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The governing of three researchers' technologies of the self

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ABSTRACT: This article sheds light on a number of discursive conditions relating to being researchers in mathematics education and with an interest in diversity. The data derived from a self-reflective triologue (dialogue of three people) between the three authors, three researchers. Two of Foucault's governing technologies were adopted: technologies of power and technologies of the self. By exploring regularities between these in our triologue we construed formations of governing technologies in relation to subjectification and subjectivation. We uncovered five formations: "Tensions between mathematics education (ME) researchers from different traditions through processes of normalization and othering", "Limiting space between ME researchers within the socio-political through dismissal of knowledge", "The socio-political tradition of a need for theory connects theory and ME researcher's self-cultivation", "The researchers' processes of self-cultivation connect theory and compassionate research practices". and "Research on policy statements as resistance towards technologies of domination in society".

Keywords: Governmentality, Technologies of power, Technologies of the self, Mathematics for all, Socio-political, Subjectification, Subjectivation, Researchers

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Introduction

This article represents a self-reflective account of research which illuminates a number of discursive conditions relating to being researchers in mathematics education (ME) with an interest in diversity. We draw on Ahmed (2007) who points out that work on diversity is important but might counteract its goal of enhanced social justice and equality if detached from the institutional histories that are taken up by, in this case, researchers, where action that words like diversity:

...depend on how they get taken up, as well as who takes them up. In other words, the 'take up' of such terms is dependent on institutional histories that may be forgotten or concealed in the present (p. 254).

Following from this, it becomes crucial that we as researchers recognise and unravel the institutional stories that we take up, and that we reflect on how these govern us and our practice. In this article, we contribute by making an attempt to make sense of some of these institutional discursive circumstances and offer the reader the possibility to conclude what researchers in mathematics education might, could, or should be. We thereby respond to Llewellyn's (2017) call for researchers' examinations of:

ourselves in relation to what we do, what we promote and the technologies of power and surveillance that support this. It is the covert forms of governance, posing as freedom that are particularly concerning; particularly when they come through the always already esteemed academy of the university and education (p. 166).

The central argument put forward in this article is that while the researcher analyses, discusses and creates meaning, s/he is affected by discourses that are institutionally activated in society, the practice, the research community, and in intersections of these while simultaneously engaging in her/his own conduct (Foucault 1983, see also Jørgensen & Klee 2014).

Hence, the research and the researcher are governed through what we, in this article, name as *formations of governing technologies*. The aim of the study was to identify such formations in our triologue (dialogue of three people), in relation to the practices of doing research addressing diversity and mathematics teaching and learning for all students. Our research questions were:

(RQ1) What technologies of power might be identified from the dialogue?

(RQ2) What technologies of the self might be identified from the dialogue?

(RQ3) What formations of governing technologies might be possible to construe through exploring regularities between the technologies in RQ1 and RQ2?

Theoretical toolbox

In the theoretical toolbox employed in this article, we primarily draw on Foucault's work from 1977 and on (e.g. 1988b), and the extensive chapter by McIlvenny, Klausen, and Lindegaard (2016) about discourse and governmentality. McIlvenny et al. draw on, and introduce, interdisciplinary research, while advocating for research:

that focuses on both the refreshed studies of governmentality and the richer discursive and interactional analyses of the forms, practices, modes, programs and rationalities of the conduct of conduct today (p. 3).

This quote captures what we have investigated in this article, specifically with strong focus on the conduct of our conduct as socio-politically oriented researchers in mathematics education.

Discourses

Conduct is dependent on prevailing discourses. The term *discourse*, according to Foucault (1993), establishes relations between language, knowledge and power, and the origin of a discourse is never (only) local, but derives from, in this case, the field of mathematics education research, as well as the institution of school, where various discourses are established. The orders and borders of the discourses affect how it is possible to act and what is possible, or not possible, to say or do (Foucault 1993), which means that during acts of conduct, it is not merely the researcher who speaks and acts, but rather the discourse that talks through the voice of the researcher by their making certain choices and positions possible and others not (see also Hall 2001). In this study, we connect to this concept in the sense of dominating discourses in research, which may restrict possible acts and possible subjectivations and allow others by researchers in various contexts.

Subjectification, technologies of power

In this article, one focus was on how we could interpret practices where researchers (i.e., we, the three authors), and/or the research, have been subjectified within different contexts, and also how researchers may have resisted such subjectifications. *Subjectification* is here considered as being executed through technologies of power (Foucault 1988b). According to Foucault (1988b), these technologies determine “the conduct of individuals and submit them to certain ends or domination, an objectivizing of the subject” (p. 18).

Milchman and Rosenberg (2009) draw on their reading of Foucault, including, and notably, the later texts that consist of Foucault’s lectures at College de France. The term for subjectification in French is “assujettissement.” Within this term is included both the processes of subjects being controlled, and “shaped” into certain kinds of subjects, and the notion of people resisting such controlling practices.

Subjectivation, technologies of the self

A further interest was in subjectivation, in the sense of how we could interpret researchers’ (our) reflections about themselves (ourselves) in relation to research (knowing ourselves in the words of Foucault), and also actions that were undertaken in order to take care of and to present oneself (self-cultivation in the words of Foucault 1988b).

The term *subjectivation* concerns various ways that a person may be “self”-constructed on the basis of what, at that moment, a person takes as a truth. With the words of Foucault himself, subjectivation may be described as “the way in which the individual establishes his relations to the rule and recognises himself as obliged to put it into practice” (Foucault 1985, p. 27). One possible subjectivation is to recognize oneself as a person who resists in a certain situation. So, while resistance is regarded by Foucault as one aspect of subjectification (see above), the care a person shows through knowing oneself as a person who resists is counted as subjectivation.

Subjectivation is executed through technologies of the self (Foucault 1985, 1988b), which is how the term is adopted in this article:

[T]echnologies of the self, which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality (Foucault 1988b, p. 18).

Governmentality

Foucault's concept of *governmentality* (Foucault 1983, 2008) refers to “both the conduct by others of our conduct, and our own conduct of both our own practices and the force within us” (Kelly 2009, p. 101). The network of power relations makes the government of others (subjectifications) and the self-government (subjectivation) work simultaneously, and our capability to govern others is intensely linked to our capability to govern ourselves. Foucault includes in the term a tendency of governing that is common in society. This governing is described by Jørgensen and Klee (2014) as “conducting the conduct” of, in the case of this article, researchers. Conducting the conduct is the ‘aim’ of governmentality. In this way, we, as researchers, are not only governed (or conducted), but also governed to perform the conduct on ourselves, or to resist such conduct.

As a consequence, governmentality may be described, drawing on Foucault (1988b), in terms of the technologies of power (subjectifications), present in society, affecting possible ways of conducting one's own conduct (subjectivations): Governmentality lies at the contact lines of power relations “between the technologies of domination of others [power] and those of the self” (Foucault 1988a, p 19).

Mathematics education in relation to technologies of power and technologies of the self

Researchers in the field of mathematics education have used concepts by Foucault more frequently in recent years, and have tended to investigate aspects of power, truth and knowledge in connection to gender, class, ethnicity and diversity. This overview is not claimed to be a comprehensive collection of all related research, but functions as a display of research related to technologies of power (subjectifications) and technologies of the self (subjectivations) in the field of mathematics education.

Several researchers have directed critique towards the neo-liberal stance of governing of education in which, especially, measures of mathematical knowledge have

become signposts for quality through, for example, the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) (Valero 2017). Included here is an interest in an expanded national testing (Bagger 2016, Grek 2009, Lunneblad & Asplund 2012; Martens, Knodel & Windzio 2014), as well as how regulatory decisions and administrative measures govern assessment practices in mathematics classrooms (Boistrup 2017). In addition, as addressed in the introduction, Llewellyn (2017) discusses the universities' governing of mathematics educational research through technologies of power, surveillance and governmentality in which we as researchers take part and at the same time are governed by.

Within mathematics education research, concepts related to regimes of truth have also been adopted and with teachers and pre-service teachers. One example is Walshaw (2004) who explored primary pre-service teachers' identity formation as technologies of the self. Pre-service teachers can then be viewed as engaging with a range of institutionalized practices that exercise the control over what 'normal' teaching means and provide practices that keep the meanings in place. These meanings can be interpreted as the 'regime of truth' in each classroom. Pre-service teachers are thereby not only redefining their teacher identities in response to the available discourses in the classroom and to the complex selves of others; they are also learning what is 'normal' practice through the school's organizational procedures.

Knowledge effects on students through processes of subjectification have been researched in the context of teacher professional development (Hardy 2004). Hardy addresses normalising power relations and outlines strategies to analyze effects of mathematics education discourse in teacher professional development of the UK 'National Number Strategy'. She gives examples of effects forming teachers' and learners' subjectivities in the classroom. In a similar way, Montecino and Valero (2017) focus on the fabrication of mathematics teachers' subjectivity through the systems of knowledge and the power effects of international agencies (like OECD and UNESCO). In such texts, the roles of teachers may be construed in terms of sales agents, and as a product of policy.

Governing technologies, and connected notions, have also been studied in relation to students. For example, Kaner, Morgan and Tsatsaroni (2014), discussed technologies of power in terms of subjectifications. They characterized the PISA mathematics regime as a form of rationality, and addressed how individuals are “recruited by or enabled to stand aside from knowledge effects” (p. 161), and can be engaged (or not) in actions as “well-tempered learners” (p. 163). Valero, Garcia, Camelo, Mancera and Romero (2012) argue that school mathematics curriculum is a powerful governing technology in itself, and certain ways of being can be denied in mainstream mathematics classrooms. When it comes to subjectification of students through positioning, Walkerdine’s (1988) study is seminal, taking into account individual and social aspects of traditional views on young children’s development in mathematics. Walkerdine highlighted social and political orders. Later, Norén (2011) explored how institutional practices enabled or disabled bilingual students’ identity formations as engaged school mathematicians. Opposing discourses were complied with or resisted, and students were positioned and positioned themselves as empowered or restricted in the mathematics classroom. Kolloche (2016), as well as Andrade-Molina and Valero (2017), points towards “the desired child” and how “school mathematics instills technologies of the self in students” (Straehler-Pohl, Pais & Bohlmann 2017, p. 11).

Positioning and power relations in a researcher’s practice have been studied by Meaney (2004), who describes how she analyses the interaction between herself and an indigenous community during a mathematics curriculum development project. She explored how power relations among the community members and herself circulated within their professional relationship. The idea of power as relational enabled Meaney to critically become aware of how she and the community members positioned themselves in relation to each other.

As outlined above, concepts related to governing technologies by Foucault (e.g. 1988b) have been adopted in various ways by researchers in mathematics education literature. With few exceptions (e.g. Meaney 2004) the focus of research has been students and teachers in the field of mathematics education and not the researcher’s own practice. In this respect, this article contributes to the field in that it illuminates how

technologies of power and of the self are interrelated and constitute an account of governing from the perspective of the researcher.

Methodology

In order to construe the governing formations, we advocated and complemented Foucault's writing on discursive formations with his theories about inclusionary and exclusionary technologies within and between discourses (Foucault 1993). Within this, it became important in the analysis to be attentive to who was speaking, from what position, to whom, about what and how, what claims of truth and knowledge were made, and the appearance, tensions and directions in activated power relations (see Foucault 1988b).

Data collection and analysis

The data in the study derive from ourselves, and, in particular, from a trialogue that was written between us while reflecting on our work as researchers. The three of us have similar research interests which relate to students' positioning by society and by the institution of school as low-performing in mathematics, or who might be "hindered" by socio-political discourses.

We created a written 'trialogue' concerning our research and ourselves, as researchers, within a socio-political field with an interest in diversity, and the teaching and learning of mathematics. The topics we discussed could have concerned whatever was in our mind concerning our research and been derived from our experiences as researchers at, in total, 10 different universities, in more than 15 research-groups, and also from experiences gained at a number of conferences. The whole research process was our focus of attention; from being motivated to choose given areas of research, to applying for funding, planning projects, carrying them out, and communicating the results. The trialogue was written during one month and resulted in approximately 15 pages in total, consisting of statements concerning our research, us as researchers and our participants. We responded to each other's reflections on these themes. In this, a statement is here understood as a mediator of knowledge and truth that exists in a field of power-relations. Statements are embedded in discursive formations (McIlvenny et al.

2016). Each of us introduced new thoughts and ideas following our own and others' reflections in the trialogue. By this, our own and each others' experiences, feelings and thoughts were intertwined in a joint account on research practices concerning diversity in mathematics education.

Analytical procedure

An adapted version of Foucault's (2011) discursive formations was advocated in order to construe formations of governing technologies. Since we theorise governmentality as the contact between technologies of power and of the self (as described by Foucault 1988b), these technologies were what we focused on first in the analysis. We chose to search in the trialogue for the effects of subjectification and subjectivation. Regularities (orders, correlations, positions, functionings, and transformations) concerning statements from which we read the effects of subjectification and subjectivation were searched for and explored, in order to construe formations of governing technologies. In this phase of the process, we were very careful not to blend the two analytical concepts. Subsequently, one researcher coded subjectification and another coded subjectivation, both independently. In this process, we highlighted parts where subjectification and subjectivation were interpreted from the trialogue. In addition, instances of governing were also highlighted in order to capture governing processes at work, including regimes of truth, power relations and hierarchies involved in the situation and context. Frequently, owing to our choice of theory, Foucault's ideas were used by us (as well as by others, whom we were in contact with) in this governing process, and therefore part of what was analysed. In the case of the coding of subjectivation we identified different processes, drawing on Foucault's (1988b) ideas, such as "knowing oneself" and "self-cultivation."

In the next phase, we compared and analysed the statements identified, and started the process of construing formations of governing technologies. This meant that we explored the subjectifications and subjectivations that we had interpreted and how these were situated in the research process, a field of research, or in a community of researchers, while making technologies of power and technologies of the self explicit. In this search for technologies, aspects of moral challenges became important because claims about truth and knowledge were often made in connection with moral problems or

issues to solve in research. Who was talking and from what position, who was not heard, power relations involved, and the self-cultivation taking place were then important questions to address.

Finally, we searched for connections and regularities between and within technologies of power and technologies of the self in order to construe governmentality as contacts between the two technologies. How statements were inter- or intra-related and how they were strengthening, shadowing or weakening each other were explored in what is understood as formations of governing technologies. In the end, we labelled each formation in terms of “what kind of connection/governing between which agents” and “through or with what kind of subjectification/subjectivation.” This way of construing the formations put the theoretical toolbox to work in a way that made it very close to the practical circumstances and settings of the statements made in the triologue.

Formations of governing technologies in a researcher triologue

In the following we give an account of five formations of governing technologies which were construed. We first list them below and then describe the formations in detail. The five construed formations are:

1. Tensions between ME researchers from different traditions through processes of normalization and othering
2. Limiting space between ME researchers within the socio-political through dismissal of knowledge
3. The socio-political tradition of a need for theory connects theory and ME researcher's' self-cultivation
4. The researchers' processes of self-cultivation connect theory and compassionate research practices
5. Research on policy statements as resistance towards technologies of domination in society

When presenting the formations, we illuminate how technologies of power (RQ1) and technologies of the self (RQ2), along with the contacts between them, constitute formations of governing technologies (RQ3). In this way, we describe, drawing on excerpts, how the conduct of the conduct of ourselves may work within the research

practices where one or more of the three writers of the triologue are working as researchers. We have labelled all three researchers as one, with the name Anevli (using the first two letters of our names: **A**nette, **E**va, **L**isa) in the account, and were required to make small changes in the excerpts to avoid revealing the speaker. This means that when Anevli is mentioned we often refer to one of us, but we do not specify whom.

1. Tensions between ME researchers from different traditions

The first formation of governing technologies concerns tensions in the field of mathematics education between researchers working within different traditions. More specifically, this formation concerns situations experienced and described by Anevli, where we construed tensions between dominating research *discourses* within mathematics education and a socio-political discourse in which Anevli engages.

One situation from which we construed this formation was a meeting where researchers with various interests and from different theoretical positionings participated. Anevli and another researcher were questioned by researchers from other fields during the meeting about whether what they knew of the literature within their field was correct or not (excerpt 1, all excerpts are translated from Swedish by Anevli).

One example is when someone recently commented on research within my field. “There is no research saying that...”. We were two researchers there, with much knowledge about this particular literature, but it did not help that we explained that there are such studies. What was stated first in the discussion was valued as being most valid. Our objections were not responded to, instead the initial statement was repeated. Probably in order for us to hear that it was valid. [...] Even though we had read a lot about the discussed topic, we were not being given the right to interpret the validity of statements in this group. There were considerations “taken-for-granted” in the discussion, saying that some research methods do not count and/or cannot produce any “truth”. [...] A valid way of researching this was also mentioned: to have a selection of data large enough to be representative, and to then make statistical comparisons between the older and younger students through measurements of knowledge and results.

Excerpt 1. A meeting where some researchers’ statements were acknowledged and some were not

From excerpt 1 we interpreted *technologies of power* when statements from Anevli and her colleague were met with silences (“Our objections were not listened to”), and when the validity of their statements were not acknowledged, but instead questioned (“There is no research saying that”). These *technologies of power* were analysed as executing *subjectification* in this situation with Anevli as one target. We also interpreted a presence of dominating discourses where research with qualitative methods was not accepted as research (“to have a selection of data large enough to be representative”). Anevli and her colleague were also *subjectified* through mechanisms of inclusion and exclusion, where there was an expectation that they should act more according to the dominating discourse. Hence, the *subjectification* during this meeting was in line with a normalisation process which researchers such as Anevli were subjected to. In the account, and also elsewhere in the data, it is clear that Anevli *resisted* this subjectification (which according to, e.g. Foucault, 1988b, also is an aspect of subjectification).

From the excerpt above we interpreted *technologies of the self* mainly from the way the text was written. In the analysis, we considered that Anevli, in her writing, displayed how she did not try to change according to the technologies of power, and instead resisted. While resisting, she engaged in technologies of the self in terms of knowing oneself (Foucault, 1988b). This technology was a way for subjectivation as an “other” within the meeting attendees. In this subjectivation, Anevli resisted through continuing in the role of being different – as not being part of the dominating research tradition. We interpret that there is a process here where Anevli both defines herself in relation to the experienced subjectification, but also a movement where she takes a stand and position herself in relation to her own research practice. The latter subjectivation was the result of self-cultivation (Foucault, 1988b)

With regard to *governmentality* for formation 1 (Tensions between ME researchers from different traditions), the contact between technologies of power and technologies of the self is mainly constituted by a tension. In this tension, the researcher being subjectified (Anevli) does not change according to the normalisation taking place, but rather defines herself, while resisting, as being an “other” who adopts qualitative methods and who works within a socio-political discourse.

2. Limiting space between ME researchers within the socio-political through dismissal of knowledge

In the second formation, we address how a space for possible subjectivation may be limited also within the socio-political field through the presence of dismissal of ways of understanding theories. In excerpt 2 Anevli is reflecting on herself as a researcher in relation to the use of Foucault, and other theories, and how theoretical concepts are often interpreted differently between researchers.

Well, I regard it as difficult to handle all expressed views in this world of research. One aspect here is everybody's opinions about Foucault and what he really wrote. In periods when I have been reading Foucault in depth I can feel rather sure of myself, but in between I am more uncertain. This gets even worse when editors have another opinion than me, which actually happened in an email conversation with one of the editors of the special issue that this dialogue is for!² [...] However [...] I have to, over and over again, meet those who challenge my way of describing various theories. In these [discussions] some words are valued more than others, and the reason for this is sometimes neither knowledge about the topic nor about the theory. This is part of my context. [...]

If it is claimed, for example, that it is not a "real" Foucault analysis if you do not research the history of the topic, then I start to feel unsure when I write and when I use Foucault. I start to think that the ways which I, with the best of intentions, use Foucault are not good enough. And then there is a risk that I get a writer's block.

Excerpt 2. Anevli reflects on interpretations of theoretical concepts.

² What is referred to is that one of the editors commented on the abstract in the paper proposal with the wording "Keep in mind that Foucault was writing from a structuralist position (notwithstanding the North-American efforts to characterise him as "post-structuralist"), privileging the analysis of systems wherein subjectivity takes place."

The *technologies of power* that we interpreted from excerpt 2 are similar to those for formation 1. Anevli expressed in the first paragraph of excerpt 2 her reflection on how in discussions about interpretations of theoretical concepts “some words are valued more than others” and how the reasons for this are not always about knowledgeability, albeit still *subjectifying* Anevli. Other potential reasons may concern who has the power to decide what is considered as valued research within the department. The dominating *discourses* this time were, however, not other research traditions, but within the socio-political field. Nevertheless, Anevli experienced a form of exclusion, as being not (sufficiently) knowledgeable.

The *technologies of the self* are different, at least partly, compared to those interpreted for formation 1. Rather late in the trialogue, from where the second paragraph of excerpt 2 derives, Anevli reflected on the consequences of subjectifications in line with excerpt 2. Through the technology of the self in terms of “knowing oneself,” we interpreted Anevli here as knowing herself as insecure. This *subjectivation* was a consequence of the subjectifications where one specific way of adopting Foucault’s work was prescribed. Anevli also pointed to the risk of her, at least for some time, becoming passive in her writing (“a risk that I get a writer’s block”). An alternative technology of the self, interpreted from elsewhere in the trialogue, was to adopt “self-cultivation” while carefully choosing with whom to collaborate, in order to create a space for her own subjectivation (“When I choose to collaborate with colleagues whom I really trust as people, they function as very positive forces”).

The contact between the technologies of power and of the self, constituting *governmentality*, was construed to be a tension within the socio-political field. Here, subjectifications were present in the form of prescribing a certain way of adopting theory, the “best” way, and thereby dismissing Anevli’s knowledge. This subjectification created a limiting space for the researcher’s possible subjectivation. In the main, we could interpret a subjectivation in the trialogue into passivity, knowing oneself as not performing research in the proper way. Occasionally, we could also interpret self-cultivation in the sense of Anevli who chose with whom to collaborate.

3. The socio-political tradition of a need for theory connects theory and ME researchers' self-cultivation

The third formation addresses a strong tradition within ME socio-political research to clearly adopt theories that are useful when performing analysis of data (Lerman, 2000). We interpreted this tradition to work as subjectifying, while creating affordances for Anevli's subjectivation through self-cultivation. In excerpt 3, Anevli reflects on how the work of Foucault may be interpreted, and what affordances from drawing on Foucault she could see for her own work as a researcher.

Foucault did not define himself or his work, possibly parts of his work were defined as structuralistic by others since he revealed structures in society? But he distanced himself from such a definition in *The archaeology of knowledge*, right? Processes of normalisation, (relational) power, and resistance is central in the research that I "want" to pursue, and think that I have engaged in.

[...]

I view theories as positive forces in my research life. Through theories I get help to write so that there is a consistency throughout the text, I also get help to read my data, to see things, to understand things. I also get help to claim things in a discussion.

Excerpt 3. Anevli reflects on Foucault's work and other theories

The *technologies of power* for this formation were possible to interpret from the numerous instances in the triologue where Anevli described theoretical discussions and considerations within the socio-political ME field with people she collaborated with, or other researchers she met during seminars or elsewhere. One such discussion is referred to in excerpt 3 when Anevli addressed her point of view about whether Foucault was a structuralist or not (see also footnote 1). Consequently, one technology of power that we interpreted as subjectifying Anevli was an expectation of adopting theories when performing research. We also interpreted the resistance aspect of subjectification, when Anevli resisted the assumption about Foucault as a structuralist (quote from the data: "But he distanced himself from such a definition").

The kind of *technology of the self* we interpreted for this formation is very much in terms of self-cultivation, through Anevli's use of theories. This is reflected in excerpt 3 when she listed some essential Foucauldian concepts, such as normalisation and power, capturing the kind of research she wanted to pursue. It is also reflected when Anevli clearly stated theories as a positive force in her "research life." The fact that she used the phrase "my research life" indicates how she subjectivated herself as a person whose (work) life is to a significant extent about theory-driven research.

The *governmentality* in formation 3 is not so much a tension, but rather consisting of subjectification (to use theories) which offers affordances for a researcher's subjectivation (to gain from using theories). A note here is that another researcher could have resisted the tradition to adopt any theories when conducting an analysis. Hence, when adopting governmentality, according to Foucault (1988b) the subjects involved, in this case Anevli, strongly affect the consequences of the technologies of power.

4. The researcher's processes of self-cultivation connect theory and compassionate research practices

Formation 4 is about how a researcher within the ME socio-political field may draw from assumptions within this field in order to subjectivate her/himself towards compassionate research practices. This formation concerns a researcher's urge to do the "good thing" in relation to students, who simultaneously may be objects in the research performed. In excerpt 4 Anevli describes her thoughts about this topic.

When boundaries are transcended or when power relations are made visible, there is also, drawing on Foucault, a possibility to study the discourse that is activated. This is also what happens when students or children are showing resistance in school, a resistance which we might study. Sometimes they may even resist participating in the study. This is then a possibility to study your own practice, and what discourse about research you are participating within, in order to, hopefully, secure a research ethics clearance. In this way, topics such as resistance, oppression and power initially may seem too hard to talk about - but, really, these research tools make possible a deeper ethical and methodological reflection of your actions as a researcher.

Excerpt 4. Anevli reflects about ethics and power relations.

There are relationships between being researchers in a socio-political field in connection to the students who may be “studied”. One example is what Anevli referred to in excerpt 4, when she wrote that students resisting participation in research offer “a possibility to study you own practice” [...] “in order to” [...] secure research ethics clearance.” From this we interpreted how assumptions within a research field worked as a *technology of power*, which then subjectified Anevli to, for example, view students’ resistance as worthy of reflection, as part of the research or as a point of departure for ethical reflections on the research per se.

In this formation, the *technologies of the self* consist of knowing oneself as a researcher striving for working to reveal oppression of students as well as resistance by students, while simultaneously self-cultivating oneself towards compassionate and ethical research.

The *governmentality* for this formation is about the political in the socio-politically oriented research field of ME, where no research is viewed as value free (e.g. Pais & Valero, 2012), and where there is often an interest in diversity and the teaching and learning of mathematics for all students. Such assumptions refer to both subjectifications of researchers within this field, as well as the subjectivations interpreted from the triologue.

5. Research on policy statements as resistance towards technologies of power in society

The fifth formation addresses critical research performed on policy statements. This area of research was interpreted to constitute a resistance against dominating subjectifications in society. Formation 5 concerns the researcher in the world and research in relation to the societal contexts, history and culture, which is exemplified in excerpt 5.

If I look back at how “people/society/teachers/politicians” et cetera viewed students’ “first language/mother tongue/home language” throughout the years, at least since the end of 1970s, there are several different “correct” courses of action. [...] In the beginning of the 1990s when there was an enormous number of cutbacks in the school sector [...] then the students’ mother tongue had very low priority, while it (sic) during the 1970s and on had a

prominent position in the teaching of immigrant students. How does this come about? Does the discourse “change” in relation to that money is retracted/increased etc.? Newly arrived students are today (in the new discourse of the National Agency of Education) “allowed” to use the mother tongue for further learning, the mother tongue is viewed as a resource in the new white pages by the Agency of Education. Why? Is this due to that if these students do not succeed in school/mathematics the results on PISA get lower? They “have to” succeed so that Sweden does not fall in the PISA ranking list? Or have previous research findings influenced policy making?

Excerpt 5. Anevli reflects on one group of students in relation to political decisions

In excerpt 5 Anevli addressed subjectifications where a main *technology of power* was operating in decision making on the policy level in society. One kind of subjectification present in the excerpt has a specific student group as its target, the “immigrant” students, and the question of Swedish versus the mother tongue. These students’ language uses are, according to observations made by Anevli, subjectified differently in society depending on financial issues and the potential impact on Sweden’s PISA results. From the last sentence of the excerpt (“Or have previous research findings influenced”), and from analysis of other parts of the data, we read that Anevli also regarded herself as a researcher as subjectified. We also interpreted a technology of power which subjectified the kind of research that Anevli pursues as not important. However, we interpreted Anevli as resisting this kind of subjectification of the group of students and of herself as a researcher.

A *technology of the self* that we interpreted concerned Anevli as self-cultivating herself, in the sense of governing, in how to name this group of students and their languages in use. In this way, she subjectivated herself in terms of an awareness of what terms to use. Another technology of the self was that Anevli cared about herself and about the conduct of her research, which in this case was in opposition to prevailing political conduct, according to Anevli’s description. In this sense Anevli subjectivated herself as a researcher aiming at resisting dominating discourses with regard to this group of students.

The *governmentality* for this formation is constituted by the tension between the subjectifications of students, and connected research, versus the subjectivation in terms of caring and acting while being a person who resists certain subjectifications.

Conclusions

In the triologue, technologies of power, subjectification, and resistance to these, were established on various levels, and in different contexts: research traditions and practices, dominating discourses, regimes of truth, theoretical discussions with other researchers in the field, expectations and assumptions, and official policies and decision making. Technologies of the self, subjectivation, were also established on various levels, and in various contexts: texts' impact, self-cultivation and self-knowledge, choices, care about oneself, and the conduct of research. Some of these technologies are strongly related to taking the role as one who may resist certain practises. The character of the formations of governing technologies was established between the two technologies – of power and of the self – as tensions, provisions of space and tools, limitations of space, and resistance.

A researcher is not only constantly moving between formations of governing technologies in relation to phases in the research-process, but also located in the context in which the research and the researcher are situated in time. In her context, the researcher reads, interprets and interacts with other people, such as researchers, participants in research, editors, and reviewers. We might add that writing a scientific article for a special issue in an academic journal is part of our interaction and, writing in this particular moment/instance, very much in the sense of how Foucault (1988b) exemplifies self-cultivating.

During movements between formations, researchers and the research are exposed to tensions. Additionally, researchers may experience how spaces are being limited or how spaces are opening up. In such a movement, it is possible to encounter self or others' resistance in what might be described as an effect of different discourses, traditions, contexts and theories being juxtaposed. Researchers are simultaneously moving between professional acts and personal feelings concerning passivity, action, doubt, faith, othering and diversity. Simultaneously, subjectivation contributes to the possibility for researchers to choose directions that are empowering, and then sometimes even activate other

formations. One example of this was when Anevli for formation 2 (Limiting space between ME researchers within the socio-political through dismissal of knowledge), as an alternative, could self-cultivate herself into choosing with whom to collaborate. Such a collaboration could, in fact, lead to a situation in which Anevli encountered formation 3 (The socio-political tradition of a need for theory connects theory and ME researcher's' self-cultivation), where adopted theories had affordances for Anevli's possible subjectivation. Self-cultivation may, at least to some extent, afford possibilities to choose context and relations to operate within, in order to perform "good", accepted and valued research.

Discussion and Epilogue: A way forward

With this article, we have illuminated the governance of being and becoming a researcher in mathematics education, working with diversity and adopting Foucault. Instead of highlighting students' technologies of the self (e.g. Valero, Garcia, Mancera & Romero 2012) we have displayed our own, in our roles as researchers in mathematics education. To simultaneously discuss subjectification and subjectivation helped us not only to critique and describe but also to reveal what is possible or could be possible. In Lerman's (2000) words, we, as researchers, are not neutral entities. "Together with others, we researchers both constitute the situation and are constituted by it" (p. 224). Using Foucault's (similar) wording we can say that we, as researchers, due to the effect of discourse/s and power relations, subjectivate ourselves, subjectify others and are subjectified in various formations of governing technologies. As a response to Llewellyn's call (see introduction), and similar to Meaney (2004), we have, through this self-reflective exercise, come to understand our own context more clearly, and how subjectification of ourselves, other researchers, participants, and Foucault's theories work together with our own processes of subjectivation. We have engaged with a range of institutionalized practices that govern what research means, and what it means to keep the meaning of conducting research in place; the regime of truth (see Walshaw, 2004).

Similar to Hardy (2004) and Meaney (2004), we have adopted power as a relational matter, while advocating Foucault's work. Power relations, then, are always at work, not the least when doing research for, with, or on disadvantaged students. Using

Foucault's work, intersections between research traditions, theories or cultures can be understood as meetings between multitudinous systems of knowledge, regimes of truth and power (Kolloche 2016, Walshaw 2004), or even as a complex macro-system of coexisting discourses at work. We point towards the importance of acknowledging and paying attention to technologies of power, which often have relationships to the dismissal of knowledge, but also orders as in routines and rules within the socio-political field of ME, and between and within other fields of ME research. It is important here to understand that we speak about this as statements (our own and others') being discursive representations of knowledge and power; it is the discourse that talks through the subject, Anevli/us (see Hall 2011).

Relationships and movements between formations contribute to a dispositive of governing technologies that both enables and disables in developing research and developing as a researcher. Examples of this occur when friction appears between or within fields of research, traditions, theories or cultures and the researcher strives towards her/his research or theory being understood and communicated. Throughout the processes of conducting, producing and evaluating research, researchers also have a responsibility towards their own field or theories – to make them understandable and to improve them. With this said, there is no researcher who knows everything about everything or any person. At times, it might be difficult to really share understandings of what has taken place, and what could or should have been done. In the end, most researchers have the desire to be accepted, respected and understood on the basis of their research.

We, the three researchers, can refer to our interpretation of research possibilities and our opportunities as researchers in relation to what the socio-political context makes acceptable and available to us, now and in the future. The exercise in writing this article opened opportunities for us to employ various technologies of the self, at the same time as we were employed by these technologies. As one example, by interpreting the work of Foucault as individual authors, we found ways of resisting being positioned in various ways by earlier research and other researchers. The experience in the writing was empowering, and an enriching resource in making visible and shaping the research we (want to) pursue. The contribution of this article lies in creating new knowledge about governing formations at work in the making of researchers and research, formations

which are in perpetual movement, and in which new and other formations are possible to interpret. The formations are also possible to apply to other situations of performing and developing research and researchers, for example, in the training of PhD students or the planning of ways to communicate or provide critique in relation to research seminars, or in the communication of research at large.

A contribution of this article is also that it illuminates a process of producing knowledge about oneself as a researcher. Thereby it provides a suggested methodology for other researchers' self-reflection and self-cultivation, in processes that may offer better understanding of one's own research context.

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