3. Mathematical Disobedience
Connectivity, Sense-Making, and Political Subjectivities

Our toes, our noses
Take hold on the loam,
Acquire the air.
Sylvia Plath, Mushrooms (1967), 34

3.1 Epistemic Disobedience against *Mathematics*
A Subversion of Sense-Making

The first two chapters of this thesis have established it's the epistemically violent role of *Mathematics* in the *Mathematics-Rationality-Human* Continuum. The last two chapters of this thesis are responses to my findings on the *Mathematics-Rationality-Human* Continuum as a continuum of violence.

Both chapter three and chapter four work to re-make the continuum; however, they differ in their approach and in their temporalities. This chapter explores forms of mathematical disobedience, i.e., forms of disobedience to the *Mathematics-Rationality-Human* Continuum, that can still be related to the bodies of meaning formed by the continuum. So, chapter three moves at the temporality of what I call future 1 – a future that is close to the now, the contemporary, because it directly connects to contemporary bodies of meaning-making, sense-making, and subjectification. *Mathematical disobedience* therefore keeps *Mathematics* and the *Mathematics-Rationality-Human* Continuum as a reference point while moving to subvert the continuum by making it less epistemically violent. So, chapter three proposes politically strategic modes of *Mathematical disobedience* while chapter four puts forth an intervention and field of epistemic resistance by seeking radical difference in the realm of mathematical practice.

Mathematical disobedience seeks to reference *Mathematics* and to subvert aspects of its hegemonic politics precisely by doing so. As such, it is a disobedient appropriation of *Mathematics* and draws on modes of subversion that are aware

of *Mathematics* as an image of thinking-being. I explore *Mathematical disobedience* by seeking to uncover disobedience to each of the following seven aspects of *Mathematical* epistemic violence[1]:

1) The establishment of the *Mathematical-Human* Continuum through the interweaving of *Mathematical Subjectivity* and *Human Subjectivity*;
2) The conceptual making of *Mathematics* as *white* and *masculine,* and along with this, the ongoing imprinting of the figure of the *Mathematician* as a *white* and *male* mode of being and of thinking;
3) The existence of *Mathematics* as a hegemonic and normalized mode of communication;
4) The role *Mathematics* plays in construing and legitimizing universalist ideals and images of thinking-being;
5) The functionality of *Mathematics* as a hegemonic norm for forms of expression in political, personal and theoretical spheres;
6) The manner in which *Mathematics* stabilizes the hegemonic lives of *Rationality* and the *Human* through its role in the *Mathematics-Rationality-Human* Continuum; and
7) The role of *Mathematics* in the continuous reproduction of hegemonic binaries and in the legitimization of forms of *thinking-in-binarities*.

Each of these hegemonic dimensions of *Mathematics* and the *Mathematics-Rationality-Human* Continuum is examined in its own sub-chapter through exploration of potential forms of *Mathematical disobedience*. to each of the hegemonic lives of *Mathematics*. I will propose possibilities for *Mathematical disobedience* and then assess the potentialities of the proposed forms of *Mathematical disobedience*. These endeavors draw from existing work on epistemic disobedience and bring it into conversation with *Mathematics*. These endeavors of *Mathematical disobedience* share that they do not aim to overthrow the *Mathematics-Rationality-Human* Continuum, but rather, aim to disobediently appropriate the logics of the continuum and to do so precisely because they strategically

1 I understand these seven aspects to be particularly central to my investigations from chapters one and two. However, these aspects are by no means an exhaustive list of the hegemonic dimensions of *Mathematics, nor are they* an exhaustive list of possible starting points for forms of rebellion. Rather, I sketch out proposals along these seven aspects with the explicit wish that they provide grounds for a more comprehensive discourse on forms of rebellion against *Mathematics.*

connect to the bodies and logics of the continuum. Each version of *Mathematical Disobedience* is introduced by means of an example of the respective practice of *Mathematical Disobedience*. From each example I then deduce a more general characterization and definition of the respective mode of *Mathematical Disobedience* in order to then take note of the possibilities and potentialities of the respective form of *Mathematical Disobedience*.

Important to note is that I do not understand this endeavor to move in opposition to the approaches of chapter four. Rather, I understand resistance too, as a continuum moved and shaped by different poles. Therefore, chapter three moves with the logic of strategically connect the hegemonic bodies of meaning, while chapter four will be a movement of resistance guided by a different logic – one that does not of reference the continuum.

3.2 A Disobedient Appropriation
Subverting Mathematical Subjectivity

As I have established in my reconstruction of the *Mathematics-Rationality-Human* continuum *Mathematical Subjectivity* in Hottinger's sense is a form of *subjectivity* that comes into existence through *Mathematics* and shapes *the human* as an image of thinking-being. Here I explore possible forms of *Mathematical disobedience* towards *Mathematical subjectivity* that is conceptually continuous with *human subjectivity*.

Hottinger develops the concept of *Mathematical subjectivity* in order to draw attention to a specific conception of subjectivity, which explicitly refers to the spheres of *the Mathematical* and is interwoven with specifically Western ideals and conceptions of subjectivity in general (Hottinger 2017, 6). *The West understands itself in relation to Mathematics*, Hottinger writes, meaning that Western understandings of subjectivity and of being human are conceptually interwoven with a specifically Western idea of mathematical activity – *Mathematics* (Hottinger 2017, 12). Resultingly, *Mathematics* constructs a conceptual continuum on the basis of an exclusive conception of *the human*[2] (Hottinger 2017, 12). In addition, *Mathematics* informs, legitimizes and normalizes the exclusions of *the human* by interweaving *Mathematical subjectivity* with *Rationality* and *the human thus* establishing specifically Western and patriarchal modes and criteria for all three of these concepts, such as *universalism* and *individualism* (Hottinger

2 See also the explanations in chapter one of this thesis.

2017, 12). This *Mathematical subjectivity*, according to Hottinger, produces and reproduces patriarchal and colonial forms of exclusion by conceptually placing them in opposition to *blackness* and *femininity* (Hottinger 2017, 8–10).

Hottinger orients herself using works that operate in the field of *Mathematics* without engaging the conceptual opposition between *Blackness* versus *Mathematical subjectivity* nor of *femininity* versus *Mathematical subjectivity*. Hottinger discusses the work of Danica McKellar as an attempt to intervene in the hermeneutic structure that produces *femininity* and *Mathematics* as *mutually exclusive*. McKellar, herself an actress and an academically successful mathematician[3], wrote middle-school mathematics textbooks that center engaging those who identify as *feminine* with the idea of *femininity* in *Mathematics*. The covers of McKellar textbooks feature herself in playful poses and smiling into the camera. By centering her image, using bright colors and playful fonts, and inclusion in the titles of some subchapters on the book that reference article-titles of magazine covers, these covers lean on the aesthetics of 'girl magazines' rather than on those common for (mathematics textbooks). Her titles are equally playful and speak to those identifying as *girls*: "Math doesn't suck – How to survive middle school math without losing your mind or breaking a nail" or "Kiss My Math: Showing Algebra who's Boss." Throughout McKellar's books, all the characters engaging in Mathematics –explaining it, enjoying it, and excelling at it – are girls. Hottinger rightfully points out how this is indeed rare since the most common middle school textbooks offer clearly gendered imbalances in that they favor narratives in which boys are 'the one mathematically capable' (Hottinger 2017, 25–38). McKellar's chapters each open with a story that features a scenario commonly associated with *femininity* , which goes on to introduce *Mathematical knowledge* through this story.

Through these practices McKellar quite literarily re-writes what a mathematics textbook is, looks like, how it moves, and who it portrays. This re-writing, Hottinger argues, boils down to McKellar intervening into the framework that makes *Mathematics*, *Mathematical practice* and *knowledge* masculine-coded, and masculine dominated. McKellar herself describes her vision as follows, "My method is to write books that look more like teen magazines than math books and say, look at how girly math can be. It doesn't have a gender line. It's for you, too. Math is going to make you—it's going to make you smarter; you're

3 McKellar coauthored a groundbreaking mathematical physics theorem that bears her name. For more information and a more detailed and nuanced discussion of her work see Hottinger 2017, *The Discursive Construction of Gendered Subjectivities*.

going to feel more confident because you know how to handle a challenge and really go for it and then become more popular because of it" (McKellar 2008b, quoted in Hottinger 2017).

Look at how girly math can be is another way of saying: *Mathematical Subjectivity* is not inherently masculine and by extension, neither is subjectivity in general, nor is being-human. By insisting on Mathematics as *always potentially feminine,* McKellar queers the *masculinity* moving through *Mathematical Subjectivity* and all forms of subjectivity implicitly referring to *Mathematical Subjectivity*. Furthermore, McKellar *It's for you too* is a direct call to those who have been estranged from *Mathematics* precisely because of its conceptual entanglement with *masculinity*. She concludes by linking the intellectual empowerment that *Mathematical Practice* can be to a general sense of confidence.

Like Hottinger, I too understand McKellar's insistence on 'girly Math' as a practical and conceptual intervention into the masculinity moving through Mathematics. And much like McKellar notes herself, this goes deeper than engaging girls in Math – it is an attempt to engage girls with a confidence that has been conceptually and historically constructed as not-theirs to inhabit. And yet, here is McKellar, committing to the idea that girls can inhabit *Mathematics*, confidence, and *femininity* all at once. This might seem trivial, but in societal structures built to estrange girls from *Mathematics* and from their own sense of intellect, I do not believe it is trivial. McKellar published four 'girly Math books', – all of which became New York Times bestsellers, and goes to show there are people in the market for exactly the feminine-Math-intervention that McKellar is staging.

Another example that moves horizontally through Mathematical Subjectivity is a book I stumbled upon in the endeavor of writing my Bachelor Thesis in (Feminist) Philosophy of Mathematics entitled, *How to free your inner Mathematician – Notes on Math and Life* by Susan D'Agostino (year). D'Agostino's book is a mathematics workbook that, much like McKellar's work, approaches its reader with playfulness, accessibility, and empowerment. However, it differs its commitment to do so in so far as D'Agostino's book is marketed towards adults.

D'Agostino introduces mathematical theorems, and notions by giving metaphorical meaning to mathematical topics, offering playful exercises, sketches, and humor. In her introduction to the book, she tells the story of her own mathematical practice. She explains that she had felt estranged from the field, intimidated even, while she has always remained highly compelled to actively engage with *Mathematics* herself (D'Agostino 2020, 1 f.). She explains how she needed to engage with *Mathematics* intuitively and playfully and

how she needed to reassure herself that she can struggle with and through her *Mathematical practice* without understanding this intellectual struggle as any sort of incapability or failure. Her book stresses the role of intuition and playfulness and understands *Mathematics* as an intellectual adventure that might help coping with life and moving through the messiness that is living. D'Agostino frequently turns the theorems or questions she is discussing into metaphors for 'life advice.' Thus, making *Mathematics* into something, touchable, feelable, into something for which – much like life – people might have an intuition.

Both McKellar and D'Agostino change aspects of the conceptual make-up of *Mathematical Subjectivity*. McKellar queers the construction of *Mathematical Subjectivity* by showing *Femininity* as mutually exclusive with it. D'Agostino queers the harshness, the linearity, the seriousness that is commonly part of *Mathematical Subjectivity*. Both of these queerings result in *Mathematical Subjectivity* being made accessible through different modes for people who are likely to have been excluded by the conventional meaning of *Mathematical Subjectivity*.

Drawing from these considerations, I propose to define the subversion of *Mathematical Subjectivity* as any practice that changes aspects of the exclusionary criteria and dimensions of *Mathematical Subjectivity* and thus enlarges conceptual, practical, and emotional access to *Mathematical Subjectivity*. This establishes two criteria for epistemically disobedient appropriations of *Mathematical Subjectivity*: A) the practice in question queers at least one exclusionary aspect of *Mathematical Subjectivity*; B) people, contexts, modes otherwise excluded from *Mathematical Subjectivity* are given (at least on the level of the conceptual) a place in the realm of *Mathematical Subjectivity*.

These subversive acts move not solely using the *logic of addition but* also move to queer the very meaning of *Mathematical Subjectivity*. Furthermore, practices like these showcase the politics of *Mathematical Subjectivity*. Both McKellar and D'Agostino link *Mathematical Practice* to a more general sense of confidence. I believe this linkage can be very emotionally real precisely because of the hermeneutical structures surrounding, entrenching, and making *Mathematical Subjectivity*. This is because due to the Western entanglements of *Mathematics*, *Rationality*, and *Being-Human*, one very literally becomes *more human* when practicing *Mathematics*. Therefore, a disobedient mode of moving through these entanglements utilizes them to form practices that enlarge the conceptual and emotional access to the generally highly exclusive notion

of *the Human*. Subverting *Mathematical Subjectivity* does this by utilizing the conceptual entanglements of *Mathematical Subjectivity* and *Human Subjectivity*.

Personally, I believe practices like these to move on a strategic, preliminary level, since I am convinced that *the Human* is violent beyond repair. However, that does not mean that there are no cracks, leaks, and termite tunnels to move through and this is what subversions of *Mathematical Subjectivity* aim to do; they move to make termite tunnels that disobediently enlarge *the Mathematical*, *the Rational*, and *the Human*.

Considering this definition and the works of McKellar and D'Agostino, allows me to point out four possibilities to engage in subversion of *Mathematical Subjectivity*. This list lays no claim to completeness but rather outlines four possible ways of disobediently appropriating *Mathematical Subjectivity*.

A) Queering Binaries that underlie *Mathematical Subjectivity* can be engaged to subvert dualisms and images of thinking-being. Examples of such underlying binaries could be the conceptual opposition of *Femininity* versus *Mathematical Subjectivity*, *Femininity*[4] versus *Intellectuality* more generally, or binary concepts such as the *Emotionality-Rationality* dualism.
B) Subversions moving in this mode find ways to disrupt, disturb, question, and queer such binaries through their appropriation of *Mathematical Subjectivity*. Both McKellar's and D'Agostino's work can be taken up as examples. McKellar queers the *Femininity/Mathematics-Binary* and the *Femininity/Intellectuality-Binary* and D'Agostino moves to queer the traditional *Rationality/Emotionality-Binary* by focusing on emotion and intuition in her modes of introducing *Mathematics*. This mode of practicing and teaching *Mathematics* bears potential to subvert some of the binaries underlying *Mathematics* as a modality of thinking-being.
C) Subversion of Mathematical Subjectivity can be engaged by pluralizing forms of access and modes of studying *Mathematics*. One element of *Mathematical Subjectivity* is the restrictiveness of what is taken to be *Mathematical Practice*. Drastically pluralizing what is understood as *Mathematical Practice* or *Mathematical Study* thus subverts *Mathematical Subjectivity* by queering the restrictive modes it inhabits. This entails pluralizing the bodyings of

4 I employ the notion of femininity similar to how Hélène Cixous employs the notion of womanhood – as a figure of radical difference, minoritized due to its immensity and always bearing the potentiality to rediscover its immensities (Cixous 1976, Cixous and Clément 1986).

Mathematical Practice (*How do bodies look that do 'Math?'*), the methods and modes of study, and the existing options to engage in *Mathematical Practice*. Both McKellar and D'Agostino take part in this in emphasizing playfulness and in making visible intellectual struggle in *Mathematical Practice*.

D) Pluralizing images of *Mathematical Practice, such as is done with the textbooks,* subverts and leads to pluralization of representations of *Mathematical Practice*. Thus, intervening into the discursive landscape that makes *Mathematical Subjectivity* as outlined above.

E) Pluralizing images of *Mathematicians* is a mode of subversion that also moves at the level of representation in emphasizing the (contemporary and historical) variety of *Mathematicians*. Because as Hottinger has shown, *women Mathematicians* as well as Black *Mathematician* did and do exist but are hardly ever portrayed in conventional books on the history of *Mathematics* (Hottinger 2017, 49 f.). This, as Hottinger also shows, is one of many discursive movements that makes *Mathematical Subjectivity* an exclusive notion and institution. Portrayals of women *Mathematicians* and Black *Mathematician* can thus engage in much more than "just stating that there are women and Black people who are *Mathematicians*." Rather, specific portrayals can be a mode to engage in the queering of binaries underlying *Mathematical Subjectivity*, e.g. the portrait of Émilie du Châtelet disturbs the *Femininity/Mathematics-Binary*. (Hottinger 2017, 109).

I believe there are different potentialities that are shared by all of these modes of subverting *Mathematical Subjectivity*:

A) They engage unruly utilizations of the dominant positioning of *Mathematical Subjectivity*, specifically of its entanglement with *the Human* and *the Rational*. This shows that *Mathematical Subjectivity* can be appropriated by and opened up to those historically and contemporarily relegated to the outskirts. This can be a strategic move of empowerment and even of representation – a chewing at the corners of *the Human* so that this violently exclusive notion is enlarged slightly.

B) Partaking in movements that queer subjectivity and being-human enables critiques of *the Human*, of neoliberal subjectivity. Moreover, movements to queer these notions, confront the exclusionary make-up of *the Human*. Since *Mathematical Subjectivity* is such an integral stabilizer of the Human and of Western and neoliberal modes of Subjectivity, subverting *Mathemat-*

ical Subjectivity is a mode of partaking in this movement to re-construct, de-construct and chew up *the Human* and *the Subject*.

C) Queering *Mathematics is* queering *Mathematical Subjectivity*. *Mathematical Subjectivity* and *Mathematics* are, as I have shown in both Chapter One and Two of this work, deeply interwoven – they are integral to one another. Thus, queerly subverting *Mathematical Subjectivity* is a mode of queering *Mathematics*.

Movements to subvert *Mathematical Subjectivity* share that they consider the hegemonic make-up and the hermeneutical landscape interwoven with *Mathematical Subjectivity* and ? and thus move to disobediently utilize this exact hermeneutical landscape. Subversions of *Mathematical Subjectivity* use movements of queering *Mathematical Subjectivity* to chew tunnels into *the Rational* and *the Human*.

3.3 Disobedient Symbolism
Transforming Images of *Mathematic*

Mathematics as an image of thinking-being is continuously made and kept alive. One of the countless ways this happens is through representations of those who practice Mathematics. While this might seem like a matter of representation only, I do not believe this to be the case. *Masculinity* and *whiteness* exist as categories of gender and race, but also as modalities of thinking-being and both layers are interwoven. So, this is why the systemic dominance of *whiteness* and *masculinity* in portraiture of *Mathematicians* is part of *Mathematics* as an image of thinking-being. This dominance manifests *whiteness* and *masculinity* as modalities of thinking associated with and authorized through *Mathematics* and it signals exactly whose mode of thinking-being *Mathematics* is and is not. This move is then reproduced with *Mathematics*, *the Rational* and *the Human* too.

In her discourse analysis Hottinger relates the construction of *Mathematical Subjectivity* to portraits of *Mathematicians*. Her analysis on the systemic exclusion of women mathematicians and black mathematicians from books on the history of mathematics reveals one of many symptoms of the *Mathematics-Rationality-Human* continuum and how these exclusionary manners of portrayal are one of a multitude of ways of the exclusivity of *the human* works.

As Hottinger (2017) shows, one of countless strands of the construction of exclusive, normative *Mathematical Subjectivity,* lies in the portraiture of *Mathe-*

maticians (Hottinger 2017, 89 f.). I propose the notion of *disobedient symbolism* to account for a) potentialities and possibilities of deliberately queering portraiture of mathematicians and b) to make visible how the question of representation in the context of portraits of Mathematicians is about more-than 'representation' in a superficial sense. While I am all about arguing for more portraits of *Black Mathematicians* and *woman Mathematicians*, I am also arguing that such choices are not only making visible the existence of Black people and woman as *Mathematicians*. Rather, I believe that *Blackness* and *Femininity* and their systemic exclusion from *Mathematics* and *Mathematical Subjectivity* are so integral to Mathematics that portraying *Blackness* and *Femininity* in the context of *Mathematics* is a form of queering and troubling the very notion of *Mathematics*. Such conceptual troubling via portraiture can be understood by drawing from Hottinger's analysis of the portrait of Émilie du Châtelet in contrast to the portrait of Isaac Newton[5].

The portrait of Newton is commonly featured in any conventional book on 'the history of *Mathematics*', while du Châtelet's portrait is usually mentioned in text, but never[6] visually featured. Hottinger understands this to be the case precisely because the portrait of du Châtelet is in deep and visible non-accordance with *Mathematical Subjectivity*. This non-accordance consists of du Châtelet being a woman; however, it also goes deeper. The portrait of du Châtelet features various aspects that are in non-accordance with Mathematical Subjectivity and with Western, Masculine notions of *Intellectuality* more generally (Hottinger 2017, 97 f., 107 f.). Du Châtelet wears clothing deeply conceptualized as *feminine*. Her dress is extravagant and eye catching and features lace, vibrant colors, and sequins (Hottinger 2017, 107 f.). Her expression in the portrait is soft, she looks like she is daydreaming while smiling towards the recipient of the portrait. As such, the air of seriousness integral to Western and Masculine modes of Intellectuality is completely lacking from this portrait (see ibid.). Rather, the portrait of du Châtelet moves with a playfulness – she looks dreamy, plays with a divider, and has different books in front of her, –one of them even featuring a floral cover. Hottinger argues that these aspects of the portrait form the non-accordance of the portrait with Mathematical Subjectivity. Furthermore, she argues this as the reason the portrait is hardly

5 The portrait of Émilie du Châtelet can be found in Hottinger 2017, 109. The portrait of Isaac Newton can be found in Hottinger 2017, 107.

6 This 'never' goes for the popular, conventional books of 'the History of Mathematics.' For more details in this see Hottinger 2017, 89.

ever featured, even if written descriptions of du Châtelet's work are commonly featured.

Contrasting this portrait of du Châtelet with the portrait of Newton makes it almost seem revolutionary. The comparison highlights how deeply the portrait of du Châtelet insists on its non-accordance with *Mathematical Subjectivity* as well as dominant notions of Intellectuality. The portrait of Newton hardly features any color, nor does it feature any books, tools, or items. His clothing is dark and plain, and he is looking away from the recipient of the portrait with a stern, serious expression. As Hottinger argues, this imagery is symbolic of Western and patriarchal notions of *Mathematical Intellectuality* as well as *Intellectuality* more generally.

I believe that Hottinger's analysis shows how portraiture of *Mathematicians* can seriously trouble and queer *Mathematics* as a hegemonic notion of meaning-making for troubling symbolism and imagery integral to Western and patriarchal modes is likely to make the legs that *Mathematics* is standing on tremble. I believe such troubling of integral imagery is integral to bringing up more radical questions and revolutions concerning *Mathematics*. Afterall, such troubling imagery is one way to a) chew on Western and patriarchal dominance in the context of Mathematics and b) to bring up questions concerning *what is considered Mathematics and what is not*. As such, if people can be inspired to seriously ask these questions, they only need to take a few more steps to realize the violent exclusions prominent in *Mathematics*, in *Intellectuality*, in *Humanness*.

Drawing from these considerations, I propose a definition for *Disobedient Symbolism of Mathematics* understood as any Imagery/Representation that subverts expectations brought up by *Mathematics*. These practices of *disobedient symbolism of Mathematics* commit to queering dominant imagery of *Mathematicians*/*Mathematics*/*Mathematical Subjectivity*[7] in their commitments to showing how *Mathematical Practice* has always already been more-than the dominant frameworks of *Mathematics* and *Intellectuality* suggest. For du Châtelet, and her beautiful dresses, did do daydreamy *Mathematics* alongside, though, and with many other beings and modes of doing *Mathematics* in nonaccordance with *Mathematics*.

This definition allows me to note three core criteria for *Disobedient Symbolism of Mathematics*.

7 *Mathematics* shapes *Mathematical Subjectivity* and with that the figure of the *Mathematician*.

A) They subvert expectations/criteria surrounding *Mathematicians*/*Mathematical Practice*.
B) The are committed to showing *what has always been there* – making visible the existence of various mode of being more than and showing the modes of *Mathematical Practice* and *Mathematical Subjectivity* that move in non-accordance with *Mathematics*.
C) Pluralizing imagery of *Mathematicians* and *Mathematical Practice* makes available more accessibility and modes of representation regarding who gets to see themselves within *Mathematics*.

Broadening these considerations, I believe there are (at least) six types of possibilities to practice such *Disobedient Symbolism of Mathematics*:

A) By pluralizing images of *Mathematical practice* and making visible various modes and formats of *Mathematical practice* that subvert the dominance of specific modes of *Mathematical practice*;
B) By pluralizing images of *Mathematicians* and making visible various subjectivities and social roles accorded to the role of Mathematician and thus enlarging the notion of *the Mathematician*;
C) By pluralizing the modes of portraying *Mathematicians*, for example, queering and breaking with classical formats of portraiture that focus on *individuals*[8], focuses on queering *Mathematics* by queering the format of *the portrait*;
D) By de-individualizing imagery of *Mathematical Practice* and *Mathematicians* we go beyond portraiture to deconstruct the individualism common in Western and patriarchal notions of *(Mathematical) Intellectuality*, e.g. by symbolizing and visually representing collective modes of *Mathematical practice* and *Intellectual Practice*[9];
E) finding symbolism and imagery, which emphasize aspects of *Mathematical practice* commonly excluded from visibility: such as collectivity, diverse

8 I do not believe that people are individuals. I refer to the term as a concept. For closer considerations see Manning 2013 and Manning 2020.

9 In the Undercommons Moten and Harney propose to re-write intellectual history by understanding intellectual practice as collective practice – famously pinpointed by Moten's words "study is what you do with other people." See Moten and Harney 2013 for a more detailed account.
See Nana and Kather 2024 for an example of collective intellectual practice.

bodyings, playfulness, and intuition, commits to making visible modes of Mathematical practice that move in non-accordance with *Mathematics*; and

F) Queering/Breaking with particular stereotypes on *Mathematicians/Mathematical practice/Mathematic* helps us discover and make visible imagery and symbolism that breaks with exclusive stereotypes of *(Mathematical) Intellectual Practice*.

Drawing from these considerations, I believe there are six core potentialities of *Disobedient Symbolism of Mathematics*:

A) Through engagement of visibility of various modes of *being-a-Mathematician* and *practicing as Mathematicians* the dominance of Western and patriarchal (*Mathematical*) modes can be subverted;
B) exclusionary imagery of *Mathematicians can be counter-acted as well as* exclusionary images and notions of *Intellectuality* and *Humanness*;
C) Conceptually queering concepts of *Mathematical Practice* and *Being-Mathematician* can make visible the effects modes of being, which are more-than those recognized by *Mathematical Practice* and queering concepts of *Mathematical Practice* and *Being-a-Mathematician* can trouble the hegemonic aspects and dimensions moving through these notions;
D) It can subvert expectations surrounding *Mathematical Practice* and *Being-a-Mathematician*. as *Mathematics* as a hegemonic meaning-maker and stabilizer of power thrives off of the persistence of exclusionary and rigid stereotypes surrounding *Mathematical Practice* and *Being-Mathematician* (such as the stereotypes of girls* and women* being inherently less 'mathematically capable' or the idea that *Mathematics* is always practiced alone by solitary geniuses), by subverting the exact expectations arising from these stereotypes;
E) It can bring about questioning of common understandings of *Mathematics*, *Mathematical Practice*, *Mathematicians* as it calls these notions into question by making visible the modes of being more-than Western and patriarchal modes of (Mathematical) Thought, which makes have visible that they have never been "all that there is" ; and
F) Enlarging access to self-understandings as *Mathematician*, *Intellectual*, *Human*: can enlarge representation, symbolism, and imagery, that participates in the making and re-making of notions of *Mathematician*, *Intellectual*, *Human*; and thus, can enlarge access to self-understandings as *Mathematician*, *Intellectual*, *Human*.

These possibilities and potentialities have in common that they move through modes of *Mathematical Disobedience* on the level of imagery and symbolism. They attempt to subversively utilize how masculinity and whiteness are both a gender/race as well as a modality of thinking-being. These modes of disobedience engage with the power of visuals. They do so by subverting the visual identity and make-up of *Mathematics* in order to chew tunnels right through the body of the continuum – right though the bodies of *the Mathematical*, *the Rational*, and *the Human*.

3.4 Disobedient Connections
Mathematics as Disobedient Communication

In chapters one and two I have demonstrated the entanglement of *Mathematics* with the epistemic value of *being right* and epistemic practice of creating create *forceful knowledge*, i.e., knowledge that moves in the logic of *winning-or-losing* and determines itself to *epistemically win*. This mode of *epistemic winning-or-losing* creates the epistemic ideal that forms *forceful knowledge* – knowledge that comes out as the *epistemic winner*. As I have shown, *Mathematics* is one of the frameworks applied to a) conceptualize the goal of *forceful knowledge* as desirable and possible, b) to normalize and even naturalize the ideal of epistemic force and epistemic winning-or-losing. It is this normalization of epistemic force within and through *Mathematics* as a notion and a practice that I focus on here as I propose a form of epistemic disobedience that is rooted in subverting the normalization of *epistemic force* in and through *Mathematics*.

Shulmans analysis of *Upapatti* and *Axiomatic Proofs* can help to understand the core of this endeavor of disobedience. With her brief analysis of *Upapatti*, Shulman shows that there are indeed mathematical practices, whose workings are not fueled by endeavors of wanting to be right or wanting to be epistemically forceful. Rather, Shulman writes, *Upapatti*, is a practice of mathematical proving in which proof is a communicative endeavor and tool. Upapatti is applied to convey and to communicate ideas, notions, and processes of thought. The focus of this chapter is inspired by precisely this focus on mathematical practice as a form of communication in which *communication* refers to smaller-scale, inter-personal communication.

What moves this chapter is the idea of reshaping *Mathematics* and its practices into forms of communication. My claim is that such endeavors are form of disobedient applications that reclaim *Mathematics* as they take up *Mathematics*

as a framework but subvert one of its core aspects. My claim is that reshaping *Mathematics* as a form of communication is a practice of epistemic disobedience that through which *Mathematics* works against the grain of its hegemonic structures.

This practice of engaging *Mathematics* as disobedient communication revolves around a) using *Mathematics* for the sake of communicating something (politics, notions, feelings, and thoughts) and b) around forming modes of *Mathematics* that de-center the logic of dominance and the dynamic of *winning-or-losing*. Thus, the following criteria can be understood to characterize practices of *Mathematics as Disobedient Communication*:

A) *Mathematical practices and notions thereof*, such as proving, equations, or calculations are applied, taken up, or utilized to communicate a notion, an idea, a feeling, or a thought;
B) *Mathematics* as notion and practice is largely taken up and remains in place, but the focus on epistemic dominance built into Mathematics and normalized through Mathematics undergoes subversion as the logic of dominance authority, and the dynamic of *winning-or-losing* are decentered in *Mathematics*;
C) The notion and practice of *Mathematics as Disobedient Communication* begins with a commitment to both find and invent potentialities of *Mathematics that build and benefit non-hierarchical goals of communication*. I believe mathematical practice facilitates wide-ranging tools of expression; however, in much *Mathematical Practice,* these tools of expression are applied as tools of epistemic domination. Exploring which of these practices intrinsically incorporate domination into their structure and which tools of expression might be applied in non-hierarchical, non-dominant modes is one of many tasks necessary to attempt subversion of *Mathematics*;
D) They focus on mutual understanding in *Mathematical Practice* that is sought out and created; which means committing to a mode of communication that drastically de-centers any mode of hierarchy. The goal is to create mutual understanding of whatever the parties involved aim to communicate/communicate about. In *Mathematics as Disobedient Communication* the focus is to explore ways to bring about such mutual understanding through *Mathematical Practice*; and
E) They center collectivity by focusing on communication *with* others, that seeks to create collective modes through, with, and within *Mathematics*.

Drawing from these criteria I propose six types of possibilities of *Mathematics* as Disobedient Communication. As always, this list lays no claim to completeness but rather aims to further consider and develop the subversive potential of re-appropriating *Mathematics* as a form of communication.

A) Political communication, i.e., using *Mathematical Practices* or modes of expression to articulate political aims, structures, or thoughts, can be drawn from *Mathematics*. A striking example for such a practice can be found in da Silva's Essay *1 (life) ÷ 0 (blackness) = ∞ – ∞ or ∞ / ∞: On Matter Beyond the Equation of Value*. Da Silva establishes the equation *1 (life) ÷ 0 (blackness) = ∞ – ∞ or ∞ / ∞* as an expression of Blackness and as a force of resistance – as *a matter beyond the equation of value* (da Silva 2017, 1).
B) The equation she forms communicates precisely this *beyondness*.
C) As such, utilizing *Mathematics* for political expression bears the potential to form and enlarge modes of communication, political notions, and to draw attention to the political character and structure of *Mathematics*.
D) Drawing from *Mathematics* forms mode of intellectual communication that establish and enlarge modes for communicating ideas, thoughts, notions and facilitates *intellectual togetherness*. This mode of *Mathematics* as disobedient communication draws from Upapatti as a mode of proving and seeks to center practices of intellectual communication in *Mathematics*.
E) *Mathematics* can be used to make communication and visibility of systemic dynamics and political structures. This usage is another more specific mode of drawing from Mathematics for political communication. For example, the way Erin Manning (2020) makes use of the notion of *counting* in, *For a Pragmatics of the Useless*, can be understood as an example of this form of *Mathematics* as disobedient communication. Manning refers to *counting* and *countability* as cases of *whiteness* and *neurotypicality* at play (Manning 2020, 7 f.). Her affiliation between counting, *whiteness*, and *neurotypicality* helps a) to make sense of *whiteness* and *neurotypicality* as logics, as modes of thinking, and of modes of being and b) sheds light on *Mathematics* as an image of thinking-being interwoven with structures of power.
F) Drawing from *Mathematics* for emotional communication utilizes *Mathematical practices* or modes of expression to express emotion. This could take the form of creating equations or proofs that affect oneself and possibly others in a certain way or that bear the potential to express and cause emotions by giving space to such affects.

G) Utilizing *Mathematics* as metaphorical communication draws from *Mathematics* to create metaphors that communicate a feeling, a notion, a logic, a system, or an idea.
H) Drawing from *Mathematics* to communicate notions through forms of symbolism, models, images, or imaginations, makes use of *Mathematical Practices* or *Mathematical Notions* to form modes that convey a notion or an idea for the sake of communications.

These possibilities have in common that they keep *Mathematics* in place as a general framework but draw from it for the sake of forming and inventing modes of communication that are not rooted in a logic of dominance or in a dynamic of epistemic winning-or-losing.

Practices of *Mathematics as Disobedient Communication* bear (at least) the following six potentialities:

A) They can subvert the logics of dominance and dynamics of *Winning-or-Losing* in *Mathematics* and epistemic practices more generally thus making *Mathematical Practices* and *Mathematical Notions* into modes of expression that center based on the core epistemic ideal of communication and subvert the entanglements of *Mathematics* and (epistemic) dominance;
B) Drawing from *Mathematics* to establish, find, and invent modes of communication enlarges the available modes of communication. Forming practices of *Mathematics as communication* even bears the potential to subvert exclusive notions of communication, e.g. centering verbal modes or moving in favor of *neurotypicality*[10].
C) Centering communication in *Mathematical Practice* is a way to challenge individualism in *Mathematics* and epistemic practice through the assertion of collectivity in *Mathematical Practice*. Thus, re-revaluating and re-shaping the implicit individualism moving through many common understandings of *Mathematical Practices* and knowledge production more generally;
D) Making visible and enhancing collectivity in *Mathematics* by centering communication and thus modes of collectivity not only questions common individualistic notions but also forms a movement in and of itself – a movement towards Mathematical Practice as a communal, collective practice;

10 For detailed accounts on *neurotypicality* as thinking that norms see Manning 2016 and Manning 2020.

E) Forming modes of being an "intellectual with", i.e., modes of intellectuality that center a togetherness in both rooting intellectual practice in togetherness and striving for togetherness through intellectual modes, in and through Mathematics. As Fred Moten and Stephano Harney (Moten and Harne 2013) make clear, such a subversion changes intellectual history because it changes the very meaning of *intellectuality*. I understand *Mathematics as Disobedient Communication* as part of such a movement. *Mathematics* as communication strives towards epistemic modes and practices that facilitate and give rise and space to intellectual togetherness. The "with" in *intellectual with* stresses how epistemic modes of an *intellectual with* aim to find, invent, and practice intellectual modes that do not center hierarchy and that do not rely on intellectualizing *about* something or someone, but *with* something or someone thereby forming intellectuality in and through relation; and
F) Making known invisible or underrepresented aspects of *Mathematics* aspects of *Mathematical Practice* that tend to be widely invisiblized in *Mathematics* as a notion, as an image of thinking-being and in the epistemic ideals it becomes entangled with, that focus on the communication. Thus, forming *Mathematical Practice* that centers communication and de-centers domination makes visible some of the disobedient potentialities already in place in *Mathematics*.

These aforementioned possibilities and potentialities center around and draw upon *Mathematics* as potential means of communication. As such they effectively connect to *Mathematics* as a mode of thinking-being but subverting the focus thereof away from a dynamic of *winning-or-losing* and aim to change the element of epistemic force constructed through the continuum.

3.5 Disobedient Expression
Mathematics as a Form of Expression

One of the core elements of *Mathematics* as an image of thinking-being is the conceptual making of *Mathematics* as a 'politically neutral' sphere of knowledge. As Stengers (2007) has shown more generally. and as I have shown for the case of *Mathematics*, it is precisely this conceptual making of *neutrality* that is intensely political. Therefore, attempts to subvert *Mathematics* find an incredibly relevant point of departure in re-considering and re-framing the conceptual

relationship of *politics* and *Mathematics*. One of many possible ways to engage in such is to make use of practices and notions connected to *Mathematics* in order to render it a form of political expression, i.e., of expression of political structures, notions, or struggles.

A striking example of this form of disobedience and expression can be found in da Silva's (2017) paper titled *1 (life) ÷ 0 (blackness) = ∞ – ∞ or ∞ / ∞: On Matter Beyond the Equation of Value*. Da Silva establishes the equation *1 (life) ÷ 0 (blackness) = ∞ – ∞ or ∞ / ∞* as a mode of decolonial expression and showcases how Blackness exceeds Western notions of *value*. The excess and beyondness of Blackness is expressed through "*∞ – ∞ or ∞ / ∞*" as the equations' outcome. Da Silva both makes visible the politics of *Mathematics* and turns the *Mathematical Mode* of the equation into an expression of colonial and anti-Black structures of power. By articulating the logic of anti-Black systems, da Silva re-makes *Mathematics* as a mode of political expression.

I suggest drawing from her work in considering the possibility of *Mathematics* as political expression more broadly. In doing so, Mathematics as a political *expression* would require applying modes/practices/notions of *Mathematics* to express political systems, notions, thoughts, struggles, modes of resistance that are *more-than x*. This practice can be considered a form of epistemic disobedience because it subverts hegemonic epistemic practice and creates forms of resistant and deliberate nonobedience to epistemically violent worlds. Subverting *Mathematics* in this manner also facilitates political subjectivity that understands feeling, knowing, and their movements in their political dimension.

An epistemic practice meets the criteria for *Mathematics* as political expression, when the following three conditions apply:

A) *Mathematical* notions, practices or concepts are used for political expression;
B) The chosen aspect/aspects of Mathematics are applied to either express dynamics of hegemonic systems and/or modes of resistance and forms of more-than always already there; and
C) The practice in question centers expression in the sense that it moves in a mode of non-necessity in which the primary goal is to express and not to force, – not even to convince.

Drawing from da Silva's work and these characterizations, I believe there are at least five possible modes *Mathematics as Political Expression can be applied*:

A) *Mathematical practices/notions/concepts* can be used to express modes of resistance; for example, one possible mode of *Mathematics as Political Expression* consists of re-applying *Mathematics* for the expression of forms of resistance. Da Silva's equation *1 (life) ÷ 0 (blackness) = ∞ – ∞ or ∞ / ∞* might be understood as the expression of Blackness as a mode of resistance;
This mode produces two important effects that constitute valuable forms of epistemic disobedience: a) *Mathematics as Expression of Resistance* conceptually entangles *politics* and *Mathematics*, which effectively questions and subverts the alleged binary between the two; and b) *Mathematics as Expression of Resistance* establishes new ranges and formats of political expression by unlocking and making visible the potential of modes of *Mathematics* for expression of forms of resistance;
Mathematical practices/notions/concepts are used to express the modes of being more-than, which are already present as it centers the visibility of the non-hegemonic modes of being and thought. This might take the form of equations, calculations, or proofs that form symbols that make visible such modes of being more than. I engage in such a form of expression in my paper entitled *1+1equals1 and 1+1equals0 and 1+1equals1000000000*, in which I argue that these three equations are entangled with one another when they are applied to describe the hegemonic politics of credibility present in discourses on sexual violence. The *1+1equals1000000000* expresses the modes of more-than that exceed the hegemonic system of credibility established and formed under conditions of epistemic oppression (symbolized by the simultaneity of *1+1equals1* and *1+1equals0*).
Mathematics as expression of modes of more-than, bears two core epistemically disobedient qualities: a) *it* subverts and changes *Mathematical Practice* by shifting the focus to the symbolic powers of *Mathematical modes*; and b) *it* unlocks new formats that express modes of more-than inside and beyond hegemonic structures of power by making visible the potential of *Mathematics* to realize these forms of political expression;

B) It uses *Mathematical practices/notions/concepts* to express feelings/emotions/worlds of life. This could take the form of using calculations or equations symbolically or metaphorically to showcase, to make emotions and worlds of life touchable and feelable, like my simultaneous usage of *1+1equals1* and *1+1equals0*, which forms a way to grasp the ambivalence and disorientation that is produced by patriarchal systems of credibility.
Mathematics as expression of emotional worlds of life bears three main qualities through which it is epistemically disobedient: a) *it* subverts the alleged bi-

nary between *emotion* and *Mathematics* and between *emotion* and *rationality* by entangling *Mathematics* and *emotion*; b) *it* disobeys the notion of *Mathematics* as intellectually pure and other-worldly by situating it as expression of worlds of life and thus part of worlds of life and part of experiences lived and breathed; and c) *it* enlarges possible modes that can express feelings and worlds of life through its application of Mathematics for this goal;

C) Using *Mathematical practices/notions/concepts* facilitates visions for living otherwise through *Mathematical modes* by centering *Mathematics* as a form of creative political practice in which understanding and applying practices, notions, ideas from within *Mathematics* are used to facilitate a Utopian Vison and to facilitate imagination.

   Epistemic disobedience is produced through how *Mathematics, as practice for (political) Imagination,* queers *Mathematics* as an image of thinking-being by queering the alleged binary between *Mathematics* and politics. Forming and seeking ways *Mathematics* itself can be or inform creative practices, practices of imagination, and visions centers the forms of creativity, intuition, and imagination that already exist within *Mathematics*. *Mathematics as practice for (political) Imagination* carves out new spaces and makes visible intersections of political subjectivity and expression by enlarging modes and spaces of practicing *Mathematics through imagination*. *In understanding* oneself as possessing qualities for Mathematical practice and for political practice available self-imagery and self-conceptualization are informed by collective hermeneutical structures due to the relation between Mathematical subjectivity and political subjectivity (see Hottinger 2017). By shifting these exact concepts and by disobeying them – new forms and spaces of and for Mathematical and political subjectivity can be formed.

D) Using *Mathematical practices/notions/concepts* expresses autobiographies. This suggestion moves very closely to the vision of applying *Mathematics* for the expression of worlds or lives. I understand autobiographical expression here as any form or any kind of fragment of such worlds of life and as any form of expression centered around finding modes through which to communicate one's lived experience. Such forms of expression should be considered modes of political expression because politics, systems, structures, and the notions moving through them shape the form and size of the experiences we live and breathe through.

   Seeking and forming *Mathematics* as a mode for autobiographical expression centers *Mathematics* in its communicative qualities and potentialities as equations, numbers, calculations, and notions can be turned into forms

of expression and used to communicate autobiographical realities. Such practices bear the potential to drastically queer the conceptual proximity of *Mathematics* and *epistemic neutrality* because *Mathematics as autobiographical* expression politicizes *Mathematics* and forms a conceptual proximity between *Mathematics* and personal lives. This also disobeys the demands of conventional notions of *epistemic purity*[11] built into *Mathematics*. Approaching *Mathematics* having the potential to bear modes of autobiographical expression opens new ways of being *Mathematically active* as well as new modes of political expression by effectively facilitating different and more and more spacious modes of *political subjectivity* as well as *Mathematical subjectivity*.

These five sketches share the core idea of approaching *Mathematics* as a potential format for political expression thus actively disobeying the conceptual make up of *Mathematics* as *politically neutral*. In light of this, I believe there are (at least) eight potentialities of this form of *Mathematical disobedience*:

A) Approaching Mathematics as political expression and drawing from *Mathematics* to invent different modes of political expression enlarges what can be understood as *political expression* and enlarges the possible modes of forming *political expression*. Thus, it engages in a quest for minor gestures such as pulling and chewing on the structures of rigid exclusionary modes of political expression. Enlarging modes is always a subversion of the dominant and universalized modes of being as well as a carving of new spaces and modes that give way and space to perspectives and modes that have been historically excluded;
B) *Mathematics as disobedient expression* centers the communicative qualities and potentialities of *Mathematics*; thereby de-centering epistemic goals rooted in a binary logic of *true versus false*, which bely notions of *epistemic winning* and *epistemic losing*. *Mathematics as disobedient expression* explicitly refrains from attempts to *be right*, and centers modes of communicative practice already present in *Mathematics* as well the formation of new modes of *Mathematical practice* that center communication;
C) Forming and understanding *Mathematics* as political expression de-centers the true-false-binary and bears the potential to question and subvert other

11 With 'epistemic purity' I refer to the notion of 'pure mathematics' and more generally to the idea of epistemic processes being (potentially) 'untouched by the world.'

binary conceptions as well: When the core of the practice of Mathematics is making political structures touchable, feelable this implies that binarism, as a logic, as well as concrete hegemonic binary conceptions[12] can and will be considered and re-considered;

D) The potential to express violence exists along two dimensions as a) *Mathematics as disobedient expression* might express forms of violence reproduced or facilitated by *Mathematics* and b) *Mathematics* might facilitate modes of expressing forms of violence, e.g., in da Silva's usage of an equation to express the systemic invalidation of Black life;

E) *Mathematics* already bears its own modes of more-than being in its non-Mathematical strokes there are already practices, notions, and modes that move subversively through *Mathematics*. *Mathematics* as disobedient expression centers thus can modes of more-than being, always already there or always already s well as forms of resistance, touchable, feelable, tastable;

F) *Mathematics* as an image of thinking-being is conceptually entangled with *necessity* as an epistemic ideal. *Epistemic necessity* in its wide-ranging normalization, even naturalization is a product of hegemonic hermeneutical structures. Approaching Mathematics as a mode of expression aimed at communication de-centers this notion of necessity, effectively showing and forming modes of expression that are not structured by the notion of *epistemic necessity*.

G) Approaching *Mathematics* in its potential for political expression politicizes *Mathematics* and subverts the alleged *political neutrality* of *Mathematics thus making visible its political dimensions*. We can draw from da Silva's work to grasp this better. da Silva forms the equation *1 (life)* ÷ *0 (blackness)* = ∞ – ∞ *or* ∞ / ∞ to show how modes and logics established through the notion of *Mathematical necessity* facilitate logics and systems of anti-Black racism. Thus, da Silva showcases the entanglement of *Mathematics* with anti-Black politics. I believe this is the general potential of *Mathematics as disobedient expression* to make visible political structures moving within and through *Mathematics*; and

H) Re-appropriating *Mathematics* to form expression of worlds of live feelings and political structures opens space for *Mathematics* to cause emotion as

12 For more detailed accounts on binary notions and their entanglement with hegemonic structures of power see e.g. Merchant 2000, Alexander 2013, and Plumwood 1993 A, – 1993 B.

well as to express emotion. Such practices move *Mathematics* in a proximity to *emotion*, queering the *emotionality-rationality-binary* conventionally underlying *Mathematics*[13] *and making visible its emotional dimension*.

These sketches of possibilities and potentialities revolve around the notion of approaching *Mathematics* as a possible form of political expression in order to fashion and endeavor of epistemic disobedience. Such practices target the hegemonic claim to 'political neutrality' established through *Mathematics* and the *Mathematics-Rationality-Human* continuum. There are two core effects of these forms of epistemic disobedience: a) they subvert the epistemic ideal of political neutrality built into and through *the Mathematical*, *the Rational*, and *the Human* and b) they build forms of expression that disobey conventional parameters for political expression.

Mathematics as disobedient expression actively disobeys the epistemic practices in accordance with the *Mathematics-Rationality-Human* continuum and partakes in movements that carve out more as well as wider spaces for political expression and therefore for political subjectivity[14].

3.6 Disobedient *Necessity*
Mathematics as a Political Strategy of Meaning-Making

In chapter two, I established how the epistemic ideal and mode of *necessity* is a) a vital component of the epistemic dominance enfolded through the *Mathematics-Rationality-Human* continuum and b) a notion that is conceptually made up through implicit and explicit references to *Mathematics* as an image of thinking-being. *Mathematics* here takes on the role of allegedly *proving* the desirability, possibility, and superiority of the striving for *epistemic necessity*. Both Shulman and da Silva establish that this notion of *necessity* is inextricably interwoven with dominance because *necessity* is conceptually built through its justification *of dominance*.

13 On the relationship between *Mathematics* with the *emotionality-rationality-binary* see Hottinger 2017, Burton 2008, and Shulman 1996.

14 I understand political expression and political subjectivity to be intertwined as they mutually fashion one another.

However, modes of *necessity* can be and often are used strategically, e.g. to accomplish short-term and hands-on feminist goals such as amendments to law.

In her paper, *On the Cost of Socially Relevant Philosophy,* Kristie Dotson engages with the idea of *trap writing*: a mode of writing arguments, that "trap" the receivers of the text. Trap writing is thus a mode of argumentation that forms a path that renders it *impossible* or *unreasonable* to not agree (Dotson 2019, – 2012 B). Thus, such trap writing is a practice of *Necessity* as it works with and through the notion to engages the idea of *Necessity* to be understood as *convincing*, as *believable*, and as *credible*. In her paper, Dotson reflects on the strategic usage of such trap writing, detailing how a paper that she wrote in the mode of trap writing gained considerably large uptake (Dotson 2019). She specifically contemplates the mode of trap writing in the context of writing philosophy that aims at enacting social change by stating how this mode of writing makes strategic sense to her as a Black Feminist Philosopher (Dotson 2012 A).

I believe Dotson's thoughts and her strategic engagement with trap writing is reflective of arguments directed towards feminist or anti-racist goals, which engage with the notion of *Necessity* and form arguments with and through practices that form and perform *epistemic Necessity*. The branch of Analytic Feminist Philosophy is a philosophy-based example of this. Generally speaking, there is a lot of trap writing in the branch of Feminist Philosophy. Specifically, trap writing that aims to trap people into committing to practices or thoughts, which might help to slightly reduce systemic sexism and other structural forms of exclusion (see e.g. Bratu 2024 or Schulz 2024).

Non-philosophical examples of these strategic engagements with *Necessity* is feminist content created on social media[15] that heavily relies on a rhetoric of *logic*, *science*, and *data* to "back up" feminist claims, which are argued, to "waterproof" the argument, and thus the feminism itself and thereby to trap people into feminist considerations by not giving them "a rational mode to disagree."

These strategies are in alignment with reference *Mathematics as Mathematics* is the image of thinking-being that these modes refer to. As such, sleeping with *necessity* means sleeping with the logic of $1 + 1 = 2$.

15 Instagram accounts that can be understood as exemplary of these forms of feminist content are 'josischreibt_,' 'magdalenaeml' or '_vanessasiel.' The success of these forms of content are indicated through the numbers of followers, likes, and the amount of positive engagement they receive.

$1+1=2$ is the structure of all the modes detailed above, which argue that *this is a given and so is this and this adds up to feminist practice. You cannot argue with this. Do you want to disagree? Then, you might as well say 1+1 is not 2. You cannot expect to be taken seriously then*.

This is the logic of disobedient usages of *necessity*. As always, there are nuances , but I do believe that this is their baseline. These modes work because they play with the entanglement of *Mathematics*, *Rationality*, and *Humanism*. This is a forceful mode of meaning-making that works through the exclusion of counter-politics.

I believe the politics of these strategic engagements with *necessity* are immensely complex and therefore it is important to note a few core considerations.

1) These modes of argumentation tend to be immensely successful in the sense that they generate wide uptake, wide validation, and consideration. This is because they fit with the dominant hermeneutical bodies in place – they perform the scripts of believability through their involvement with *Necessity*.
2) These modes of argumentation reproduce hegemonic modes as the logic of *necessity* is the logic of whiteness, the logic of masculinity, the logic of the binary, and the logic of coloniality[16]. When fooling around with *necessity* one fools around with all of the logics thus creating stark dissonance and, possibly, hypocrisy.
3) These modes are not solely a reproduction of these logics as they do subvert *necessity* by putting it to anti-hegemonic rather than to hegemonic use. Also, these modes might enlarge access to the modes and practices of *necessity* thus subverting their exclusiveness.
4) Still, while point three is important to acknowledge, what is not subverted through these modes of disobedient *necessity* is their involvement with *necessity* and *dominance*. Engaging with *necessity* is engaging in struggles for *dominance* – not by striving for nondominant modes– but by appropriating *dominance* for one's own struggle. There can be extremely good reason to do so, and my comments are not written with any judgement. Rather, I think there needs to be clarity that moving with modes of *necessity* is a form of striving for *dominance* and *domination*.

16 For more detailed accounts on these multiple hegemonic dimensions see da Silva 2017, Nye 1990, and Shulman 1996.

Personally, I am a firm believer that decolonial feminists can and sometimes should have affairs with *Necessity* –but never partnerships. An affair is an involvement that comes from a place of exigency and from a place of urgency. Affairs can be quite dirty (in Elsa Dorlins sense of the word[17]) for they do not align with deeper needs. A partnership is an involvement , which is hopefully and possibly very different in nature as it is a deliberate, deep commitment that arises from places of political, personal, emotional, and theoretical fulfillment.

I do not think any radical decolonial and feminist struggles should be seeking partnerships with *necessity*. But we might end up having strategic affairs with *necessity*. Some amongst us, like Dotson for example, might enjoy these affairs, which makes sense in lots of ways[18], while others, like me, might feel a little dirty in these encounters. This makes as much sense as the enjoyment does and most times it is likely to be a little bit of both. However, I believe we should always realize the deeply hegemonic bodies of *necessity* at work. Thus, I arrive at my conclusion – no partnerships with *necessity*!

But also, affairs with *necessity* might be necessary (how ironic!) and might also be enjoyable and empowering.

Drawing from these considerations, I propose the following definition for *Disobedient necessity*: the formation of disobedient modes of *necessity* means putting *Mathematical necessity* to strategic use to subvert, change, and question violent structures of power. For these modes of *necessity* to be genuinely disobedient, however, I believe hegemonic bodies of *necessity* need to be made visible, known, and continuously negotiated and reflected upon.

This leads me to suggest the following criteria of *Disobedient necessity*.

A) *Disobedient Necessity* applies practices and notions of *(Mathematical) necessity* to change/question/subvert hegemonic structures.
B) Applying and claiming *necessity* happens in modes of strategic and critical playfulness – a little like playing with fire, knowing that a) itis warm (good!)

17 Through her notion 'Dirty Care' Dorlin defines 'dirty' actions, situations or behaviors that are primarily rooted in fear and attempts for self-preservation against violence (Dorlin 2017, 133 f.).

18 It makes sense on the level of intellectual and political self-empowerment, self-discovery as well as for strategic reasons and practices of self-preservation in the context of academic philosophy. For Dotson's personal and detailed reflections see Dotson 2012 A.

and b) it's fire (danger!). This is to say, the genuine social, political, and personal spaces and utopias we are moving ourselves towards should lie far beyond, inbetween, or underneath *necessity* as awareness of the hegemonic structure of Necessity is always there and always part of the *strategic play*.

There are six possibilities of *Doing Disobedient Necessity* that I want to highlight.

A) Its strategic use for argumentation arises from its use of modes and practices of *Necessity* to form arguments that withhold and fit the hermeneutical structures in place.
B) Claiming *being-convincing*, *being-credible*, *being-believable*, *being-rational*, and *being-human* is a strategic appropriation of *necessity* and appropriating *necessity* against the grain can subvert what is understood as *being-convincing*, *being-credible*, *being-believable*, *being-rational*, and *being-human*.
C) (Self-)Empowerment can occur through *necessity*. Given that the notion and practice of *necessity* is made *valuable* due to the hermeneutical and political structures in place, the appropriation of *necessity* can be immensely empowering – intellectually, politically, and personally. Being able to move in modes of *necessity* is likely to feel intellectually empowering because of the hermeneutical structures and bodies of *necessity in place*. This empowerment can be deliberately engaged for purposes of political, personal, theoretical, and intellectual empowerment.
D) Making use of *necessity* to change institutional structures (e.g. amendments of the law) can be a promising strategy to make institutional systems less widely violent and exclusionary by appealing to the very logic they stand on, i.e., the hegemonic logic of *necessity*.
E) Appealing to and using *necessity* to make visible and name forms of violence can be a mode through which one insists on widely normalized forms of *violence* being named as *violence*. For example, proposing an official definition of patriarchal forms of violence such as sexual assault or stalking and meticulously applying them to singular cases is a strategy that moves with *necessity* as its guiding force. These kinds of strategies can be and have previously been of great importance in making visible violence and the normalization of thereof, and in appealing to wide audiences with this quest.
F) In making use of *necessity* to enlarge access to *Mathematical Subjectivity* or other modes of *Intellectual Subjectivity*, one moves closely with *necessity* as a strategy of empowerment as claiming and reappropriating modes of *neces-*

sity is a mode through which *Mathematical Subjectivity* and *Intellectual Subjectivity can be claimed*.

I believe there are three core potentialities to all these modes of *Disobedient Necessity*.

A) The can form strategic modes of (intellectual, political, etc.) participation, e.g., participation in discursive structures, modes, and practices. In hooking up with *Necessity, these forms of participation* can make visible violence and bear the potential to help bring about beneficial (non-radical)[19] changes.
B) Appeals to *necessity* can engage subversion of hegemonic modes and the potentiality of chewing termite tunnels and broadening concepts.
C) They can open up possibilities for Identification, Subjectification and Empowerment as potentialities of disobedient appropriation of the entanglements of *necessity*, with *the Rational*, and with *the Human*.

These modes of *Mathematical disobedience* share that they strategically and critically engage with *necessity* thus making the dominant force of this notion a force for disobedience: This version of *Mathematical disobedience* is an attempt to turn the mode and notion of *necessity* against the scripts of the *Mathematics-Rationality-Human* continuum, which continuously re-enforce the *Mathematics*-centric world and the continuum-based scripts.

3.7 Disobedience against Thinking-in-Binary
Non-binary *Mathematics*

One of the core elements of *Mathematics* as an image of thinking-being is *the logic of the binary*: a two-value-system that only bears the options *true* or *false* with no in-between – a logic of separability and of binary concepts, modes, and dualisms. The fundamental *logic of the binary* is exemplified by the popularity of indirect proofs in *Mathematics* as well as in philosophical logic in which indirect proofs prove something to be *true* by proving it is *not false*. Such modes of proving directly rely on a true-false-binary and utilize this bi-valent conception to

19 With 'beneficial (non-radical) change' I refer to societal changes that move on the level of making visible and de-normalizing violence, but not on the level of re-writing images of thoughts or modes of thinking and being.

demonstrate alleged *epistemic certainty* and irrefutable validity of *Mathematics and* of *proof*.

However, not all practices within *Mathematics* operate based on this fundamental binary. For example, philosophical logic bears multivalent systems of logic and *Mathematics* bears what Franci Mangraviti refers to as *Inconsistent Mathematics* (Mangraviti 2023 A, – 2023 B). By inconsistent *Mathematics* Mangraviti refers to modes of *Mathematics* that do not rely on a true-false-binary or on other modes of thought infatuated with binarism (Mangraviti 2023 B). Mangraviti proposes *queer incomath* as an emancipatory intervention into classical *Mathematics* (Mangraviti 2023 B, 298 f.). *Queer Incomath* as it is proposed by Mangraviti, is an outstanding example of epistemic disobedience in relation to *Mathematics*. Relating her work to feminist critiques of logic established by Val Plumwood, she showcases the validity of Plumwood's claims for *Mathematics* and uses them to then propose forms of *Mathematical Practice* that queer the logic of the binary moving through classical *Mathematics*. Queer Incomath radically disobeys binarism and thus engages in a type of mathematical disobedience that centers modes in which binarism can be disobeyed. These epistemic practices thus move in nonbinary modes as modes that subvert and counteract all modes of violence and hegemonic supremacy that are ever so present in modes of *thinking-in-binarism*[20].

Mathematical disobedience against binarism keeps the framework of *Mathematics* while subverting binarism by a) ridding *Mathematical Practice* of the *true-false-binary* and practices directly based on this binary (such as indirect proofs) and by b) developing and applying non-binary *Mathematical practices*. The following three criteria further characterize mathematical disobedience against binarism:

A) Creating and applying non-binary *Mathematical Practices*, like proofs that do not require a two-value-system;
B) Refusing the use of *Mathematical Practices* that rely on binarism, like the true-false-binary; and
C) Otherwise keeping the framework of *Mathematics mostly* intact.

This points to four possible modes of mathematical disobedience against binarism.

20 For more detailed accounts see Mangraviti 2024, da Silva 2017, Alexander 2013, Shulman 1996, and Plumwood 1993 B.

A) Centering *Mathematics* without indirect proofs by practicing non-binary modes of proving that already exist and by forming new modes of proving that do not rely on the true-false binary. Refusing indirect proofs and centering other modes of proving disobeys the logic of the binary in its most fundamental form by refuting the notion of the two-value system – of *either true or false without any in-between*. The popularity of indirect proofs is a telling example and a particularly fundamental example of *the logic of the binary within Mathematics*. Thus, one deeply powerful mode of Mathematical disobedience against binarism lies in any attempt to un-do and re-do the normalization of indirect proofs. These modes can range from refusal of indirect proving to the invention of new modes of proving. Mangraviti's *queer incomath* is a powerful example of *Mathematical disobedience against binarism*. Her concept of *queer incomath* foregrounds a focus on the beyonds and in-betweens that can be practiced and known and felt and touched when indirect proofs are refused and give way to *inconsistent Mathematical practice* (Mangraviti 2023 B).

   At the core of this mode lies the identification of indirect proofs as a re-production of binary modes in their hegemonic dimension and thus the productive refusal of indirect proofs comes from turning away from indirect proofs toward other modes of proving.

B) *Engaging Mathematical Practice* focused on practices not reliant on *the logic of the binary* is a similar move to de-centering indirect proofs, but rather than focusing solely or primarily on reproducing the normality and popularity of indirect proofs, it suggests centering a) an identification of other notions, modes, practices, as well as proofs within *Mathematics* that are not reliant on the true-false-binary or on a different binary; and b) adopting a broader approach to de-centering and re-doing. In its essence this approach, like the one I sketched out before, disobeys the *Mathematical Modes* reliant on binarism. However, by practicing and forming alternative ones, it thus, also refuses them.

C) Centering the invention of *Mathematical Proofs* beyond binarism puts focus on the invention of modes of proving that do not feature modes of binarism rather than beginning with the identification of specific forms of the production and reproduction of binarism within *Mathematics*. It thus queers and redoes what it means to prove within *Mathematics* – subverting *proving* both as notion and practice by un-doing the binarism normalized within and through conventional *Mathematical proofs*.

D) Inventing and Developing *Mathematical Practice* not in need of the true-false-binary, much like the approach sketched out in C), aims to re-do *Mathematical Practice* by centering the invention and formation of modes beyond binarism. Like mode C), the focus lies not on the identification of binarism within Mathematics or on the non-binary modes already present in *Mathematics*. Rather, the focus is the invention and the (collective) creation of non-binary modes of *Mathematical Practice*, which effectively disobeys the element of binarism conventionally present within *Mathematics*.

I believe there are three core potentialities that of Mathematical Disobedience against Binarism:

A) Subverting *Credibility* by means of subverting *Mathematics keeps* the credibility of Mathematics alive while de-linking *Mathematics* and *Mathematical Credibility* from Binarism. *Mathematical Credibility* is conceptually interwoven with binarism, particularly the *true-false-binary*. Thus, keeping the general framework of *Mathematics* alive but ridding *Mathematical Practice* of Binarism bears the potential to queer and render non-binary *(Mathematical) Credibility*.
B) Making visible existing non-binary modes of *Mathematical Practice* and epistemic practice, which are on the verge of *Mathematics* that we can see, know, and practice in order to shift them more towards its center.
C) Subverting practices and notions of *proof* by de-centering Binarism queers what it means to *prove*, shifting the focus towards less hierarchical, rigid modes.

Mathematical disobedience against binarism directly relates to questions of *proving*. What it means to *prove* is a highly political question. This political dimension can be exemplified by considering how the notion of *proof* is present whenever accounts of sexual violence come forth[21]. *Mathematics* informs calls for *proving*, notions of *proof, which* much like *Mathematics* more generally, too

21 There is an impactful and wide-ranging feminist discourse on the invocations on victim-survivors to prove sexual violence as well as on the very notions of proof and evidence in this context. The most important works in this field include the following: Bryden & Lengnick, 1997; Childs & Ellison, 2000; Leslie & Smith, 2021; Hunter, 2000/ Kinports, 2000; Mack & Roach Anleu, 2000; Nicolson, 2000; Raitt, 2000.

move through and within *the logic of the binary* (Freedman, 2023; Mangraviti, 2023; Nye, 1990; Shulman 1996). Affirming inconsistency and refusing binary modes of *proving*, such as indirect *proofs*, therefore subverts practices and notions within *Mathematics* that are deeply interwoven with political discourses and personal worlds of life.

Disobeying binarism is a mode of decolonial and feminist disobedience because patriarchal and colonial structures of power are actively upheld by the true-false-binary, other binary concepts, as well as a general inclination towards binary modes and concepts. Thus, these conventional hierarchical binaries form exclusions that we can make visible, question, and re-do by disobeying binarism. *Mathematical disobedience against binarism* is of fundamental importance for epistemic disobedience against binarism more generally precisely because *Mathematics* deeply informs the normalization, legitimization, and idealization of binary epistemic modes.

Mathematical disobedience against binarism makes space for notions, modes and practices in *Mathematics* – as well as beyond *Mathematics* that disobey binarism and open up epistemic modes and modes of subjectivity that are not reliant on *the logic of the binary*. These endeavors of disobedience strategically connect to the *Mathematics-Rationality-Human* continuum to then chew away at the *logic of binary* built into continuum-based scripts.

3.8 Disobedience against Universalism
Seeing and Learning Mathematics in a Plural Sense

One of the core characteristics of *Mathematics* as an image of thinking-being is the inclination to think that this mode of mathematical practice is 'the only *Mathematics*.' The epistemic values and practices implied by *Mathematics* are distinctly Western and patriarchal but are hardly ever communicated in their situatedness. This dynamic universalizes *Mathematics* by claiming or implying that it is the only possible mathematical practice.

However, as both Shulman and Hottinger discuss, there are modes of mathematical practice, mathematical conceptualization, and epistemic values beyond those of the distinctly Western modes established through *Mathematics* (da Silva 2017, Hottinger 2017, Shulman 1996). Hottinger shines light on the importance of making visible, teaching, and knowing non-Western modes of mathematics as to this day *Mathematics* is actively universalized and taught as *the only Mathematics* – even to people who might already be familiar

with mathematical modes beyond Western *Mathematics* (Hottinger 2017, 125 f.). These students are asked to un-learn their non-Western mathematical modes so that their understanding of mathematical practice can fit within the Western, universalist notion of *Mathematics*. This is an epistemicide of mathematical knowledge as existing mathematical knowledge is actively erased and un-taught in light of the hegemonic norm that mathematical practice ought to be *Mathematics*.

There are attempts to build different forms of mathematical practice and different mathematics into school curricula (Hottinger 2017, 125 f.). I am in alignment with Hottinger's analysis, which states that while the attempts of so called *Ethnomathematics* are important, they are also in danger of reinforcing Western epistemic norms. All too often, these attempts still feature *Mathematics* as the form of mathematics that is singularly taught for the most part, and different mathematics are only introduced through a general nod to their existence. This effectively reinforces *Mathematics* as the norm and others all mathematics not rooted in Western epistemic values (Hottinger 2017, 157 f.).

So where does this leave us? Once more I feel reminded of my terminology in earlier parts of this work – that: attempts by *Ethnomathematics* tend to move with *the hope of addition* – the hope to add many different mathematics to *Mathematics*. But as long as the universalism built into *Mathematics* is not targeted itself, these attempts move with the constant danger of reinforcing that exact universalism, of only adding non-Western mathematical modes without restructuring the curricula themselves nor *Mathematics* in the necessary ways. So, what I argue would be necessary is to move towards pluralistic notions of mathematics and to train ourselves and others to think of mathematics in the plural. Therefore, we are in need of disobedience against universalism – both in general and specifically, regarding *Mathematics*. Such forms of disobedience against universalism center the deconstruction of Universalism of *Mathematics* and aim to learn, practice, and make visible different mathematics – a mathematics in the plural and with wide open spaces for diverging epistemic values, modes and practices. The following six criteria can be taken to define *Disobedience against Universalism* with regards to *Mathematics*:

A) The general framework of *Mathematics* is kept alive, but the element of universalism in Mathematics is targeted in order to enable a pluralistic gaze and the visualization and learning of various mathematics.
B) The universalism built into *Mathematics* is subverted, deconstructed, or questioned.

C) Mathematical pluralism is introduced and practiced as multiplicities of mathematical practices are made visible, made to be learned and touched and felt and practiced and known.
D) Non-Western mathematical practices are made visible.
E) Differences in mathematical practices are made visible in non-hierarchical ways, i.e., without any ranking order or any true-versus-false-binary.
F) Non-*Mathematics* mathematics are made more accessible, visible, practiceable.

There are seven possible ways to pursue such mathematical Disobedience against Universalism I will highlight here:

A) Teaching non-Western mathematical practices in educational spaces, as the example of Ethnomathematics shows, is not without its pitfalls and can only unfold decolonial potential when *Mathematics* is deconstructed in its role as the norm in mathematics. However, taking up this task is of high importance for two core reasons: a) educational systems and institutions very deeply shape what is conceptualized as education, intellectuality, and "mathematics"; and b) as both Day and Hottinger very eloquently make clear, institutionalized mathematical practice shapes lives and opportunities for education, jobs, and all kinds of material wealth and institutional belonging (Day 1997, Hottinger 2017). Therefore, deconstructing the dominance *Mathematics* has over institutionalized mathematical practices and systems of job opportunities is of incredibly high importance to a) counter-acting mathematical epistemicide, b) make use of academic institutions to deconstruct the universalization of *Mathematics*, c) enact institutional validation and recognition of forms of mathematical practice, and d) counter-act Western and patriarchal mechanisms of exclusion built into educational systems and notions structuring job opportunities.
   Insisting on the existence and visibility of various modes of mathematical practice bring to bear two aspects of epistemic disobedience: a) subversion of the universalization of *Mathematics* and the universalism built into *Mathematics* and b) making non-*Mathematics* mathematical practices visible, learn-able, touch-able.
B) Addressing, problematizing, and questioning the Universalism in *Mathematics* and the universalization of *Mathematics* makes it visible, as a mode of Western violence and counter-acts the universalization taking place: *Mathematics* is conventionally implied to be the only form of mathematical prac-

tice and to possess epistemic qualities like *neutrality* and *universality*. These conceptualizations, however, are applied to *Mathematics* in by means of distinctly Western epistemic qualities and values, which erases the visibility of the situatedness of *Mathematics*.

C) Forming and establishing pluralistic notions of mathematics by approaching mathematical practice with a genuine sense of pluralism counter-acts the universalization of *Mathematics* and gives way to non-Western modes of mathematics being taught without engaging epistemic othering.

D) Re-learning epistemic values in order and to restructure epistemic and political systems, requires changes in epistemic practice through engagement of different modes of mathematical practice, different forms of proofing, and application of different notions of *what it is to proof*.

E) Creating and practicing forms of de-centering *Mathematics*, i.e., forming modes to change and deconstruct the role of *Mathematics* as a central reference point for Western epistemic practice as well as for mathematical practice, aims to address or subvert *Mathematics* in this role of reference point. *Mathematics* as a Western epistemic institution is conceptually built as a point of reference for *rationality*, *intellectuality,* and *being-human*. As I have demonstrated in chapter one and two these conceptual entanglements are brought into existence through universalism, which serves as a common thread – moving through these notions (*Mathematics*, *Rationality*, *Humanism*).

F) Addressing dangers of "mathematical Othering" requires making visible, problematizing, and questioning dynamics of teaching, which still feature *Mathematics* as the mathematical norm. Directly addressing these dynamics helps recognize and disarm them and is a form of making visible and deconstructing the element of universalism in *Mathematics*.

G) Not all practices, modes, and notions within *Mathematics* imply universalist notions. Therefore, one possible mode of combating universalism in *Mathematics* is centering and forming *Mathematical practice* that does not feature universalist implications.

These possible practices share a commitment to undoing the universalization of *Mathematics* and the universalism built into *Mathematics*. There are eight potentialities of such practices I will highlight here.

A) Part of the conceptual make-up of *Mathematics* are the epistemic values such as *neutrality* or *objectivity*, which are closely linked to and informed by

universalism. Forming modes of subverting and questioning the element of universalism within *Mathematics* bears the potential to de-center the role these and other universalist notions play in Mathematics – in its conceptualization as well as in its practice.

B) Establishing and learning non-*Mathematics* mathematics confronts and counter-acts the universalism and universalization of *Mathematics* and makes it possible to establish different mathematics as mathematical practice and knowledge; thereby, de-throning the dominance of *Mathematics* over the term 'mathematics.'

C) Epistemic Othering is any practice that explicitly or implicitly regards *epistemic modes as other to the norm* when they do not fit with epistemic modes normalized in Western patriarchy. Regarding all these epistemic modes as "other" re-enforces the normalization of hegemonic and conventional modes. Epistemic othering is a systematic occurrence, a product of the normalization of certain epistemic modes and the exclusion of other epistemic modes.

When the universalization and normalization of *Mathematics* is made visible and different forms of mathematics are more widely practiced, established, known, and recognized –opportunities to unlearn epistemic othering with regards to mathematical practices are formed. As a result, epistemic othering can become visible – and as such, can be confronted and un-learned.

D) Forming and learning pluralistic notions of mathematics i.e., learning that multiple, even conflicting forms of mathematical practice can coexist without there necessarily being a *wrong* and a *right*, a *better* or *worse*. Pluralism here is not a movement towards despotism but rather towards questions of situatedness and of suitability. As such, approaching mathematical practices or epistemic practices more generally in a mode of pluralism is first and foremost a movement that counter-acts the binary of *true-false*, *good-bad*. It is not an undoing of these categories, but rather a chance to define them and to get to know their inbetweens and beyonds.

E) Questioning *Mathematical universalism* and other forms of universalism makes visible the universalism within *Mathematics* and opens up opportunities to question universalism as an epistemic value, which is necessary to counter-act the universalization of *Mathematics* as *the only mathematics*.

F) Making visible (mathematical) Universalism as Western, i.e., that universalism and universalization of specifically situated epistemic modes are distinctly Western and *white* modes that work to enact and uphold their

own supremacy. Confronting universalism within *Mathematics* implies to making visible what is being excluded through this universalism, namely non-hegemonic modes of mathematical practice. Making visible and understanding how colonial exclusions of knowledge and colonial epistemicide are consequences of and legitimized through universalism means understanding universalism in its capacity as a tool to uphold systems of *white* and Western supremacy.

G) Subverting (*Mathematical*) Universalism by keeping the general framework of *Mathematics,* but de-centering and questioning elements of universalism are ways in which said universalism and universalization can be counteracted and subverted.

H) Forming epistemically disobedient mathematical practices with regards to universalism leads to developing pluralistic stances with regards to mathematical practice, e.g., practicing different mathematics.

Disobedience against Mathematical Universalism is a form of epistemic disobedience that centers modes of disobeying the universalization of *Mathematics* as well as the universalism built into *Mathematics*. When exclusionary and specifically situated epistemic modes are universalized they enfold exclusionary dimensions. This universalism thus affects possibilities and impossibilities for (political) subjectivity. The *Mathematics-Rationality-Human* continuum ensures that exclusions from *the Mathematical* are exclusions from *the Human* and the other way around. Confronting the universalism and universalization built through the continuum is a practice that a) shows and inhabits the inbetweens and beyonds of these notions that are always and were already there and b) carves out spaces for various and new (political) subjectivities.

3.9 Possibilities and Impossibilities of *Mathematical Disobedience*

In this chapter I explored forms of epistemic disobedience in relation to *Mathematics* and to the *Mathematics-Rationality-Human* Continuum, while also attempting to subvert some of their violent dynamics. This mode of disobedience bears the strategic element of connectivity to the world as it is. As such, rather than moving with different worlds in mind *Mathematical Disobedience* is grounded in the world of *Mathematics* and thus upholds a connection to hegemonic epistemic structures.

Working with *Mathematics* connects practices of epistemic disobedience practiced to existing bodies of meaning-making, sense-making, and subjectification and effectively assures that the disobedience practiced can be recognized as *meaningful* as it is taken up through contemporary bodies of meaning-making. However, it is this same connectivity to the hegemonic body of meaning-making, sense-making, and subjectification that runs the risk of reproducing central aspects of the patriarchal and colonial structures of power, we are so eager to move against and beyond. This is an unresolvable conflict integral to epistemic disobedience as I understand it here.

Mathematical Disobedience bears with this conflict – knowing it to be unresolvable and moving with this in mind to form strategic endeavors of disobedience. I proposed seven potential forms of Mathematical Disobedience: 1) disobedient appropriation, 2) disobedient symbolism, 3) disobedient communication, 4) disobedient expression, 5) disobedient necessity, 6) disobedience against binarism, and 7) disobedience against universalism.

Mathematical Disobedience is disobedience practiced against epistemic violence. Epistemic resistance is a vast spectrum featuring many modes – all of them deeply necessary in their own right. I make use of the distinction between *Epistemic Disobedience* and *epistemic wildness*, not to mark two mutually exclusive categories, but rather to point to two polarizing points within the spectrum of epistemic resistance. *Epistemic Disobedience* is a movement that counter-acts epistemic violence, whereas *epistemic wildness* moves beyond it. *Epistemic Disobedience* bears connectivity to contemporary bodies of meaning, whereas *epistemic wildness* bears connectivity to visions, movements, gestures, and modes that exceed the world as it is now.

Mathematical Disobedience and *Epistemic Disobedience* are limited because they still references violent modes and the continuum. Simultaneously, there is the vibrant possibility of connectivity and subversion – of finding modes of epistemic resistance that are linked to present bodies of meaning. The impossibilities of *Mathematical Disobedience* as well as other modes of *Epistemic Disobedience* include the impossibility of the radical centering of beyondness and inbetweenness and the impossibility of visions, modes, and movements that exceed the *Mathematics-Rationality-Human* Continuum.

Thus, our next movements will dance more closely to the other pole of the lovely and extensive spectrum of epistemic resistance – to the pole of *epistemic wildness.*