Changing storylines in public perceptions of mathematics education

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Abstract*: I analyze the storylines identified by mathematics educators as representative of public perceptions of mathematics education. I consider these storylines in light of positioning theory's focus on immanence and its emphasis on the negotiability of storylines, and in light of rhetorical devices associated with myths. Using a functionalist-informed orientation to the storylines, I ask what needs they address. The article begins and ends with reflection on a specific incident of public interaction—a criticism of mathematics educators in online discussion of a news article. I consider different storylines for interpreting the criticism and encourage mathematics educators to pursue opportunities to change storylines.*

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A new vein of scholarship in mathematics education investigates the predictable, problematic, and persistent image of mathematics portrayed in the media (e.g., Abtahi & Barwell, 2017; Chorney, Ng, & Pimm, 2016; Herbel-Eisenmann et al., 2016; 2016; Lange & Meaney, 2018; McFeetors & McGarvey, 2018; Rodney, Rouleau, & Sinclair). This scholarship responds to and reflects many formal and informal conversations amongst mathematics educators regarding the vexing problems of misperception and our challenges in communicating with the media. I am motivated to consider effective and ethical ways to respond within this media phenomenon.

I bring positioning theory to this problem because the theory addresses the nature of conflicting interpretations within an interaction. I extend positioning

theory's conceptualization of storylines by connecting it to myth, drawing on Barthes' (1972/2009) descriptions of rhetorical devices that sustain myths and his approach to recasting myth.

I begin with an account of one of my interactions within public media to set the stage for theorizing storyline and myth with functionalist sensibilities. I use this theoretical frame to reconsider scholarship on public mathematics storylines and myths. Finally, I bring this theoretical framing back to the story of my public interaction to consider the possibilities for mathematics educators to communicate within public media.

1 Reflection on a public interaction

In 2014, at the Annual Meeting of the Canadian Mathematics Education Study Group, a panel of Canadian mathematics education researchers, including me, addressed this question: "What have we not been hearing about PISA?" (McGarvey, 2015; Reid, 2015; Savard, 2015; Wagner, 2015). As noted by McFeetors and McGarvey (2018), this discussion of the 2012 results of the Programme for International Student Achievement (PISA) (OECD, 2013) and Canadian responses to these results drew the interest of local media, some of whom attended the panel discussion. McFeetors and McGarvey characterized an *Edmonton Journal* article reporting on the panel discussion as having "fairly represented the views of the panel by emphasizing the ongoing excellent performance of Canadian students and possible factors leading to the slight decline in achievement scores over the past decade." They reported that the numerous online comments on that newspaper

article were less sympathetic. I agree with their appraisal of the article and the comments.

An old friend, whom I will refer to as Sheila, was the author of one of the online comments. It had been more than a decade since I had last talked with her. In my experience, Sheila was a very intelligent, well-educated, and thoughtful person. In her comment on this article—which the newspaper removed, along with all the other comments, shortly after the publication—Sheila criticized faculties of education. She said that they promote student agency at the expense of basic skills. She continued with something like, "My daughter doesn't need agency, she needs to know how to do calculations so that she can stand up for herself when a cashier gives her insufficient change."

It is unusual to base a scholarly article on such a brief interaction, especially as it relies on my memory of the situation. However, this is the kind of interaction we mathematics educators face when we engage with the public. We have to respond to the little information we have. In this article, I take this interaction as a touchstone to develop theory and ethics around the problem we face as educators in public interaction about mathematics and mathematics education.

Reflecting on Sheila's comment, I ask myself what would be an appropriate response to her criticism. Here is the kind of answer I have come to expect in comment forums of newspaper articles like this one—angry and dismissive: "Thank you, Sheila, for arguing against yourself so forcefully! If your daughter didn't have agency, she most certainly wouldn't stand up for herself." However, I think it is wrong to dismiss Sheila's criticism because it represented her anger and frustration.

It is fair to assume that this anger and frustration comes from her daughter's experiences in school. My own children have also had school experiences that warranted anger and frustration. How did Sheila's expression of concern reflect her experiences and needs and how did popular perceptions of mathematics education impact her concern?

2 Storylines and myth

Before I consider the storylines that serve the needs of the public and individuals, I will clarify what I mean by storylines. I think of the term as it is used in the positioning theory articulated initially by Harré and van Langenhove (1999). People interpret their experience through known storylines. Storylines are "lived stories for which told stories already exist" (Harré, 2012, p. 198)—for example, "David and Goliath" and "doctor and patient" (Harré & Moghaddam, 2003), and paternalism, joint adventure, and feminist protest (Davies & Harré, 1999).

Storylines make available certain positions, which have accompanying expectations for interaction. For example, if I experience someone acting like a physician (in a medical office or elsewhere), that suggests a doctor-patient storyline, and leaves me the role of patient. I can accept this positioning by acting like this physician's patient, or I can resist by suggesting (implicitly or explicitly) a different storyline. Harré (2012) noted that storylines can be explicit or implicit.

Positioning theory is extensively elaborated, but for the purposes of this article I focus on its articulation of immanence and contestability. First, immanence: language is taken only as a concrete occasion of language in use (Davies & Harré,

1999), not as speaking for something outside the context (transcendent). It is common for research in mathematics education to consider how mathematics is positioned. However, this is a departure from classic positioning theory because mathematics is generally seen as transcendent, not immanent. For instance, an analysis of mathematics education storylines in the media by Herbel-Eisenmann et al. (2016) considered the way mathematics is positioned. Normally, analysis using positioning theory would focus on the people in the interactions instead of the entities outside the interaction.

Herbel-Eisenmann and I problematized positioning theory's focus on immanence by using the context of mathematics education (Wagner & Herbel-Eisenmann, 2009). We explained how mathematics is present in an interaction as mediated through the people interacting. Nevertheless, I am here focusing in the immanent because "it enables emancipation from powerful discourses; in a mathematics classroom (or anywhere), there is no exterior structure that 'forces' particular interactions" (Wagner & Herbel-Eisenmann, 2015, p. 2).

Second, positioning is contingent. This means that different people may use different storylines to interpret a situation and/or assign different positions to people in the situation using a given storyline. Shifts in storylines and positioning may be explicitly or implicitly negotiated. This aspect of positioning theory enables shifts in patterns of interaction because it reminds us that we can change the stories being used to interpret the interaction, which is the first step to changing the way we speak and act.

The way positioning theory describes storylines relates to the way I think of

myth. The word *myth* is often used to describe something that is widely said but naïve and even (perhaps especially) false. By contrast, I see myths as the stories people use to interpret their experience, stories that are common expressions of widespread belief. They can include any texts such as words, images, or memes. This view is a synthesis of my scholarship and my religious background (my theology degree and years of reflecting on the meaning of mythical scripture texts and years of conversations with people who use such texts to consider how to live ethically). This view of myth aligns with the idea of storyline in positioning theory.

Scholars have used other concepts to address similar ideas. For example, when scholars refer to Discourses in the sense that Gee (2011) described, they align with what I describe as myth in that they comprise a larger set of associations to culturally embedded narratives. Why then is it important for me to use a different word—in particular *myth* instead of *discourse*? It is because the concept of mythology is explicitly value-laden; other people's myths are hard to accept. Yet we all have them. As we acknowledge the value in stories that others find helpful and true, we also wish for others to value the stories we find helpful and true.

I see myth as functional and formative. What makes something a myth is not its falseness but rather its pervasiveness in culture. Thus a myth is dangerous in the Foucauldian sense—powerful with possibilities for abuse. Myth also has explanatory potential to help us live in a complex world. If we think of the stories that comprise the mythology of ancient civilizations and of old religions along with their current manifestations, we can see how they enable reflection on complex phenomena. We can see how these traditions are used with current religions

wherein opportunistic people use mythology to gather followers. These characteristics of mythology are important to keep in mind whether we are considering religious myths or education myths. Perhaps we scholars too often focus on the violence that a myth may support and ignore the possibilities for reflection that the myth engenders.

Myths and storylines interact with communication acts in a recursive way, similar to the way Foucault (1982) described discourses in relation to objects: discourses are "practices that systematically form the objects of which they speak" (p. 52). An act of communication, whether it be spoken word, gesture, or gross action, may initiate, maintain, or transform the myth/storyline. People also use communication acts to explicitly negotiate which myths/storylines are called into play in a particular situation. Positioning theory describes this function as "second order positioning" (van Langenhove & Harré, 1999, p. 21). While communication mediates myth/storyline, it is also formed by myth/storyline. The myths/storylines provide resources for people to construct their communication acts. When I have used positioning theory in previous publications, I usually focused on the positioning, but in this article I am more interested in the storylines. Figure 1 is modified from my previous work (Herbel-Eisenmann, Wagner, Johnson, Suh, & Figueras, 2015, p. 194) to illustrate the recursive nature of myth and storyline in relation to communication acts. Notably, I have replaced *positioning* with *myth/storyline*.

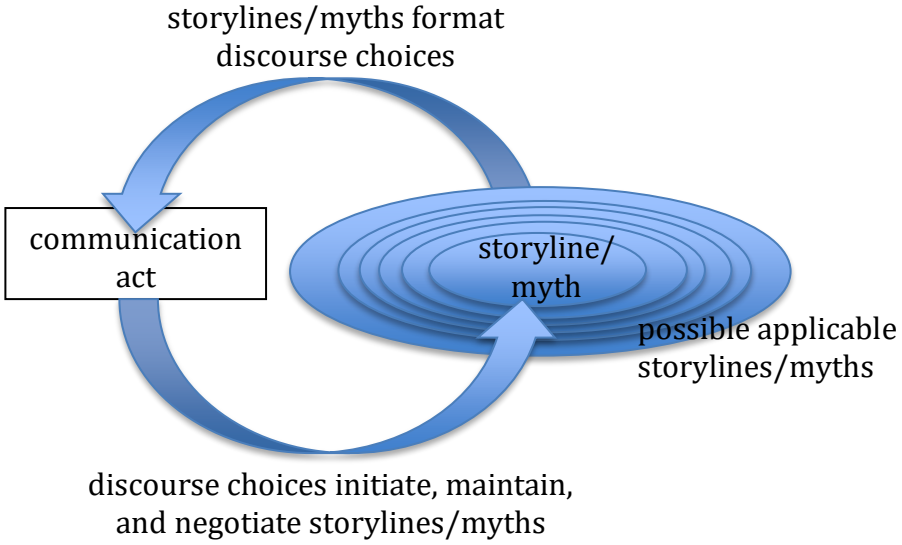

Figure 1: The recursive relationship between myth and communication acts

Because myths/storylines characteristically address complex social issues, it is worth interrogating these myths. The closest work to my views on myth that I could find was Barthes' (1972/2009) book *Mythologies*. The field of anthropology also sees myth as formative but it tends toward a structuralist view and focuses on symbols, especially sacred objects (e.g., Geertz, 1974).

3 Changing storylines, changing myths

With this view of myth, how can myths be overcome? Barthes (1972/2009) advised, "The best weapon against myth is perhaps to mythify it in its turn […] and this reconstituted myth will in face be a mythology" (p. 161). He called this role *mythologist* and underscored its difficulty. He provided insight into myth by giving examples of the kind of mythologizing he had in mind. For example, he described the

myth of Einstein's brain in a three-page essay, including this identification of the myth's reduction: "The historic equation $E = mc^2$, by its unexpected simplicity, almost embodies the pure idea of the key, bare, linear, made of one metal, opening with a wholly magical ease a door which had resisted the desperate efforts of centuries" (Barthes, 1972/2009, p. 78).

Andersson and I took on this role as mythologists when we described and recast the mystery myth in mathematics (Andersson & Wagner, 2018). We showed how mathematics curriculum and mass media sustain the idea that mathematicians solve mysteries. We made a distinction between this romantic ideal of mathematics and school mathematics, comparing them to discovery in an open landscape and the discovery of unknowns concealed by humans. Our approach aimed to mimic Barthes' approach, as we described articulations of the myth and the contradictions within them. The goal was not to kill the myth but to tune it. In this way, Barthes' approach of mythologizing (I call this *recasting* myth) is different from calls in mathematics education to refute myths (Anderson, Boaler, & Dieckmann, 2018; Clements & Sarama, 2018) or to expose misperceptions in storylines (e.g., Herbel-Eisenmann et al., 2016).

Barthes (1972/2009) also described characteristics of myth. He reported that myth is usually but not always associated with right wing politics and that "revolutionary language proper cannot be mythical" (p. 173). To recast a myth, Barthes considered it important to understand the rhetoric of myth. I understand him to have said that we should be attentive to the rhetorical devices I overview below. Barthes himself did not refer to these devices in his exemplar recasting of

myths. The descriptions benefit from examples, and thus will become clearer as I identify these rhetorical devices in action later in the article:

- An "inoculation" (p. 178) exposes us to small doses of something otherwise harmful or distasteful to desensitize us from the myth's power.
- "The privation of History" (p. 178) undermines relevant histories by describing them too simply.
- With "Identification, […] the Other becomes a pure object" (p. 179). In a myth, we judge not the person but a stereotype.
- A "tautology" (p. 180) suggests an idea as true because we already know it is true.
- "Neither-norism" (p. 181) rejects possibilities by positioning two radical extremes and suggesting a particular middle way as the only option.
- In "the quantification of quality, … myth economizes intelligence [and leads us to understand] reality more cheaply " (p. 181). This The reduction may involve the translation of qualities into quantities, but this rhetorical device can describe any reduction; Barthes' wrote that this economization is part of all the rhetorical devices.
- A "statement of fact" (p. 182) assumes everyone agrees.

These rhetorical devices give myths their force. I read Barthes to be saying that they are not necessarily used intentionally. A journalist or public commentator may use one or more of these devices for other purposes or unintentionally. No matter their intent, the device helps build and sustain the myth.

4 A functionalist orientation

Kollosche (2018) addressed the weight of public perception in a different way, by turning a functionalist lens on mathematics education. He described how "social systems, institutions and practices necessarily need each other to function" (p. 290) and argued that change is only possible when these functions are recognized for their interrelationship. He described how society depends on mathematics to qualify people for significant roles, to integrate children into society, to legitimize political structures, to assess people as a gatekeeper for certain professions, to keep children occupied, and to provide a context in which children can serve as proxy for their elders' hopes and dreams. Kollosche's analysis does not suggest that change is impossible but it does underscore why change is difficult. He did not say why people depend on mathematics in these ways, and he called for much more work on this question.

This functionalist orientation can help us take myths seriously. Much of our field's writing about myths and public perception storylines positions them as falsehoods, as I will elaborate below. I have found that much of the informal dialogue within our field about public perception focuses on our frustration with these apparent falsehoods. While there are simplifications and other rhetorical devices at play in the storylines, which may be seen as falsehoods, I think it is better to consider why these myths persist.

As I work through the public perception storylines and myths identified in mathematics education scholarship and in my interaction with Sheila, I am oriented

by the functionalist tradition. However, I take a step away from the tradition by looking at how myths address the needs of individuals rather than of society. This fits with positioning theory's focus on immanence. The needs of society identified by Kollosche also represent personal needs for many people. An example is the gatekeeper role—society needs people to qualify for significant roles. Parents need their children to qualify for significant roles, and their children also need to qualify for such roles if they are to feel successful.

5 Storylines of mathematics education in the news

There has been substantial recent scholarship identifying storylines that are pervasive in news media representations of mathematics education. I identify shorthand descriptors of these storylines and elaborate them below. I consider how they use Barthes' (1972/2009) rhetorical devices and speculate on what needs the storylines might meet. I see such speculation as a first step that begs deeper analysis and even empirical research. In reflecting on what kind of empirical research would be both possible and useful in this vein, I think that the functionalist tradition that Kollosche draws on would give some direction for a research agenda.

5.1 Basic skills vs. discovery dichotomy

First, a number or studies relate to what I will refer to as the *basic skills vs. discovery dichotomy*. Rodney et al. (2016) examined a corpus of 71 online Canadian newspaper articles over a three-year period that included the release of the 2012 PISA results. They found two pervasive metaphors that are central to the storylines in public perception because they describe how people relate to each other. One

metaphor used the image of war to describe the relationship between two dichotomous factions in mathematics education. Rodney et al. described a storyline that says "There is a math war in Canada" (p. 394). Herbel-Eisenmann et al. (2016) also looked at media addressing mathematics education in the USA and Canada and drew on other studies of these media. They identified a storyline that is analogous to the math war metaphor. It says "There are two dichotomous ways of teaching mathematics […] the 'basic' way and the 'discovery learning' way" (p. 104).

This storyline is an example of one of the rhetorical devices Barthes (1972/2009) referred to as *the quantification of quality*, as it simplifies a complex situation. The storyline also relates to the *identification* rhetorical device, as it usually does not critique any particular teaching. Rather, it critiques caricatures of teaching.

This dichotomy used by the media has an interesting relationship to the *neither-norism* rhetorical device. The people who argue for the basics promote them by ridiculing the results of discovery learning in the absence of basics. This suggests that there are only two ways of teaching mathematics and that there is a choice to be made between the two. There is no consideration of the possibility of teaching for both understanding and procedural skills. It is the opposite of *neither-norism* because it rejects the middle way. If there is a place for *neither-norism* in this storyline, it lies with mathematics educators who promote their own approaches by pointing out the unreasonableness of both caricatures in the dichotomy storyline. I acknowledge that I have used this rhetorical device, not to manipulate but because I thought it was reasonable at the time.

McFeetors and McGarvey (2018) conducted a phenomenographic study of online reader responses to popular press articles relating to mathematics education. They found complexity in public perception. Two of their five categories relate to the *dichotomy* storyline in that they represent two sides, namely that the "public perceives ideal school mathematics as having an expected goal of mastering basic computational skills (and remembering math facts)" and the "public perceives ideal school mathematics as having an expected goal of understanding mathematical ideas/concepts" (McFeetors & McGarvey, 2018).

McFeetors and McGarvey's (2018) categories of public perception are filled with nuance. In this particular article they focused on the category related to basic skills. They identified twenty variations within the category and left the elaboration of the other categories for future work. Their project suggests a dissatisfaction with the simplified storylines distilled by other mathematics educators. The scholarship that distils public perception into identifiable storylines is employing *the quantification of quality* rhetorical device, as it reduces a more complex media landscape into a relatively simply stated storyline. As I write, I too am distilling public perception down to identifiable storylines. While we may rile against the simplification of complexity when done by our opponents, we mythologists employ similar strategies. It is wise for mythologists to understand and acknowledge what we are doing.

Why would people need/want to characterize two extremes in mathematics education? I speculate here, but encourage further research. The storyline simplifies a complex landscape and thus enables non-experts to engage in dialogue about this

important social need—mathematics education. I too use dichotomies and categories regularly in my teaching to support novices in a complex dialogue.

5.2 Mathematics equips society

The second storyline contains the idea that *mathematics equips society*. Herbel-Eisenmann et al. (2016) described a storyline that says, "The main goal of mathematics education is to produce a STEM workforce" (p. 106). Rodney et al. (2016) identified a metaphor that positioned mathematics education as competition and students as economic commodities. They saw a storyline that says "student success in mathematics is linked to economic growth" (p. 394).

This metaphor positioning mathematics students as proxies in international economic competition is not explicitly stated in the media. No one says it is necessary for us to see ourselves in a competition with other countries. The metaphor works subtly with the language of competition as if there is an undisputed need to outperform other countries. Personally, I would rather live in a world where everyone cooperated and respected each other's needs. I am not the only one who feels this way. Leaders from all countries negotiated a similar vision to mine, articulated by the United Nations in 2015 as part of its 2030 Agenda for Sustainable Development (United Nations, 2015). I point out the difference between these two visions for the world to show how this storyline relates to the *statement of fact* rhetorical device. PISA results are given as facts subtly laced with the competition metaphor to give the sense that everyone agrees that our country (whatever country that is) needs to outperform others.

McFeetors and McGarvey (2018) identified two public perceptions of mathematics that are relevant to the *mathematics equips society* storyline. In one, the "public perceives ideal school mathematics as having an expected goal of problem solving and applying mathematics to various contexts." This idea relates to the one about the STEM workforce identified by Herbel-Eisenmann et al. (2016). McFeetors and McGarvey (2018) also found that the public "perceives ideal school mathematics as having an expected goal of being a critically numerate citizen." This goes beyond the STEM workforce to include the benefits to society when people are equipped to challenge systems of power. I expect but cannot show that the competition metaphor is not often used to describe the necessity to have critically numerate citizens, though I think such citizens do strengthen a country's systems and industries.

5.3 Mathematics equips individuals

The third storyline is that *mathematics equips individuals*. This storyline is related to the idea that *mathematics equips society*, but has some nuanced differences. Chorney et al. (2016) used the same corpus as Rodney et al. (2016), noting that most articles in the corpus "were motivated by how Canada placed on the PISA, but there is strong suggestion in many of the articles that the ranking of Canada among its international competitors is a metaphor for the individual and his or her resulting social position after graduation" (p. 412). In other words, Rodney et al. were focused on the societal impact of mathematics learning, while Chorney et al. made the distinction that individuals are equipped and in competition with each other, even within a society. McFeetors and McGarvey (2018) also addressed this

storyline about equipping individuals as they found that the "public perceives ideal school mathematics as having an expected goal of developing discipline and intellectual capacity through mathematics." As with the *mathematics equips society* storyline, the rhetorical device of *statement of fact* applies here.

5.4 Mistrust of mathematics educators

The fourth storyline is what I refer to as the *mistrust of mathematics educators*. This reflects a storyline identified by Herbel-Eisenmann et al. (2016) that says "mathematics education research is not trustworthy" (p. 106). I have taken their storyline a step further and made it personal: there is a mistrust of *people* who produce mathematics education research. This personalization is in line with how positioning theory privileges the immanent over the transcendent. While media accounts of people who promote a back-to-the-basics approach usually refer to the research in a general way, there are actual people who do the research. This is an example of the *identification* rhetorical device as it takes a step away from judging actual people. (However, I do know of incidents of so-called 'mathematics advocates' explicitly questioning the credentials of particular mathematics education researchers in public discussion.)

It is worth considering why someone would need/want to promote mistrusting a body of people and their body of research. I speculate here, and encourage further research. The storyline allows a person to assume the position of a foil against the untrustworthy—as a person who, unlike those others, can be trusted. (My aside

about “so-called ‘mathematics advocates’” above is an example of me playing the same rhetorical game.) This is a way to gain exposure and perhaps power.

6 Other storylines of mathematics education

In the preceding section, I synthesized the storylines identified by mathematics education scholars who have focused specifically on media. Mathematics education scholars have identified other storylines about mathematics and mathematics education that are prevalent in society. Sometimes these are referred to as myths or discourses. However, this research does not focus on the media but rather on the myth or storyline.

For example, Anderson et al. (2018) asserted that the “idea that some of us are ‘math people’ and some are not is a myth that pervades Western society” (p. 1). They gave no examples of this myth’s presence in popular media (either in the news media nor elsewhere), apparently assuming that their readers would recognize the myth. This is an example of the rhetorical device described by Barthes (1972/2009) as *tautology* because it assumes that everyone agrees. Anderson et al. focused on a professional development program developed to counter myths, including the math people vs. non-math people myth.

Why would people need/want to believe that there are math people and non-math people? I speculate here, and encourage further research. The most obvious answer to me is that the myth allows people to feel satisfied or comfortable with their own incompetence in mathematics, or with the incompetence of the people they care for.

Clements and Sarama (2018) identified eight myths but did not show how the myths manifest. They argued against the myths, including some that relate to the call for the basics: "children need to master skills and knowledge before they can solve problems" (p. 2) and "young children must sit down and learn math. Sometimes you just have to do worksheets" (p. 2).

Why would people need/want to believe that children need to do certain things in order to develop basic skills? I speculate here, and encourage further research. The belief makes it easier to plan mathematics learning. It makes it easier to judge mathematics teachers. And it makes it easier for parents to absolve themselves of responsibility for giving their children rich mathematical experiences.

These two articles (Anderson et al., 2018 and Clements & Sarama, 2018) are part of a special issue of *Education Sciences* edited by Jo Boaler called "Dispelling Myths about Mathematics"[1]. The articles in that issue generally take the word *myth* differently from the sense in which I am using it here. They saw myth as a commonly held belief that is wrong.

Why would mathematics educators want to develop the storyline that there are myths that need to be argued against? I speculate here, and encourage further research. The storyline correctly positions us as experts and dismisses the experiences of others (perhaps correctly). The storyline could also be placed within a war metaphor (c.f. Rodney et al., 2016), where we defend our field against false claims.

[1] The special issue may be found at: https://www.mdpi.com/journal/education/special_issues/Dispelling_Myths_about_Mathematics

There is yet other research that delves deeper into the myths of mathematics and mathematics education but uses the myths for other purposes. For example, Mendick (2005) worked from interviews with 16-year-old advanced mathematics students to illuminate the gendered nature of children's self-identification as being good or not good at mathematics. She positioned these identity statements in the larger discourses of enlightenment rationality and gender. She drew on stories of socially incompetent mathematicians (including an example from the television series *Buffy the Vampire Slayer*) and of heroic mathematicians (including an example from the film *Good Will Hunting*). She referred to the larger narratives of gender and rationality as stories, myths, and discourses. These all relate to storylines. Her look at the storylines in mass media went beyond news sources and positioned the myths as deeply embedded in culture.

In the students' identity statements, Mendick (2005) identified fifteen binary opposites that supported the positioning of being good versus not-good at mathematics, including "maths people/non-maths people" and "real understanding/rote learning." The former relates to the myth challenged by Anderson et al. (2018) and the latter relates to the storyline of *basic skills vs. discovery dichotomy*. These fifteen binary opposites are in addition to the male versus female binary opposites she related to them and the binaries that could be elaborated in the enlightenment reasoning discourses. These binaries are examples of the *quantification of quality* rhetorical device. Mendick's binaries also show connections among the *basic skills vs. discovery dichotomy* storyline and the other myths that scholars in our field address but the news media typically ignores.

7 Available storylines in action

With my theorization of myth in mind and with my functionalist orientation, I return to reflect on Sheila's communication act, which I took personally as a mathematics educator. When I consider what motivated Sheila's criticism, I am looking for storylines that could explain what she chose to write. I am compelled to look beyond the storylines identified as public perception of mathematics education.

Sheila seemed dissatisfied with the universities and how they prepare teachers, invoking the *mistrust of mathematics educators* storyline. The fact that she raised the concern means that another myth was in play—universities are agents of society. The academy is responsible to society and thus society has the opportunity and perhaps the responsibility to express views on what happens there. This is a myth that I generally favour. Instead of being angry with Sheila, I could appreciate her engagement with this important public institution.

Sheila's criticism can also be interpreted as a manifestation of parenting storylines. She was concerned about her daughter. And this concern for her daughter indexes a larger concern for all the children in society, a concern that I favour.

Sheila pointed at the promotion of student agency. There are many myths that might relate to this focus. One that comes to mind is the idea that millennial children have an inappropriately strong sense of entitlement. This myth may not be explicitly about agency, but it is connected. The myth seems to say that children "these days" are not willing to do what they are told as compared to children in the past.

Perhaps agency was the real focus of Sheila's frustration, but it could also serve as an index for her general frustration with teacher preparation practices. Perhaps Sheila's real concern was with a shift away from teaching the basics—the *basic skills vs. discovery dichotomy*. In this case, news stories about university instructors promoting student agency were for her an example of the misplaced priorities of the people in the university. Sheila wanted her daughter to have basic mathematics skills, and she seemed to think that this kind of skill would equip her daughter for problems she would face in the world—the *mathematics equips individuals* storyline. Again, I could choose to appreciate her engagement in the value of my discipline.

Sheila's frustration could also be situated in its political context. At the time of the communication, a new right wing political party was emerging, which often raised complaints about the state of education in the province. Sheila was a vocal supporter of this party. Political motivations are not straightforwardly separable from personal concerns. Most likely, Sheila's frustration with the state of education was a factor in her support of the new party and this concern bolstered her support of other party endeavours as much as vice versa. This kind of connection among motivations relates to the reciprocal nature of storylines and communication acts as articulated in positioning theory. Sheila's interactions involving her daughter and others are interpreted through the political storylines she favoured, and her articulations of these experiences are clearly substantiating and somewhat shaping the political storylines. Nevertheless, the connection between her experiences and her storylines can be related to the *identification* rhetorical device, in which one judges the identification of the Other and not the actual person. If I interpret Sheila's

communication for its politics, I am using this rhetorical device by viewing her simply as a political agent and not as a complex person.

How might I respond to the multiplicity of storylines I could attach to Sheila's criticism? First, I think of this in terms of the *identification* rhetorical device. Sheila was not criticizing any teacher in particular, nor any education faculty in particular. This makes it quite difficult to refute her criticism because it covers so much.

Sheila also invoked another rhetorical device—the *statement of fact*. She wrote about the practices of teacher induction as if anyone would agree with her characterization. This move is related to the *privation of history* rhetorical device. She presented an account of the things that have led to this moment of frustration. One could try to argue with Sheila about her characterization of teacher induction, but it would be a tricky argument. I do think that mathematics educators have become increasingly interested in promoting student agency (e.g., Wagner, 2007). However, shifts in mathematics teacher preparation are significantly more complex than simply replacing a basic facts focus with a student agency focus. Rhetorical devices like *statement of fact* and *privation of history* make disagreement less possible and support the perpetuation of the myths at play.

However, positioning theory reminds me that there are other options. I need not argue against Sheila in the storylines she invoked. I can negotiate the storylines at play in any interaction. I can ignore the problematic myths that Sheila raised and focus on the available storylines that I support. I can engage with her as a parent and a responsible member of the public who shows interest in the university's role.

I encourage us as mathematics educators to take up and construct opportunities

to dialogue about mathematics education, and to encourage news media representatives to set up such actual dialogues. I had an opportunity to try this a few years ago. On a local morning radio show in my city there had been some days of heated complaints about a recent school district decision to dispense with grades on student report cards in the early years. During this time Lisa Björklund Boistrup happened to be in town collaborating with me. One of her research focuses was assessment in mathematics education. After asking her permission, I sent the following email to the radio show producer:

> The Information Morning interviews about assessment these last two days have been very interesting. It so happens that I have a visiting scholar in town for a week, who has worked extensively in assessment in Sweden (1998-2011 working in the national mathematics assessments)—Dr. Lisa Björklund Boistrup.
>
> I thought you may be interested in interviewing her on the show—Terry could ask her questions about the situation and she could answer from an outsider's perspective. She doesn't know the local context at all, so Terry would have to describe something about the situation and ask her what is done elsewhere (in Sweden, in particular) and why. I purposely didn't engage Lisa in conversation about the context here so that I would not skew her views. If you want to be in touch with her, you could email her. I'm cc-ing her.
>
> Cheers, Dave

I purposefully promoted a conversation that would change the storylines. It appeared to be effective. Lisa was great. She appeared on the radio show the next

morning, and I heard no more public complaints or debate about the issue after that. (I did hear by word of mouth that teachers were very thankful to Lisa.) I believe what made her so effective was that her interview changed the storylines at play, and her position from outside the community precipitated some changes to the storyline in the interview. She asked questions of the radio host and talked about the purposes of education. Also, Lisa's knowledge of research on assessment was an important asset.

I hope we mathematics educators can do more of this. We can volunteer to set up panel discussions with the people who are making themselves popular by complaining about mathematics education. In such face-to-face situations, we can change the storylines. Positioning theory reminds us that we do not have to accept a storyline and positioning that is suggested by others. We can address the situation with different storylines.

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