International Handbook
Introduction to Section on Trends on Equity and Social Justice

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Imagine a world without oppression.
Take more time here. Visualize softness.
Breathe deep.
Envision a world centered in justice.
Stay here.

Tricia Hersey (2022, p. 10)

What are words, however sacred and powerful, in the presence of the grim facts of the daily struggle to survive? Any attempt to deal with this situation on a basis of values that disregard the struggle for survival appears to be in itself a compromise with life. It is only when people live in an environment in which they are not required to exert supreme effort into just keeping alive that they seem to be able to select ends besides those of mere physical survival."

Howard Thurman (1949/2022, p. 58)

Technology has put all of us in easy reach of one another, we do again share the responsibility for being the proverbial keeper of [each other]. Where globalisation means, as it so often does, that the rich and powerful now have new means to further enrich and empower themselves at the cost of the poorer and weaker, we have a responsibility to protest in the name of universal freedom.

Nelson Mandela (2000)

In this section of the handbook, and in the spirit of its controversial theme, we bring work from scholars whose research and perspectives raise significant questions about the role of mathematics and its education vis-a-vis equity and social justice. In the introduction for this section, I bring a historical-economic lens to tracing inequality to highlight our responsibility regarding outcomes to advance equity and social justice in mathematics education. I then present an overview of the chapters, framed by the meaning of the title of the section, to entice readers into engaging with this scholarship, and conclude with some thoughts about our collective responsibility towards equity and social justice in mathematics education.

Trends, Equity, Social Justice

Thomas Piketty (2020) opens his *Capital and Ideology* book as follows:

> Every human society must justify its inequalities: unless reasons for them are found, the whole political and social edifice stands in danger of collapse. Every epoch therefore develops a range of contradictory discourses and ideologies for the purpose of legitimizing the inequality that already exists or that people believe should exist. From these discourses emerge certain economic, social, and political rules, which people then use to make sense of the ambient social structure. Out of the clash of contradictory discourses—a clash that is at once economic, social, and political—comes a dominant narrative or narratives, which bolster the existing inequality regime. (p. 1)

Piketty goes on to mention that current narratives on property, entrepreneurship, and meritocracy are terms that are directly connected to our current ideology about inequality. His book is, of course, on economic systems, and while for some, his historical analysis of inequality regimes might be considered tangential to our work in education, it is everything but.

Piketty takes ideology to mean the "a priori plausible ideas and discourses describing how a society should be structured" (p. 3). On the one hand, an ideology proposes responses to crucial questions related to boundaries, that is questions of who belongs and who does not, how and who makes decisions, and what rights do the members of the society have; and on the other, it proposes responses to crucial questions of ownership (e.g., of land, ideas, people, etc.) and its forms through legal and practical procedures that regulate "property relations between different social groups." Louie (2020) and others (e.g., Ernest, 2009; Martin, 2019; Roos, 2019) have highlighted various ideologies underlying reforms in the teaching of mathematics; an application of the definition of ideology above readily shows that, in mathematics teaching, questions of boundaries are significant, especially when we think about the school curriculum, tracking policies, or about the not-long-ago times when having representation of women in advanced mathematics courses was fought because of the implied perception of lowering curricular (Willis, 1998). Likewise, questions of property and the relationships between groups are also

relevant: property can be interpreted as knowledge, and by extension to the processes used to decide when someone has mastered a particular content; in this analogy, mathematics assessments therefore can be used to decide claims of property. So, we can substitute mathematics (and its teaching, learning, curriculum, assessment, etc.) for "society" and the notion of ideologies and the questions it must answer are readily apparent. In fact, much of our research that deals with these areas has certainly made such connections (e.g., Keitel, 2000; Skovsmose & Valero, 2002; Vithal & Valero, 2001).

But I believe that we should not do such replacement (mathematics (and its teaching, learning, curriculum, assessment, etc., for society), because the narratives that justify an inequality regime, in economic terms, have a direct impact in our work in education and in mathematics education. I argue, that ignoring these connections has led us into a path in which we either individualize problems—that is we blame individuals and their character for their own predicament—or willfully disregard that economic structures have a major responsibility for the current status quo. Examinations of ideologies of inequality in economic terms can help explain the marked different outcomes that we seek to understand and "fix," especially because ideologies determine our intellectual commitments, in particular our approaches to educational and tax regimes. In no place, the connection between educational and taxation regimes is more evident to me than in the U.S. I consider this context because I am nowadays most familiar with its workings. The U.S. has a decentralized system of school administration that is funded by both federal and local taxes (Augenblick et al., 1997; Leachman et al., 2017). Communities with high tax revenues, that is the more affluent ones, have better schools (i.e., better facilities, more demanding curriculum, better educational outcomes) than communities that with low tax revenues (Destin et al., 2019; Hanushek et al., 2019; Hung et al., 2020; Merolla & Jackson,

2019). These later communities are in addition chronically exposed to physical, environmental, and psychosocial stressors that affect the regulation of their individuals' biological systems, compromising their ability to learn and function in school and in the world (Geronimus et al., 2020; van der Kolk, 1994). Our current environmental and humanitarian crisis has a basis in economic disparities that compromise equity and social justice, which significantly impact any type of learning. In mathematics education, we have documented such impacts in Black women, especially when they are successful (McGee & Bentley, 2017) (Leyva, 2021; Leyva et al., 2021)

In contrast, in other countries with more egalitarian processes for redistributing wealth (e.g., Canada, Finland), disparities across schools' educational outcomes are a more recent phenomenon (Butler, 2019; Salmela-Aro & Chmielewski, 2019), mainly as a result of increased migration, a phenomenon that for many communities is a direct consequence of economic hardship. However, it is also the case that within countries, the impact of poverty is also felt in measures of student achievement; that is, schools still contribute to inequality (Schmidt et al., 2015).

In reading Piketty's book, it becomes evident that much of the work we are pursuing to achieve equity and social justice needs to be coupled with an understanding of the ideology that governs our economic systems, and the way in which borders and property, are justified and managed, so that we can indeed push back against pressures imposed on educators to solve problems that are about political will: about ensuring a more egalitarian regime to access wealth. The set of chapters in this section, while not directly connecting to property—a notion that has been used in sociology (e.g., Whiteness as property, Wood et al., 2019) and in mathematics education (Battey & Leyva, 2016; Leyva, 2017)—will challenge ideologies that underlie our work in mathematics education.

Chapters in This Section

Each handbook section was conceptualized to collectively account for current work by starting with a historical overview and ending with ideas for future work. The word *trend* has three slightly distinct meanings ((1) a prevailing tendency, movement and style; (2) a change over time;(3) a line of general direction or movement).[1] The first set of meanings are encompassed in the chapters in this section; our interest on equity and social justice has been heightened by the increased awareness of inequality that became obvious as the globe navigated the COVID-19 pandemic, the constant and senseless killings of people of color in cities and rural areas around the world, and the increased economic disparities that have become more entrenched. This increased awareness occurred also within our community—much attention was devoted to the role that scholarship and publication processes play in upholding such inequalities. We have seen a resurgence of research in areas directly related to equity and social justice—almost to the point that it be a must for any type of research to be engaged. The other two meanings relate to changes over time, which is certainly captured quite well in the structure for the chapters included in this section.

The Merriam Webster dictionary provides three distinct sets of meanings for the word equity: first, freedom of bias and favoritism and dealing fairly and equally with all concerned; second money value of a property, stocks, or rights to existing values; and third legal doctrines needed to administer justice to "supplement or override a narrow rigid system of law."[2] The first set of meanings are in line with what I would refer to as our current common understanding of the term—freedom from favoritism, dealing fairly with everyone concerned—which appeals to

[1] https://www.merriam-webster.com/dictionary/trends
[2] https://www.merriam-webster.com/dictionary/equity

moral and ethical values. The third set of meaning also resonate with my own understanding, and it was made more viscerally evident because of the pandemic and the negative impact that law and its application have on the communities that we willfully and carelessly have made invisible. The second set of meanings are directly connected to financial framings and relate directly to conceptions of property and wealth as described by Piketty. Interestingly enough, the Merriam Webster defines social justice simply as "a state or doctrine of *egalitarianism*" [3] and egalitarianism as "a belief in human equality especially with respect to social, political, and economic affairs" and as "a social philosophy advocating the removal of inequalities among people." [4] The definitions rely on the word *equality*, a term that our research literature has been intentionally disassociated from *equity*, mainly because equality (equal treatment or equal distribution of resources) can maintain inequities and inequalities that were structurally created. The recognition that the expression refers to a doctrine implies the existence of structures that define the doctrine and shows the direct connection between social justice and ideologies of inequality. Thus, addressing inequality might be necessary step to begin to achieve equity.

When I was given the opportunity to conceptualize this section of the handbook, prior to reading *Capital and Ideology*, I thought about scholars working on topics that are not in mainstream scholarly conversations; at the time, I saw the section as an opportunity to give voice to those scholars and dig under the structures that define our narratives about mathematics education; I also was keen into finding scholars who were understanding mathematics education in unseen communities, such as students and teachers in countries ravaged by war, terminally ill students, incarcerated people, refugees, blue-collar and migrant workers, neurodiverse people; I

[3] https://www.merriam-webster.com/dictionary/egalitarianism
[4] https://www.merriam-webster.com/dictionary/social%20justice

also thought about scholars who have dedicated their work to breaking boundaries about our conceptualization of students and schooling. The group of scholars who agreed to write chapters for this section have been opening paths towards our understanding of core ideas and processes of topics directly related to equity and social justice, which are fundamental for our understanding of the practices of mathematics education as a research field. Several months later, with the set of chapters and the framing of Piketty's book, I have a much richer perspective of the core issues that all these scholars are grappling with in the section.

Chapters in this section of the handbook seek to address specific research areas from political, philosophical, and historical perspectives within mathematics education, theorizing core research topics and bringing critical perspectives to our research practice. As an international handbook, we worked hard at reaching out to international scholars to foster conversations across intellectual perspectives with writers physically located in different countries and who may have published their work in other languages,[5] giving us a much richer basis for scholarship for the chapters. Working through these differences was a very important component of the work and, while the readers will not be privy to the rationales underlying the development of the chapters, the results are quite stimulating intellectually.

[5]Various critiques to our usage of English for communicating our scholarship (e.g., Meaney, 2013; Mesa, 2004) have not resulted in any significant change in publishing practices. The *Mathematics Education and Society* and *Educational Studies in Mathematics* make an allowance for data in other languages to be included in texts, with translations and explanations needed, without penalizing authors through word count and has provided some support to authors (Geiger *et al.*, 2022). Geiger, V., Delzoppo, C., & Straesser, R. (2022). Supporting English non-dominant language authors' efforts to publish: perspectives from the editors-in-chief of highly recognised journals in Mathematics Education. *Educational Studies in Mathematics*, *111*(3), 543-565. https://doi.org/10.1007/s10649-022-10174-0 Meaney, T. (2013). The privileging of English in mathematics education research, just a necessary evil? In *Proceedings of the 2013 Mathematics Education and Society Conference* (pp. 65-84). Mathematics Education and Society. , Mesa, V. (2004). JRME in the global village: Parlez vous Français? Habla Ud. Español? *Journal for Research in Mathematics Education*, *35*(1), 2-4.

When thinking about the organization of each section of the handbook, we proposed that each section would have an initial chapter providing a historical perspective, four chapters dealing with one specific area of research relevant to the section, and a chapter that would challenge us into new ways of thinking based on the authors' reading of the earlier chapters. This is not exactly what we have in this section; within each of the chapters, authors wove in historical perspectives, key issues of research, and challenges for our community towards furthering work. Each chapter by itself does take the reader into a significant exploration of scholarship, ideologies, historical dialogues (explicitly and figuratively), in addition to bringing new light onto how we tell stories about research and about mathematics, how we conceive of terms such as 'crisis,' 'conflict', 'intersectionality', identity, patriarchy, what is mathematics and for what good is its education, what knowledge and what aims do we uphold or suppress, and in the end pose the question: equity and social justice for whom?

Relative to the equivalent section in the *Third International Handbook* (Clements et al., 2012), the work in this section shows significant theoretical development, building upon well-known works that use a critical approach in mathematics education by Danny Martin and Rochelle Gutiérrez and more general theories such as positioning (Davies & Harré, 1990) and intersectionality (Crenshaw, 1989). Danny Martin's work has questioned the rationales used to advocate for more Black students entering careers in science, technology, engineering, and mathematics, when we know that these jobs are supporting a system that maintains oppression of people of color (Martin, 2013, 2019). Rochelle Gutiérrez has questioned our fixation with 'gaps' in mathematics achievement and participation, proposing instead to attend to power and identity (not just opportunity and achievement), to consider measures that will signal when we have achieved equitmy and to imagine a better future for our students (Gutiérrez, 2008, 2017, 2022).

But in addition, the authors in this section question the workings of race, ethnicity, gender, and of military and political power in our views of students, of teachers, and curriculum. They invite us to consider less well-known theorizations that address our relationship with coloniality and supremacy (e.g., modernity, Mignolo, 2011), epistemic injustice (Mbembe, 2017), white supremacy and settler colonialism (Bonds & Inwood, 2016), and using theoretical approaches from economics (e.g., capability approach, Sen, 1999) and political science (e.g., conflict in practice, Vergès et al., 2021). Such an expansive synthesis of scholarship in this handbook section allows us to better understand how we, as members of the mathematics education research community, are participating in the production and reproduction of inequity and social injustice through our work.

Collectively, the authors cited 538 different works spanning almost 90 years of scholarship, with the earliest being in 1934 and the latest in 2022, and most works (67%) from the years 2010 on, which appropriately covers the period since the publication of the *Third International Handbook* in 2013. Two of the chapters (Chapters 1 and 4) cited 30 (6%) works that were originally published in a language other than English (Arabic, Portuguese, Spanish, and Tamil).

More crucially, the chapters are addressing quite controversial issues. Some scholars in this section have experienced either harassment or indifference towards their ideas or both, which is a threat to all of us, even researchers whose work more comfortably sits in the mainstream dialog (Gutiérrez, 2017, 2018; The Math Ed Collective, 2023). But controversial ideas, when they are rooted in solid research evidence have brought significant changes to our society. Numerous examples abound in medicine, public health, and science (Dreger, 2016).

In this section, readers will encounter many intellectual transgressions; the opening chapter, by David Wagner and Carolina Tamayo subverts the way in which a research account is

presented, calling multiple voices into a conversation on intersectionality and invisibilization across time, disciplines, theories, and practices, and removing the barriers imposed by more commonly-known formats of academic publications. Their take on processes of invisibilization and intersectionality might provoke multiple reactions, from curiosity to skepticism about the connections made. But at the core is the effort to show the power we have given to mathematics to contribute to invisibilization of people who bring multiple lived experiences and who resist assimilation processes. Other transgressions occur in Megan Jeune's and Craig Cullen's chapter, who call into questions our efforts to produce curricula that support the development of contributing citizens to society. What should the curriculum be for children who are facing a terminal illness and will die within a short period of time? Not offering mathematics seems cruel: what arguments do we have to deny access to mathematics to such students? But then, what mathematics is to be offered? Additional transgressions occur in the chapter on conflict by Luz Valoyes-Chávez, Aldo Parra, and Jehad Alshwaikh who draw from each of the authors' personal experiences as researchers, working with students and communities that have been dehumanized, not only through schooling practices in mathematics, but also intentionally through power structures that regiment and constrain their access to basic resources. More importantly, they showcase how mathematics has been a tool that has supported these regimes and constraining structures. The chapter on gender, by Luis Leyva and Mahtab Nazemi, brings new language that will appear transgressive to some readers. But this new language regarding white cisheteropatriarchal spaces help elucidate that the path towards a holistic appreciation of students, away from binary and single stories in mathematics education, is open for us.

The two chapters that conclude the section might appear less transgressive than the other chapters. In their chapter on identity, Einat Heyd-Metzuyanim and Mellony Graven turned their

gaze on research on identity itself to uncover how authors made headway on controversial issues surrounding identity research and point out that current research practices and the often-implicit rules that govern them, can contribute to a closing of dialog across researchers. The final chapter, by David Stinson, Jayasree Subramanian, and Cathery Yeh, points to the intertwined nature of colonization projects throughout the world and their impact on communities and educational systems. They make salient that white supremacy and settler colonialism not only has a legacy, but it is also alive and continues to determine how we see the world. Their analysis of the impact of the caste system in post-colonial India reveals conflicts and contradictions that make it even more evident the role of colonial projects rooted in specific justifications for inequality.

True to the spirit of the section, the section provides an overview of past and current issues, with multiple sources called into the conversation, followed by contemporary work that updates work since the last handbook, and closing with future research directions given our current context.

Our Collective Responsibility

The reading of *Capital and Ideology* makes it even more apparent that the power to make change that sustains social justice rests not in education by itself, or in mathematics education for that matter, but in a more equitable redistribution of wealth and in a more critical understanding of property. The work demands political will that requires strong *collective* action that rejects our current ideology of economic inequality—who is deserving and who is not—and how we treat those whom we see as poor or disenfranchised. Our collective action must go beyond education to include, for example, public health and environmental researchers, who have documented the impact of poverty on human biology and on the environment in many communities around the

world (Dar & Singh, 2022; Ehigiamusoe et al., 2022; Geronimus *et al.*, 2020; Polcrova et al., 2022; Selvarajah et al., 2022; Xu et al., 2022).

In the absence of such political and social collective action much of the issues highlighted in this section will continue to be exacerbated, and our research perceived as irrelevant or worse, ineffective. As Jeremy Kilpatrick (1981) would put it, "perhaps one of the reasons for the perceived ineffectiveness of research in mathematics education is that too much has been expected of it" (p. 27). Our society has solved great problems that made living better for many people in the planet. Why can't we apply the same ingenuity when it comes to the problems raised in this section? Kristol (1973) addressing the relative easiness of going to the moon versus the difficulty in improving our system of education said,

> the one is nothing but a technological problem, the other is everything but a technological problem. Doing something about education means doing something about people—teachers, students, parents, politicians—and people are and do not become new people to suit any new ideas we might have. (p. 62)

Thus, the work in this section is an invitation to grapple with the difficulties of pursuing equity so we can achieve social justice, but as invitations go, it is up to us to accept them. We do not need to fabricate a mathematical reason for accepting the responsibility of addressing equity and social justice. The question of who benefits from all these efforts needs to always be in the forefront—lest we continue to work for the benefit of the wealthiest among us. This question must be asked recognizing that we must accept the loss of personal wealth (and the consequent privilege and power) that will be necessary to support all these efforts to achieve equity and social justice. And that "in the attempt to correct so many generations of bad faith and cruelty, when it is operating not only in the classroom but in society, [we] will meet the most fantastic, the most brutal, and the most determined resistance" (Baldwin, 1963). And even when that is the case, we will need to have clarity on what is our ideology regarding inequality, and deciding who

deserves access to what and at what cost. Finally, we need to keep showing up to heal and move forward and we need to acknowledge that when we choose to disconnect from these realities, in the political arena, we help maintain the status quo. This work demands our full attention and presence.

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