

Mathematics in and through social justice: another misunderstood marriage?

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Abstract The current push to marry off mathematics with social justice compels one to ask such critical questions as “What *is* social justice?” and “How does (or can) mathematics look and act when viewed in/through the lenses of social justice?” Taking a critically reflective approach, this article draws the reader into a discussion of what is amiss in the currently promoted picture-perfect marriage of mathematics and social justice, presenting perspectives on both the *content* and *context* of mathematics teaching and learning. In this article, the author’s account of her experience in teaching a mathematics curriculum course for prospective middle years’ teachers highlights a call to re-imagine the relationship between mathematics and social justice as more than a perfunctory integration of a “statistics and figures” approach. The author’s reflections acknowledge the complexity and potentiality of the relationship while challenging current status quo practices and paradigms in mathematics education.

Keywords Critical · Content · Context · Discourse · Prospective teachers · Middle years · Social justice · Mathematics

Introduction

There was a time, not so long ago, when it was all the rage to integrate mathematics and science to create meaningful learning experiences for students. Research which promoted such an integrative approach espoused that mathematics could be made more real, relevant, and grounded in the importance of making sense of the world (Davidson 1995; Pang and Good 2000; Roth 1993). Not long after, it seemed apropos to move science aside and make a strong case for integrating mathematics and technology (Abramovich and Kveong Cho 2006; Childress 1996; Norton et al. 2000; Shaffer and Kaput 1998), so that one did not get left behind in the neophyte dust. Similarly, there has been a recent commitment to abandon (or, at least, de-emphasize) cognitive psychology as an interpretive framework for learning

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mathematics in favor of a partnership between mathematics and socio-cultural theories (Atweh et al. 2001; Lerman 2001). During each major shift in theoretical and practical approach, the rhetoric surrounding the change was such that teachers and/or researchers were made to feel as if they should not miss the boat on this one or they would be swimming alone. The aim, I suppose, was to convince the mathematics education community that this was the breakthrough it had been waiting for, making it difficult to imagine what we could have possibly been thinking and doing before now—before this meaningful marriage came along.

Now, a very fine marriage between mathematics and social justice has come along, ready to dissolve all the former naïve relationships in which mathematics indulged.

Social justice. Who would dare scoff at the term? Who would ask: “Who needs social justice? The world has survived just fine without focusing on it thus far.” It seems entirely unthinkable to deny or resist a move toward social justice. Further, imagine focusing this social justice lens on the context of mathematics education and we have a concept impossible to resist. Just think: After all these years of deflecting student questions such as “When will I ever use this?” now mathematics teachers can finally don a smug grin and reply, “Why, for social justice, of course!”

Dare I ask, however, the two burning questions: *What is social justice?* and, in the particular context of mathematics education, *How does (or, can) mathematics look and act when viewed in and through the lenses of social justice?*

Gindin (2002) defines a socially just society as “one that fosters and encourages the full and mutual development of all the capacities of all members of society” (p. 12). Indeed, while most individuals would articulate a desire to live in a socially-just society, conceptions of precisely what such a society might look like emerge from, and are shaped by, diverse political ideologies. In other words, there is no consensus ideology on conceptions of social justice. One might even suggest that it is a misdirected goal to strive for such a consensus. According to Brown et al. (2007), believing one can “get to a consensual ideal beyond conflicting ideologies [is] the biggest ideology of all” (p. 187). However, without such a consensus on the meaning of social justice, how does one view mathematics education in and through the lenses of social justice?

The intent of this discussion article is not to strive for consensus ideals on conceptions of social justice. Instead, the article draws the reader into an interrogation of what is missing (or amiss) in the current push to marry off mathematics with social justice. In the discussion that follows, I seek to stir up a little inner angst regarding what is amiss in touting the mathematics–social justice relationship as a blessed union. In order to do this, I first set the stage by discussing the current and most prevalent frameworks for social justice theory and practice in mathematics education. Then, I discuss the context of a particular undergraduate teacher education program that is currently being redesigned and reshaped to focus on “teaching as a way of working toward participatory democracy, more sustainable futures, and social justice” (Faculty of Education, University of Regina Program Renewal Documents 2007). From there, I move into a brief description of a mathematics curriculum course for prospective middle years’ teachers and how the experience of designing and teaching this course as part of the new program initiative challenges students’ expectations for the course. I close this article by providing my perspectives on why a future divorce between mathematics and social justice is inevitable if we do not address now what is amiss in the marriage.

Prevailing social justice frameworks in mathematics education

A recent burgeoning of research in mathematics education and mathematics teacher education highlights a call to focus on social justice in the teaching and learning of mathematics (Appelbaum and Davila 2007; Burton 2003; Gutstein 2006; Kumashiro 2004; Valero and Zevenbergen 2004). In the context of education and classrooms, Cotton and Hardy (2004) define social justice as “a way of working that accounts for, and works with, the links between oppressions, inequalities and exploitations that we see inside and outside our schools and classrooms” (p. 90). Similarly, Bose (2005) describes teacher professional development for social justice as a broadening of “its current focus on equity to include a deeper understanding of the interconnections of power, privilege, difference, oppression, and justice both domestically and internationally” (p. 78). For the most part, however, the ways in which these definitions are translated into the practices of teaching and learning, especially in mathematics, is through a focus on content issues. In other words, the most common approach to realizing a mathematics education in and through social justice is by integrating the facts and figures of poverty, exploitation, and discrimination into ready-to-use problem-based lesson plans. For example, Gutstein (2006) delineates two sets of pedagogical goals in teaching mathematics for social justice, where one is focused on issues of social justice (involving reading and writing the world with mathematics) and the other is focused on mathematics (concerned mainly with learning, understanding and connecting mathematics to “real-world” situations). Similarly, Stocker (2007) describes his reasons for constructing 50 mathematics and social justice lessons as a means to teach and practice key mathematical skills while providing “content that captures and increases student interest in justices, fairness, and kindness, replacing purposeless content that furthers no student’s ability to engage with their social reality” (p. 11).

Gutstein (2006) and Stocker (2007) represent just two examples of resources that illustrate how the relationship between mathematics and social justice is currently being conceptualized and practiced. While it would be inaccurate to suggest that this is the only approach, I have found it to be the most common, and, dare I say, the easiest approach to realizing a simplified consensus on the nature of the complex union between mathematics and social justice. That the marriage of mathematics and social justice could be so simply portrayed is a mystery to me. The “statistics and figures” content approach seems to leave the dominant characteristics and personality of mathematics intact, while molding and shaping the concerns of social justice to fit into the life-as-usual of mathematics. Not, in my mind, a marriage built to last.

If building a robust marriage between social justice and mathematics begins by working to understand the complex interpretations and readings of social justice, then perhaps one seed for a lasting relationship lies in the education of our teachers, and in acknowledging the critical role of teacher education programs.

Program renewal at the University of Regina

At one particular Canadian university (the University of Regina), the critical role of teacher education programs and “teaching for a better world” has been on the minds of faculty, students, and local school boards for some time now.

We believe that education exists to enrich individual lives, but also to serve humanity by helping to create a better, healthier, more democratic and more peaceful world.

Education ought to do more than reproduce the status quo. Education ought to be transformative... We are proposing a program that we believe will foster more generous and less condemning attitudes in future middle years teachers, and which will prepare them for working in their teaching toward a better world. (University of Regina 2007)

The program renewal initiative has come about as a result of several years of (re)visioning and (re)imagining the undergraduate teacher education program within the Faculty of Education. Among the new principles emphasized in the renewal is the offering of courses and curricular experiences that will foster deeper understanding of society, the environment, and the global economy; courses that will provide students with a better understanding of privilege, racism, and the social structure of race, gender, class, and ability. It could be said that the program principles and goals are highly desirable and yet, at the same time, contentiously courageous.

In taking up the challenge of this new program focus in my own mathematics curriculum courses for prospective teachers, I can honestly declare that the critical aims of my course did not change significantly from my previous offerings of this same course. My teaching and research experience has had considerable impact on my current perspectives on mathematics teaching and learning. In my own learning of school mathematics, I experienced mathematics as a fast-paced, highly exclusive subject of study that was not meant for the feint of heart or, for that matter, for anyone who needed to know *why* they were doing what they were doing. As a student, I not only excelled at the fast-paced execution of mathematical procedures but I was also quite compliant with institutional authority and regulations, including those that defined the “doing” of mathematics. It was years later, in my own experience of attempting to “teach as I was taught,” before I understood just how mathematics serves as a gatekeeper and filter, circulating signs of its status and power to mathematics students at all levels. Disillusioned and dissatisfied with my own approach to teaching—one that perpetuated elitist attitudes and status quo practices—I am motivated to pursue research into critical and transformative mathematics education, including what counts as knowledge as well as what and whose conceptions of mathematics matter most (Nolan 2007a).

In many ways then, even before the official implementation of our Faculty’s new middle years program, I had already designed a mathematics curriculum course reflective of the goals and philosophies of this newly proposed social justice oriented program. In addition to traditional course goals of becoming familiar with curriculum documents, exploring various pedagogical approaches to teaching and learning, and designing lesson plans—that is, all of the practical things that students want in their curriculum courses—the outline for my course also includes three additional critical aims:

- To reflect on personal attitudes toward, and beliefs about, mathematics teaching and learning;
- To ask critical questions about curriculum, teaching, and the nature(s) of mathematics;
- To reflect and act on critical issues in mathematics education, including multiculturalism, social justice, equity, diversity and inclusion, literacy, and other socio-cultural dimensions to mathematics. (Nolan 2006, p. 1)

Feeling a need to justify such critical goals, I also include the following statement of rationale in my course outline:

This course is developed in response to reform calls to view mathematics teaching and learning, as well as the nature of mathematics, through critical, integrated, and

transformative lenses. This course will encourage future middle years teachers to become familiar with the content and structure of current curriculum documents while simultaneously seeking to understand diverse views on the nature(s) of mathematics education. (Nolan 2006, p. 1)

As mentioned previously, these critical aims have been present in my course outline for some time now. The difference this time, however, is that now I have the expressed support of our Faculty's program renewal initiatives to open a space for me to be more critical of such things as the nature of mathematics and what it means to know (in) mathematics. Hence, I am entirely supportive of the philosophies and directions of the new social justice focus, *in theory*. I am sceptical, however, about *practice*, especially with respect to what it means for mathematics and my prospective middle years' teachers. Throughout all the mathematics marriages (with, for example, science integration, technology integration, and socio-cultural theories of learning), the dilemma occurs in living out the teacher education program theories in the practice of mathematics classrooms—in living out the theory/practice transitions in meaningful and transformative ways. And this, for me, remains the proverbial theory/practice thorn in my side.

When I teach undergraduate teacher education mathematics curriculum courses, the story unfolds in much the same fashion each semester: The first few weeks proceed quite smoothly and even optimistically—students embrace notions of making mathematics more inclusive, more democratic, more focused on social issues, and more accessible to all. Then enters the practicum experience in middle years classrooms. The prospective teachers spend approximately three weeks in middle years classrooms where they see, hear, and do much the same as they saw, heard, and did *themselves* as middle years students (anywhere from 6 to 26 years ago). When the practicum experience is complete, the students return to the university classroom, arms folded, demanding that more attention be devoted to the practical issues of classroom management, direct teaching, test writing, and numerous other traditional practices in which they feel inadequately prepared. They want to know (often not in their own voices but in the voices of their cooperating teachers) how they could possibly address the multitude of curriculum objectives and learning outcomes by focusing on the “side issues” of social justice, and not “real” mathematics.

When the students return from their practicum experience, there is a renewed resistance to the course work in which I invite them to engage with, and learn from, research *theory* on becoming a critically reflective mathematics teacher in *practice*. As an example, consider one task that I have assigned students in this middle years mathematics curriculum course. I refer to it as the Reflective Practitioner assignment, with the description and rationale for the assignment as follows:

As prospective teachers, it is crucial to engage in the reading and discussing of mathematics education research literature. While it is understandable that we are concerned with the practicalities of preparing to be middle years teachers, it is also necessary to understand how theory and practice are mutually informing aspects of our profession and our professional growth. With this in mind, this assignment has been designed in order to introduce you to a few key research ideas in the teaching and learning of mathematics. In particular, this assignment focuses on one of the course goals: to consider critical issues in mathematics education, including multiculturalism, social justice, equity, diversity and inclusion, literacy, and other socio-cultural dimensions to teaching and learning mathematics and science. (Nolan 2006, p. 3)

Engaging with mathematics teaching and learning at this theoretical level is a challenge for the students. For the assignment, I chose three articles for the students to read, reflect on, and discuss in small groups. The first article, by Povey (2003), focuses on exploring the opportunities that the term “citizenship” has to offer for a more just and democratic mathematics education. In the article, Povey (2003) asks the question of whether the concept of citizenship education can be reclaimed for social justice in the context of teaching and learning mathematics. The second article distributed to students was written by Mukhopadhyay (1998). In discussing the hegemony of formal school mathematics, Mukhopadhyay (1998) questions the role of discourse in mathematics, especially with respect to popular culture and the social construction of Barbie. The third and final article distributed for this assignment was written by Gutstein (2003)—an article that describes an experience of teaching mathematics for social justice in a middle years, standards-based classroom. Through a series of “real-world projects,” Gutstein seeks to increase the students’ mathematical power by introducing them to the process of reading the world, and its complex issues, with mathematics.

In the prospective teachers’ own words, the Povey article was “too political” and the Mukhopadhyay article was “too feminist”, but the Gutstein article was deemed “just right” (except perhaps, in the words of the students, “too long”). By “just right,” the prospective teachers meant that it was full of example lesson plans and activities to use in the classroom. While I would not argue that fundamentally the students *did* want to understand more about social justice issues, when it came right down to it, however, they wanted practical examples they could readily apply in the classroom. On one level, they desired that complex social justice issues be reduced to some tips and techniques for the classroom teacher. They embraced the practical lessons containing poverty statistics, world population figures, and average earned income graphs (even though they often struggled with exactly how and where to “squeeze them in” to an already full curriculum). I believe that, for them, the activities represented tangible ways to both *understand* the marriage of mathematics and social justice and to *feel good* about doing what they could to address social justice issues in/through mathematics through more meaningful “real-life” connections.

Now don’t get me wrong. I do understand that theory without grounding in everyday practice can sit lifeless in prospective teachers’ binders, which holds little transformative potential for mathematics teaching and learning. I do understand the critical necessity of educating prospective teachers and their future students in the inequities and injustices in our society and in the world at large and that one way we can do this is by integrating some of the realities of the issues (i.e., the numbers) into mathematics content. I also understand that students can learn traditional mathematics content (in potentially more meaningful ways) in and through the “statistics and figures” of social justice, making them not only more mathematically literate but also critically aware and action-oriented citizens. In my view, however, such an approach is simply not enough.

At this point, I present two perspectives that are amiss in this practical “statistics and figures” approach to the marriage of social justice and mathematics. I begin by reiterating one of my course goals: to ask critical questions about curriculum, teaching, and the nature(s) of mathematics. I believe that asking critical questions about these educational objects of our attention means questioning both the *content* with which we are charged to teach and the *context* in which we teach it, in accordance with our views on the nature of mathematics.

Beyond the cartesian plane: a perspective on content

What often fails to become illuminated in the well-intentioned “statistics and figures” approach to the marriage of social justice and mathematics is the question of “why do we teach what we teach?” The relationships between mathematics and the social justice issues of privilege, racism, and the regulatory discourses of race, gender, class, and ability cannot, in my mind, be taken seriously without also asking serious questions of whose interests are being served by not asking this question. At a recent AERA symposium (de Freitas and Nolan 2008), Appelbaum asked the following question of one of the participants:

What I tend to see “missing” from most mathematics for social justice is a critical stance on the mathematics itself. Usually mathematics is a tool for social justice projects – as if mathematics is a neutral technology of knowledge. Yet school mathematics tends to be the mathematics that grew out of European intellectual history and as a tool of colonialism and imperialism. Can you tell a story of a situation where students and teachers together interrogate the complicity of mathematics in constructing our notions of reality, truth, logic, reason, knowledge in general? (Personal Contribution: Appelbaum, March 27, 2008)

An interrogation of the use of mathematics as a neutral tool lies at the heart of my course goal of asking critical questions on the nature of mathematics and what it means to know. Elsewhere (Nolan 2007a), I have interrogated, at great length, elementary prospective teachers’ stories of what it means to know, what counts as knowledge, and who decides—all questions that they have been trained not to ask during their experiences of school mathematics. Teaching and learning mathematics for social justice through a “statistics and figures” approach serves to ignore our own complicity in establishing one form of mathematical knowledge as dominant—a form which is frequently viewed uncritically as being politically neutral and unrelated to issues of privilege, racism, and other forms of oppression. What is seldom acknowledged in this acceptance of mathematics as a tool to understand, interpret, and even change our world is the complementary post-structural perspective that mathematics is also a tool used to create our world (Cotton 1996).

In the words of Appelbaum and Davila (2007), “What we once accepted as pure, wholesome truth is now understood as culturally specific and tied to particular interests” (p. 19). Mathematics has long been viewed as a gatekeeper and filter, with mathematics educators at all levels serving (often unwillingly) to perpetuate this status. However, questioning the status of mathematics—its power, logic, and rules—is viewed almost as an implausible approach. Who would believe that the very nature of this highly regulated system of logic and truth could be called into question? In my own teaching and research experience, when I speak about questioning what counts as mathematics knowledge and who decides, I am often inundated with matter-of-fact statements that “math is math” and that it is untouched by personal values or subjectivities. Having the “math is math” mantra challenged is uncomfortable for many students, almost as if it destroys the one sure thing in their school lived experience (even if this one sure thing caused them much agony and anxiety in school). While people can be surprisingly forthcoming with “I was never very good at math” (a personal deficit approach) (Nolan 2007a), seldom is there an inverted attack where the predominant epistemological view of mathematics itself is called into question. Can I suppose that, for this reason, a more welcome approach to challenging and changing status quo practices in mathematics is to sneak the issues of inequity, oppression, and racism in by the back door? That is, might it be easier for social justice focussed

mathematics educators to continue nodding their heads to the view that “math is math” but then aiming this system of rigidly defined skills and procedures at a different target—that of the numbers connected to societal injustices? That we might not use numbers and graphs—but instead the critical questions of what counts as mathematics and who decides—may be viewed as an unforgiving challenge to the establishment of mathematics.

As an example from my own middle years classroom of prospective teachers, consider the issue of what counts as knowledge in mathematics. In order to embrace multiple ways of knowing (in) mathematics, I introduce six dimensions of mathematical knowledge—the dimensions are not new to most mathematics educators since there has been considerable emphasis on them for some time now as key areas of instruction and assessment. The dimensions of mathematics knowing that I introduce and incorporate into my course are: procedural; conceptual; language/communication; disposition; technology; and critical thinking and problem solving.

For students in my course, however, dimensions other than procedural and conceptual knowledge are generally not given much credence. For instance, students inform me that the dimension of communication (being able to explain and talk about math processes) is irrelevant as long as the learner is “getting the right answer.” Since mathematics is often taught and learned as a competitive race to the one right answer, these other aspects of what it means to know (in) mathematics are treated as “asides” to the “real” mathematics. The discursive practices that have thus far structured students’ experiences of knowing mathematics have taught them that procedural knowing leading to a single “truth” is privileged.

Returning to my discussion on the “statistics and figures” approach, I should clarify that I am not proposing that “reading the world with mathematics” (Gutstein 2006)—including understanding and challenging relations of power, inequities, discrimination, and other forms of oppression in our society and the world at large—is an insignificant focus in teaching and learning mathematics: far from it. What I believe is missing in this vision, however, is a deconstructive reading of mathematics with the world—that is, understanding how we have come to categorically accept mathematics as a neutral, yet powerful, tool of constructing knowledge, and all that is required of us is to use this tool in appropriate ways to better our world. A deconstructive reading of mathematics begins with the unchallenged suppositions about mathematics, and what counts as knowledge, and works backward to reveal its embedded injustices.

Beyond the cartesian plane: a perspective on context

In this section, I propose that social justice lies in the interrogation of the lived context of the mathematics classroom as well as the mathematics content. One could say that social justice lies beyond the Cartesian plane of content—beyond the set of all points that can be readily plotted and interpolated. Social justice is about what is unsaid, as well as said; about what is absent, as well as present—where what is unsaid and absent lie dormant in the lived mathematics classroom realities of issues such as inclusion/exclusion, gender equity, power distribution, elitism, and the perceived fallibility of mathematics and mathematics teachers. Asking critical questions about curriculum, teaching, and the nature(s) of mathematics implies a willingness to see each of these issues at work in how we structure and regulate mathematics classrooms (perhaps more so than any other school subject) to enable, for example, the unproblematic labeling of student (dis)ability, student (lack of) power and choice, suspicious dispositions toward different ways of knowing, and teachers’ (infallible) knowledge. A sense of powerlessness in noticing these issues at work

can result in students and teachers of school mathematics positioning themselves in such a manner that they unknowingly produce and reproduce themselves in a toxic relationship with mathematics.

As another example from my own middle years classroom of prospective teachers, consider the issue of teachers' infallible knowledge. While my own experience of learning school mathematics centered on the teacher-as-expert model, I endeavor to break away from this model in my own courses by involving students in collaborative group work, problem posing and solving, differentiated pedagogy and assessment, and diverse ways of knowing. I make a specific effort to encourage student personal choice and initiative in their assignment work. However, their reading of this approach is often interpreted as being left to fend for themselves. On course evaluations, students have written "we had to teach ourselves" and "we need more straight-forward instruction" (Nolan 2007b). With the rigid view of mathematics as facts, skills, rules, and procedures, and the teacher as the sole authority of transmitting and confirming the correct application of these facts, skills, rules, and procedures, it is no wonder that the infallible teacher image inhibits all hope for student agency and mathematical power, not to mention a teacher's use of diverse pedagogical approaches. The dichotomous encounter with right or wrong answers positions students as unknowing subjects, and as Klein (1998) notes, "[w]hen a student's attempts at sense making do not correspond to the authoritative ways of the classroom, s/he is excluded from participation in the dominant discourse" (p. 6).

When I teach the mathematics curriculum course, I seek to make visible the dominant discourses of school mathematics that (sometimes subtly) regulate and sustain these absent and unsaid issues of social justice with/in the classroom context. As Cotton and Hardy (2004) suggest:

... there is much we can do within schools to challenge injustice, by examining the curriculum—and assessment procedures—we offer learners, by being critical about the practices we adopt, and by being aware of the social and political structure and contexts within which we operate. (p. 101)

It seems, however, that each year I teach the course, this critical nature of my intent goes awry, with students often writing on final course evaluations that there could have been more social justice issues incorporated into the classroom activities. In other words, the "statistics and figures" approach to mathematics content is first and foremost in students' minds when it comes to articulating what it means to teach mathematics in and through social justice. The marriage of social justice and mathematics is, for me, at a crossroad as I seek to understand how I could better connect my course and its critique of mathematics teaching and learning in the minds of prospective teachers. How can I direct their attention to the fact that they had personal input into student assessment? How can I direct their attention to the fact that they had choices in their project-based work? How can I direct their attention to the fact that they had opportunities to collaborate with others and provide peer feedback? How can I direct their attention to the fact that course assignments were designed to encourage students to demonstrate their learning and knowing through multiple formats? Finally, and perhaps the most challenging question of all, how can I direct their attention to the fact that the course attempts to provide opportunities for hearing the marginalized voices calling for attention to the relationship between social justice and mathematics in the context of the politics and policies of school classrooms?

There is little doubt that directing one's attention—or, in the words of Stocker and Wagner (2008), "directing one's eyes" (p. 76)—toward a particular perspective is a power issue, and that considerable didactic tension exists in directing students' eyes while, at the

same time, promoting student agency and empowerment. A significant shift in how prospective teachers view mathematics content and context seems doubtful even if I am “successful” in directing their eyes toward noticing that social justice and mathematics are linked in more subtle and pervasive ways than the statistics and figures approach to mathematics content. Many middle years prospective teachers characterize their learning of school mathematics by feelings of anxiety, confusion, and irrelevance. In reflective moments during teacher education courses, they will sometimes voluntarily ponder aloud how these negative experiences have shaped their current disposition toward, and interest in, teaching mathematics. However, when prompted by the question “What would have made the experience better for you?” many prospective teachers will seize the “real-world” option, saying “if only my teachers had made it more real for me and connected mathematics to my everyday experiences.” The discursive practices of mathematics classrooms already work (and quite successfully) to direct eyes—they work to position and regulate teachers’ and students’ views on mathematics. I remain motivated, however, by the question of how mathematics teacher education can create spaces for resistance and deconstruction of these discursive practices.

Is divorce inevitable?

I began this article by questioning how mathematics and social justice might build a better long-standing and committed marriage together, one that is focused less on simplified consensus practices and misunderstood communication and more on possibilities for growth, dialog, and maybe even a bit of (deconstructive) counseling. My reflections in this article sought to acknowledge the complexity of the relationship, while also accepting that critique alone will not move us forward in mathematics teacher education. Appelbaum and Davila (2007) remind me that the only way forward in teaching through social justice is for schools to be restructured and reorganized to provide spaces of resistance and critique—an approach that reflects “an ideological shift in the way we think about teaching and learning in schools” (p. 17). In mathematics teacher education, I am interested in working toward such an ideological shift—one that opens spaces of empowering possibilities and potentialities for prospective mathematics teachers and their students. My intention is not to teach in closed spaces where we can all “agree on the ideal nature of student learning and classrooms for social justice” (Bose 2005, p. 95). Therefore, I continue to “direct students’ eyes” to modes of critical questioning and deconstruction—an approach that, thus far, has resulted in more frustration and self-questioning than empowerment. I continue to grapple with decoding the research theory of mathematics teacher education and social justice (Appelbaum and Davila 2007; Cotton and Hardy 2004; Skovsmose 1994, 2005; Valero and Zevenbergen 2004) such that I might create the conditions for a practice that is not centered on deploying mathematics as a neutral tool to analyze socially unjust facts and figures, but instead centered on critiquing the story-lines that weave throughout teacher education (Klein 1998) and mathematics classrooms. I continue to dream of a social justice-oriented mathematics classroom that begins by challenging the often invisible normative and regulatory aspects of schools and mathematics.

Finally, a break-through moment. On one final course evaluation, a prospective teacher wrote

I finally get that the way [the instructor] taught her class WAS about social justice... that teaching mathematics about, or through, social justice isn't just about poverty

statistics and world population figures... it's also in the thoughts and actions of the teacher toward his/her students and in the thoughts and actions of students toward each other. It's about feeling safe to be who I am and, at the same time, to critically question who I want to become and what (and who) I value. And, most of all, I think it's also about opening up the content of mathematics (what and how we teach) to this same kind of critical questioning.

Ok, so that's a lie. No one actually wrote that on the course evaluations. This is the fictional part of my story—it's the opportunity I am seizing to convey my dream for mathematics in and through social justice.

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