonical texts). When this basis of merit is many times centered upon the reigning structures, norms, and hierarchies within society, to what level can an individual function outside of or in tension with these structures if they intend to receive any kind of allowance of universalism?

When it comes to the necessity of interdisciplinarity within sustainability education, the trends which indicate a lack of minorities as well as the reductionist tendencies within academic institutions seem to imply that incorporating a variety of different ideas, paradigms, and backgrounds into research goes against the status quo (Jenkins, 2014; Mebratu, 2005; Littledyke & Manolas, 2010; Gough, 2002; Broadhead & Howard, 2011).

Adopting reflexivity, in the sense that researchers must be aware of their position and conscious of their own subjectivity, is not wholly compliant with the traditional view of disinterestedness and objectivity which is required within the academic institution.

This sentiment is not new, as Kates (2011) states that sustainability science has a "commitment to moving [its] knowledge into societal action" (p. 19450). Lowe and Benson (1984) address the difficulties of programs which are centered upon any kind of social or emancipatory purposes.

> "´... the emphasis on objective scholarship acts to limit inquiry to topics which do not threaten the social order, since any scholarship which explicitly discusses the desirability of social change is seen as special pleading and nonobjective.
>
> A look at the history of the development of the various disciplines makes it clear that the professions and professional associations were set up so as to take control of knowledge, primarily through enforcing standards of objectivity. As part of this control, radical thought tied to social movements has been consistently and overtly excluded." (Lowe and Benson, 1984; p. 180)

While this statement is decades old, it remains pertinent. We can see that the above described ´norms´ of academia continue to follow this path of objective scholarship (Braxton, 2010) which Lowe and Benson (1984) reference when addressing the tensions between academia and feminism..

To relate this to sustainability, Miller (2012) states clearly that:

> "The scientific norms and epistemic values governing scientific practice have not evolved to deal with wicked problems and arenas in which the validity of scientific knowledge is challenged outside of the laboratory" (p. 290)

In summation, sustainability education calls for a method of learning which questions these dominant paradigms and strays from the norms of academia. How then, does sustainability education function within institutions whose norms contradict central values of this education itself? In order to answer this, I conducted a brief inquiry into sustainability education, which indicates that sustainability education may not fully employ all of these critical concepts within practice.

1.4 A brief inquiry into sustainability education

While many researchers vouch for the dominance of traditional norms and discourses within these programs (Moore, 2005; Mebratu, 1998, Gough, 2002; Sipos, Battisti & Grimm, 2008; Christie et al., 2013), I wanted to further compliment this more theoretical standpoint with an understanding of these patterns and how they take place, essentially the difference between sustainability in theory versus practice.

You may be thinking: "Results? So soon?" Yes, indeed! However, keep in mind that these are neither my primary nor most important results. "Why do you include them?" Simply because they were a part of my research process, and I firmly believe in an honest representation of my journey.

I want to mention here that I am applying what is called a **"Sequential Transformative Strategy"** to my research. This is a mixed method approach in which the first phase of research is characterized by more quantitative data collection and analysis which then goes on to *inform and build upon* the second phase of data collection, which is qualitative (Creswell, 2017). This approach is unique in the sense that throughout it is characterized by the existence of a theoretical lens or context, in my case feminism, structure, and sustainability, which frames the research question and approaches (Creswell, 2017). For my case, I will be using a combination of quantitative and qualitative rather than simply quantitative, as I utilize document analysis (Bowen, 2009), which, due to its applicability to mixed methods research, can be a flexible and multi-faceted approach. For this section, I employ this method to provide "supplementary research data. [as] Information and insights derived from

documents can be valuable additions to a knowledge base" (Bowen, 2009; p. 30). Also, the methods efficiency, availability, stability, coverage, and lack of obtrusiveness (Bowen, 2009; p. 31) are all uniquely situated to suit this initial problem formulation stage of preliminary research.

An additional justification for this mixed methods approach, is to improve the validity of my findings, enhance my understanding of both research problems, and understand different potential findings (Hesse-Birber, 2010). This allows me to perceive to what extent the research from this approach and from my later qualitative data "get at the same underlying issues" (Hesse-Birber, 2010: p. 466).

I began by compiling a list of sustainability masters programs throughout the world. In order to be considered a sustainability program, the word sustainability must be in the title of the program, not as a supplement (such as sustainable management, sustainable engineering). Second, these programs must be open to international students. This was for the sake of narrowing my search, as well as its application in sustainability, as these seem to be more in line with this idea of transdisciplinary, multicultural work environments, and a global perspective on problem solving. Finally, these programs must be current, full time, and offer in person learning environments.

I perused a list of master's search sites and sustainability programs provided by my sustainability science professor here at Lund University. While exhausting these resources, I recorded the program title, faculty, university, country, language, duration, and URLs. I found 110 programs to within my study criteria. After this preliminary read through, my second task was to retrieve information on each program's curriculum, key learning prospects, and central themes.

For this section, I included: program focus, core modules, and key concepts. Applying the above definition of sustainability and criteria for sustainability education, I annotated whether each program contained mention of the critical concepts within their publicly available information. The main sources from which I gathered data included program pages, websites, curricula, and syllabi. Depending on the program, the availability of information changed, which is one limitation of document analysis (Bowen, 2009). For example, some programs had all of these platforms, some had only two, and some had only one of the potential platforms. This was expected and unavoidable, and had little impact on the data itself.

Of these concepts, I discovered and annotated potential variations which could be used to describe them. While doing research, I kept a log of these terms (Appendix A) and recorded the deviations from the original specific concepts that I accepted throughout the research in order to keep the process concise and fair, yet allowing for some flexibility in terms of word choice. I understand that there is a slight variation in understanding when it comes to the included phrases, such as

multidisciplinary versus interdisciplinary, however, I desired to permit flexibility within the potential phrases to allow for the greatest potential of words to be categorized.

My use of this 'concept search' was the best method to approach this issue, specifically when considering that this is preliminary research, as well as taking into account time and scope of the research. Without these limitations, the most thorough way of knowing if these programs adopt these terms would be to take the courses myself, but this was not an option. Another potential route would have been to send surveys to students of all of these programs in order to understand what they have learned- however this also would have been problematic as it would have been outside my scope considering the breadth of programs I intended to look at. So, searching whether or not programs employ these concepts when describing their own curriculum was the most valuable option, keeping into account my scope, capacity, and nature of preliminary thesis. This follows the line of Bowen (2009) describing the potential flaws in this method, focusing on lack of detail, and bias in selecting the documents, both of which I did my best to avoid through systematic searching and thorough examination of all potential documents per source. As I envisioned focusing more on the second portion of this thesis, my intention for this investigation was to understand the patterns within sustainability education, rather than conduct a micro-level analysis, and so a summary of my findings is sufficient.

As a quick aide-mémoire, we must return and review my original research questions. The first of which being: *what are the patterns in masters programs of sustainability that may indicate an adherence to traditional paradigms of learning and restriction to the strict norms of academia?*

First, as seen in Figure 1, the most prominent concepts found within the program websites, descriptions, syllabi, learning outcomes (where possible) and curricula were interdisciplinary and critical thinking/learning. These are, perhaps, the most frequently cited necessities for sustainability education, yet still were not present in every single

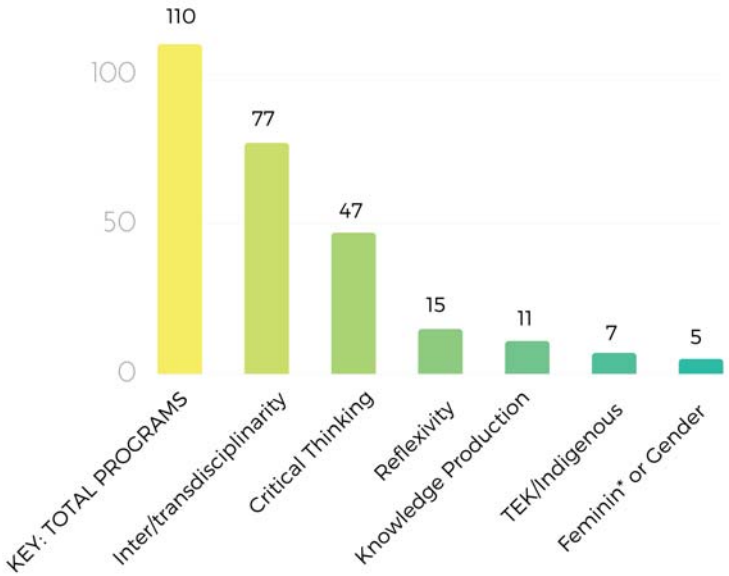

Figure 1: Graph listing the most prominent concepts included within Masters programs of sustainability search. *Own Illustration, 2018.*

program. Figure 1 indicates the presence of each of the six concepts decided upon for research and, as you can see, after the first two concepts, the last four were included in 15 programs or less.

The least frequently mentioned term was femin* or gender, with the second least being TEK. This was expected as these are not criteria for sustainability education, but subjects which run parallel to the necessities listed for such education.

Next, I wanted to see if there were any distinct patterns in the combinations of inclusion of these concepts. Figure 2 shows a simple depiction of these patterns. The most common combination of concepts was the use of interdisciplinary, and nothing else, with 31 programs having this pattern. The second most common pattern for programs was to not include any of the critical concepts (23 programs), and the third was to have both interdisciplinary as well as critical thinking/learning (21 programs). There were 7 programs (6%) which mentioned interdisciplinary, critical thinking/learning, and reflexivity, which are some of the most important aspects of sustainability education. The majority of programs mentioned at least one topic, but few mentioned more than two of them.

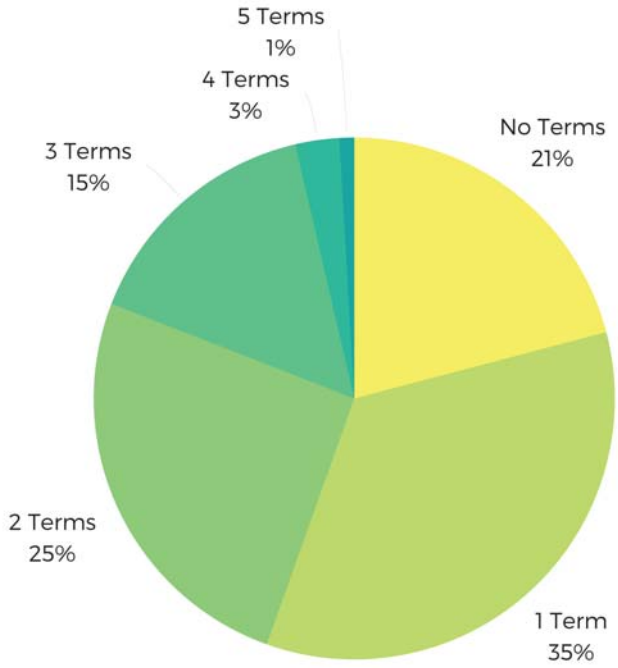

Figure 2: Pie chart showing a depiction of the patterns within master's programs of sustainability in terms of inclusion of the critical concepts. of survey respondents from each batch. *Own Illustration, 2018.*

I found that many of these programs claim that they are the 'first degree of their kind' and 'innovative'. Many of them are focused around business and economics, and many even mentioned the necessity of growing profits 'sustainably'. The focus of each program was usually clear, either being centered around natural science or social science. This was interesting as it applied even for programs which simply said sustainability and is visible through the lack of diversity in mandatory courses, many times focusing solely on natural sciences, business, and economics, without providing any mandatory course on sustainability. Coming from this, there was a large absence of sustainability science courses. See sample page of study results in Appendix B.

Now, we return to the question at hand. What does it tell us and where can I continue from here? There are indeed patterns, such as the popularity of including interdisciplinary and critical thinking, but exclusion of the rest of the critical concepts. We also observe that the more 'radical' topics, such as indigenous knowledge or feminism within the curriculum, are almost absent within these programs primary definitions and courses, and that the more 'critical' requirements, such as reflexivity and addressing knowledge production, are also uncommon. These trends seem to mirror those which have been discussed above in terms of the contradiction between sustainability and the norms of academia. The fact that not one program included all criteria for sustainability education indicates a disconnect between what should be and what is. And while my study focused upon how these programs described themselves within their publicly available documents, seeing the inclusion or exclusion of terms within the programs own descriptions tells us something important about these ideas and how widely they have been adopted within the sustainability education sphere. We can also assume in some capacity that the way that the program defines itself must, to some extent, reflect the program itself. According to Bowen (2009) "documents can be analyzed as a way to verify findings or corroborate evidence from other sources" (p. 30). This, in cohesion with providing supplementary data, is the main fruit from the above research, as it exhibits a trend familiar to us, explained in the theory above.

1.4.1 Does this apply?

The previous results showed that few sustainability programs included all of the critical concepts within their program definitions. Unfortunately, from this, I cannot confidently answer my first research question to the fullest extent as we can not come to know *if there are patterns in masters programs of sustainability that indicate an adherence to traditional paradigms of learning and restriction to the strict norms of academia.* However, we can perhaps begin to piece together an understanding of *w*hy sustainability education in practice and in theory are not cohesive[8].

According to my theoretical analysis, we can perceive that the critical concepts necessary to sustainability education are in conflict with the norms of academia. Perhaps this tension is the reason that these key concepts are not included within the programs own descriptions to the general public.

[8] I want to point out here that I could have easily changed my research question in order to better fit the data in this section, an option which was recommended to me multiple times by multiple people. I have not done that as it offers an opportunity to identify one of these norms of academia that I critique. I would much rather convey honesty and authenticity in stating that I was unable to answer the question I set out to, than do something similar to lying, twisting my process, and hiding the reality of my research in order to ensure my own success, as is, as I have experienced, a common practice in academia. This is, in my opinion, 'bad' science.

Sustainability education may not exist in practice in the same way it does in theory because it simply cannot. Similar to the troubles of feminist scholars in their marginalization within academia and failure to gain recognition (Jenkins, 2014: Levit, 2000), sustainability education in theory may be too close to questioning the existing paradigm and traditional norms of the education system.. In order to exist, these programs struggle to embrace reflexivity, critical thinking, and question knowledge production as these topics run too far away from the dominant discourse. This is emphasized by the idea of social control, and the enforcement of these norms by the academics within the institutions themselves (Durkheim, 1982; Braxton, 2010). Even though this is not enough emperical evidence to state my claim positively, the strength of the conceptual tensions, and the realtionships which have been established by other scholars in the field, allow me to make a highly substantiated theory towards this case.

In order to narrow down the complexity of this, I've created a brief visualization of the relationships and tensions which I discuss in previous sections. As seen in Figure 3, sustainability in theory informs sustainability in practice, however, the values necessary for sustainability are contradicted by the norms of academia, in which sustainability in practice is required to function within.

Later, I will use the same figure to demonstrate how teaching feminism in sustainability education can remedy and fill some of the issues with these tensions, answering my second research question.

Now, take a deep breath, grab another cup of tea, and get ready to weave through the second, and main, part of my journey.

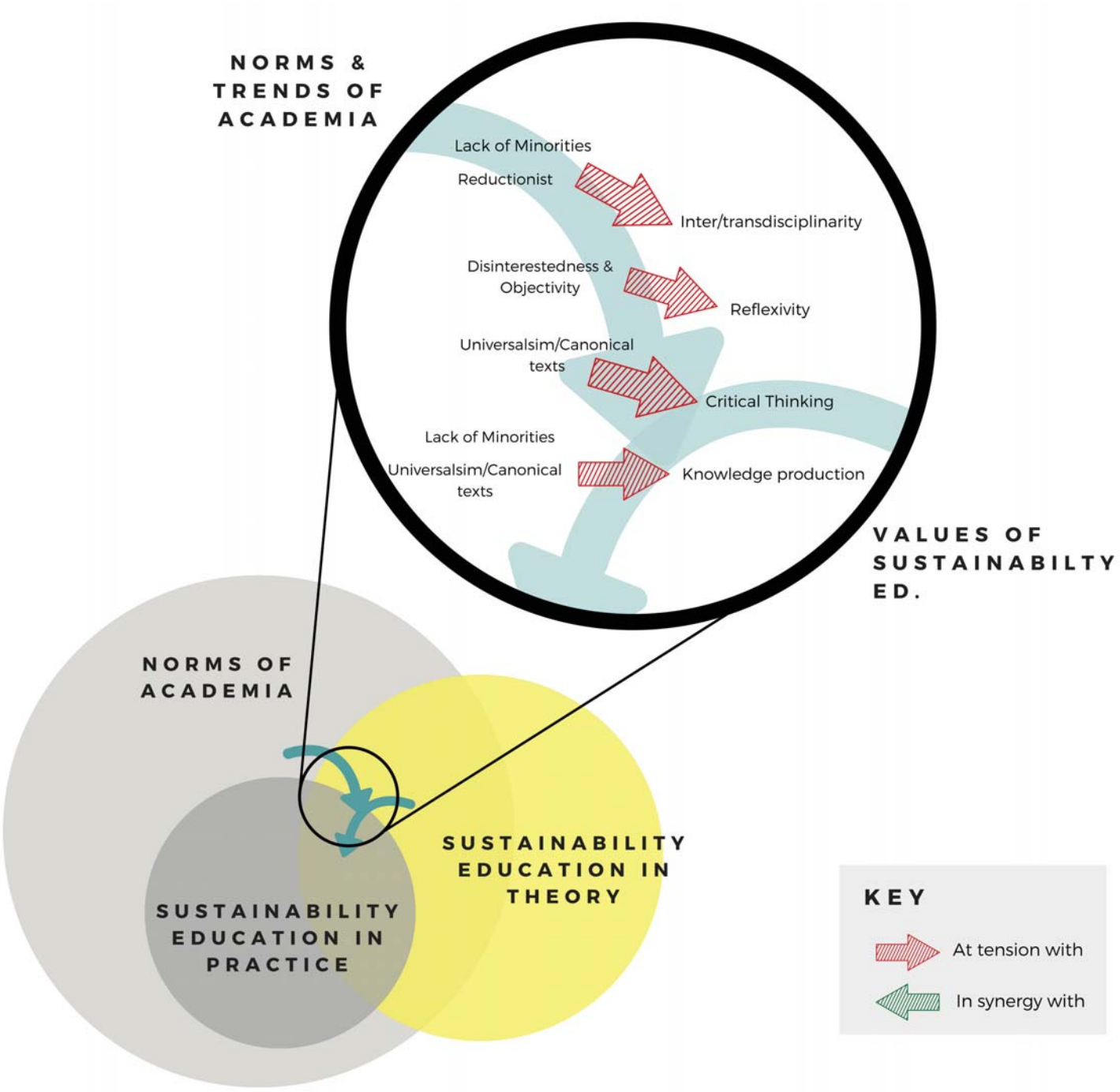

Figure 3: Visualization of the conceptual relationship between sustainability in theory and practice, and the norms of academia. The red arrows indicate where there may be tensions, and we see the overlap between sustainability in theory, in practice, and the norms of academia, and how the relationship between these factor create sustainability education in practice. *Own Illustration, 2018.*

2 Searching for a solution

This is when I bring us to the second, and main, question within my research: *how can teaching feminist work balance these patterns to be more in line with the values of sustainability and pre-described necessities of sustainability education?*

2.1. Using Feminist Work

Following the previous train of thought, my hypothesis is that incorporating feminist theories, concepts, and methods within sustainability education could be a feasible and justifiable pathway to supply the lacking criteria extrapolated on above. For the second section of my research, I first attempt to forge an understanding of the commonalities between feminism and sustainability within academia, as well as further justify my use of feminism within the thesis. Second, through a survey of students who have studied these two concepts together, I attempt to determine the specific feminist theories, concepts, and/or methods, as well as understand the core values of using these concepts together, which are most valuable to sustainability education based upon their overlap with the necessities for sustainability education in theory.

2.1.1 The Relationship Between Feminism and Sustainability

In 1997, a feminist academic, Londa Schiebinger, advocated for the transition towards a modern feminist science, naming this new field "sustainable science" (Schiebinger, 1997). Scheibinger's conceptualization of 'sustainable science' mirrored already existing theories in feminism, and was, in her eyes, simply the next step of feminist science, particularly in relation to the essence of a "socially and environmentally responsible science" (1997: p. 211). Within her claim, Schiebinger states that this "sustainable science" must have central concepts including the production of knowledge (by whom and for whom), observing who benefits from science, as well as what type of science is practiced. She maintained that the topics of environmentalism and humanitarianism were inherent within feminist science, currently and historically, and not only in pertinance to gender equality. In this "new feminist science" Schiebinger specifically references 'strong objectivity'[9] (Harding, 1992) and 'situated knowledge'[10] (Haraway, 1988) in affinity to pursuit of knowledge and knowing. She

[9] Strong objectivity is a concept introduced by Sandra Harding (1992) which emphasizes the importance of knowing and acknowledging one's own subjectivity in order to make the research more valid.

[10] Situated knowledge (1988) is a theory by Dona Haraway which states that everyone's knowledge is situated within their social setting. Haraway states that those who are downtrodden or marginalized can see the society and oppressions in a different, more valuable light.

bases her "sustainable science" off of these core concepts, touching upon understanding power relations, practicing multi- and interdisciplinary research, and problem driven research. She goes so far to state that Harding's strong objectivity (1992) is one of the most important elements of her transformation of "feminist science", particularly in getting to the bottom of issues and their source (Schiebinger, 1997).

According to Schiebinger, this sustainable science requires tools for gender lens, as having these mechanisms is essential to cultivate and then conceive sustainable science in the first place (Schiebinger, 1997). She articulates that:

> "Sustainable science is the best way to realize the feminist goals of achieving equality for women in the sciences and creating sciences that address the concerns and needs of women around the world." (Schiebinger, 1997; p 216)

However, Schiebinger was neither the first, nor the only, scholar to allude to the connection between sustainable science and feminism. For example, eco-feminism is directly pertinent to sustainability, and historically provided a means to observe layers of similar oppressions (Mebratu, 1998). In fact, Mebratu (1998) declares that ecofeminism is based in "merging the critical and transformative potentials of ecology and feminism" (p. 506), an action which fostered a potent force for social and cultural transformation, which is similar to what sustainability requires, as well as other campaigns of the time.

2.1.2 Synergies between Feminism and Sustainability

While I have narrowed my understanding to feminist work, this field has no strict definition or delineations. It is wonderfully diverse and defies definition as such, other than theories, research, methods, and more which are self-identified as feminist by the researcher who produced them (Hesse-Biber, 2011). Many maintain that a general, all encompassing definition of feminism is neither warranted nor desired (Wilkinson & Morton, 2007; Hesse-Biber, 2011). In fact, within the feminist sphere, difference of theories, concepts, methods, and standpoints are not only embraced, but strongly encouraged (Hesse-Biber, 2011; Harding, 1987).

And yet, to proceed with an understanding of sustainability and feminism, I must form general concepts or themes which are present throughout a majority of feminist work. In order to do this, I

should reiterate my earlier description of feminist theory as a "critical theory" in the sense that it offers a social critique centered upon power discrepancies, inequalities, and the pursuit of social change.

In essence, feminism and sustainability have many similarities, even taking into account the fact that the extremely diverse body of feminism varies so drastically in relation to paradigms and focus. I've attempted to make an apperception of a few of these concepts which link the two. In Figure 4 there are details of these connections, the main linking concepts being: a primary focus on inequality, a critique of existing structures within society, a focus on social change, inclusive and varied methods of research, and the importance of the inclusion of different voices.

Figure 4: Similarities between feminism and sustainability, based upon: Harding, 1987; Hesse-Biber, 2011; Jerneck et al, 2011; Kates, 2011; Lang et al, 2012; Wilkinson & Morton, 2007. *Own Illustration, 2018.*

2.2 The Research

2.2.1 Abductive, inductive, and deductive

My goal for the next step of data collection is not to base it upon a previous theory or framework. In order to retain the core messages and values of the responses I hope to receive, I employ a primarily inductive form of data collection and analysis, while utilizing elements of abductive reasoning (Timmermans & Tavory, 2012), for further explanation see footnote[11]. Due to the nature of my research I am more drawn towards utilizing an inductive approach towards my research in understanding the value of feminist work within sustainability. However, I have been gradually including different conceptualizations of the phenomena of which I seek to understand, and therefore cannot claim to pursue a truly inductive approach to my research. This is why I combine these methods of data collection, by acknowledging my own positionality towards the research and the theoretical background which I've employed up until this point to constitute a basis for my research (Timmermans & Tavory, 2012).

2.2.2 And I become a (Research) Designer!

As I bring us back to our winding pathway of discovery, we must once again return to my second research question: *how can teaching feminist work balance these patterns to be more in line with the values of sustainability and pre-described necessities of sustainability education?*

As stated, I wanted to focus upon individual accounts and understanding of the connection between sustainability and feminism. I also wanted to allow for people to deny or contradict my own analysis of the existence of these connections.

As mentioned, my program has a course focusing on Gender and Sustainability. It is a peer-teaching approach to learning which centers upon different topics within a large variety of spheres, from philosophy of science, biology, sociology, labor, politics, to climate change and gender (Gender, 2018). This course mainstreamed feminist theories, methods, frameworks, and concepts, and as such provides me with a group of students who have studied these concepts in close cohesion with sustainability. I decided to utilize this aggregation of knowledge; focusing not on their understanding of different theories, but how understanding feminist work in general had improved their ability to work within the field of sustainability.

[11] There are some generally cited forms of analysing data: inductive, deductive, and abductive. Inductive is data centered, starting with the data and then developing a theory. Deductive is reasoning which begins with theory and ends to understand this theory (confirm or contradict). Abductive reasoning attempts to consolidate between inductive and deductive, using the data as starting point, and then using theory to produce a likely explanation (Timmermans & Tavory, 2012)

Coming from this realm, I created a brief questionnaire to allow myself for more participants than I would have received with interviews while also providing students the time and space to meditate over the questions and their answers to them. This collection of qualitative data is characterized by open-ended questions with a *purposeful sampling* method, in which "individuals [were] selected because they have experienced the central phenomenon" (Creswell, 2017; p. 217). In my case these individuals were the students whom had taken the gender and sustainability course and have knowledge of learning feminism and sustainability cohesively in a sustainability master's environment (which, you would be probably unsurprised to know, is a rare phenomena).

Through this use of an open-ended questionnaire, I intended to allow for an imaginative understanding of the issue, yet combining this with the allowance for and presence of my own underlying theoretical knowledge (Timmermans & Tavory, 2012). This method enables both deductive and inductive reasoning, in the sense that it allows for the creation of new findings and creative investigation of new theory, but further examines the theory, with a focus upon my own standpoint and a deeper analysis of the findings (Timmermans & Tavory, 2012)

After the creation of the target group, I created five open ended questions in order to follow an exploratory approach to the data. The inclusion of simple logistics questions follows the statement that findings are generally "…intimately shaped by the qualitative data" (Hesse-Biber & Leavy, 2010: p 175) which emphasizes the need to include questions on the background and current standpoint of respondents. While I do not utilize these statistics within my data or analysis is important to state them in the chance that they could, in further studies, impact the results. I also follow the concept of the *standardized approach* which refers to the utilization of identical questions in order to make valid comparisons and include an essence of comparability in the data (Hesse-Biber & Leavy, 2010).

I formulated questions in order to provide a broad overview of students' perceptions to answer my research question. As mentioned before, I wanted to utilize an abductive approach, and following this, I intended to leave the questionnaire open enough so that new information and other data could be found, besides what my research question was specifically intending upon answering. For example, instead of referencing the specific necessities of sustainability education and tensions of norms of academia, and then questioning respondents on how feminism addresses them, I left the questions broad, so that other topics, concepts, and results could be found. This survey also allowed me to pick out the most important synergies and tensions between sustainability and feminism, not only those which are related specifically to the research question and norms of academia (see Appendix D for survey questions).

As is always present within any type of research, the questions of time, capability, and feasibility narrowed my choice of methods. A major roadblock was reaching out to my target group and getting them to respond. I utilized multiple methods of acquisition, including asking the staff in my program to forward my survey to all those who had taken the gender and sustainability course (see Appendix C for email transcript), reaching out on Facebook to contact previous students, and practicing snowballing to encourage responses from students from other batches. I utilized these additional methods as not all graduates still have access to their university email, and I wasn't able to acquire emails of students who may have graduated in multiple years past.

One thing I would like to note here is my position within this research. I was also a student of the class in which I intend to study; I have input and knowledge gleaned through that class, which is arguably no more or less than those I have asked to respond. Following the words of Kim England (1994), "the researcher is an instrument in his/her research" (p. 248). I am no exception. Yet what does that mean for my questionnaire? Do I respond as a subject? Are my reflections to be included if I am indeed an instrument of my own research? In this instance, I decided to refrain from this, not because I feel that my reflections would bias the findings, but that the action of doing so would open up my research to be both more vulnerable to such critique and exclamations of subjectivity and bias.

But this in no way means I am not still an instrument within this research. I have attempted to make my presence known through an exhibition of my own personal narrative and reflections throughout the paper, and will continue to do so. One aspect I should mention at this phase is my own responsibility to expressing participants responses and findings within this paper. I am in the powerful position of choosing which quotes to include and exclude; whose voices are to be heard (England, 1994). During and after my analysis, I intend to continue returning to this concept, and be reflexive in my own perceptions and bias of the data I have.

Let us wind our way back to the idea of an abductive approach to research, and use it as a guideline for analysing and presenting the data compiled from my brief questionnaire. According to Timmermans and Tavory (2012), grounded theory methodology (Charmaz, 2006) supplements the abductive method in the sense that it allows for a deeper analysis and reflection of the data which could provide the ability to create new, and original theoretical ideas. The suggested grounded theory inspired methods, as prescribed by Timmermans and Tavory (2012) are: revisiting the phenomenon, defamiliarization, and alternative casting.

> "Often, the process of puzzling through the data not only will create a new puzzle but may actually construct a new game with new rules for thinking about the relationship between different pieces." (Timmermans & Tavory, 2012; p. 177)

Taking this approach in mind, I followed these three guidelines towards analyzing and understanding my own data. For a more specific framework of approaching the analysis of my data, I turn to Thomas (2006) who defines the general approach to analyzing data in an inductive way. My purpose here is not to confuse you with a variety of contrasting approaches to data, but to remain consistent in the idea of abductive analysis, while making sure that my methods of analysis will "allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data" (Thomas, 2006; p. 238). This method of data analysis is (1) summarize the data, (2) establish connections between the data and the research objectives, while making sure these connections are clear and justifiable (Thomas, 2006; p. 38). The third step [(3) develop the theory from the data], is where I bring back my methods to the abductive method and observe the phenomenon in relation to my theory.

2.3 What I've found

For the questionnaire, I had 26 respondents. Of these 26, I had representatives from 4 years of students, from batch 17-20 (2015-2018, batch 20 being the current graduating class of LUMES). This way I could include reflections, while not representative of the entire class, of at least one person from the last four years of the course. The course has been running for 5 years, and no respondents from the initial year were reachable. Figure 5 indicates the number of respondents from each batch. In total, there have been around 60 students in the past 5 years of the Gender and Sustainability course, therefore my data represents approximately 43% of these students.

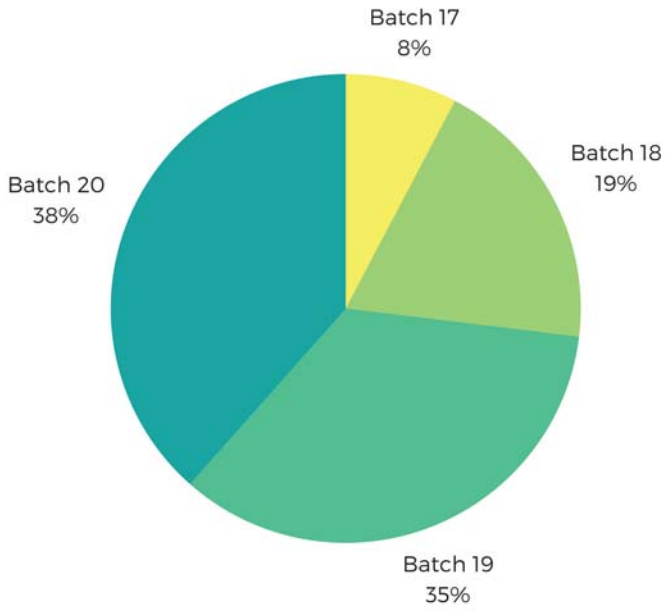

Figure 5: Pie chart showing percentages of survey respondents from each batch. *Own Illustration, 2018.*

2.3.1 Results and Interesting Findings

Finally I have lead you to the main themes and findings of this data, after which I indicate how these main points could be woven into my existing hypothesis and theory.

2.3.1.1 Overview

To start, every respondent to the first question confirmed the hypothesis that feminist methods, theories, and concepts could be used to improve students' ability to perform sustainability research and understand critical topics. 81% of the respondents confirmed this with no conditions, the other 19% confirmed it with conditions. The conditions were: that it was dependent on one's definition of sustainability (this must include natural and social sustainability), that the theories that question scientific knowledge production were included, that it depends on the type of feminism, and some stated that sustainability simply benefits from diversity so that feminism in particular offered nothing other than inclusion of diversity.

For the second question, every respondent observed a variety of synergies and overlaps. The most commonly referenced theme was a focus on inequality and equality, as well as oppression and justice.

For the question concerning tensions and challenges, 23% of respondents noted that they did not perceive any tensions/challenges between sustainability and feminism. However, 77% noted a variety of different challenges and tensions, which were not always directed between the two concepts, but many times towards the possibility of merging them.

In figure 6, we see a list of the *specific theories, concepts, scholars and methods* which were listed by respondents, starting from the most commonly referenced in question 4, which are feminist standpoint theory, feminist political ecology, intersectionality and reflexivity to the least, which were public and private, Butler, Gaard, Ecofeminism, queer feminism, feminist pedagogy and feminist objectivity.

When it came to how the knowledge that respondents gained was useful for their current occupation, 50% of respondents found that it was directly useful, 38% of respondents found it indirectly useful, and 12% of respondents found it not especially useful either in comparison to the other courses in LUMES, or as they were still a student.

Now that I've outlined a very basic representation of the results, I can dive in to the "fun" stuff.

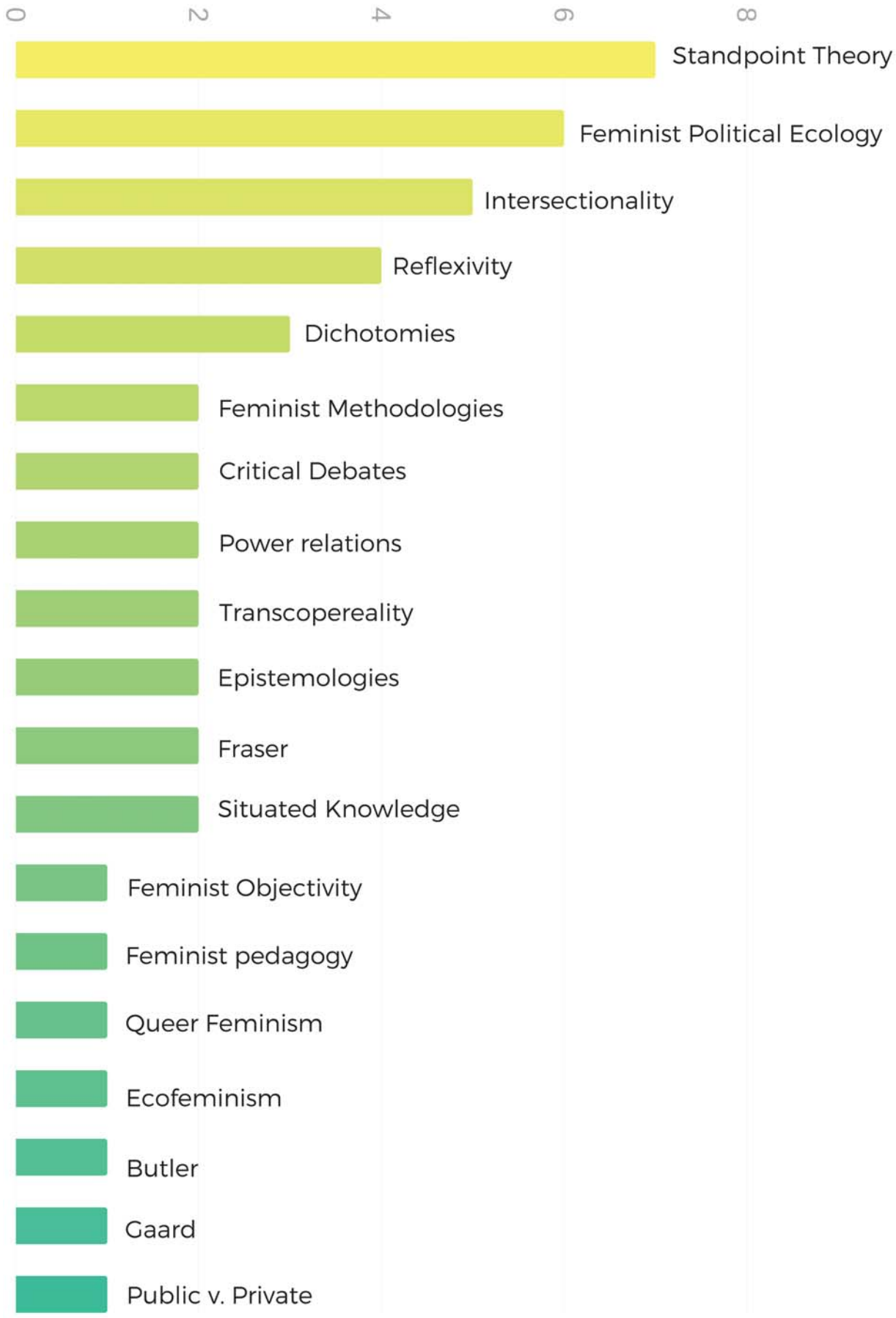

Figure 6: The cited theories, concepts, scholars, and methods which were listed by respondednts in question 4, by order of most cited. *Own Ilustration, 2018.*

2.3.1.2 The fun stuff

Through this section, I will deliver my findings in relation to the second research question; *how can teaching feminist work balance these patterns to be more in line with the values of sustainability and pre-described necessities of sustainability education?*

In this section, I focus mostly upon individual quotes, topics that they support, and arguments that appear. In this way you can get your own understanding (at least superficially) of many of the sentiments expressed within the research. The answers per question are included within Appendix E.

The topic(s) most mentioned within the survey was reflexivity or the role of the researcher. These concepts came up mostly in the area which outlined some of the vital ways that feminism has impacted their ability to do sustainability. In many instances, this was related to the necessity of this concept within sustainability science. For example, the following respondents mentioned what the most important concepts for them were:

> "I would say probably intersectionality. It opened a new world for me which helped me to understand how difficult and sensitive it is to research and understand marginalised groups of society and produce knowledge about their situation. Also, how to accept and evaluate certain bias that comes with you as a researcher and your position. I think these aspects are crucial while researching any field but especially sustainability."

> "The theories and concepts we learned in the course aided me in understanding the role of the researcher, their biases and the importance of understanding and admitting that we have experienced things and these things influence our research, hence the importance of being reflexive of that."

> "I think reflecting on your own standpoint and why you tend to certain arguments over others is a useful way of thinking. Once you get into that, the challenge is how do you work to understanding why someone else might be making a specific argument, and then trying to form a way of mediating all arguments given everyone's perspective."

These reflections were usually connected to a variety of other topics, such as perspective, inequalities, marginalizations, research, power, and more. The core importance of being reflexive and the notions which critique power and privilege seems to have continually arose in responses, and

multiple respondents alluded to the necessity of this in sustainability research, particularly in fieldwork. The second most referenced topic is power and power relations. Both in the ability of researchers to understand and be aware these power relations in research, but also of their ability to see them perpetuated in society, academia, and on. The following respondents noted:

> "Also how issues of gender are about power, and therefore dominant structures are perptuated [sic] over time. Being aware of that also makes a researcher more critical/aware of power relations more generally"

> "I think it gives a good lens on understanding existing power relations, which leads to more comprehensive outlook and understanding to a researched topic."

> "the course helped me to confirm what I already believed (and what subsequently became the theory and method for my thesis) - that power relations, and especially hidden ones, are what keep societies from achieving actual sustainability."

> "It did equip me with new ways of looking at the world, talking about it, being aware of discourses and dichotomies that are also deeply entangled into the sustainability debate and dialogue."

One respondent addressed these power relations in correlation with observing and critiquing the scientific knowledge production, as well as the roots of this knowledge.

> "the most helpful concepts from the course for me focused on power relations, taking into account the voices and experiences of people actually living in affected areas rather than just the masculinized science/engineering principles imposed from above."

This is a topic which comes up multiple times, however, before touching upon it I want to mention the next most referred to ideas within the survey. Many observed that sustainability and feminism both had an emphasis on equality, inequality, and justice.

> "Feminism is about challenging the status quo and feminist methods are about bringing this challenge into the analysis. Sustainability should be about the same thing - looking at the world with a pair of critical specs, highlighting inequalities, power relations, marginalisation, etc."

Inclusivity was also referenced, both in the sense that feminist teaching methods and epistemologies help to encourage and allow for more inclusive environments, but also in order to portray the common goals and ideologies which both disciplines seem to apply. Multiple respondents mentioned the atmosphere of the course as well as the feminist methodologies which encouraged critical thinking and participatory methods.

> "Critical debates in a small and inclusive group that forced everybody to engage and understand different perspectives." (in answer to what were the most helpful concepts for sustainability science)

> "Feminist teaching methods allow for more inclusive and reflexive learning in a deliberative environment."

> "The feminist pedagogy is helpful for creating spaces where people feel comfortable to share their positions on certain issues"

In terms of other themes mentioned, diversity was a central idea which continued to appear. In some cases, this concept was used as a perspective on how there may be tensions between feminism and sustainability, with many mentioning that the possibility of merging the two relies on the type of feminism or the type of sustainability which is perceived and pushed. For example,

> "feminism is also very diverse and contains different paradigms, so these different paradigms within feminism may have different challenges, tensions and critiques"

> "It depends on the type of feminism though, in order to fulfill your objective it has to be newer feminist thoughts and not the, to use a popular term, man-hating nor the strong equality feminism"

> "I would argue that this confirmation is strongly dependant on how you define sustainability. If you define sustainability widely as an attempt to allow all people on this planet to live the good life (so that includes living in a healthy environment, both naturally and socially), then you need to address inequalities at all levels and across different axes. This means you need to understand issues of gender."

> "Sustainability has, however, been hijacked by everyone and everything and has come to lose much of its oumph. Therefore, I find it more helpful to talk about deep/strong sustainability or even degroth [sic], because weak sustainability

> understandings will have very little in common with feminism (nothing in-the-face oppositional, just not cover those topics)"

> "it depends on which understanding or applied approach of sustainability you're referring to. When it comes to actual sustainability- deep/strong - I see no tensions. When there are tensions between what seems to be sustainability and feminism (/feminist methodology - also two slightly different things), one can question if it's actually sustainability that is talked about"

However, others seemed to have heard this argument, and mentioned the issues with getting lost in the many different interpretations and perceptions of both sustainability and feminism. The quotes below portrays this:

> "[tensions may be] In the diversity of schools within each of those areas. If we get to tangled up in detailed discussions on which type of feminist or sustainability theory we adhere to, we forget to actually look out for our overarching connecting goals."

> "To me, feminism is connected to all dimensions of sustainability: social, economic and environmental. And in many ways"

A topic which was referred to multiple times was the human-nature, as well as the woman-nature relationship. This was often related to an observation of oppression and underlying rhetoric and perspectives within the sustainability discourse and society in general. Some respondents noted that one of the most important learning outcome was:

> "looking into the relationship between human and nature"

> "I mainly saw the synergies in writing my final paper on transcorporeality, a concept that challenges the idea of the categorizing and separating of humans and nature."

Other respondents mentioned the potential links that can be made due to these common oppressions, a concept which is reflected in ecofeminism.

> "Their (sustainability & feminism) biggest synergy would be underlying oppressive structures that over power women can also be found to dominate nature. Seeking to overcome this common opposition enables links to be created between the two movements"

This was one of the interesting findings, however, not wholly unexpected as a large portion of the findings show that feminism's input in sustainability has not been solely on gender, but on a variety of far reaching dichotomies and relationships in society and academia alike. This leads on to one of the next topics, which is a critique and challenge of the dominant structures (these include systems of oppression, patriarchy, and capitalism). The below quote references these structures in science in particular:

> "Feminist theories and methodology have been challenging patriarchal and heternormative notions within science in terms of content and methodology from the start"

This quote nicely sums up a lot of the references to this topic:

> "feminism in general strive(s) to challenge existing concepts, ideas, norms and notions of the world and should therefore be mandatory for anyone trying to really get to the bottom of the crisis we are in. Because it is a systemic problem and we need systemic change"

Another main concept that was continually reference was intersectionality, particularly in relation to reflexivity and the role of the researcher:

> "Engaging more in depth with the concept of intersectionality and feminist standpoint theory helped me to find my place in the debates around feminism and how I can be involved in making a positive contribution to the goals of sustainability. Together these concepts helped me as a sustainability scientist to reflect on my own role as a researcher and making my assumptions and values more explicit."

This relates more directly to the overview above in which I graphed out the answers to question four, touching on the most useful/helpful feminist concepts for sustainability science. This also relates to perspective, and lived experiences, which some state are vastly important for sustainability science, and sustainability researchers.

> "Feminist epistemologies is about bringing the marginalised perspective into focus and that is something vital for those who claim to be sustainability researchers."

> "I argue that feminist critique serves to broaden sustainability research capabilities. It provides a highly valuable lens casting new perspectives enabling possible new ways knowing important for sustainable transitions"

> "And then the idea of taking into account lived experiences which I see as connected to this idea of indigenous knowledge and how here is so much to be learned from this rather than only relying on "objective" science"

This leads in to the idea of inter- and transdisciplinary research, which was referenced both as a similarity between the two and as something which feminism could improve in sustainability research. For example,

> "On a methodological level sustainability science in its transdisciplinary form can hugely benefit from feminist methodologies."

One aspect to mention about the data is that multiple respondents brought up the notion that sustainability benefited from feminist perspectives as sustainability itself is not as holistic or critical as is supposed to be. One respondent mentioned:

> "I think feminist perspectives are more likely to include more esoteric and holistic ways of research (call it 'soft' or unconventional if you like) and has a critical approach much needed to question the sustainability dilemma which is mostly growing from a patriarchal soil."

This response seems to imply that the sustainability "dilemma" is nourished and continues to grow from the system of the patriarchy, which is therefore one reason why using feminist perspectives is necessary. Continuing down this pathway, another respondent stated that:

> "I think feminist theories would assist sustainability science in understanding inequality and listening to the subaltern - both things that I think are currently somewhat lacking."

While this does not mention critical thinking or holistic perspectives, it does make the argument that sustainability science is failing to address inequality and failing to listen to marginalised perspectives. Another respondent goes further with their critique of sustainability, noting how structural inequalities centered around gender are reinforced through sustainability science and knowledge production.

> "Even though sustainability science likes to call itself norm critical, we can see how in its science and knowledge production the influence of societal gender structures are very much present"

To reiterate this observation, there were multiple other comments which mentioned the structural privilege of the sustainability sphere, a sentiment which directly relates to the above comment on the dominance of gender structures within the discipline.

> "Both have become neoliberalised in their own ways and to dismantle these might take a separate coordinated strategy. With this in mind, resources would flow toward the sustainable movement, creating more opportunities for success (or whatever that may mean), due to most people within the movement being structurally privileged, that is, white, cis, males"

This quote may also indicate or explain why sustainability in practice does not adopt as many critical terms as it claims to in theory. It also relates to the above theory of the norms of academia mirroring and reinforcing the social structure in order to support the privileged. Finally, the quote mentioned here builds upon this idea, stating that sustainability may incorporate some of the underlying social structures within its essence, which causes the movement to suffer from hypocrisy when failing to address these structures.

> "Both sustainability and feminism are born out of and in response to the problematic societal structures it seeks to undo. But sustainability is likely to have more of that within its values, thinking and actors than feminism will. So really it's about sustainability and all those affiliated with it, waking up to the smell of hypocrisy."

Many other respondents referred to the societal and academic resistance to feminism, some referencing the idea that feminism has much more "unconventional" perspectives which is one reason for its failure to achieve a prominent status in science. Further statements reinforce the idea that feminism is still not received well in society, and remains to be seen as a special, or niche area, rather than a "fundamental lens" in which to view the world.

The below quotes also draws off of the above topic of feminism being marginalised or less accepted in the dominant discourse.

> "Like environmentalism and sustainability, feminism challenges business as usual which can feel threatening to some. But unlike the former, I feel like feminism gets

much more resistance, at least from a U.S. perspective, even though they are deeply related and both pursue goals for the benefit of everyone. "

"Feminist still has a label for sure and as with any more unconventional ways of looking at the world, it might not yet have reached the status as a science the way it ought to be. I mean, just the fact that it isn't a mandatory part of the sustainability curriculum is one evidence of that. **I really think there is no way of looking at sustainability deeply without addressing feminist perspectives**."

2.4 Connecting the Dots.

If a thesis were a popular television series, this would be the moment when the main detective starts winding red thread all around each picture and discovers that, all along, the murderer was the *insert generic murder character here*! While my thesis is in no way relatable to a murder investigation, the discussion is the point where all of these topics come together to make conclusions.

As a reminder, the main body of the thesis focused upon the question of: *how can teaching feminist work balance these patterns to be more in line with the values of sustainability and pre-described necessities of sustainability education*? This question pertains to the first section as a solution to the disconnect between theory and practice, and an attempt at improving sustainability education as a whole.

If you remember, the main topics described as necessities for sustainability education were: reflexivity, critical thinking, knowledge production, and inter/transdisciplinary learning environments. When we compare these topics to the results from the questionnaire, we see substantial overlap.

Reflexivity, being the most alluded to topic in the survey, offers the most promise in relation to being able to improve upon what exists in sustainability education. As many respondents referenced the topic, they also reaffirmed its necessity within sustainability research and fieldwork, and some also went on to mention how it was lacking within sustainability education in general. This idea addresses the norms of objectivity and disinterestedness (Lowe and Benson, 1984; Braxton, 1990; 2010; Jenkins, 2014; Benschop & Brouns, 2003; Sipos, Battisti & Grimm, 2008), which are some of the most commonly cited academic norms. However, in this case, reflexivity does not mean that science must all be completely subjective, which is one beauty in the diversity of feminist work, as there are a variety of different pathways to choose from in relation to embracing reflexivity while maintaining

specific forms or notions of objectivity (e.g. strong objectivity- as previously explained in footnote (Harding, 1992).

In terms of inter/transdisciplinary learning environments, we see similar sentiments as reflexivity, with respondents stating that feminist methods of teaching as well as feminist theories greatly impacted their ability to both do transdisciplinary research and embodied the values of inter/transdisciplinary work and teaching in a way that sustainability has yet seemed to do. This could indirectly touch on the issue of reductionist tendencies in academic disciplines (Jenkins, 2014; Mebratu, 2005; Littledyke & Manolas, 2010; Gough, 2002) through encouraging a variety of different topics, concepts, and research that spans disciplines be taught and acknowledged, which, due to the great variety of feminist work, also offers potential.

When looking at knowledge production, this was not mentioned as frequently as the other two topics, but was addressed indirectly through the connections which were made with perspectives and learning, as well as observing marginalized knowledge. The most referenced concept in terms of question four was feminist standpoint theory, which is a direct addressal to the production of scientific knowledge production and the God Trick (Haraway, 1988), the concept in which a researcher writes and acts as if they are essentially unquestionable and invisible within the research, as well as an introduction to strong objectivity (Harding, 1992: explained above in a footnote), which focuses on reflexivity and observing bias and personal roles in scientific knowledge production. This directly addresses the issues of academic thought which have a prerogative towards particular ways of thinking, and poses difficulty for critical scholars and minorities (Jenkins, 2014; Sipos, Battisti & Grimm, 2008: Pilcher & Whelehan, 2016).

The topic least mentioned was critical thinking, being usually referenced in relation to something, such as “critical debates” or “critical lens”. In this state, I cannot identify any major relationship between the two other than acknowledging the underlying tone of responses in relation to gaining new perspectives and more critical methods of understanding/seeing the world.

However, the results show more than the potential to address these gaps alone. According to these results, feminist work has the faculty to improve the ability of sustainability students and researchers to understand power and power relations, to address structural inequalities, and perceive systems of oppression with more critical lenses. Additionally, learning feminist work in conjunction with sustainability can vastly improve research methods and understandings of different backgrounds, perspectives, and potential solutions. It offers new ways of ‘doing’ science and research, new and marginalized perspectives on issues, and a deeper understanding of the relationship between

humans and nature, as well as a variety of other dichotomies on which our society is structured. This directly addresses the issue of marginalization of minorities within academia, as well as an emphasis on finding innovative and original approaches to theories and issues, which may be more difficult in an atmosphere which relies on validation from "canonical texts"(Jenkins, 2014) as mentioned above.

For a visual understanding of the above discussion, see Figure 7 on the next page.

Perhaps most importantly, feminism has the power to help sustainability wake up from its own "hypocrisy" and start to break free from the traditional paradigms of thought and dominant structures, which have, in some ways, helped form the discourse itself.

As stated previously in relation to Durkheim's (1982) social facts: the moment an individual attempts to function outside of, or against, the flow of this social pressure, the existence of this phenomenon becomes obvious. The realm of comfort remains in line with the dominant discourse, yet, in order to understand the overarching structures which have been so problematic (for sustainability in particular), one must 'go against the flow' so to speak.

While stepping outside of this discourse can be risky and uncomfortable, it is also the undeniable way forward. With the inclusion of more critical curricula and paradigms, sustainability education could start collecting the tools they need to perceive and address these discourses, rather than reinforce them.

And the incorporation of feminist work in these topics is like the tools, toolbox, and tool shed all in one.

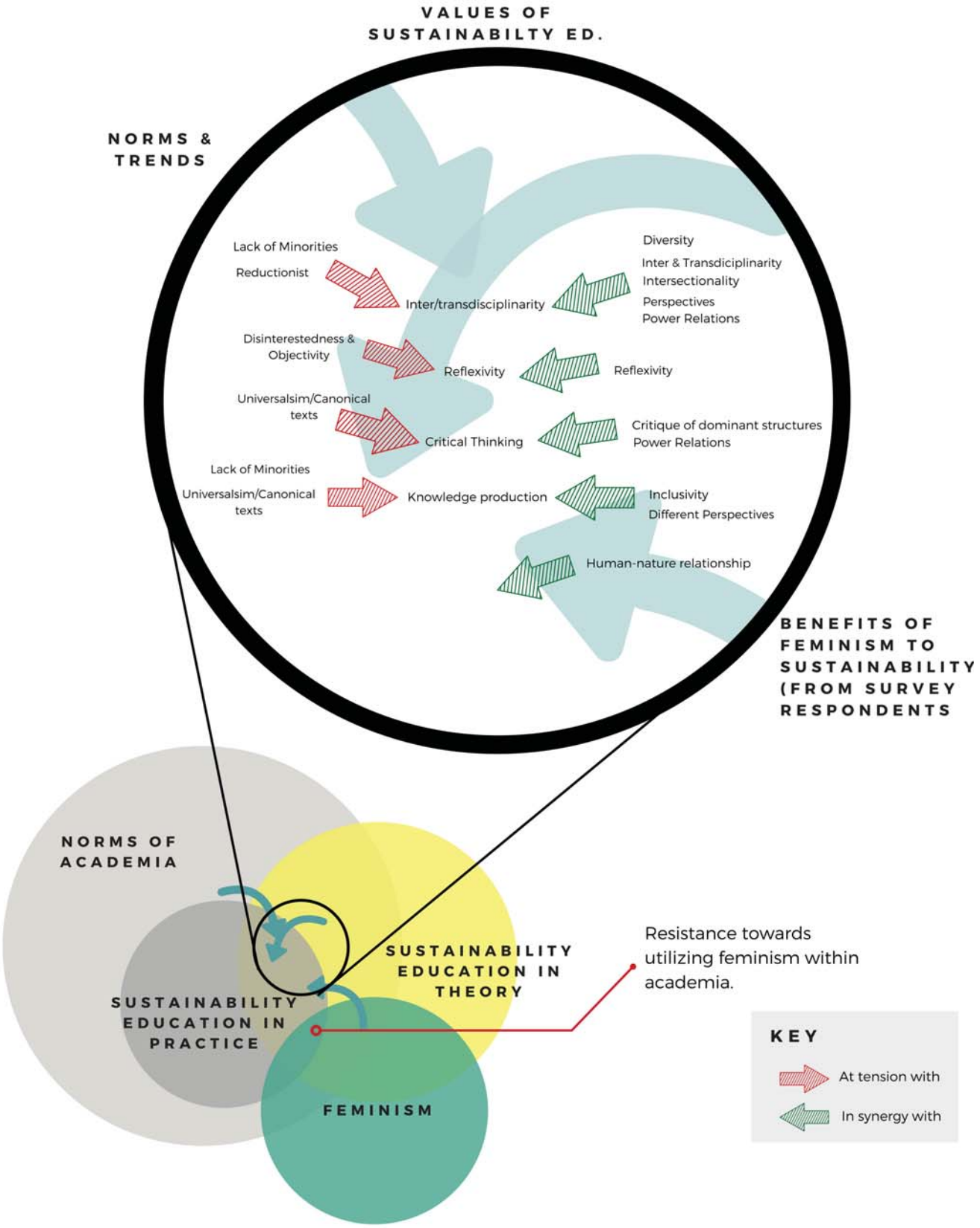

Figure 7: Visual representation of the relationship between sustainability education in theory, practice, the norms of academia, and the way in which feminism could supplement the tensions between the latter three scopes. The red arrows are indicating where the norms of academia are at tension with sustainability values and the green indicate where feminism could supplement sustainability and remedy the tensions of these norms. *Own Illustration, 2018.*

2.4.1 Limitations

While I have tried to include my reflections and limitations throughout the research, there may still be an *elephant in the room* for those of you who will read this. Some have said that each of my research questions could have been a stand-alone thesis, and I do not deny that, in fact, I acknowledge and embrace it. Due to the way I performed the research (driven by curiosity and knowledge), as well as my own ambitions and pursuit of integrity in the research, I ended up doing much more than I needed to and was left with the unhappy predicament of only have 14,000 words to encompass what could have been a PhD. This meant that, for some, the first section of research, which I made clear throughout my paper was preliminary and solely meant to stand as supporting data, was not in depth enough. But rather than minimizing and, in my opinion, loosing some of the core aspects, I attempted to incorporate at least the key elements of my research..

That being said, I may have been too dedicated to a comprehensive analysis, and too much driven by my inherent curiosity and pursuit of knowledge; so much so that it has taken time and space from all aspects of my research. I do not mean to say that the work I have done here is invalid or not-well thought through, as the largest constraint to communicating these things was simply the word limit. I do feel as if I could not give each realm of research the physical space it was perhaps deserving of.

2.4.2 In the Future

Addressing the feasability for implementation of this solution is out of my scope. However, I intend for this paper to be a starting point, the first word on a blank page, which will help to promote, encourage, and justify, not only the use of feminist work in sustainability education, but also the possibility of new methods of research, writing, exploration, and 'science'.

Future studies must go into the topic of how to overcome the conceptual resistance to feminism within academia, and then research the most feasable ways in which these topics can be incorporated and taught.

3 Conclusion

I want to leave you with a few things which continue to hound my mind as I finish off my time of research. I know, that even when given solid evidence and pointing out unique patterns and synergies between these two topics, the conceptual resistance towards feminism cannot be corrected with one essay. I know that this paper will not suffice to directly influence most programs' perceptions or attitudes towards feminist work, due to a variety of these tensions between feminism, the dominant discourses in sustainability, and norms of academia. While teaching feminism in sustainability would work on those gaps for current and future students, the question I am left with now is how to help people, programs, and institutions to accept it's validity and teach their students in the first place.

I want to finish off with a quote from the renowned historian and feminist, Mary Beard.

> "If the formal education which they (women) have won the right to enjoy does not turn to ashes in their hands, women must help to socialize it, to render it of permanent value by stretching it beyond the privileged and idle services of a class, to make it of deeper consequence than was the Renaissance, to make it a reflection of the world spirit and an agent of humanitarian evolution...They must examine their latest privilege in the light of common needs and see what it has to contribute towards the total improvement of [hu]mankind." (Beard, 1977; p. 151)

Sustainability science, as with feminism, reaches towards common goals. We long for equality and change, push for a better world and a brighter future. We can not risk that future, we must grasp our education, our potential, and our privilege and, rather than work for the maintenance of structures of oppression or dominant discourses, reach out to those at the forefront of the struggle for a more sustainable world.

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Appendices:

Appendix A:

Log of search terms included within preliminary research on sustainability masters programs.

Term: Inter/transdisciplinary

Potential Variations: multi disciplinary, knowledge of multiple disiplines together, cross disciplinary, interdisciplinary, transdiciplinary

Term: Critical learning & thinking

Potential Variations: critical reflection, critical learning, critical thinking,

Term: Reflexivity

Potential Variations: self reflection, reflections on research, reflection son worldview, reflexive learning, reflexivity

Term: Knowledge Production

Potential Variations: creation of knowledge, source of knowledge, perceptions/theories of knowledge, different types of knowledge, production of knowledge, knowledge production

Term: Indigenous/TEK

Potential Variations: aboriginal, community traditions of knowledge, indigenous, TEK

Term: Femin* or gender

Potential Variations: feminism, feminist, gender

Appendix B:

Sample page of the Sustainability Masters program search

GENERAL INFORMATION							
PROGRAM TITLE	FACULTY	UNIVERSITY	COUNTRY	LANGUAGE	DURATION	URL	CATEGORY
MSc Sustainability	Faculty of Science & Technology	Anglia Ruskin University in Cambridge and Chelmsford	England	English	2 semesters	https://www.anglia.ac.uk/study/postgraduate/sustainability	Governance
MSc Corporate Social Responsibility and Sustainability		London Metropolitan University t	England	English	2 semesters	http://www.londonmet.ac.uk/courses/postgraduate/corporate-social-responsibility-and-sustainability---msc/	Business
MSc Life Cycle & Sustainability (MLiCS)	Faculty of Business and Law	Pforzheim university	Germany	German and English	3 semesters	https://businesspf.hs-pforzheim.de/studium/studierende/master/master_life_cycle_sustainability_msc/	Products
MSc Joint European Masters Environmental Studies: Cities & S	Faculty of Science	Technische Universität Hamburg (TUHH), Universitat Autònoma de Barcelona (UAB), Universidade de Aveiro (UA), Aalborg Universitet (AAU).	Multinational	English	4 semesters	http://www.jemes-cisu.eu/joomla3/ http://www.jemes-cisu.eu/joomla3/images/PDFs/2017-03-01-JEMES_CiSu_2017_full.pdf	Urban Planning
MA Sustainability Economics and Management (SEM)		Carl von Ossietzky University of Oldenburg	Germany	German and English	4 semesters	https://www.uni-oldenburg.de/en/sem/	Economics
MBA Sustainability Management	Professional School	Leuphana University of Lüneburg	Germany	German and English	2 semesters	https://www.leuphana.de/en/professional-school/masters-studies/mba-sustainability-management.html	Business
MSc International Sustainability Management	Business	ESCP Europe	International	English	4 semesters	http://www.escpeurope.eu/escp-europe-programmes/masters-full-time/biopharma-energy-and-sustainability-full-time-specialized-masters-msc-postgraduate-degrees-escp-europe-business-school/msc-in-international-sustainability-management-escp-europe/welcome-msc-in-international-sustainability-management-escp-europe/	Business
MA International Business and Sustainability (MIBAS)	Business, Economics and Social Scienc	Universität Hamburg	Germany	English	4 semesters	https://www.uni-hamburg.de/en/campuscenter/studienangebot/studiengang.html?1359989120	Business
MSc Sustainability Science	Faculty of Sustainability	Leuphana University Lüneburg		English	4 semesters	https://www.leuphana.de/en/graduate-school/master/course-offerings/sustainability-science.html	Sustainability
Msc Materials Science and Sustainability Methods	University of Applied Sciences	University of Bonn-Rhein-Sieg	Germany	German and English	4 semesters	https://www.h-brs.de/en/anna/materials-science-and-sustainability-methods-msc	Products
MSc Strategy, Innovation and Sustainability (MSIS)	LUT School of Business and Managem	Lappeenranta University of Technology	Finland	English	4 semesters	https://www.lut.fi/web/en/admissions/masters-studies/msc-in-business-administration/strategy-innovation-and-sustainability-msis/degree-structure-and-studies	Business
MSc Outdoor Environmental and Sustainability Education	Graduate School of Education and Spor	University of Edinburgh	Scotland	English	15 months	https://www.ed.ac.uk/education/graduate-school/taught-degrees/outdoor-environmental/introduction	Environment
MSC Environmental sustainability		Edinburgh Napier University	Scotland	English	18 months	https://www.napier.ac.uk/courses/msc-environmental-sustainability-postgraduate-fulltime	Industry
MSc Sustainability and Consultancy	School of Earth & Environment	University of Leeds	England	English	3 semesters	http://www.see.leeds.ac.uk/admissions-and-study/masters-degrees/masters-courses/msc-sustainability-and-consultancy/	Business
MSc Sustainability and Business	School of Earth & Environment	University of Leeds	England	English	3 semesters	https://courses.leeds.ac.uk/26190/MSc_Sustainability_and_Business	Business
MSc Sustainability in Transport	Institute for Transport Studies	University of Leeds	England	English	3 semesters	https://courses.leeds.ac.uk/26192/Sustainability_in_Transport_MSc	Transporation
MSc Energy Management and Sustainability		EPFL - École polytechnique fédérale de Lausanne		English	4 semesters	https://master.epfl.ch/energy	Energy

	DETAILS ON CIRRICULA				MENTION OF					
PROGRAM TITLE	PROGRAM FOCUS	CORE MODULES	MASTER PROJECT/THESIS	KEY CONCEPTS & WORDS	INTER/TRANSDISCIPLI	CRITICAL LEARNING/ THIN	REFLEXIVITY	INDIGENOUS/TE	KNOWLEDGE PRODU	FEMIN* or Gender
MSc Sustainability	business, government and society	Introduction to Sustainability and Systems System Pressures Research in Sustainability Governance and Behavioral Change Better Business Working Towards Change	Y	models of sustainability, systems, economy, complexity, climate change, ecosystems, health & wellbeing, research, behavior, leadership, innovation, business, governance, resillence	N	N	N	N	N	N
MSc Corporate Social Responsibility and Sustainability	Corporate Social Responsibiltiy (CSR)	CSR and Sustainability Projct Consultancey Environmental Economics and Investment Practical Sustainability Research Methods for Global Buisienss	Y	management, CSR, sustainable business, economics, environment, resource use, climate change, waste management, sustainable development, auditing, international trade,	N	N	N	N	N	N
MSc Life Cycle & Sustainability (MLiCS)	Product development, Life Cycle Assessment	Industrial Ecology Strategic Management Ethics and Corporate Social Responsibility Sustainabiity Accounting and Reporting Evaluating Societal Impacts Service Marketing	Y	energy flow, production, sustainability management, CSR, energy systems, sustainable development, Life cycle, technology, science	Y	N	N	N	N	N
MSc Joint European Masters Environmental Studies: Cities & S	Urban planning and cities	Urban Transformations and Sustainable Engineering Theories of Science and Research Designs Susainable Urban Planning Climate Hydrology of the Dense City Designing Smarter Citis The Socio-Technocal Context of Planning Sustainability Assessment and Societal Decision Processes Theories of the NEtwork City and its technologies GIS Waste Management Global Change	Y	urban and built environment, environmentally and socially sustainable technology, climate change, design, complexity, history, theory of science, resilience, planning, infastrucutre, social context, technical solutions, decision making, policy, waste,	Y	Y	N	N	N	N
MA Sustainability Economics and Management (SEM)	Economics	Environmental Law Environmental Economics International Sustainability Mangement Environmental and Sustainability Politics Environmental Sciences Corporate Social Responsibility Resource and Energy Economics Strategies, Methods and Instruments of Sustainability Management Advanced Topics of Sustainability Economics Practical Project in sustainability Economics and Management	Y	environmental economics, sustainability management, politics, environmental law, environmental sciences, business administration social and natural science	Y	N	N	N	N	N
MBA Sustainability Management	Green Business and corporate responsibility	Business Basics Fundamentals of Sustainability Management Perspectives & Concepts of Sustainability Management Framework Conditions for Sustainable Business Management Final Module and Practical Workshop-Sustainable Business Management	Y	CSR, sustainability mangement, innovation management, entrepreneurship, sustainable development, ecological and social sustainability, organizational theory,	Y	Y	N	N	N	N
MSc International Sustainability Management	Business, sustainability management, CSR	Environmental and Sustainability Managmenet Ecosystems, Climate Change and Economic Theory Language & Career Development Frameworks for Sustainability Transition Sustainable Governance and Managememtn in an Interntational Context Project Management and Consulting Research Methods, Complex Systems and Organizational Change	Y	international, management, CSR, ethics, environmental mangement, marketing, climate change, economics	N	N	N	N	N	N
MA International Business and Sustainability (MIBAS)	Business, economics	Fundamentals of International Research Research Methods Sustainability Management and Socioeconomics International Management and Economics Advanced Research Methods	Y	ethical, ecological, social, and political implications of business, economics, social research, ethics, global economy, management, international, moral responsibility, CSR	Y	Y	N	N	N	N
MSc Sustainability Science	Research	Sustainability Science Research Methods in Sustainability Sciences Advanced Fundamentsals of Natural Sciences Advanced Fundamentals of Human Sciences Advanced Natural Sciences Advanced Human Sciences Research Perspectives	Y	complexity, social-ecological systems, cultural, natural and human sciences, organizations, research, businss, consulting, governance, culitre, management, theories and perspectives, design, governance, communication, digital media, ecology, social devleopments	Y	N	N	N	Y	N
Msc Materials Science and Sustainability Methods	Materials, products, processing	Sustainable Materials (1-4) Materials Processing (1-2) Materials Analysis (1-2) Sustainability Integrated Managmeent Systmes	Y	materials science, technology, life cycle assessment, renewables, resources	N	N	N	N	N	N
MSc Strategy, Innovation and Sustainability (MSIS)	Strategic Managmeent, technology, innovation, CSR	Business Research Methods Strategy, Innovation and Sustainability Technology and Innovation Managmenet Sustainabile Strategy and Business Ethics Introduction to Sustainability	Y	innovation management, sustainability CSR, business ethics, international, strategy, economics, technology, networks, marketing.	N	N	N	N	N	N
MSc Outdoor Environmental and Sustainability Education	Environmental Studies and outdoor education	Outdoor Environmental Education: Concept Based practice Interpreting the Landscape Ecology and Field Studies Experiemental Education Sources of Knowledge Education for Environmental Citizenship Introduction to Learning for Sustainability Planning Research	Y	environmental education, social education, community, outdoors, ecology, landscape, learning, knowledge	N	Y	Y	N	Y	N
MSC Environmental sustainability	Buildings, property, technology, waste	Building Performance Renewable Energy Finance and Environmental Law Sustainable Building Design Sustainable Energy Technologies Sustainable Urban Property Development Sustainable Water Resources Management Waste Management	Y	buildings, property development, sustainable technologies, waste, water, renewable energies, bulding design, resources, management	N	N	N	N	N	N
MSc Sustainability and Consultancy	consultancy	Sustainable Venturing and Innovation Business, Environment and Sustainability Sustainability Consultancy Project Project Management: Developing and Managing Evnriomental Contracts Delivering Sustainability Through Projects The Regulatory and Planning context for Sustainaable Projects Inttroduction to Sustainability Issues and Cases in Corprate Socail REsponsibility	N	CSR, buildings, consultancy, business innovation, project management environmental policy, social pressures, policy, development	Y	N	N	N	N	N
MSc Sustainability and Business	Innovation, entrepreneurship, business	Enterprise Awareness New Venture Creation Research Methods Research Project Sustainable Venturing and Innovation Business, Environment and Sustainability Introduction to Sustainability Issues and Cases in Corporate Social Responsibility	Y	business, environment and society, innovation, entrepreneruship, ventures, environmental management, CSR, community enterprising, poverty alleviation, sharing economy, sustainable development	Y	Y	N	N	N	N
MSc Sustainability in Transport	trasnport, business, governenace, policy	Environmental Policy and Governance Environmental Science and Sustainability for Transport Shaping Future Transport Systems Transport Data Collection and Analysis Dissertation & Integrated Project	Y	transportation systems, environmental science, sustainable transport, environmental policy, management, climate change, pollution, mobility, economic growth development, social justice, stakeholder, planning, economics	Y	Y	N	N	N	N
MSc Energy Management and Sustainability	business, energy, management	Chemical and Evnrionmental Bioprocess Natural Water, Soil and Ecosystem Engineering Monitoring and Modelling of the Environment Energy (large variety of cousreses Other domains, including recycling mathematical modeling, machine learning, real time networks, etc. Management of Technology courses	Y	complex systems, electricity distribution, environmental services, energy consumption, climate change, urbanization, energy demand, wind and water, science, engineering, economics	Y	N	N	N	N	N

Appendix C:

Email sent out to students to respond:

Hej Hej!

One of our current LUMES students is doing their thesis on the hypocrisies of sustainability science education, and is looking into the possibility of addressing these flaws with the incorporation of feminist theories, methods, and concepts within master's programs.

This student wants to know what you think about the connection between these two spheres, and since since you took the gender course, you have an super unique understanding of how these these different concepts do or do not work together.

There is a really short survey that should only take around 10-15 minutes, and the student would really appreciate it if you had a minute to take it.

Link to the survey: https://www.surveymonkey.com/r/Z8VY8ZD

Thank you,
Amanda (our program coordinator who sent out emails)

Appendix D:

Outline of the Survey

Hej Hej!

I am sorry for interrupting your (hopefully) productive life, but I promise, this will only take a moment. I am doing a short survey of the concepts of feminism and sustainability and since you were in the Gender and Sustainability course at LUMES, I would love your input. First let me explain the topic:

I have found that, globally, sustainability masters programs are lacking in some specific key topics and am attempting to explore avenues which could provide or improve the level of inclusion. One of the solutions I've stumbled upon is the inclusion of feminist theories and methods within sustainability education. I have found that sustainability and feminism have many commonalities, for example: A primary focus on inequality, critique of existing structures within society, focus on social change, inclusive and varied methods of research, & inclusion of different/marginalized voices. From this mindset, I want to understand whether or not connecting these topics, like is done in the gender and sustainability course, is beneficial for sustainability education (particularly for higher understandings of reflexivity, critical thinking, interdisciplinarity, & knowledge production).

My main goal is to understand how you view the connection between these two topics: specifically whether you would like to confirm or challenge the idea that feminist methods, theories, and concepts could be used to improve existing sustainability education programs.

Are you a LUMES Student? (Y/N)
What Batch were you in? __
Tell me a little about yourself (name, email, current occupation)
Question 1:
Feminist methods, theories and concepts could be used to improve students ***ability to perform sustainability research and understand critical topics within sustainability****.*
Would you like to challenge this idea, or confirm it? Please give your reasons.
Question 2:
Where do you see the synergies or overlaps between sustainability and feminism?
Question 3:
Where do you see the tensions or challenges between sustainability and feminism?
Question 4:
What were the specific theories, concepts, or methods within the gender course that you felt helped you the most as a sustainability scientist? Why?
Question 5
Has the knowledge that you gained in the gender course been useful in your current occupation? How? Could you provide a specific situation or example?

Appendix E:

Survey responses, organized question by question

Question 1:

Feminist methods, theories and concepts could be used to improve students ***ability to perform sustainability research and understand critical topics within sustainability.***

Would you like to challenge this idea, or confirm it? Please give your reasons.

R1: 'Could be used', sure, they could be used. I would, for that reason, confirm the idea. I want however to state that I do not agree with all modern feminist thoughts or that many of the takes/arguments presented at the gender and sustainability course.

R2: Confirm it. The know that you are you and therefore have biases. That your eye is tainted by your experience.

R3: I confirm it. However, I would argue that this confirmation is strongly dependant on how you define sustainability. If you define sustainability widely as an attempt to allow all people on this planet to live the good life (so that includes living in a healthy environment, both naturally and socially), then you need to address inequalities at all levels and across different axes. This means you need to understand issues of gender. Futhermore, I like how feminist theories question the scientific knowledge production, and that is helpful for sustainability research.

R4: I agree. I have found that feminist ideas can add new dimensions to the general theories used in sustainability science.

R5: Improve! Feminist teaching methods allow for more inclusive and reflexive learning in a deliberative environment. Students are more engaged in the learning process, which fosters greater understanding.

R6: Confirm! I can't recall if all of these concepts originated in feminism but certainly things like reflexivity are super important for understanding one's role as a researcher, bias, etc. Also how issues of gender are about power, and therefore dominant structures are perptuated over time. Being aware of that also makes a researcher more critical/aware of power relations more generally. And then the idea of taking into account lived experiences which I see as connected to this idea of indigenous knowledge and how here is so much to be learned from this rather than only relying on "objective" science. There are many more connections, my only hesitation is that I think some feminist theories have similar counterparts in sustainability science already, so maybe combining these theories could provide more nuanced, well-rounded theories/tools.

R7: I think that in some cases feminist methodology can be useful. However, I think it is important not to assume that because a theory/method has feminist roots that it is a priori superior. As students, I think it's important to know whats on the menu in terms of tools/theories available and then chose the most appropriate one for our research aim.

R8: I definitely agree with this statement. Feminist theories and methodology have been challenging patriarchal and heternormative notions within science in terms of content and methodology from the

start. Considering Sus Scie regards itself as a transdisciplinary and norm-critical field of research, incorporating feminist viewpoints would be highly beneficial to the discipline.

R9: I believe so, the theories and concepts we learned in the course aided me in understanding the role of the researcher, their biases and the importance of understanding and admitting that we have experienced things and these things influence our research, hence the importance of being reflexive of that. It also highlighted further the idea that we should be 'humble'¨to hear the other and their perspectives of truth, as the forms of privilege and oppression in their lives have lead to such beliefs.

R10: I'd like to confirm this idea. I think feminist theories and concepts can help perform sustainability research. They can especially help overcoming the problems of transdisciplinary research in not addressing power relations.

R12: Confirm it! (intersectional) Feminism theory should be the umbrella for other social theories.

R13: Confirm. I think feminist perspectives are more likely to include more esoteric and holistic ways of research (call it "soft" or unconventional if you like) and has a critical approach much needed to question the sustainability dilemma which is mostly growing from a patriarchal soil. We cannot cure the bite of a dog with the hair of a dog and I think here are any new ways of looking at sustainability issues is the way forward from actually finding solutions that work.

R14: I think all research paradigms, sustainability science included, gain from a diversity in epistemologies, methods, theories.

R15: I want to confirm this idea because it is crucial to understand male-dominated this society critically. I want to add an ability to address their ability in the society. (not only for research people)

R16: There is a sharp distinction between a particular framework that allows an individual or group to conduct research and one that actively seeks self-reflection and a novel way to observe external relationships. Feminist ideas that are subsumed within, and pacify hegemonic discursive frameworks may present a superficial level of gender inclusivity; in order to be constructive frameworks, they might need to first highlight their own injustices, learn from these setbacks, and collectively project these lessions towards a platform that builds from the personal to the public.

R17: Yes, due to the transdisciplinary nature of both fields and feminist theories about equaltiy

R19: Confirm. I think it gives a good lens on understanding existing power relations, which leads to more comprehensive outlook and understanding to a researched topic.

R21: Confirm it. Feminist epistemologies is about bringing the marginalised perspective into focus and that is something vital for those who claim to be sustainability researchers.

R22: I argue that feminist critique serves to broaden sustainability research capabilities. It provides a highly valuable lens casting new perspectives enabling possible new ways knowing important for sustainable transitions

R23: I agree, which is why I did my thesis with a feminist theoretical framework. It depends on the type of feminism though, in order to fulfill your objective it has to be newer feminist thoughts and not the, to use a popular term, man-hating nor the strong equality feminism

R24: Confirm. The real value for me is questioning the starting point of your argument, which I believe is good practice for sustainability research. Once your taught to understand, reflect and question the origins of your argument, then your solutions are more considered and more applicable.

R25: I agree with that since I think that some of the fundamental ideas are overlapping

R27: Absolutely support it.

R30: Confirm, feminist theories criticise aspects and ideologies which are unsustainable

R31: I confirm it. I believe that a feminist research design in general can assist you in getting a broader and more in depth understanding of an sustainability issue.

R32: I would definitely confirm this. I think feminist theories would assist sustainability science in understanding inequality and listening to the subaltern - both things that I think are currently somewhat lacking. Sustainability science is unfortunately still rather Western in approach

Question 2:

Where do you see the synergies or overlaps between sustainability and feminism?

R1: Change in values. A need for a cultural shift toward more long term, holistic, cooperative way of thinking and problem solving.

R2: As you said the focus on inequality. But I think even more significant is the ideas behind the creation of knowledge.

R3: As I am taking a more radical stance, I'd like to see the synergie in a critique of capitalism (as it oppresses and exploits nature and women) and techno-fixed societies. On a methodological level sustainability science in its transdisciplinary form can hugel benefit from feminist methodologies.

R4: On the 'social' side of sustainability, regarding equality and justice issues but also power relations.

R5: Inclusiveness, equality, Gaian thought, egalitarianism, cooperation, circularity, soft approaches.

R6: Hmm, guess I summarized that above. Critical analysis of power relations, reflexivity, indigenous/lived knowledge.

R7: I think your opening statement adequately captures this

R8: - Ecofeminism and Queer ecologies challenge the intersections of how nature, sex, gender and sexuality are discursivly framed and their material and cultural and power implications for sustainability
- Feminism and sustainability aim at participatory and inclusive, power-and norm critical productions of future cultures and economies.

R9: I mainly saw the synergies in writing my final paper on transcorporeality, a concept that challenges the idea of the categorizing and separating of humans and nature. This is a post-humanist theory, which stemmed from the critique of the same difference that is often made between

genders. In addition, the methodologies were very important, those that talked about the role and position of a researcher.

R10: I see an overlap in their goals of fostering collaboration and addressing injustice and to empower people to achieve their goals and lead a just and sustainable life. For synergies see answer 4

R12: Synergies: feminism covers the social aspect since it is very comprehensive, and environmental science courses make up for the other half. That mix results in environmental studies

R13: Feminist methods, in my opinion, and feminism in general strive to challenge existing concepts, ideas, norms and notions of the world and should therefore be mandatory for anyone trying to really get to the bottom of the crisis we are in. Because it is a systemic problem and we need systemic change. I also find it interesting to look at eco-feminism and how the oppression of women (and people of colour) can be compared to the oppression of nature.

R14: I guess both have an emancipatory normative vision. Beyond that I think it's hard to generalize ad both fields are very diverse.

R15: looking into the relationship between human and nature

R16: The recognition that the personal is political - in correctly dismissing the false notion that homo sapiens as a species are not divine endowments, but wholly dependent on the natural world.

R17: A common denominator is their emphasis on equality

R19: To me, feminism is connected to all dimensions of sustainability: social, economic and environmental. And in many ways. For example, existing oppressions result in reduced productivity, freedoms and access to services, which hinders economic performance, social security and well-being. Additionally, existing sexist stereotypes facilitate different behaviour patterns, which deliver different intensity of environmental footprint.

R21: Feminism is about challenging the status quo and feminist methods are about bringing this challenge into the analysis. Sustainability should be about the same thing - looking at the world with a pair of critical specs, highlighting inequalities, power relations, marginalisation, etc. Sustainability has, however, been hijacked by everyone and everything and has come to lose much of its oumph. Therefore, I find it more helpful to talk about deep/strong sustainability or even degroth, because weak sustainability understandings will have very little in common with feminism (nothing in-the-face oppositional, just not cover those topics)

R22: There biggest synergy would be underlying oppressive structures that over power women can also be found to dominate nature. Seeking to overcome this common opposition enables links to be created between the two movements.

R23: To listen to the marginalised group no matter the gender. Intersectionality. Understanding contexts. Understanding how culture and politics are re-inforced and changed through everyday activities. Bringing in nature and environment

R24: The societal structures are largely against sustainability and feminism in the global mainstream. So I think a lot of the arguments against someone, or something tend to be framed in the same light, albeit worded slightly different. However, when you actually think about it, I think it's almost the same thing for me, although I respect the need to separate the two. In short, you can't have a

sustainable society without gender and identity equality. Bringing it back down to research, when there is such clear similarities it would make sense that the two subjects adopt, merge, borrow, consider each others ideas and methods for research.

R25: -identification of baseline causes - interdisciplinarity - complexities as a central problem - systemic approach -methodologies -justice as a central topic -both "aiming" for social change

R27: In a lot of instances for example, I wrote my final wiki article about veganism and feminism and how they are very much interrelated

R30: Criticising systems of oppression

R31: I see many synergies and relations between sustainability and feminism; in having a multi-level perspective, bottom-up approaches, participatory methods, and inclusive theoretical framework etc. but it's also a way of positioning yourself within your research. Seeing you biased stance and subjectivity influencing the research.

R32: Sustainability requires systems thinking, and therefore considering all components of a system. Feminism does too, by requiring that inequality be recognised so that all voices can be heard. Further, feminism could be seen as a means to attain sustainability. Only when we understand who is vúlnerable and why can we create sustainable societies.

Question 3:

Where do you see the tensions or challenges between sustainability and feminism?

R1: In the deep and confusing loss of focus some parts of the feminist movements get detailed to. Those are the: "there is NO difference between the genders, no such thing as a biological gender" parts of the movement. This is where some parts of feminism go against science and reason and I see that is a giant waste of time and energy. Ironically it's a part of the "no such thing as truth, only my opinion/feeling and that is equally valid" nonsense trend, which is sad. For me the true equality is to get to a place where we value the genders and what they have to offer- to society- equally. But today we de-value feminine roles and hyper-value male roles and achievements. I believe better more sustainable decisions could be made if we had more 'feminine values' in society.

R2: the challenge is how people choose to interpret one against the other.

R3: In the diversity of schools within each of those areas. If we get to tangled up in detailed discussions on which type of feminist or sustainability theory we adhere to, we forget to actually look out for our overarching connecting goals. I also see a challenge in "this or that" thinking, as in the prioritization of which goals matter more (feminist or sustainability). I hope that by applying a "this and that" approach we try to follow more goals simultaneously or at least make sure that our actions on each front to undermine the actions of the other front. (As said above, if we unite along the front of questioning capitalism and developing alternative socio-economic systems we could work together way better).

R4: The focal point of feminist theory on gender might not enable a holistic perspective on the different issues in sustainability. Feminism might focus to strictly on the social side.

R5: Dominance of current structures that favour egocentrism, competition and linearity.

R6: Like environmentalism and sustainability, feminism challenges business as usual which can feel threatening to some. But unlike the former, I feel like feminism gets much more resistance, at least from a U.S. perspective, even though they are deeply related and both pursue goals for the benefit of everyone. Maybe it has a lot to do with religion but people don't understand that ultimately this is about improving everyone's lives. So maybe it's an issue of awareness.

R7: There is the potential to assume that social sustainability = environmental sustainability. Although gender equality is an important part of a societies wellbeing we need to be careful not to assume that gender equality always has a bearing on things like ecosystem function. There is also some tensions between epistemologies used in feminism which are not aligned with the goals of sustainability science and we need to be clear about this.

R8: Even though sustainability science likes to call itself norm critical, we can see how in its science and knowledge production the influence of societal gender structures are very much present

R9: I see challenges in making the links obvious for people who are not yet sensitive to feminist perspectives. I can see that both for privileged people who don't experience oppression and might have a harder time understanding it, and for people like myself, who although had experienced oppression related to gender, was very hard-headed in understanding feminist perspectives (probably exactly because patriarchy is so ingrained where I come from). For me, jumping into more radical feminist perspectives was too fast, and hindered my openness to understanding of the important messaged of feminist theories, and therefore its connection to sustainability science. However, as I said, with the further studies within the course, I finally got to that point. In conclusion, I believe the presentation of such feminist theories and concepts must be aware [reflexive] of the different backgrounds of students learning such topics, so that its revolutionary can find its way in to students' minds and make a faster and more coherent connection with environmental and sustainability studies.

R10: I don't see any tensions between the two, but rather a common challenge to provide practical ways on how to achieve their common goals. In my eyes, sustainability as well as feminism also fail to provide positive narratives and often rather rely on criticizing the current state, without providing/living better alternatives. Instead they often overly emotionalize debates, leading to the marginalization of voices that express certain values that are not commonly held in sustainability/feminist circles, thus undermining their own goals and their credibility.

R12: No tensions nor challenges. They are not opposed but reinforcing. This said, students from the 'environmental science side' have to really integrate feminism in their thinking, and students from the 'social science side' have to add environmental science to their arguments.

R13: Feminist still has a label for sure and as with any more unconventional ways of looking at the world, it might not yet have reached the status as a science the way it ought to be. I mean, just the fact that it isnt a mandatory part of the sustainability curriculum is one evidence of that. I really think there is no way of looking at sustainability deeply without addressing feminist perspectives.

R14: I guess it all depends on what strand of feminism and sustainability you adhere to. I don't see any direct tensions between them.

R15: Feminism is looked as special (or not fundamental) lens

R16: The dichotomy between sustainability's holistic approach and certain strands of first-wave feminism that maintain that the natural world projects an inherent femininity.

R17: To my knowledge there are no tensions between the two

R19: I think that feminism addresses a lot of important aspects which relate to sustainability and I fully support that. Although, feminism is also very diverse and contains different paradigms, so these different paradigms within feminism may have different challenges, tensions and critiques. The main worry to me is that liberation form oppression and increasing economic and social freedom, even though just, would boost consumption, production and intensity of economic performance. That can bring a lot of benefits but would also have a substantial environmental impact.

R21: Like I answered in Q(2), it depends on which understanding or applied approach of sustainability you're referring to. When it comes to actual sustainability- deep/strong - I see no tensions. When there are tensions between what seems to be sustainability and feminism (/feminist methodology - also two slightly different things), one can question it it's actually sustainability that is talked about.

R22: Both have become neoliberalised in their own ways and to dismantle these might take a separate coordinated strategy. With this in mind, resources would flow toward the sustainable movement, creating more opportunities for success (or whatever that may mean), due to most people within the movement being structurally privileged, that is, white, cis, males.

R23: Feminism is not that well received in society but sustainability is getting there.

R24: It's in the merging of the two subjects. Though I think people on both sides would agree with the other ones sentiments, in reality I don't feel there's widespread genuine understanding and genuine practice of both sets of values concurrently. Clearly there is a need to bring the two together but both sustainability and feminism as ideologies in themselves are already well entrenched, structured systems of thought with avid scholars and supporters on both sides. For me, there's a sense of people doing one or the other at a given moment, but rarely you're doing both. And if you are, it's a niche, which really is the problem. Why is it a niche? Unfortunately it requires time, a lot of research and education, but probably most importantly, openness and the spreading of privileges. Both sustainability and feminism are born out of and in response to the problematic societal structures it seeks to undo. But sustainability is likely to have more of that within its values, thinking and actors than feminism will. So really it's about sustainability and all those affiliated with it, waking up to the small of hypocrisy.

R25: -from a research perspective: epistemologically
-in general, not really

R27: I feel like it take a long time (maybe a generation) to erase the patriarchal mindset and truly embrace equality and feminism but I am afraid there won't be much time left since other sustainability issues like climate change and ecological destruction needs immediate action

R30: Not sure I see any

R31: Maybe it can be a bit abstract to grasp, since it's also the notion of having a gender lens in sustainability science, not necessarily through applying feministic methods, but to have a feministic ontology and epistemology in mind, which is very much the same thinking as strong sustainability science.

R32: One potential tension may be between social and environmental issues. However, I think that conflict is more theoretical than real. After all, the social world is intimately connected to the

environment. I don't think the environment can truly be protected in a purely biophysical sense without social justice also being considered.

Question 4:

What were the specific theories, concepts, or methods within the gender course that you felt helped you the most as a sustainability scientist? Why?

R1: Can't remember any specific ones from the top of my head.

R2: Standpoint theory. Feminist objectivity

R3: feminist methodologies (including reflexivity) and methods

R4: To be honest, the course has been a while, so I can't be so specific. I felt that feminist theories helped me realize vulnerabilities in people which was useful for my thesis. I also used justice theory which is oftentimes applied in feminism.

R5: Critical debates in a small and inclusive group that forced everybody to engage and understand different perspectives. A bit like Habermas' ideal speech situation.

R6: I wrote my thesis on discourses and governance in water management, so the most helpful concepts from the course for me focused on power relations, taking into account the voices and experiences of people actually living in affected areas rather than just the masculinized science/engineering principles imposed from above. I can't say that I actively used feminist theories, but I think some of them complemented my ways of thinking.

R7: The feminist pedagogy is helpful for creating spaces where people feel comfortable to share their positions on certain issues

R8: - queer feminism: moving beyond the binaries present in Western culture (nature-human, man-woman,...)
- feminist political ecology: focus on power in human-nature relationships

R9: Transcorporeality. It has a lot to do with my mindset as a person when I learned and wrote about the concept. This is because in her feminist perspective, the boundaries we create and the lines we draw to separate material things only create room for human-centrism, and does not recognize the true connection between humans and the rest of the world. Stacy Alaimo goes on to talk about sustainability discourses, how anthropocentric most of our advocacy towards sustainability is and how false that is! Learning about this, in the same way of learning about gender, made me notice little things of our discourses within sustainability science, and how often that separates humans from the rest of the material world, and gives space for privilege and oppression.

R10: Engaging more in depth with the concept of intersectionality and feminist standpoint theory helped me to find my place in the debates around feminism and how I can be involved in making a positive contribution to the goals of sustainability. Together these concepts helped me as a sustainability scientist to reflect on my own role as a researcher and making my assumptions and values more explicit.

R12: Intersectionality theory

R13: Definitely the concept of ecofeminsim, but also looking at concepts of power and standpoint theory. It did equip me with new ways of looking at the world, talking about it, being aware of discourses and dichotomies that are also deeply entangled into the sustainability debate and dialogue.

R14: I don't really consider myself a sustainability scientist but I really liked Harding's and Haraways epistemologies as they highlight the sociological aspects of science and problematizes a homogenous scientific community.

R15: "intersectionality" is a helpful word for the scientist when they understand the problem

R16: It was the interaction between other students - conscious, political, self-aware individuals - that allowed me to strengthen and question the latent assumptions that I held about the relationships and tensions between and within genders, and cultures and communities.

R17: Intersectional analysis

R19: I find it difficult to remember the specific theories. But I would say probably intersectionality. It opened a new world for me which helped me to understand how difficult and sensitive it is to research and understand marginalised groups of society and produce knowledge about their situation. Also, how to accept and evaluate certain bias that comes with you as a researcher and your position. I think these aspects are crucial while researching any field but especially sustainability.

R21: Difficult to say - can't say that any specific method/concept/theory helped me, but rather that the course helped me to confirm what I already believed (and what subsequently became the theory and method for my thesis) - that power relations, and especially hidden ones, are what keep societies from achieving actual sustainability.

R22: Fraser, Butler, Haraway, Gaard, Plumwood, Sandilands, Shiva.

R23: Feminist political ecology, reflections on being a researcher doing field work, conceptualising linkages between human and nature

R24: I think reflecting on your own standpoint and why you tend to certain arguments over others is a useful way of thinking. Once you get into that, the challenge is how do you work to understanding why someone else might be making a specific argument, and then trying to form a way of mediating all arguments given everyone's perspective. That is the challenge for sustainability I feel. Everyone has a certain line of argument because of their own experiences. But it's the challenge in how you collectively decide whose experience in which given case could be more valuable for ensuring the best outcome, which I think is pivotal. It strips away the ego and allows you to be more considerate which I think overall society has been lacking of late, and sustainability scientists can only benefit from this.

R25: political ecology

R27: Standpoint theory

R30: Feminist political ecology, standpoint theory, looking at dichotomies

R31: Situated knowledge, FPE, Frasers framework of understanding redistribution, recognition and representation, etc.

R32: I found standpoint theory and the God Trick to be really interesting ideas that apply usefully to sustainability science due to the way both womyn and nature tend to be objectified. I also found public and private space to be useful, as the tensions in womyn's roles regarding public and private space have a clear impact on sustainability. A third idea I found very useful was feminist political ecology, because it highlighted the connections between political systems, ecological systems, and gender impact.

Question 5:

Has the knowledge that you gained in the gender course been useful in your current occupation? How? Could you provide a specific situation or example?

R1: Not any more that the whole LUMES program in general. Maybe giving me a different way of thinking of problems. But i most of the time think back to the GandS course in critical ways thinking how much i disagree with the arguments that were presented there (For example the privilege test we were made to do and the no genders arguments), and how much better I could presents counter-arguments now than I could then.
I mostly rely on my b.sc. in biology and ecology for my daily job.

R2: I do not think it has been directly useful, but when going about research for clients, I have an awareness about the information source and their agenda which can be useful in painting a picture.

R3: Yes, for sure. Questions of gender are appearing here and there in projects I am working on (related to public space, mobility, etc.). Having a basic understanding of gender helps to be more sensitive (and sceptical) in asking who's experiences are taken into account in planning etc...

R4: Not in any particularly visible way but I think it has changed the way I perceive the world and made me aware of further important issues which I should look at in my work.

R5: Not in my work hahaha. But definitely in everyday life, especially when engaging in conversation with people from all walks of life. Practicing compassionate listening and response.

R6: I am not working so not exactly, but I'm taking a course in environmental management and I think the theories/concepts I described above are in my psyche during any kind of critical reflection.

R7: The gender course helped me to better understand standpoint theory and in this way, I am able to better understand arguments from this position.

R8: Absolutely! I am using feminist theory for my master thesis

R9: Well, I'm writing my thesis. In my thesis I do not use a feminist methodology or theory, but I am mindful about my biases, and I think to admit that and incorporate that into it has been aided by the course.

R10: It helped me in the design for my PhD research proposal where I tried to incorporate feminist standpoint epistemology. However, I am currently lacking the knowledge on how to translate the theory into concrete research activites.

R12: Useful but not enough. It was a good entry point to start understanding higher-level gender/feminism theory courses. It helped me personally to be a better colleague, and as a professional to integrate better gender/race/class issues in environment-related work.

R13: I did an internship with an environmental organization that works with tribal people in India after I graduated. I focused mostly on doing communications and interviews and found myself reflecting a lot on the interlinkages of nature, women and sustainability, and also recognising the vast potential of the re-discovery of this rich tradition of traditional ecological knowledge as a way to address the sustainability crisis.

R14: I'm stull in Lumes...

R15: It will be useful when I resume my work. Especially in Japan, still, feminism is a special idea for certain people. From my experience of the governmental work, we rarely have feminism lens when we make (environmental) policies. After LUMES, I will definitely participate in policy-makings with feminism/gender lens.

R16: It has increased my fight against blind cultural relativism, especially in my work to support women farmers in rural areas.

R17: The course improved my overall understanding but I cannot think of a specific situation where it has been extra useful.

R19: I think general knowledge about feminism and capability to critically evaluate existing power structures helps me in everyday life. So I reflect on it and sometimes challenge injustices in my working environment. What relates to my occupation and job that I do I think it has minimal effect yet and minimal relevance. In the future I may have more responsibilities and therefore more influence.

R21: To be honest, not particularly. My research (as part of my PhD) is however still informed by my own views of what is important to research, which is power relations, structural hinders, etc., which was part of the gender course.

R22: Provided me with a deeper set of heuristics to make sense of how oppression and power works in society. Has afforded me language to make sense of issues I see in my work.

R23: No not from the course as such

R24: It stopped me from doing my initial thesis idea which was to conduct a socicio-spatial study on the placement of refugees in Malmö in relation to inclusivity in malmö. Considering my lack of expereince and knowledge on the area, I did not feel it would be right for me to conduct this study.

R25: -I am a student. So, yes. If I imagine myself working soonish I believe that I might have some kind of team-leading tasks I think it definitely will be useful to be more aware of different underlying view points for potential conflicts within the organisation or between individuals.

R27: Sorry I do not work yet. But definitely I see things in a different way now in everyday life.

R30: It has improved my analysis for my thesis. I'm using feminist political ecology in my thesis.

R31: Yes it is definitely useful for the thesis witch im writing atm.

R32: I am currently a law student in South africa- a country that is still battling with huge inequalities in race, gender and class. I feel that the gender course has been useful for me just in inhabiting this space. Something happened to me last weekend, actually, that the concept of intersectionality helped me understand. A friend of mine (a black womon) invited me to a feminist memorial for Winnie Mandela, who passed away not long ago. I arrived after here and made to enter the hall where the memorial was being held. I was stopped by one of the organisers, and asked her if I was in the right place. She said yes, but the event was only for black womyn. I asked, "What about womyn who are in solidarity with black womyn?" she said, no. I said, ok. I called me friend and she came out of the hall. She was cross and wanted to kick up a fuss. She said it was racism. I don't really think it was. Maybe it was the response to racism- the response to a very particular experience of discrimination based on compounded factors of race, class and gender. I also wondered whether it was so different from a discussion on rape where men are not welcome- I would have felt differently about that, I think. I found it hard to know how to respond to the situation and told my friend to leave it, not to make a fuss. After all, what could I do? Insist on my rights as a white womon, a highly privileged person in South Africa? No. Of course not. See, I think what I learned about intersectionality in the gender course helped me navigate the situation. It's a personal example, not a professional one, but I am sure I will come across similarly complex situations in my professional life as well. I plan to be an environmental lawyer, and am studying law now, which I want to combine with my LUMES degree. In a place like South Africa, rife as it is with inequalities of various kinds, I think what I learnt in the gender course will be invaluable to me as I try to work to improve sustainability in my country.