FEMINIST URBAN MOBILITY

-

Uncovering Sexism in Urban Mobility & Taking Action Towards a Feminist Urban Mobility

LOUISA DREIS

S4431162

l.c.k.dreis@student.rug.nl

University of Groningen

Wirdumerdijk 34

8911 CE, Leeuwarden

Abstract

Urban mobility is subject to many forms of sexism, many of which can be traced back to the different activities carried out by women and men - care work versus paid work - and their resulting mobility patterns - trip chaining versus commuting. Sexism and feminist actions are uncovered across all levels of urban mobility: namely the (1) policy-making, (2) planning, (3) organisational, (4) academic, and (5) educational level. Recommendations for action include the gender mainstreaming of policies; the diversification of planning teams; the human-centered, end-to-end design and planning of mobility; the prioritisation of safety and active mobility in the (re)design of neighbourhoods; the implementation of inclusive employee mobility offers; the development of gender-sensitive mobility products and services; the conducting of observational and participatory research; and the diversification of the public debate, among others.

INTRODUCTION

Sexism is an issue affecting the lives of women in all areas of life, including their urban mobility. Urban mobility has long been and continues to be designed, planned and built around the needs of men. The result is a car-centered mobility, an infrastructure which facilitates commuting, and the design of vehicles to fit the body of the 50th percentile male (iabuk, 2019). This is not surprising. Urban planners have historically been men, who used their own mobility needs as benchmarks for planning urban mobility (Hanson, 2010). Urban mobility is thus intrinsically sexist, as it structurally ignores the needs of women in mobility. Only in the 1960s and 70s the gender perspective entered urban (mobility) planning. Still, many decades later, sexism can still be uncovered in various aspects of urban mobility, as we will see throughout this thesis.

Equal rights are one of the founding values of the European Union (EU) (CEMR, n.d.). Although that may be true on paper, in reality women continue to be subject to many forms of discrimination. Many of them are not apparent to the naked eye. To understand why and how urban mobility is sexist, it is important to understand how women move and why.

Gendered Mobility

Mobility needs and the patterns in which people move are dependent on the activities they perform (European Institute for Gender Equality, 2020). These activities, in turn, are heavily influenced by gender roles (Gauvin, 2020). In heterosexual households, women have historically been responsible for household maintenance and taking care of children and other family members. Men on the other hand have been wage earners. Evidently, these gender roles have changed over the last decades, but nevertheless, the tendencies can still be observed in the EU to this day (European Institute for Gender Equality, 2020). Illustration 1.1 shows that women still

spend much more time on unpaid work in the EU than men. According to the European Commission (EC), women perform on average 22 hours of care work per week, in contrast to men, who 'only' perform 9 hours per week (2020: 11). Illustration 1.2 depicts that men continue to spend more time on paid work or study in the EU than women, although the gender gap here is much smaller (European Data Journalism Network, 2018).

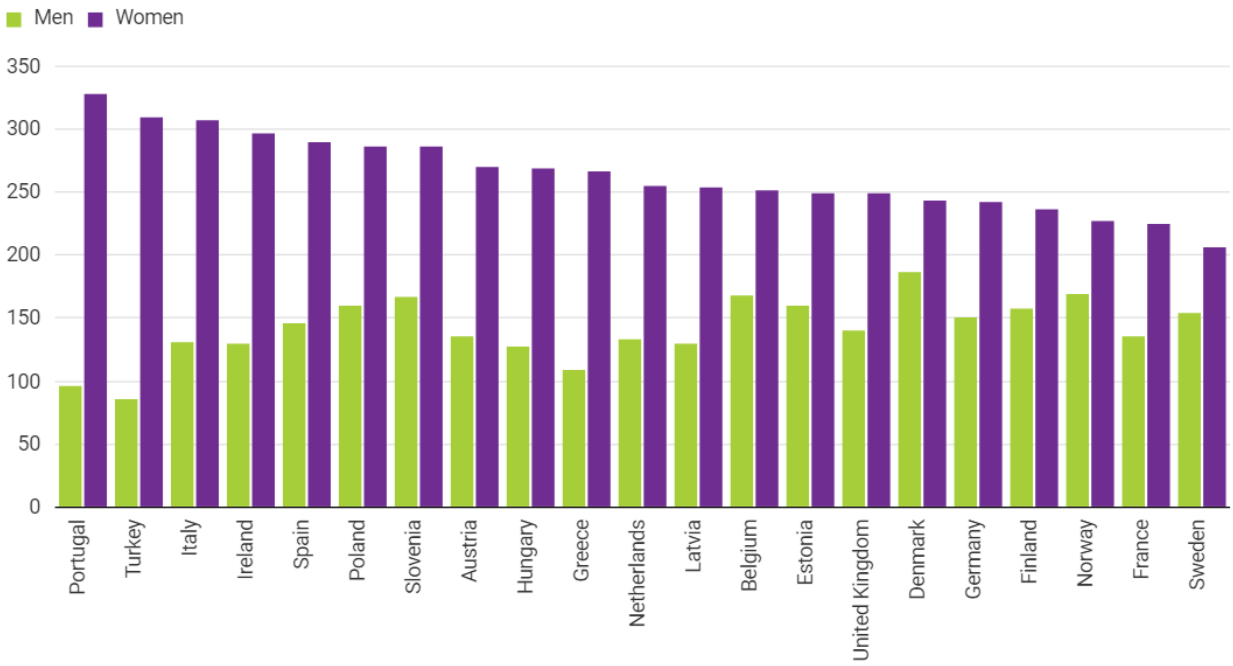


Illustration 1.1 - Time spent on unpaid work per day in minutes (European Data Journalism Network, 2018)

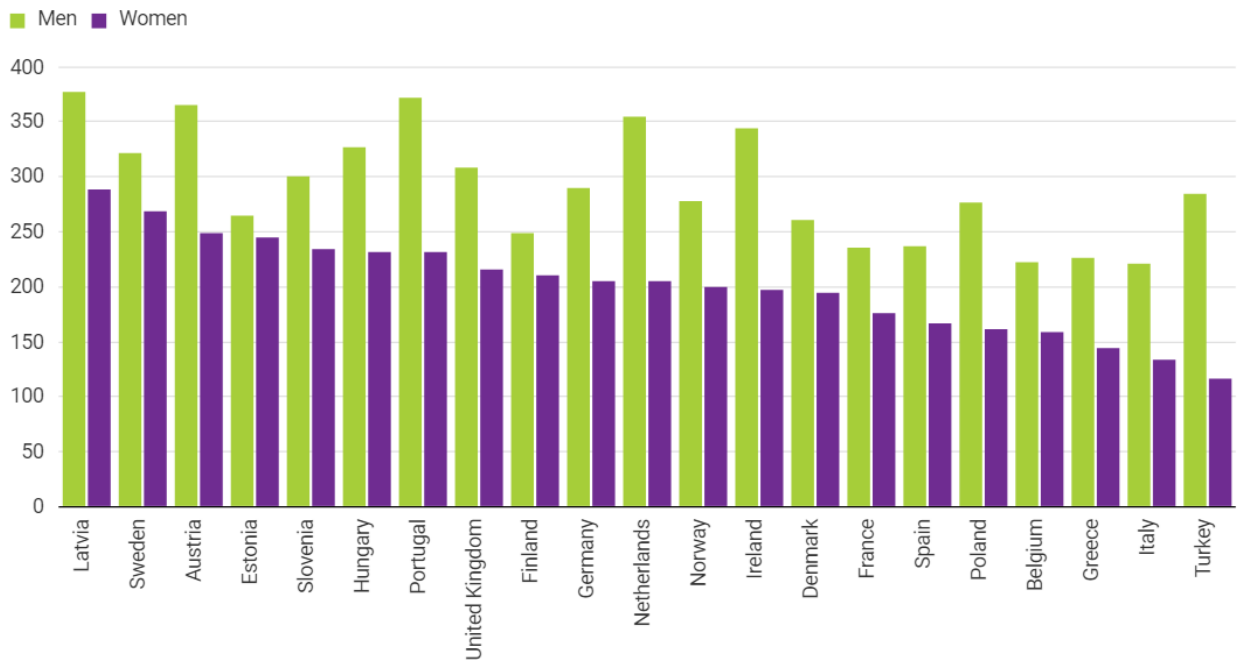


Illustration 1.2 - Time spent on paid work or study per day in minutes (European Data Journalism Network, 2018)

These different activities influence the mobility needs and mobility patterns of women and men. The mobility patterns of individuals who perform care work and household maintenance is described as 'trip-chaining', as they typically make multiple shorter distance trips to carry out their diverse activities, including bringing children to school, shopping for groceries, walking the dog, and checking up on older relatives (UN Women, 2010). Since women still make up the majority of care workers, trip-chaining is often attributed to female mobility (European Institute for Gender Equality, 2020). Accordingly, commutes between the home and workplace continue to be associated with male mobility (European Institute for Gender Equality, 2020).

The mobility patterns in turn influence the modal choices. Statistically, women are "inclined to use low carbon transport modes such as public transport and walking" thus making their mobility more environmentally sustainable (Civitas, 2020). Hanson raises the question whether this is the result of choice or constraint (2010). Men, on the other hand, move mainly by motorized

transport (Civitas, 2020). In heterosexual households with one car, men have been found to be the primary user of said car (Pirdavani et. al, 2017; Criado Perez, 2019: 30).

It should go without saying that both the stereotypical activities and the modal choices are oversimplifications of mobility needs of women and men. However, as long as these gendered differences can be observed in data and personal stories, it is crucial to be aware of them in order to avoid sexism and develop feminist solutions. It is also important to note that many of the sexisms that will be highlighted throughout this thesis, are not the result of a deliberate choice to discriminate against women, but merely the result of a lack of awareness and understanding of gendered mobility (iabuk, 2019).

Sexism in Urban Mobility

Now that we know that women and men move differently, the question still remains about where, how and why sexism resides in urban mobility. In a patriarchal society expectations are raised of the different genders, and men hold the power (Cambridge Dictionary, n.d.). This shows in many, if not all areas, of our lives. In urban (mobility) planning, it expresses itself through a prioritisation of the needs of the default male. Therefore, most cities are designed around motorized transport modes, including the passenger car, being the main male mode of transport (Worldbank, n.d.). Additionally, residential areas such as suburbs and business districts often located in city centers have been well-connected through large traffic arteries to allow for quick and direct commutes between the home and workplace (Criado Perez, 2019).

In her international bestseller “Invisible Women”, Caroline Criado Perez writes about the gender data bias which negatively influences the lives of women everywhere (Criado Perez, 2019). One of the examples of sexism in urban mobility she gives is of the case of Karlskoga, Sweden,

where in 2011, the local government conducted a gender audit of all their policies. When one official jokingly said “at least snow-clearing [is] something the ‘gender people’ would keep their noses out”, he triggered an investigation into the underlying logic of snow clearing (Criado Perez, 2019: 29). In a talk Criado Perez gave in 2019, she said: “never throw the gauntlet to a feminist, because of course we made snow clearing sexist”. It turned out that snow clearing followed the same male reasoning as the design of urban environments. The “major traffic arteries” were cleared first, followed by the smaller interconnecting streets, and ending “with pedestrian walkways and bicycle paths” (Criado Perez, 2019: 29). As women are more likely to walk than men (Sustainable Mobility for All, 2017), they had unconsciously been classified as secondary citizens in the snow-clearing schedule. Thus, snow clearing was found to indeed be sexist.

Karlskoga and other Swedish cities consequently changed their snow clearing schedules, prioritizing pedestrians and public transport users, by clearing pedestrian walkways, cycle lanes and public transport stops before the major car lanes (Criado Perez, 2019: 30; Include Gender, 2014). Surprisingly, this schedule was not only an improvement for the safety of women, but ended up saving the municipalities millions of Euros (Criado Perez, 2019: 31). Prior to the implementation of the new schedule, during the winter months, women had been injured more often in single-person accidents than men, creating large costs in health care and lost productivity (Criado Perez, 2019: 31). These numbers were reduced when the snow-clearing schedules were changed. It turns out, feminism can save a lot of money (iabuk, 2019). This example goes to show that sexism is hidden in the unlikeliest of places and as previously said does not have to be deliberate (iabuk, 2019), but simply is the result of the patriarchal logic in our society.

The work by Criado Perez was game-changing and brought the gender debate to the foreground once again. Researchers, urban planners and mobility planners started wondering where else lies uncovered sexism. So did I, which led me to writing this thesis. However, I did not want to stop there. I wanted to discover what solutions already existed and what actions had to be taken to create a feminist urban mobility. This thesis attempts to serve as an overview and guideline for action on different levels of urban mobility, by answering the following research question:

> In which aspects is European urban mobility sexist, what does a feminist urban mobility look like and how can it be achieved?

The "Theory" section consists of relevant definitions and a thorough overview of existing literature about existing and known sexisms in urban mobility. The "Methods" section explains the qualitative research approach that was adopted to answer the research question. Semi-structured interviews were conducted with experts, namely academics in urban planning and urban planners to gain insight into the sexisms and existing solutions. The research findings from the interviews are presented in the 'Results' section. Sexisms and feminist solutions are presented at different levels of action, namely the (1) policy-making, (2) planning, (3) organisational, (4) academic, and (5) educational level. The section "Discussion" puts the results into context with existing literature, further discusses some findings, and provides an overview over the limitations of the research. The last section "Conclusion" makes recommendations for policy makers, urban planners, academics, businesses, entrepreneurs and public debate organisers and gives suggestions for further research in the field of feminist urban mobility.

THEORY

This section will provide a theoretical framework for this research. Definitions of urban planning, urban mobility planning, sexism, and feminism will be provided and the concepts put into context.

Urban (Mobility) Planning

Urban planning, mobility and transport are closely interlinked. Urban planning refers to the "planning and design of urban areas" and deals with "both the development of open land and the revitalization of existing parts of the city" (Collins Dictionary, n.d.; Fainstein, n.d).

Mobility describes the "capacity and ability to move" (The Merriam-Webster Dictionary, n.d.). Unlike transport, which is "the act of moving goods or people" (McKay, 2019), mobility includes pedestrian movement. In this thesis, urban mobility refers to the movement of individuals within cities. Planning urban mobility includes the planning of infrastructure and street design.

Sexism

'Sexism' refers to the "prejudice, stereotyping, or discrimination [...] on the basis of sex" or gender identity (Masequesmay, n.d.). It occurs when one sex is believed to be superior to another, which is the case in any patriarchal society, where men hold the power (Cambridge Dictionary, n.d.). Naturally, sexism manifests differently in different contexts.

A person's sex refers to their biological sex (CIHR, 2020). A person is either assigned female, male or intersex at birth. Gender, however, is a social and cultural construct associated with certain (behavioural) expectations from persons of a certain sex (CIHR, 2020). Understanding

this difference is important to comprehend that statistical observations such as the gendered activities which influence mobility patterns are not inherent to a person's sex, but a result of gender roles.

Sexism in UM

Sexism manifests in urban mobility in different ways. First, urban (mobility) planning has long been a male discipline thus creating a lack of diversity at all levels (Worldbank, 2020: 29). Urban environments and mobility were designed to fit the needs of an able-bodied, working, 'normal' man - the default male (Worldbank, 2020: 26). This was likely not a deliberate choice, but merely a consequence of a lack of the female perspective (Criado Perez, 2019: 32). This lack of diversity in perspectives means that the same views are continuously reproduced.

Since the focus lay on male mobility, motorized transport was prioritised in urban mobility planning (Worldbank, n.d.). Women, who statistically move mostly by foot or public transport, were largely neglected and urban mobility infrastructures were not accommodating of their diverse needs. The different activities and resulting mobility patterns form the basis for many of the sexisms which can be uncovered in urban mobility.

Gender Data Bias

Whenever gendered data is collected, it usually is disaggregated by sex (female and male). However, there continues to be a lack of gender-disaggregated data which limits the understanding of sexism in urban mobility (Gauvin et al, 2020; Criado Perez, 2019). The collection of binary data may help gain initial insights into women's mobility, but one should never assume that gendered data is generalisable. After all, every human is unique and so is their

movement through public space. Gender is merely a category of analysis which enables the revelation of structural discrimination.

Data has been proven to often be biased towards male behaviour or characteristics such as the design of transport vehicles for the default male, a 50th percentile male (iabuk, 2019). This results in handles being installed too high for most women to reach on public transport vehicles or in seat belts which are life-threatening to pregnant women and their fetuses or in a significantly higher risk of severe injury and even death in car accidents compared to men (iabuk, 2019). These examples illustrate how quickly designs for the default male can become dangerous and even life-threatening. Uncovering these data biases can prevent accidents and save lives (Criado Perez, 2019: 31).

Safety

Safety is an important issue for women in urban environments. They are constantly exposed to the possibility of (sexual) harassment and violence - especially as pedestrians and public transport users (Sustainable Mobility for All, 2017). There is thus a need for safe solutions for women during the day and at night as well as to challenge the patriarchy and resulting gender roles.

Here, a distinction between objective and subjective safety is necessary. Objective safety refers to the measurable safety of specific spaces, for instance the number of accidents or (sexual) crimes. Subjective safety refers to the perceived safety of a location and comfortability of moving through a space. For example, badly-lit streets and streets without explicit bicycle lanes may be perceived as unsafe.

There is likely a dissonance between objective and subjective safety, as many places which are visibly dangerous will be avoided from the get-go and thus may not appear in statistics as such. Understanding safety needs and issues is relevant in the design and planning of mobility infrastructure. Studies have shown that specific street designs are perceived differently in relation to safety. This understanding is crucial to design and transform streets to become objectively and subjectively safe for all (Sadik-Khan, 2013). According to Riggs, "perceived safety can influence comfort and potentially modal choice—particularly for parents", which may in turn influence their decision on whether or not to allow their children to walk or cycle down certain streets (2019). For instance, cycle lanes with driving cars on one side and car parking on the other may feel unsafe due to so-called dooring zones - zones in which the risk of crashing into an opening car door is high (Kassim, Ismail & McGuire, 2018). A street in which car parking separates the road from the pedestrian and cycle lanes is perceived as safer (Sadik-Khan, 2013).

Financial Discriminiation

Another way in which urban mobility is discriminatory against women is the financial one. Women continue to be subject to a gender employment and pay gap. In the EU, the gender pay gap accounts for 15,7% (EC, 2020: 10). This affects their modal choice and in turn, the modal choice affects their financial situation. Due to their trip-chaining mobility, the use of public transport can result in higher costs, because fares are often non-pausable and limited to a particular journey (Criado Perez, 2019). Kern refers to this as a "pink tax", a phenomenon where "women pay more for similar services than men", in this case because they rely on public transport more and "spend more per month" (2020; Tadepalli, 2020).

Feminism

Britannica defines feminism as the "belief in social, economic, and political equality of the sexes" (Burkett, n.d.). It is important to note that feminism does not aim for women to behave identical to men. For instance, the feminist goal is not to reproduce patriarchal structures by having more women drive private cars, but for them to have the same opportunities as men by improving access to mobility in other, more inclusive (and environmentally sustainable) ways. Interestingly, creating a feminist urban mobility will not only benefit women, but everyone (ITF, 2021).

A word on 'intersectionality': intersectionality describes "how different social categories interact, sometimes resulting in compounding effects and tensions" (Burkett, n.d.). Intersectional feminism acknowledges the heterogeneity of women and the added discrimination women may face based on their race, ethinicity, sexuality, gender identity, religion, social class, family status, (dis)able bodiedness, age, etc (EC, 2020: 16). To avoid gender-sensitive planning which mainly benefits the "married, able-bodied mother, with a pink- or white-collar job", it is crucial to make intersectional gender planning mainstream (Kern, 2020). Therefore, it is important to not only think of data, but of individual stories. When developing urban mobility solutions, we cannot merely think of our own needs or the needs of the default female. We must think of solutions as diverse as the people they cater to.

Feminist UM

According to Hanson, understanding the differences in and challenges of current urban mobility is key to planning urban mobility which is inclusive of gender (2010). Collecting gender disaggregated data is incremental to this understanding (Criado Perez, 2019).

The lack of gender perspective in urban mobility can be tackled, by increasing the number of “women as decision makers”, “users”, and “workers” and thereby the diversity on all levels of the mobility sector (Worldbank, 2019). Additionally, women’s needs and their perspectives need to be actively thought out and catered to by gender mainstreaming urban mobility processes and policies and adapting infrastructure to fit women’s mobility needs and patterns (EC, 2020: 15; International Travel Forum, 2018). For instance, in order to make public transport - a main transport mode of women - more attractive, dedicated bus lanes could be installed allowing to bypass traffic (Sadik-Khan, 2013; TED, 2013). Another solution is to redesign streets in a safer way to enable and encourage active mobility.

METHOD

Research Design

To explore the issues and the potential solutions that exist within urban mobility, a qualitative research approach was chosen. Semi-structured interviews were conducted, as is appropriate for exploratory research (Bryman & Bell, 2011). The interviews provided insight into the current sexism prevalent in urban mobility and the solutions that could be implemented to create a more feminist urban mobility.

Eight interviews were conducted with experts from the fields of urban planning, urban mobility, and gendered urban mobility. The interviewees are named in table 3.1, along with the assigned participant keys, which will be used in the 'Results' section to reference their statements. A more detailed description of the interviewees can be found in Appendix II.

TABLE 3.1

Interviewees and their Participant Keys

Participant Key	Interviewee[1]	Profession	Field of expertise
P1	José Carpio Pinedo	Urban Planner, PhD	Sustainable Mobility, Spatial Analysis, Pedestrian Planning

[1] Consent Forms: shorturl.at/eyBR2

P2	Lieke Ypma	Designer, Engineer, Consultant, Lecturer	Gender Mobility
P3	Katja Leyendecker	Engineer, Mobility Sociologist, PhD	Mobility and Gender, Women's Cycling Activism
P4	Frieda Bellmann	Designer, Innovation Consultant	Gender Mobility
P5	Wiebke Unbehaun	Spatial Planner, Researcher	Gender Mobility, Transformation of Public Spaces
P6	Lina Mosshammer	Urban planner / User-centered, Gendered Mobility	Sustainable, Flexible, User-centered and Gendered Mobility
P7	Guadalupe González Sánchez	Researcher / Sustainable Mobility Expert	Transport Management, Sustainable Mobility
P8	Anonymous interviewee		Gender Mobility, Inclusive Mobility Transition

Research Context

Boundaries of Research

The boundaries of any research project have to be defined (Bryman & Bell, 2011). This thesis was subject to several types of boundaries: time, spatial, and academic boundaries.

Firstly, due to the relatively short time within which the thesis had to be written, namely a five months period including an iteration process concerning the research question, only a limited amount of research could be done.

Secondly, the research was subject to spatial boundaries. I chose to limit the geographical scope of the thesis to Europe, as globally the differences in activities and mobility patterns between women and men and between women of different geographical locations are stark, and I do not want to assume that I would be able to fully comprehend the challenges that women in other parts of the world are facing when it comes to their own mobility needs. Nevertheless, some of the results may certainly be adopted in other social and geographical environments. In the set geographical context, the interviews were conducted with experts from Germany, Spain and Austria.

Thirdly, the research is limited to the input of experts, who are researchers, consultants or urban planners. No field work, observational research, or participative / user-centered research was conducted, either of which could have provided more in-depth and potentially new insight to the topic.

These boundaries may create a bias of which readers should be aware. Interpretations are always subject to subjectivity.

Data Collection Methods

Primary data was gathered through semi-structured interviews. Except for one interview which was completed in writing due to an individual preference, they were all conducted online via Google Meet, Zoom, or Microsoft Teams. This was partly due to the COVID-19 pandemic which hinders in-person meetings, and due to the geographical distance to the interview partners. The interviews varied in lengths, lasting 45 to 90 minutes each.

Semi-structured interviews were chosen, as they allow the interviewer to guide the interviewee through the interview all the while leaving enough room for them to individually interpret the questions and give individual answers (Bryman & Bell, 2011). Previous to the interviews, a guide was created including questions about sexism in urban mobility, what a feminist urban mobility would look like, how this feminist urban mobility could be achieved, what entrepreneurs could do with this information and where further research is still needed in the field of (feminist) urban mobility (Appendix I). Probes were added to each question, in case an interviewee was struggling to find an answer to a specific question (Bryman & Bell, 2011). However, except for once, the probes never needed to be mentioned. The answers given to the questions varied depending on the field of expertise of the interviewees.

Data Analysis Methods

After conducting the interviews, they were transcribed manually[2], using the intelligent verbatim transcription style. When using this transcription style, fillers such as “ums” and laughter are eliminated and some slight editing is done to sentences to facilitate reading and understanding,

[2] Transcripts: shorturl.at/qAH78

without changing the meaning of what was said (Summa Linguae, 2021). The manual transcription allowed me to get familiar with the content and derive initial codes.

The next phase consisted of coding. Again, out of preference, this was done manually using a spreadsheet. In a first coding cycle, an inductive approach was applied to two transcripts, meaning that codes were derived from said transcripts (Bryman & Bell, 2011). This corresponds to the conventional data analysis approach which is appropriate for exploratory research. In a second coding cycle, these codes were categorized, forming a sort of initial coding catalogue. In a third coding cycle, the rest of the transcripts were coded using an abductive approach (Bryman & Bell, 2011). The codes from the initial coding catalogue were applied where appropriate, and new codes added to the categories where necessary. The complete coding tree, consisting of 104 codes, can be found in Appendix III.

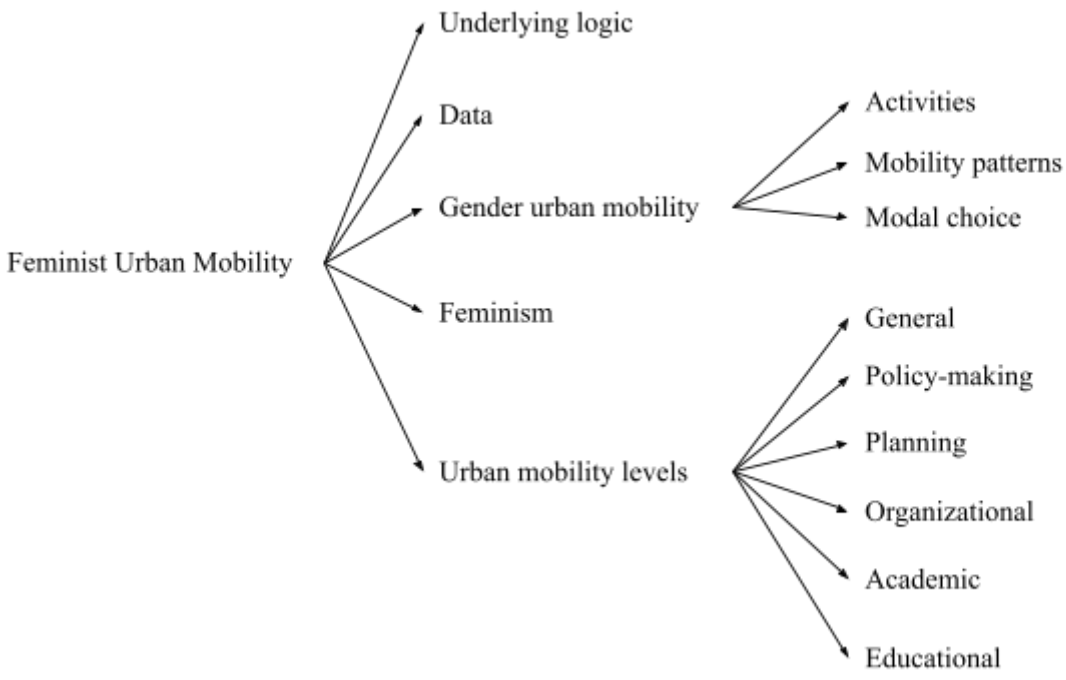
RESULTS

In this section, the findings from the interviews will be presented. First, the underlying logic of urban mobility will be explored, then a light will be shed on the data bias. Next, the gender urban mobility will be addressed, including the gendered activities and resulting mobility patterns and modal choices. Then, the implications and benefits of feminism in urban mobility will be highlighted. And finally, the different levels of urban mobility wherein sexism lies and within which change needs to occur to create a feminist urban mobility will be addressed. These levels are: (1) policy-making, (2) planning, (3) organisational, (4) academic, and (5) educational.

The subchapters of this section correspond to the main categories of the coding tree, shown in illustration 4.1.

ILLUSTRATION 4.1

Basic Coding Tree Structure



Underlying logic

Mobility design and planning follow the underlying patriarchal logic of "the right of the fastest", and of "acceleration" (P2, P8). Work commutes continue to be at the center of mobility planning (P1), and this mobility need is prioritised over any other, even when collecting mobility data (see 'Gendered Data'). Urban mobility decision makers pride themselves on creating flagship projects, which shine as innovative, "futuristic [mobility] projects", often including state-of-the-art technical aspects (P8). However, these projects often only reinforce a "male, technical, [and] patriarchal" logic of urban mobility (P8).

Gendered Data

Almost all participants were familiar with the gender data gap illustrated in Criado Perez' 'Invisible Women'. Thus, a basic agreement existed about the prevalent gender bias in urban mobility.

Two concrete examples were given of sexist data collection in urban mobility. The "German mobility study" was mentioned by P2 and P8. The latter explained that the work commute is prioritised and that multi-purpose trips cannot be indicated as such, as one can only "indicate one trip purpose", resulting in a "totally biased" study which "systematically makes all unpaid work trips invisible" and made work commutes appear more relevant than they actually are (P8). P2 additionally spoke of a Barcelone mobility study, in which "they do not count trips shorter than one kilometer", which is a problem as it renders many care work trips invisible.

Overall, the lack of gendered data and the need for more gender disaggregated data was mentioned by multiple participants (P5, P6, P7). So was the need for intersectional data, as

women are not a homogenous group and thus the needs of different groups of women have to be highlighted and addressed (P7, P8).

Gendered Activities & Mobility

P8 considers the "division into men and women" to be "a category of analysis, which allows [us] to see the [...] different mobility requirements", but is only ever "a first starting point to uncover these differences". It should be recognised that women are a heterogenous group of individuals, whose "diversity [we are] denying" by categorising too much (P3). P5 points out that the "heterogeneity within women [is] as great or greater than that between men and women". However, activity and mobility differences between genders can still be detected, so "the collection and analysis of gender-sensitive mobility data" is necessary to "identify possible measures to improve women's mobility" (P7).

Activities

All participants spoke about the different activities women and men perform in their everyday lives, which "[imply] completely different mobility patterns and mobility needs" (P1). According to P7, "it is essential to know and understand [women's] mobility needs, barriers and opportunities" to create a feminist urban mobility. The main aspect which complicates women's mobility, is the "sexist division of tasks" (P1), namely "care-giving and household maintenance" (P1), which continues to be unequally distributed with women continuing to "perform more care activities" (P2, P4, P6). This includes paid (part time) work, care work, domestic tasks such as household maintenance, and shopping, among others (P1, P4, P8). These activities are the result of "societal gender roles" and thus "context-related" (P3, P4). According to P5, the unequal distribution becomes "visible when women enter marital status" or have children. It also

becomes less unequal once women "reach a certain level of professional activity" (P5). Additionally, the sexist division of tasks is mostly visible in heterosexual households and "does not apply to gay households" (P1). Of course, society is going through changes, and more men are performing care work (P4). P3 questioned whether it would be sensible to "de-categorise when it comes to men and women" and instead ask more specifically about the "needs of individual persons" and speak about "individuals with care work, so men can feel included" (P3, P2).

Mobility patterns

The gendered activities influence the mobility patterns of women and men (P1, P5). Women's mobility is described as "trip-chaining" (P2, P4, P6), and "characterised by shorter distance trips, closer to home, and more numerous trips, as well as multi-purpose trips" (P7). Men's mobility is characterised by longer distances, single trips between the home and workplace - the typical commute (P1, P6, P7).

Modal choice

The modal choices, thus "the transport mode we choose or must use to perform [a] trip" (P1), were addressed by most participants. Women tend to "make more trips on foot and use public transport to a greater extent" (P7). This pedestrian mobility can be observed across "all social classes" (P5). Men typically move by car or public transport (P1, P5, P7). P5 and P6 also implied that "bicycle mobility is more male-dominated", with P8 speaking of the "middle aged men in Lycra" to symbolize the cyclists who purchase top equipment to move fast and agile alongside motorized vehicles. Both P1 and P7 mentioned that in households with less cars than drivers, the

man is the main user. P2 implied that the choice of transport mode is also a result of one's socialisation.

It became apparent that the mobility patterns and modal choices of women are heavily influenced by their safety needs. Women will adapt their trips, and choose or not choose transport modes depending on their perceived safety (P1, P8).

Interestingly, a digital divide can be perceived (P7). Women use sharing services and e-mobility much less than men (P5, P6, P7), with men representing the majority of sharing mobility users (P2). This is partly due to their socialisation and to a service which does not cater to female needs enough (P4, P5, P7).

Feminism

P7 argues that "mobility should be a fundamental right for all people". Thus, it should be ensured that "women, recognised as one of the vulnerable groups, have the freedom to choose between different transport options to [cover] their mobility needs" (P7). By applying feminism to urban mobility, "you also start thinking of other people that are not considered in urban planning" (P1). Therefore, it is important to take on an "intersectional feminist approach" (P8), to assure that the "mobility needs of the most vulnerable population groups" are addressed (P7).

P1 argues that adopting the "women's perspective" is important to create urban environments which are not only "comfortable and safe and attractive for women, but also for men". P1, P4 and P8 agree that a "(intersectional) feminist approach" is beneficial for all.

It is important to note, that the feminist approach does not aim to tackle the gender mobility imbalances by encouraging women to adopt men's mobility behaviour, but to transform mobility

infrastructure in a way that women's diverse mobility needs are met and men's mobility no longer is the most attractive option (P1).

Before addressing the sexism on the different urban mobility levels, it should be noted that "sexism is not deliberate" (P8), but merely the result of a "lack of knowledge about the relevance of this topic" and a lack of awareness (P8, P2, P6).

Sexism & Feminism in Urban Mobility

The gendered mobility differences have implications on all levels of urban mobility. It became apparent from the answers of all participants that in order to tackle sexism in urban mobility, all levels involved would have to be addressed through a gender lens. The following five crystallised: the (1) policy-making, (2) planning, (3) organisational, (4) academic, and (5) educational level. Within each of these levels, the prevalent sexist structures will be outlined and the tactics to solve these issues and create feminist solutions instead will be highlighted.

As previously mentioned, a lack of awareness is part of the reason for sexism in urban mobility. P6 argues that an awareness must be created on all levels, by giving women visibility and a voice, be it as decision-makers, in planning teams, in product development, in public debates or in street names (P2, P6).

Interestingly, according to P5 and P6, women themselves are not necessarily aware of the disadvantages they face in urban mobility. They have simply developed "coping strategies" to tackle their tasks in a mobility not designed for them (P5).

Multiple participants argued that it is important to exit “our own bubble”, be it the academic or feminist ‘bubble’, in which the need for feminist solutions and the theoretical implications are well-known (P3, P5).

Policy-making level

The highest level of decision-making is the policy-making level. Decisions made here have the potential to influence every level of urban mobility, from a regional to a national level. However, the potential for improvement is high (P5). P2 and P5 spoke of the German and Austrian road construction rules and regulations, which regulate the specifics of roads and “pedestrian and bicycle infrastructure”. P5 criticized that these regulations continue to be “male-centered” and that “other traffic infrastructure, such as signs, traffic lights, and recently charging stations for electric vehicles” have to be placed on pedestrians and / or cycle lanes, representing obstacles and dangers for “cyclists, pedestrians, prams, and wheelchair users”.

A solution is to make the inclusion of the gender perspective in all planning processes mandatory, as it is done in Spain (P1). P1 adds that “the gender perspective must be cross-sectional [and] not something you check in the end”. P6 speaks of a “gender mainstreaming manual” which serves as a guideline for gender mainstreaming policies, including the use of gender-neutral language.

Planning level

Planners

Historically, urban planning has been a “male discipline”, consisting of predominantly male decision makers with higher education degrees (P1, P2, P8). Naturally, these men designed

transport systems to fit their own needs, meaning the "central topic [was] commuting" as the planners themselves were "male commuters working away from home" (P1, P4). This meant that "women's insights" and "the [views] of many minorities [were] missing" in urban planning (P1). Most participants mentioned the need for "more women in charge of planning" and generally more diversity in planning teams (P1, P2, P4, P5, P6, P8).

Planning process

According to P1, urban environments have been and continue to be planned around the needs of "the universal human being, [...] a person without attributes", which is clearly not representing the diversity of society.

Instead, a human-centered, participatory approach needs to be adopted to accommodate the mobility needs of all when planning urban mobility (P4, P8). P2 spoke of planning journeys "end-to-end", by connecting different mobility services and products to allow uninterrupted mobility. P4 called this linkage "holistic service ecosystems", and called for "cross-company connection" of products and services. P8 mentioned an example of Munich, where school routes are analysed to detect "how accessible they are for children and teenagers by foot".

Urban Planning and Mobility & Safety

Urban planning is closely linked to urban mobility with a "strong correlation between the physical environment and the perceived capability to use the space" (P1, P5). The design and architecture of neighbourhoods plays an important role in the safety of women - both objective and subjective (P1, P2, P5, P6).

In terms of objective safety, women and other vulnerable social groups are statistically more likely victims of (sexual) harassment and violence in public spaces than cis-men, specifically “as pedestrians” and “at night” (P1, P2, P5, P8). Objective safety can be measured by collecting data on accidents or crimes having occurred in a specific place (P8).

Subjective safety, “the perceived safety” is rarely measured (P8). There may be a dissonance between places with objective and subjective safety (P8). Additionally, certain street and neighbourhood designs may be perceived as more or less safe (P1, P2, P6).

In order to create urban environments, “where everybody, [...] both male and female feel more comfortable” and safe, it is crucial to “eliminate fear spaces” within the urban environment (P1, P5, P8). This can be done by creating or increasing “natural surveillance” (P1). This is given when one can “perceive eyes on the streets”, referring to the phenomena of feeling like what is happening on the street is seen by others (P1). This is closely related to the architecture of streets and neighbourhoods. Neighbourhoods, which are high in density and diversity, and streets which are of mixed use are both safer and more attractive (P1). High density urban environments also allow women to complete their many tasks within a smaller radius, saving time and money (P1).

Current mobility infrastructure largely prioritises motorized mobility and does not accommodate female mobility sufficiently (P1, P4, P5). Much public space is dedicated to “stationary and moving traffic”, thus neglecting more active mobility, such as pedestrians and cyclists for whom it can be unsafe to move around (P3, P5, P7).

A feminist urban mobility will “prioritise active mobility” (P1, P5, P7), for instance through “the redistribution of public space” (P7). One example of prioritised active mobility was mentioned: Barcelona Superblocks, for which streets in Barcelona are transformed to accommodate and

prioritise pedestrian and bicycle mobility and public green spaces (P1, P4). The two concepts '15-minute city'[3] and 'The Walkable City'[4] were mentioned as examples of human-centered and decentral urban design, which encourage active mobility and rely on high density and high diversity neighbourhoods (P1, P4, P7, P8). For any distances beyond the walkable, a safe and effective public transport system should exist to eliminate the need for a car (P1). Enabling active mobility in a safe urban environment, will encourage "independent mobility" of children and older people among others and reduce the care trips women have to perform (P2).

Planning processes can take many years (P8). Thus, it may be sensible to implement so-called 'pop-up infrastructure', "temporary infrastructure" which allows the "quick and cost-effective testing" of certain infrastructure changes (P8). This may include "pop-up cycle lanes", pop-up car-free zones, and the creation of pop-up public spaces (P8). As pop-up infrastructure is temporary, the impact of it can be observed and eventually lead to the cancellation or the solidification of the intervention (P8).

Organisational level

Many companies provide company cars as "perks" to enable their employees to commute to work and complete other work-related journeys (P2, P6, P8). However, there are more inclusive ways to support employee mobility (P8). Companies could offer different modes of transport such as "company (freight) bicycles" and "e-bikes" or a "mobility budget" (P2, P8). Customising employee mobility to the actual needs of care workers could even create positive effects for companies, such as potentially less fluctuation and more full time work (P6). Additionally,

[3] Coined by Carlos Moreno: all needs should be fulfilled within a 15 minute walk or bike ride radius from home
[4] Coined by Jeff Speck: putting pedestrian mobility at the core of urban mobility, combined with mass transit

policies encouraging telework and flexible hours could allow women to better manage their many tasks and enable them to find an actual work-life balance (P7).

Mobility companies

Companies working in the transport and mobility sector have a significant influence on the level of inclusivity of mobility solutions.

Many technological products are biased as they are designed for the 50th percentile male body (P4, P5). This applies to safety measures of different transport vehicles such as safety belts in cars and handles on public transport vehicles, but also AI services such as voice recognition (P4, P5, P8). As a result of the first, women have been found to have "more serious neck and chest injuries" when involved in accidents (P4, P5). Thus, there is a need for product development which actively addresses the (safety) needs of women (P8).

Another area of entrepreneurial opportunity is digital solutions or 'mobility-as-a-service'. As previously mentioned, women are reluctant to use sharing mobility. This is not least due to the lack of child car seats and storage space on those transport modes, issues which could easily be rectified (P4, P8). Another reason for women's reluctance is the financial aspect of these services. Since women often perform different tasks during one trip, the ability to pause a paid usage plan until the trip is resumed, may prove to be helpful (P8). Another way to facilitate trip-chaining may be through a "mobility budget" which is affordable, allows the use of different transport modes and allows pausing (P4).

Academic level

On an academic level, research is necessary into additional areas where sexism may be prevalent. Three types of research were mentioned: (1) observation, (2) personal stories, and (3) participation.

Observations can be made by moving around a city and seeing it “through women's eyes” and observing the way women move within cities (P1, P3, P4, P8). This may provide insight beyond what can be measured with gendered data or voiced in conversations with women.

Secondly, the relevance of individual stories was emphasized by several interviewees (P2, P3, P4, P5). Women are not a homogenous group of people, therefore valuable insight can be gained by inviting women to tell their stories and “listening empathetically” (P2, P3).

Many participants mentioned participatory research (P1, P2, P5, P8). P8 spoke in more detail about several forms of public participation: (1) “Outreach participation” in the shape of “city walks with affected individuals”, (2) “town hall meetings” which do tend to be attended by “always the same people”, (3) “citizen’s assemblies” which need to be planned as accessible as possible - and not just in the sense of having a ramp for wheelchairs, but “linguistically, culturally, and temporal” - and potentially compensated and offering childcare to function.

Either way, it is important to not get lost in theoretical research, but aim at exiting one’s ‘bubble’ and breaching the “gap towards applicability” (P1, P3).

Educational level

As previously mentioned, urban planning has long been a male discipline. Many of the connected disciplines are too (P1, P2). These are often lacking the feminist perspective which can be changed by implementing it in the educative process (P1).

The public debate on urban mobility is also heavily biased towards men. A diversity across opinions is missing and “the same people with the same stories” continue to be amplified (P8).

Arguably, activism is also a useful tool to raise awareness and push the gender perspective in urban mobility and the mobility transition (P3, P8).

One aspect became apparent, applying an (intersectional) feminist perspective to urban mobility, will not only benefit women, but everyone - including the planet (P1, P4, P8).

DISCUSSION

Many of the findings confirmed existing literature, although some aspects were highlighted more than others. Several of the statements presented in the 'Results' section will now be addressed further.

As was mentioned in the introduction, gender is merely a category of analysis (P8). Social dynamics are changing (EC, 2020); more men are doing care work, and more women are working part- or full-time. Thus, mobility patterns are becoming less gender-specific and more activity-related or "context-related" instead (EC, 2020: 8; P4). These changing dynamics need to be considered in academics, but as long as the gender-specific imbalances do exist, this category of analysis stays relevant.

The importance of gendered data became apparent in both literature and during the interviews. The world is becoming increasingly technological, with artificial intelligence (AI) gaining popularity. However, AI can be dangerous for women, if it is fed sexist data. Seeing that only 22% of AI programmers are female, it is likely that the AI will consume and reproduce male data bias (EC, 2020).

It was mentioned that the public debate on mobility is still predominantly male, which poses an issue as the same ideas continue to be reproduced. (P8). Many of the modern concepts for sustainable and socially inclusive mobility are coined by men, such as the '15-min city' and the 'Walkable City' (Johnston-Zimmerman, 2017). What I found during my research is that many solutions to gender-specific issues already exist and many women are experts on female mobility, but they are not given enough of a voice in the public debate; a fact which needs to change.

The different intersections of discrimination were not given much room in this thesis, however, it should be noted that women who are more acutely subject to other forms of discrimination may not choose or have access to resources or channels to communicate their point of view (P8). Nevertheless, their mobility needs should be explored, for instance through observation or outreach participation, and their perspectives included in feminist urban mobility.

Limitations

This thesis is subject to several limitations of personal, scopal, and geographical nature.

Every research project is susceptible to the paradigms of its researchers. My own characteristics, circumstances and choices influence the way I move in cities and perceive mobility and its challenges and opportunities. In order to understand the mobility needs, patterns, and challenges of other women, such as POC women, mothers, dog owners, wheelchair users, poor women and older women, I need to actively seek their input. Sadly, a more detailed analysis of the broad research question was not feasible due to the short time frame within which the research was conducted.

Another limitation was the geographical one. The experts were mostly German-speaking, with interviewees from Germany and Austria, and only two from Spain, with whom the interviews were conducted in English. It would have been preferable to speak with experts from more diverse backgrounds to get an even better understanding of female mobility across the EU.

CONCLUSION

In conclusion, we have seen that sexism continues to be an issue in urban mobility due to differing activities and mobility patterns of women and men. This is slowly changing, thus we have to persist in taking steps towards a feminist urban mobility.

The more everyday activities become equally distributed between women and men, the less sexism will exist in urban mobility. This does not go to say that the issues simply disappear; they will simply no longer be gender-related, but context-related. This means that, for instance, the focus on commute mobility will no longer be discriminatory against women, but against care workers of all genders. However, society has not reached this point yet and so, for now, these issues remain sexist.

Recommendations

Recommendations can be given across different levels.

On the policy-making level this means applying a mandatory gender perspective to all urban mobility policies at the regional, national and European level.

On the planning level this includes diversifying urban planning teams, adopting a human-centered approach when developing urban mobility, prioritising safety, and being “creative and daring” (P1) by implementing pop-up infrastructure. Additionally, urban planners should look to cities across the world to seek inspiration and learn from each other's experiences. Sexism in urban mobility is a global challenge, which is best tackled together.

On the organisational level, this signifies developing employee mobility policies according to their needs, and developing safe and attractive mobility products and services. For

problem-solving entrepreneurs, understanding sexism in urban mobility provides endless opportunities for innovation.

On the academic level, it means observing, listening to personal stories and encouraging people from diverse backgrounds to participate. Researchers should additionally seek to bridge the gap between theory and practice by aiming to lower the academic hurdle through accessible language and communication formats.

On the educational level, it signifies encouraging women to go into professions related to urban mobility and diversifying the public debate in order to break the cycle of reproducing the same sexist perspectives.

Generally, it is recommended to constantly re-evaluate urban mobility, by asking (1) where (potential) sexisms lie, (2) what an (intersectional) feminist urban mobility looks like, (3) how this goal can be achieved, (4) whether the solutions are still up to date, (5) whether all social groups were considered, and (6) whether certain solutions need to be adapted to accommodate further needs.

Further research

During the interviews several research gaps became apparent.

The need for intersectional research and data is one (P8). The heterogeneity of women and the added discrimination they may experience due to other personal characteristics is well-known, but not researched enough. Different discriminations and their intersections with sexism need to be examined in urban mobility.

Subjective safety is another research field which requires further research (P8). Objective safety data often lacks the insight needed to understand why people move in certain places and not in others, and why they choose certain modes of transport. Applying a more observational approach to understand which urban (mobility) infrastructure promotes subjective safety and which does not, is important.

P2 and P4 noted that they were approached several times to conduct participatory studies on female rural mobility, in order to understand their challenges and develop solutions (P2, P4). This is an area which has been neglected until now.

Overall, a more observational approach to research on female urban mobility is necessary to uncover hidden sexisms in urban mobility (P4). Although data can be helpful to discover imbalances, listening to personal experiences and observing how women move, can provide much greater insights.

Lastly, the research on the transformation of urban mobility through technologies is lacking (P7). Women are known to use shared and e-mobility less than men. This is yet another area which requires insight and feminist solutions.

Urban mobility continues to be sexist. However, many solutions for the creation of a feminist urban mobility exist and simply need to be implemented across the different levels of urban mobility.

REFERENCES

Bryman, A., & Bell, E. 2011. *Business Research Methods* (3rd ed.). Oxford University Press.

Burkett, E. n.d.. *feminism | Definition, History, Types, Waves, Examples, & Facts*. Encyclopedia Britannica. Retrieved May 15, 2021, from https://www.britannica.com/topic/feminism

Cambridge Dictionary. (n.d.). Meaning of patriarchy in English. https://dictionary.cambridge.org/dictionary/english/patriarchy

Carpio-Pinedo, J., De Gregorio Hurtado, S., & Sánchez De Madariaga, I. 2019. Gender Mainstreaming in Urban Planning: The Potential of Geographic Information Systems and Open Data Sources. *Planning Theory & Practice*, *20*(2), 221–240. https://doi.org/10.1080/14649357.2019.1598567

CEMR. n.d.. *» The European Union and Gender Equality - Observatory of the European Charter*. Charter Equality. Retrieved June 4, 2021, from https://charter-equality.eu/the-charter/the-eu-and-gender-equality.html

Civitas. (2020). *Gender Equality and Mobility: Mind the Gap!* https://civitas.eu/sites/default/files/civ_pol-an2_m_web.pdf

Criado Perez, C. 2019. *Invisible Women: Exposing Data Bias in a World Designed for Men*. Penguin Random House UK.

Collins Dictionary. n.d. Definition of “urban planning.” Collins. https://www.collinsdictionary.com/dictionary/english/urban-planning

European Commission (EC). 2020. A Union of Equality: Gender Equality Strategy 2020-2025. COM/2020/152 final. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0152&from=EN

European Data Journalism Network. 2018, March 8. *Women still work more and enjoy less free time*. https://www.europeandatajournalism.eu/eng/News/Data-news/Women-still-work-more-and-enjoy-less-free-time

European Institute for Gender Equality. 2020, September. *Urban mobility. Gender-sensitive infrastructure*. https://eige.europa.eu/publications/gender-equality-and-urban-mobility

Fainstein, S. S. n.d. *Urban planning*. *Encyclopedia Britannica*. https://www.britannica.com/topic/urban-planning

Gauvin, L. (2020, June 17). *Gender gaps in urban mobility*. Humanities and Social Sciences Communications. https://www.nature.com/articles/s41599-020-0500-x?error=cookies_not_supported&code=75545026-0302-478f-852a-d8a35e6d5f74

González-Sánchez, G., Olmo-Sánchez, M. I., & Maeso-González, E. 2021. Challenges and Strategies for Post-COVID-19 Gender Equity and Sustainable Mobility. Sustainability, 13(5), 2510. https://doi.org/10.3390/su13052510

iabuk. 2019, June 20. *Caroline Criado Perez at Engage 2019* [Video]. YouTube. https://www.youtube.com/watch?v=hB92hQeCEAw&feature=youtu.be

Include Gender. 2014, February 18. *Gender Equal Snow Clearing in Karlskoga | Include Gender*. https://www.includegender.org/gender-equality-in-practice/planning-and-urban-development/gender-equal-snow-clearing-in-karlskoga/

ITF. (2021, March 8). *ITF work on Gender in Transport*. https://www.itf-oecd.org/itf-work-gender-transport

Johnston-Zimmerman, K. 2017, December 19. *Urban Planning Has a Sexism Problem*. Next City. https://nextcity.org/features/view/urban-planning-sexism-problem

Kassim, A., Ismail, K., & McGuire, S. 2018. Operational Evaluation of Central Sharrows and Dooring Zone Treatment on Road User Behavior in Ottawa, Canada. *Transportation Research Record: Journal of the Transportation Research Board*, *2672*(36), 136–144. https://doi.org/10.1177/0361198118787092

Kern, L. 2020. *Feminist City: Claiming Space in a Man-Made World*. Verso.

Leyendecker, K. 2019. *Women activists' experience of local cycling politics*. https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.799745

Lubitow, A., Carathers, J. D., Kelly, M., & Abelson, M. 2017. Transmobilities: mobility, harassment, and violence experienced by transgender and gender nonconforming public

transit riders in Portland, Oregon. *Gender, Place & Culture*, *24*(10), 1398–1418. https://doi.org/10.1080/0966369x.2017.1382451

McKay, J. 2019, November 22. *Transport or Mobility: What's the difference and why does it matter?* Forum for the Future. https://www.forumforthefuture.org/blog/transport-or-mobility

Masequesmay, G. n.d.. *sexism | Definition, Types, Examples, & Facts*. Encyclopedia Britannica. Retrieved May 16, 2021, from https://www.britannica.com/topic/sexism

Pirdavani, A., Daniels, S., van Vlierden, K., Brijs, K., & Kochan, B. 2017. Socioeconomic and sociodemographic inequalities and their association with road traffic injuries. *Journal of Transport & Health*, *4*, 152–161. https://doi.org/10.1016/j.jth.2016.12.001

Summa Linguae. 2021, April 27. *Types of Transcription Explained: Verbatim vs. Intelligent vs. Edited Transcription*. https://summalinguae.com/data/verbatim-vs-intelligent-vs-edited-transcription/

Sustainable Mobility for All. 2017. *GLOBAL MOBILITY REPORT 2017: Tracking Sector Performance*. https://openknowledge.worldbank.org/bitstream/handle/10986/28542/120500.pdf?sequence=6

Tadepalli, A. 2020, August 28. What Would a Feminist City Look Like? *In These Times*. https://inthesetimes.com/article/feminist-city-leslie-kern-new-york-city-abolition-park

TED. 2013, December 6. *Enrique Peñalosa: Why buses represent democracy in action* [Video]. YouTube. https://www.youtube.com/watch?v=j3YjeARuilI

The Merriam-Webster Dictionary. n.d.. *mobility*. The Merriam-Webster.Com Dictionary. Retrieved May 15, 2021, from https://www.merriam-webster.com/dictionary/mobility

UN Women. 2010, October 30. *Safe Public Transit for Women and Girls*. https://www.endvawnow.org/en/articles/252-safe-public-transit-for-women-and-girls-.html

Worldbank. (n.d.). Handbook for Gender-Inclusive Urban Planning and Design. World Bank. Retrieved June 10, 2021, from https://www.worldbank.org/en/topic/urbandevelopment/publication/handbook-for-gender-inclusive-urban-planning-and-design

Worldbank. 2019. *GLOBAL ROADMAP OF ACTION - Toward Sustainable Mobility: Gender*. https://pubdocs.worldbank.org/en/229591571411011551/Gender-Global-Roadmap-of-Action.pdf

Worldbank. 2020. *Gender-Inclusive Urban Planning Design*. The World Bank. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjeg4_ptYvxAhUFM-wKHdpzDJ4QFjANegQIHhAE&url=https%3A%2F%2Fopenknowledge.worldbank.org%2Fbitstream%2Fhandle%2F10986%2F33197%2F145305.pdf&usg=AOvVaw1rlJfzlLKhwamx9O45wGWw

APPENDICES

Appendix I - Interview Guide

Appendix II - Coding Tree

Appendix I - Interview Guide

“Hello [name],

Thank you for agreeing to this interview.

Before we start, I have to ask you for your consent on recording this interview for the purpose of transcribing it later.

Would you like to keep your identity anonymous in my thesis or may I mention your name when presenting my findings?

I will send you a consent form per mail for you to sign and send back to me.

Let me first give you a brief introduction to the topic of my master thesis and my motivation.

You might have heard of the bestselling book by Caroline Criado Perez “Invisible Women”. It’s about the gender data bias in this world. In the first chapter, she describes how Sweden ended up saving money by asking whether snow plowing is sexist. When I read this chapter, I became fascinated with discovering where else sexism lies within urban mobility.

Additionally, I am an ecofeminist activist, which means that I actively participate in the conversation and debate on how to make this world a better place, that is a more environmentally friendly, feminist and anti-racist world to name a few.

So, I am interested in knowing where sexism is both obvious and hidden in European urban mobility, and how we can tackle these issues and implement feminist or gender-sensible urban mobility.

Do you have any questions so far?”

---

1) Could you tell me a quick two sentences about yourself and how you relate to this topic?
    a) Urban mobility
    b) Gender studies
    c) Urban planning
2) Do you perceive a difference between females and males in urban mobility and if so, which?
    a) Urban mobility planning
    b) Implementation
    c) Use of urban mobility
    d) Safety
    e) Data bias
3) Where do you see disadvantages for female-identifying people in urban mobility?
    a) Quotas (planning)
    b) Underlying / structural sexism
    c) Planning for men → consequences
    d) Safety
    e) Financial

4) What would or does a feminist urban mobility look like to you?
    a) Quotas
    b) Use
    c) Safety
    d) Type of mobility
    e) Specific examples
5) How do you think can we reach this feminist urban mobility? What tactics should be implemented?
    a) Quotas
    b) Planning team
    c) Stakeholder involvement
    d) Planners - researcher cooperation
    e) Intersectional planning process
6) How could this knowledge be used by entrepreneurs?
    a) Transport companies need to become entrepreneurial
    b) Problem-solving
    c) Institutional entrepreneurs → changing policies

7) Which research questions does this field still need to answer? Where are gaps in the research field?

8) Do you have any other thoughts on this topic that I have not specifically asked for so far?

    a) Other priorities

    b) Other discrimination

    c) intersectionality

Appendix II - Interviewees

José Carpio Pinedo is an architect and a PhD in City and Regional Planning. His fields of expertise include sustainable mobility, spatial analysis, and pedestrian planning. Together with two gender-sensitive planning experts, he published a paper on “Gender Mainstreaming in Urban Planning”.

Lieke Ypma is a designer and engineer. She is the co-founder of an innovation strategy consulting firm. Upon learning about the mobility differences perceived in gendered data from the book “Invisible Women”, she co-organised a workshop to understand what mobility truly feels like for women (Criado Perez, 2019). She is a speaker and writer on female mobility and a lecturer in a smart city design master programme

Katja Leyendecker is an environmental engineer, mobility expert and PhD. She wrote her dissertation on ‘Women activists’ experience of local cycling politics‘, a comparison of the cycling politics in Bremen, Germany and Newcastle, UK, to make women voices heard and to describe the intricacies of campaigning for cycling space in a car-centric environment.

Frieda Bellmann is a designer and director of human-centered innovation at a consulting firm. She co-organised the workshop on female mobility with Ypma and has co-published several articles on female mobility among others.

Wiebke Unbehaun is a mobility and gender expert. She studied spatial planning and has since mostly worked in the traffic sector. She does research on gender mobility and transformation of public spaces among other topics.

Lina Mosshammer is an urban planner. Since her studies she is involved with several associations. Through her work and volunteering, she developed a focus on sustainable, flexible, user-centered and gendered mobility, eventually co-founding the ‘Women in Mobility’ Hub in Vienna.

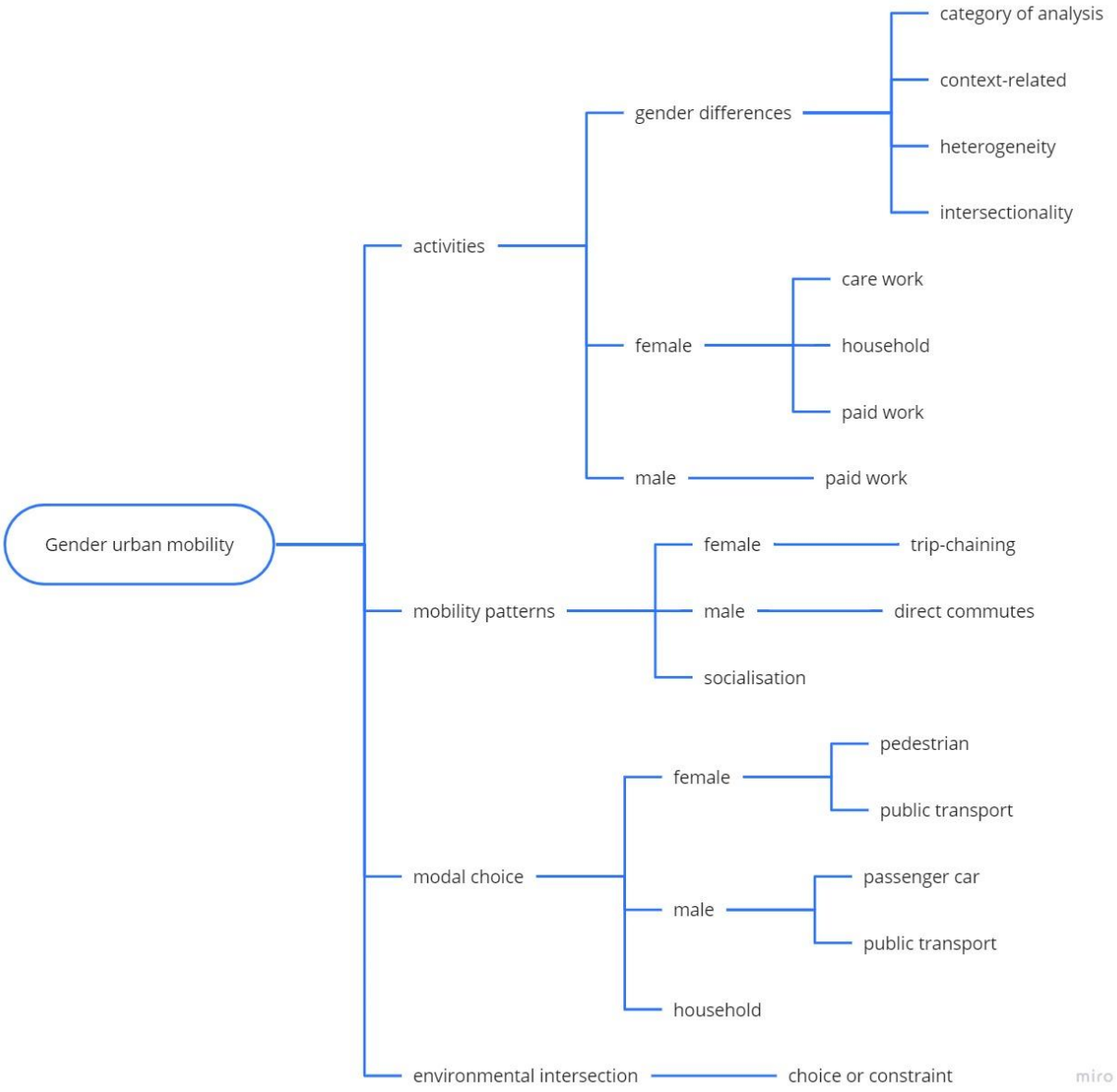
Guadalupe González Sánchez is a researcher and PhD from the University of Malaga, Spain, with her interests being related to transport management and sustainable mobility. She is co-author of multiple publications, including one on the “Challenges and Strategies for Post-COVID-19 Gender Equity and Sustainable Mobility”.

Appendix III - Coding tree

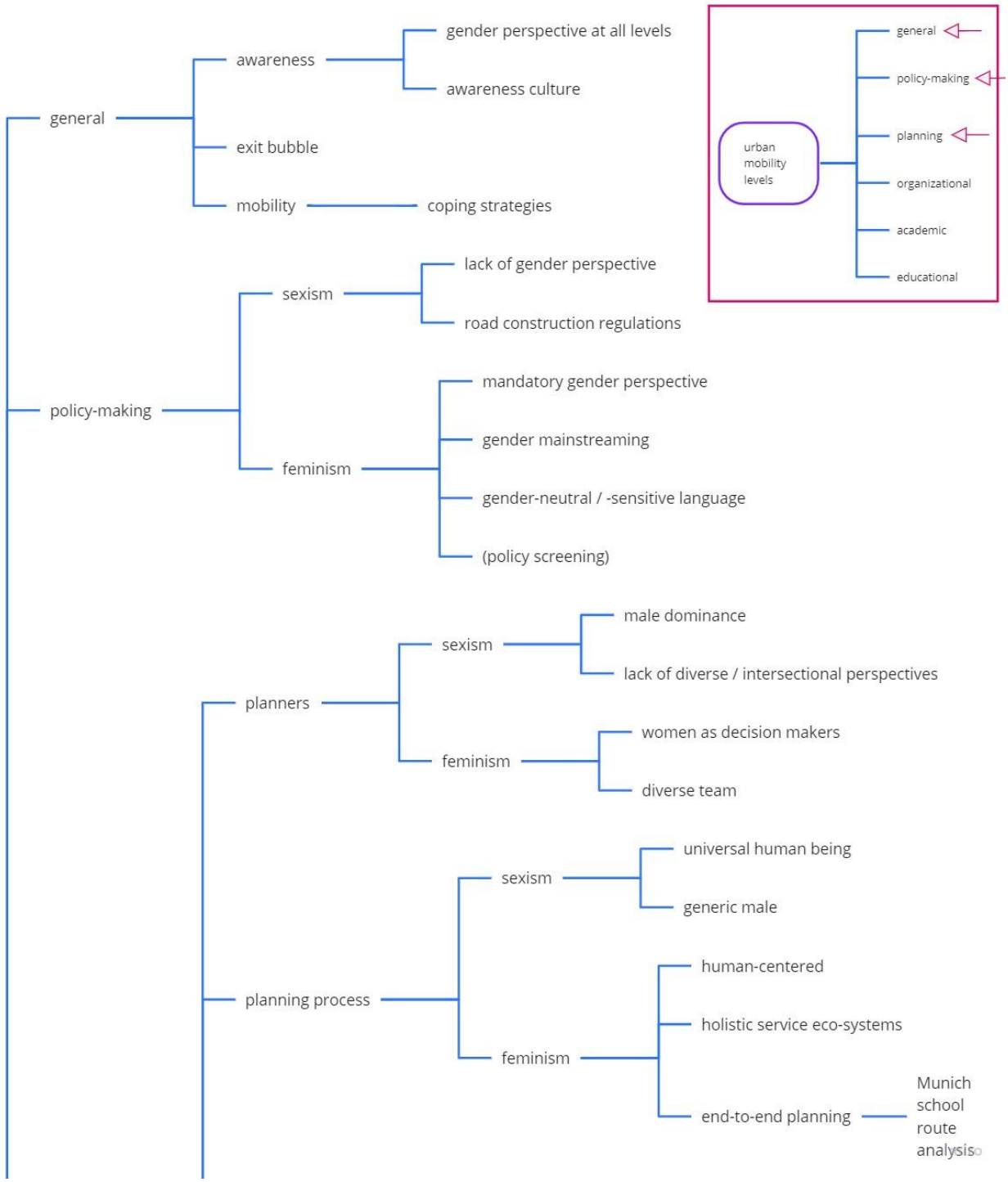
shorturl.at/hACJ3

1

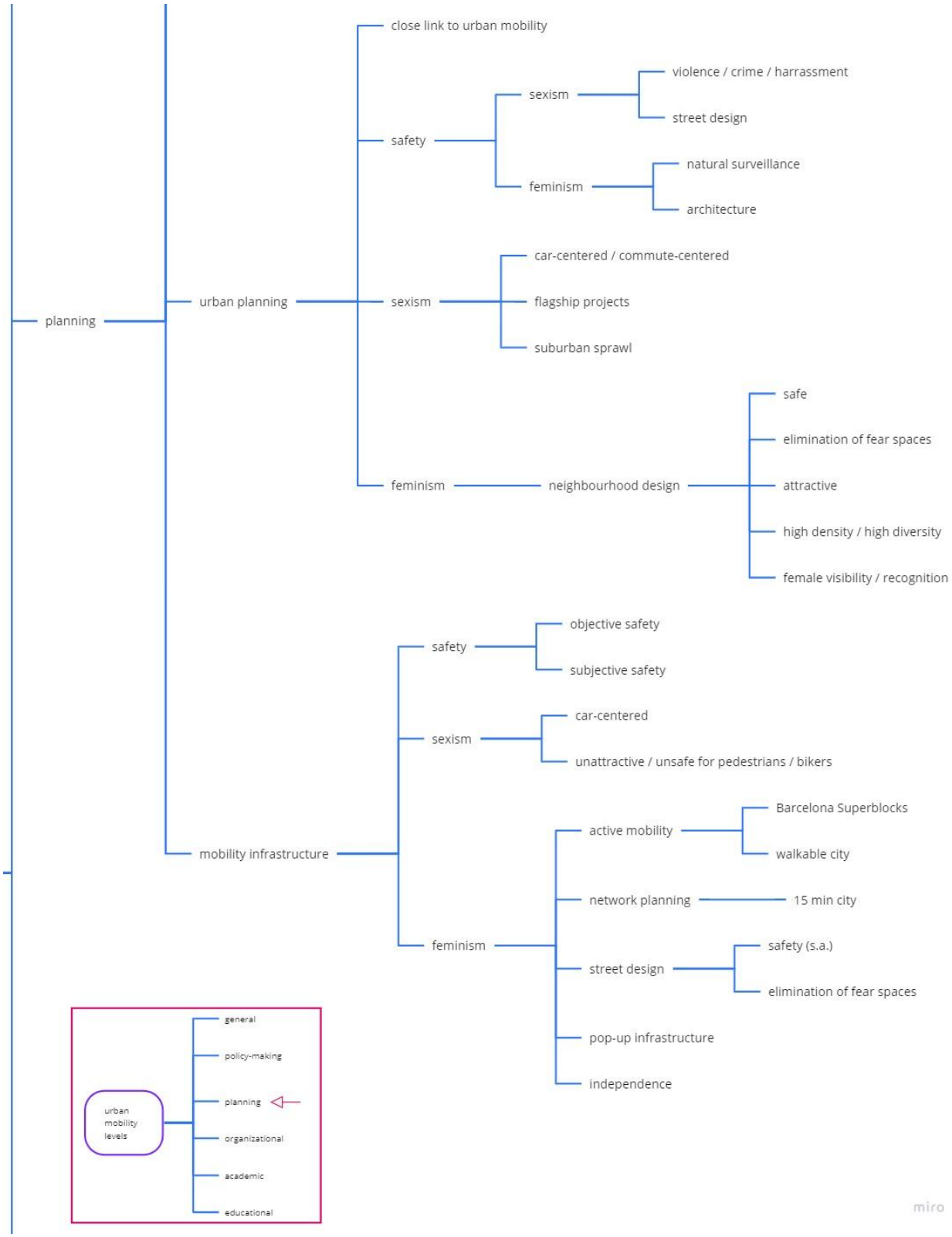
2


Gender urban mobility
activities
gender differences
category of analysis
context-related
heterogeneity
intersectionality
female
care work
household
paid work
male
paid work
mobility patterns
female
trip-chaining
male
direct commutes
socialisation
modal choice
female
pedestrian
public transport
male
passenger car
public transport
household
environmental intersection
choice or constraint
miro

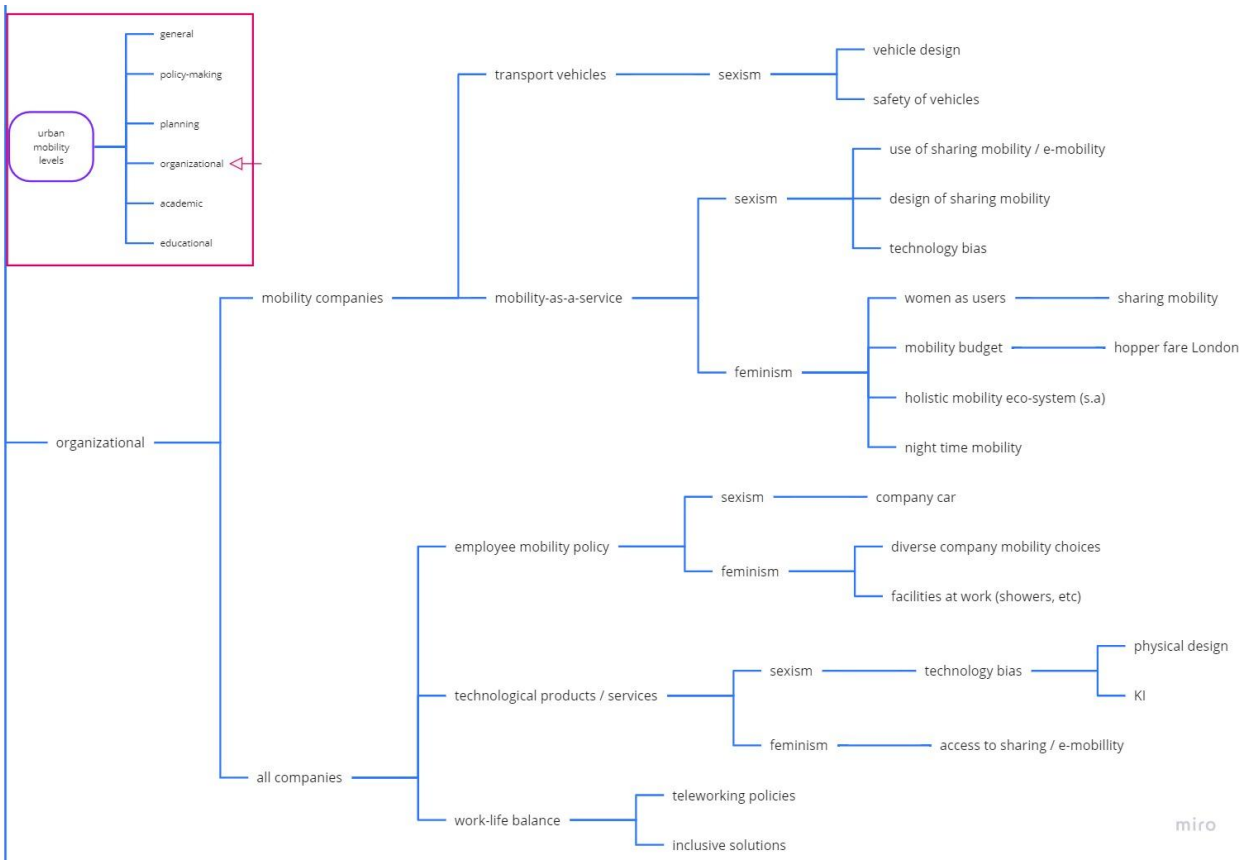
3


general
awareness
gender perspective at all levels
awareness culture
exit bubble
mobility
coping strategies
policy-making
sexism
lack of gender perspective
road construction regulations
feminism
mandatory gender perspective
gender mainstreaming
gender-neutral / -sensitive language
(policy screening)
planners
sexism
male dominance
lack of diverse / intersectional perspectives
feminism
women as decision makers
diverse team
planning process
sexism
universal human being
generic male
feminism
human-centered
holistic service eco-systems
end-to-end planning
Munich school route analysis
urban mobility levels
general
policy-making
planning
organizational
academic
educational

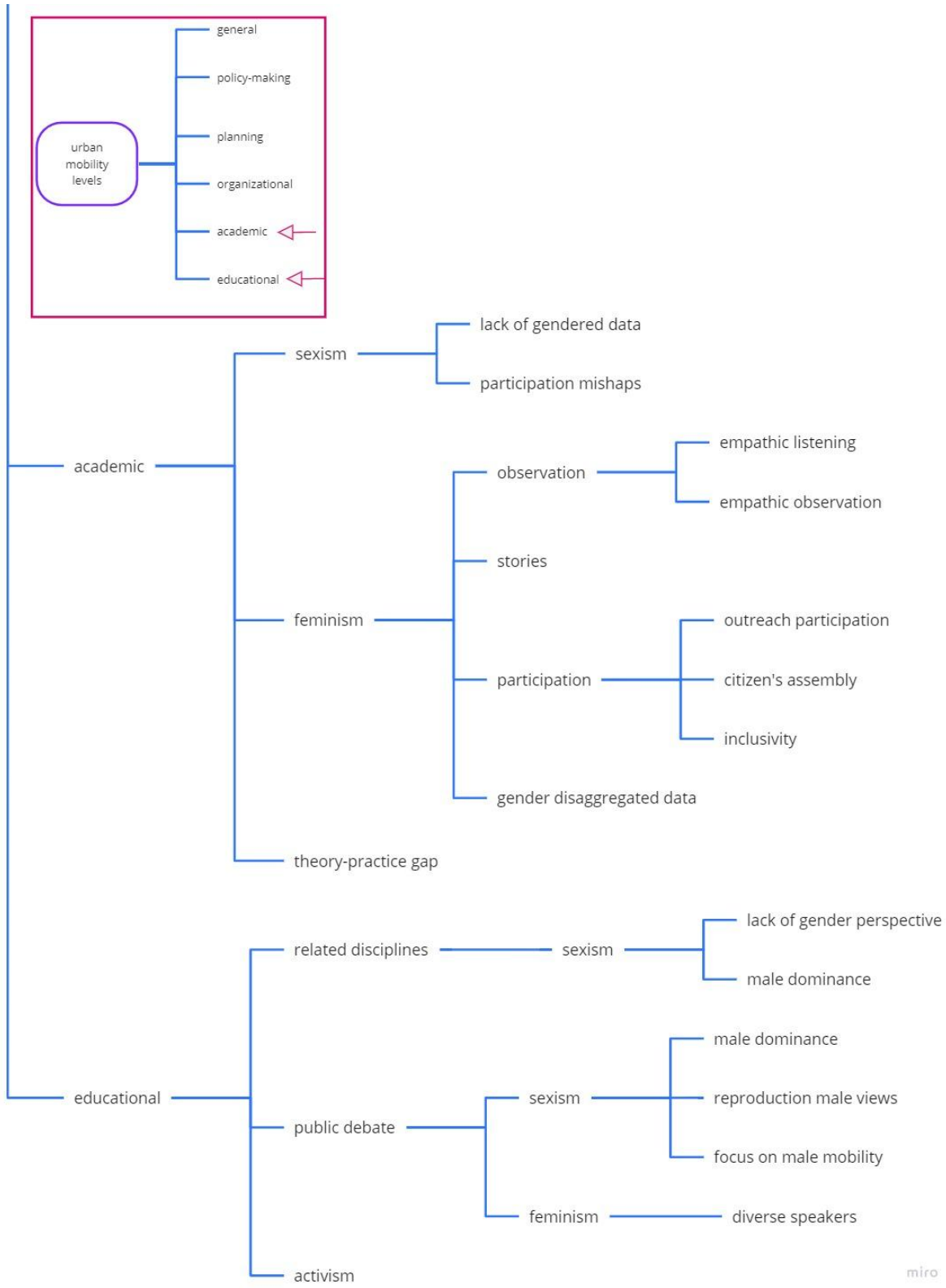
4


planning
urban planning
close link to urban mobility
safety
sexism
violence / crime / harrassment
street design
feminism
natural surveillance
architecture
sexism
car-centered / commute-centered
flagship projects
suburban sprawl
feminism
neighbourhood design
safe
elimination of fear spaces
attractive
high density / high diversity
female visibility / recognition
mobility infrastructure
safety
objective safety
subjective safety
sexism
car-centered
unattractive / unsafe for pedestrians / bikers
feminism
active mobility
Barcelona Superblocks
walkable city
network planning
15 min city
street design
safety (s.a.)
elimination of fear spaces
pop-up infrastructure
independence
urban mobility levels
general
policy-making
planning
organizational
academic
educational
miro

5


urban mobility levels
general
policy-making
planning
organizational
academic
educational
organizational
mobility companies
transport vehicles
sexism
vehicle design
safety of vehicles
mobility-as-a-service
sexism
use of sharing mobility / e-mobility
design of sharing mobility
technology bias
feminism
women as users
sharing mobility
mobility budget
hopper fare London
holistic mobility eco-system (s.a)
night time mobility
all companies
employee mobility policy
sexism
company car
feminism
diverse company mobility choices
facilities at work (showers, etc)
technological products / services
sexism
technology bias
physical design
KI
feminism
access to sharing / e-mobillity
work-life balance
teleworking policies
inclusive solutions
miro

6


urban mobility levels
general
policy-making
planning
organizational
academic
educational
academic
sexism
lack of gendered data
participation mishaps
feminism
observation
empathic listening
empathic observation
stories
participation
outreach participation
citizen's assembly
inclusivity
gender disaggregated data
theory-practice gap
educational
related disciplines
sexism
lack of gender perspective
male dominance
public debate
sexism
male dominance
reproduction male views
focus on male mobility
feminism
diverse speakers
activism
miro