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# A Meta-Research Question about the Lack of Research in Mathematics Education Concerning Students with Physical Disability

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*This paper focuses on a “meta-research question” stemming from the first author’s PhD research on difference and inclusion/exclusion in mathematics education, namely what is the nature of the relative silence of research in social justice in mathematics education concerning people with physical disabilities. Faced with the paucity of such research, Renato decided to include this questioning in his PhD research where he argues that disability/abnormality is an invention of the normality, inspired by Edward Said who says that the Orient is an invention of the Occident. Renato Marcone approached a few mathematics educators to discuss this issue with them. Bill Atweh, a researcher with publications on social justice spanning several years, agreed to enter into a dialogue with Renato as joint reflections on this question. This paper reflects this dialogue.*

## **Presentation**

Renato’s inspiration for focusing his PhD research on physical disability in mathematics education came from his experiences in teaching mathematics to blind and deaf students since 2005 and undertaking a masters degree on the topic (Marcone, 2010). Renato commenced his PhD research in 2011, and in 2012 he read Edward Said, Frantz Fanon, Homi K. Bhabha, and Paulo Freire after reading researchers in his own research field (*Mathematics Education, Difference and Inclusion*) such as Lulu Healy, Miriam Penteadó, and others. From these authors,

Renato developed an understanding of disability as the invention of *normality* (Marcone, 2015) inspired by Said (1979) who, in his book *Orientalism*, argued that the Orient is an invention of the Occident. Renato differentiates between impairment and disability. While one can take an impairment to be a physical condition, disability is the result of having to operate in a socially constructed world and is a reference to how the impairment is seen by others in the world – as abnormality or disability. More often than not, such constructions and viewpoints are from people who do not suffer the impairment – and hence are considered “normal”. While the terms abnormality and disability may not be standard in academic and public discourse in some contexts, their deliberate use here is to highlight their pejorative connotations. Incidentally, this understanding matched the views of the participants in the research who almost unanimously agreed that impairment should not necessarily become a disability (Marcone, 2015).

Renato was reading works on social justice and mathematics education, eager to find literature that might inform his work and provide its theoretical framework. He could not find much help in the literature, and then started to ask himself “why?”. Instead of trying to raise some hypothesis or speculations, Renato decided to ask directly some authors with backgrounds in research on social justice and mathematics education. This paper reports on the conversation between Bill Atweh and Renato Marcone.

The trigger questions that Renato brought to the dialogue that was started were: Is there a relationship between what you call social justice and the teaching of mathematics for people with disability? Do you agree that there is a lack of research on this issue? Why do you think this group is not often mentioned as a minority in mathematics education publications? The asynchronous dialogue occurred by email. Renato’s contribution to the dialogue is written in the first person, bringing Bill’s ideas to the conversation as appropriate.

## **A Conversation about Inclusion, Exclusion, Mathematics Education, and Social Justice**

This question came to my mind because I was interested in understanding what makes a minority eligible to be a focus of research,

particularly in an area that claims to be seeking social justice for all students. I will start with Bill's first reaction to my invitation to participate in the dialogue. He wrote:

First I want to thank you for this opportunity for exchange about this very important and worthy question you are investigating. More importantly, the question that you are raising is a question about our own practice as researchers. It is what I might call a meta-research question that we, as a mathematics education community, should engage more often. You are asking, if I understand your email right, *why is there relative silence in the literature about this and possibly other groups of people that are left behind in mathematics education*. Second, let me say that I consider this exchange as a dialogue between us and not as a definite answer to your question.

Bill said my question made him reflect on what are the social justice questions that we raise in mathematics education. The question of gender came to his mind as perhaps one of the first questions that the community raised a few decades ago, although in the past it was not constructed as a social justice issue, but an equity issue. In his previous writings, Bill suggested that social justice is a more general and powerful term to talk about equity/diversity issues. More recently, he had suggested that ethics is even a more comprehensive term that one can use to understand exclusion, and more importantly, points to the obligation to work towards inclusion.

Indeed, I often ask myself "what does social justice mean?" since, it appears to me that we do have to define what justice is and then pursue social justice. However, as is widely believed, justice is not easy to define, as its use depends on the context in which it is used. Consulting a dictionary of philosophy (Abbagnano, 2007), I found that a classic definition of justice could be understood as an adaptation to the current socially accepted standards or, in other words, simply following the law, as Aristotle would say. Also, Hobbes argued that justice is to keep the social pacts under the coercive power of the State, meaning that without the State there are no social pacts and thus there is no justice or injustice. Still, justice, in this sense, is only following standard pre-established norms, and it is not difficult to find many other examples that justice is only about legal status. A

second possibility, accordingly to the same dictionary, is that justice is the efficiency of a norm, meaning whether or not this norm makes possible the aspired relationships among a community. The second understanding of social justice necessarily involves politics in its construction of social justice as an arena for the struggle and the pursuing of interests and rights.

Bill replied that the suggestion that knowing what something is before working towards it, “is an interesting one,” and he agrees with me saying any construct is controversial and does not lend itself to being settled once for all. However, Bill said, “We still have to act!” meaning we cannot wait for the definition to be settled before acting justly one with another. This is a point made by Ole Skovsmose (2004), that we have no option but to act responsibly towards one another, a concept Bill has taken as an argument for ethics, from Levinas, that is not based on rules and regulations but on an encounter with the other that is not based on, and precedes, knowledge.

Bill also said that we (i.e., the mathematics education community) have considered questions about poverty (mainly in developing countries), ethnicity, cultural diversity, gender, and indigeneity. These have become mainstream in the sense that there is some theoretical and empirical work done on them and they constitute identifiable strands in publications and conferences. A problem about this, according to him, is that, in any attempt to itemize social justice issues/concerns, one is always open to being questioned “but what about this or that”? The point here is that physical disabilities has not become mainstream in the above sense. The question is “*why?*” Having said that, there is a research strand in general education about inclusive education that includes research on the blind, deaf, and similar physical disabilities (of course, the language – in terms of what to call these groups – is always contested and changing). However, there are specific issues concerning mathematics education that are not addressed in this strand in general education literature. For example, we know little about the development of didactical material and/or strategies to teach mathematics (including advanced mathematics) for blind and deaf students to enable them to deal with mathematical situations in everyday life and pursue higher mathematics.

Bill recalled “a very embarrassing recent incident” (in his words) where he was giving some examples about the concept of inclusivity in a talk about “Productive Pedagogy”, in the Philippines. Bill mentioned

the usual list of social justice concerns – for example, gender, culture, ethnicity, and indigenous education. At the conclusion of the lecture, the inclusive educator of the University approached him, and gently commented that we always forget blind and deaf students in our discussion about mathematics education. Bill stated he was very thankful for the reminder and started thinking about the question I raised, even a few weeks before I wrote to him, and says: “Talking about strange coincidences! He [meaning the inclusive educator] was absolutely right. I think I am a better mathematics educator as a result – even though I still don’t know exactly what their needs are and how to meet their needs.”

It was heartening to read this. It shows that this question arises naturally in other contexts in the world. However, looking into Bill’s statement, perhaps there is an assumption that is possible that we (the mathematics education community) already know exactly what the needs of the so-called *normal* students are. Why do we usually say that we do not know the needs of people with disabilities while we do not know *anybody’s* needs, actually? As a matter of fact, there is some research showing that both groups can have the same difficulties in learning mathematical content (see, for instance, Fernandes & Healy, 2007).

I put this question to Bill and he saw it as “another very good point”. He said it would be wrong to hope that research would point out a complete list of students’ needs once and for all. However, Bill argued that since the excluded are, by definition, often voiceless, silent, forgotten, and invisible in mainstream practice, using Levinas, it points to our own weaknesses as a research community to meet these needs. Perhaps, Bill continued, some of the research in mathematics education may have the ultimate aim of “generalization” of findings and generation of a list of needs that can mechanically be satisfied. “This is not my idea of what research does or should aim to do”, he stated.

Let us go back to the question of the “why”. Bill added that one could identify many possible reasons. Research into certain areas in terms of social justice has started by people affected by the disadvantages themselves, he observed. Bill pointed out that gender research has become mainstream as the result of a group of women mathematics educators; Edward Said is Palestinian, and Fanon was Afro-French (making reference to some key authors I read for my conceptualisation of my research). He continued, saying many educators come

from lower social economic status background and that indigenous rights have been initiated by affected people themselves. Quoting him directly:

I venture to say, with some hesitation, that blind and deaf people, as well as people with a range of physical and mental disabilities only recently have started to mobilize as identifiable communities with their rights as demonstrated by the Independent Living Movement.

(See <http://bancroft.berkeley.edu/collections/drilm/>). We should say that particular measures in institutions have been made to cater for the participation of a small number of people with disability, such as ramp access, color of fonts on websites and so on. But these have not been matched by an increase of awareness and interests in mainstream areas of research in mathematics education. We agreed that it seems mathematics educators in general are not the initiators of social justice, but reflectors of issues raised, both in society and in critical social writings. In our social identities, we are mainly concerned with mathematics teaching. Some of us have strong commitment to social justice, however in many instances this commitment is narrowly defined as a commitment to the teaching and the learning of a particular social group, or particular issues of social justice.

I do agree that claims of inclusion are usually raised from the excluded groups; as Spivak (2010) says in her book *Can the Subaltern Speak?*, we cannot give voice to the voiceless, to the oppressed. It is colonizer behaviour to believe we are the owners of the stage and we can give voice to the *other*. A social justice agenda should be based on allowing each group to speak for themselves.

Still, I can say deaf people have been pretty much organized as a social community for a while, perhaps more than any other disability group, even some claiming they belong to a different culture, as they have their own language, for example. Nevertheless, they are not included as an identifiable group in social justice research and educational thought. There is an interesting documentary about this concerning the history of deaf education in United Kingdom (<http://www.bslzone.co.uk/bsl-zone/history-of-deaf-education/history-deaf-education-1/>). In this documentary, one deaf person asserted that the worst crime against the deaf community was the Milan

Conference in 1880, when a group of hearing people decided that the deaf community should be educated by the oral system only, and the sign language was to be prohibited in schools. It is an example of normal people defining abnormal people. It shows the deaf community struggling for their rights at least since the 19th century in the United Kingdom.

I put this to Bill and he indicated that he was aware of that to a certain extent. Bill recalled that he had a deaf personal friend in the past that inspired him to learn the Australian sign language in order to communicate with him. Bill was pleasantly surprised to learn about the complexity of their community. However, for some reason, Bill thinks it would be safe to say that such organization has not been extended to demands on the educational system itself in the same way that gender issues have been raised by women educators.

Another possible reason raised by Bill for this lack of research on the issue we are discussing here is what he calls “searching for the key in a lit area”, a story (joke) he heard as a child about this drunken man who was searching for his house key under a streetlight at 3 am in the morning. A policeman asked him whether he lost his key at that spot. The man said, “No, I actually lost the key around the corner”. Surprised, the policemen said, “Then why are you looking for his key here?” The drunken man said, “Well, there is more light here”! At times, it seems to Bill that in mathematics education we often chose research questions where previous research has been done and where theoretical tools have been developed. We feel safer searching in areas that have already been researched. Perhaps very few of us venture into new terrains of research. Bill thinks my research is perhaps going into a “dark” corner to search for new “truth”.

This made me feel good about my research. I knew this joke in Portuguese since I was a child; the popular wisdom has always fascinated me. It is true – I do feel in a dark corner occasionally. Bill asked me about the theories I mentioned as my inspirations at the start of our discussion, questioning if these theories make claims that some of the common “remedies” we use to help blind people, for example, (such as adapting mathematical didactical books in braille) are based on our own concept of *normality* and would we be colonizing the world of the blind according to our understanding of *normality*. Here, Bill provoked me with some questions of his own.

I look forward to reading more about your argument in detail and your data. It sounds a very innovative way to think about the area.

However, the questions in my mind are

1. What are the aspirations of the blind people you dealt with in this regard and how they see the issue of such measures?
2. Are these theories you are using related more to the “recognition” rather than the “distributive” models of social justice as Iris Young and Fraser talk about? What other ways are there to deal with their disadvantage that allows for their “participation” in their society?

Surely I cannot tell all their aspirations, but I can state at least one concerning education based on my own masters degree research (Marcone, 2010): they want access. It is widely known today (looking into official statistics in Brazil and in India, for example) that people with disability do not get access to higher formal education; the numbers of people with disability in the Brazilian universities are derisive. And those who get access want adaptation of widely available knowledge. What I am arguing is that adaptation is not enough, as it is only an imitation of what *normal* people have. As educators, we could think of different activities for different needs, and this is possible only in collaboration with the different groups we are talking about. It is not reasonable to say that this is a teacher’s responsibility alone, because it is not – teachers cannot save the world! But it is reasonable to do research on these issues in partnership with researchers who happen to be deaf, blind, or with any other impairment, as their experience of the world is the most important thing for teaching mathematics relevant to their aspirations.

Again, I brought this idea to Bill and he said that he understood my point more now. He guesses he was raising the question above more out of ignorance of my argument than disagreeing with it. According to him, he had the (wrong) impression, from the little that he knew, that I may be arguing that all modifying of our practices, both in education and social life, is colonization of the world of the blind. That’s why he raised the question as to aspirations of blind people themselves. Now he hears me saying “it is important but not



enough”. In other words, if that is the only thing we do then it may be seen as colonization. We totally agreed with each other. Bill gave an example. A few years ago he had a friend from UK who was a drama teacher who had dyslexia. He underwent a master’s degree from London University for which he had to write a thesis. He successfully argued that it would be discrimination against people in that condition to have to write a traditional thesis. He was granted his degree based on a “thesis” that was a video rather than a printed document. In our standardized culture in education and normal life, we assume sometimes that everybody should be able to do the same thing in the same way. This is neither social justice nor ethics. This is the same reasoning that gave us standards, outcomes, and standardized testing!

I need to read Iris Young and Fraser first in order to comment on their work and I will do it later. And, as I said, these theories are not dealing with people with disability; they are talking about the colonizer/colonized relationship and I am using this as inspiration to theorize on the relationship between *normal* and *abnormal* people in general, specifically people with, and people without, recognized physical impairments.

About the second aspect of the question, is the need to concentrate efforts on the exclusion apparatus instead of on the disadvantage itself? The problem is not the blindness or the deafness, rather it is the structure that creates a barrier, preventing these students to get access to the contents, to the information. They do have impairment – I am not denying it romantically – but this impairment does not need to become a disability or disadvantage. If one is blind, he or she will be disabled only in a world where is not possible to read with his or her fingers or to listen to text and so on. The idea is to concentrate on the environment, on the exclusion structures such as the school itself, instead of concentrating only on the physical impairment.

To this, Bill replied he likes this point. He said he would pass me papers that he had sent someone else about Nancy Fraser. One of the papers he had written, one is by Fraser herself, and the other by somebody else reviewing her work. Bill finds her model to understand social justice to be useful in analysing social justice action. The way he sees it is that measures of modifying current practices such as distribution and the other measures I am calling for could be based on recognition. Bill finished by saying “We will see where this dialogue would take us. I am really enjoying it and thanks for the opportunity”.

## Concluding Remarks

Our conversation has not finished yet, as this paper is not finished either. This is the first public version and we do intend to expand it in a short future. I'm reading the papers Bill Atweh has indicated and I am discussing these issues with my PhD supervisor, Ole Skovsmose. I have interviewed Swapna Mukhopadhyay too, in order to get more data for the development of this meta-research.

I will finish with an idea from Gilles Deleuze about minority and majority, taken from an interview conducted by Claire Parnet between 1988 and 1989 ([https://www.youtube.com/watch?v=\\_Wer1VGBZi8](https://www.youtube.com/watch?v=_Wer1VGBZi8)). Deleuze says that the majority cannot exist, as it is based on a pattern that is not possible to achieve. To be normal, to be part of the majority, one should possess all the majority characteristics – for example, in all the Occident a normal person, belonging to the majority, should be a heterosexual man, white, adult, and a citizen. However, Deleuze says that the majority is never anyone; it is just an empty pattern, even though many people recognize themselves in this empty pattern. “The majority is anyone, and the minority is everybody”.

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