Maintaining *Standards*: A Foucauldian Historical Analysis of the NCTM Standards Movement

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The National Council of Teachers of Mathematics' Standards documents represent the most recent and most enduring reform movement in mathematics education. These documents have formed a discourse that has guided mathematics education through the 1990s and beyond. This study uses Foucault's archaeology and genealogy and his concept of the author function to explore Standards*-based mathematics education as a discursive formation and the complex power relations that made it possible for the formation to become The discourse of school mathematics. Data for the exploration includes the Standards documents, earlier histories of the NCTM Standards movement, literature surrounding the documents, and oral history interviews with several of the writers of the NCTM documents.*

Introduction

Since the mid-20th century, there have been several reform movements within mathematics education in the United States; each movement has been subject to its own unique socio-cultural and –political forces. The National Council of Teachers of Mathematics (NCTM) has positioned itself as the voice of mathematics educators in the United States, assuming an increasingly active role in mathematics education reform conversations. This activity reached a seminal point during the most recent and most enduring mathematics education reform movement—the *Standards* movement. The NCTM *Standards* documents—*Curriculum and Evaluation Standards for School Mathematics* (*CESSM*; 1989), *Professional Standards for Teaching Mathematics* (*PSTM*; 1991), *Assessment Standards for School Mathematics* (*ASSM*; 1995), and *Principles and Standards for School Mathematics*

(*PSSM*; 2000)—provided the basis for the *Standards* movement.

Collectively, the *Standards* documents have formed a *discourse*—*Standards*-based mathematics education—that has guided U.S. mathematics education through the 1990s and beyond. This paper represents a portion of a larger investigation (Bullock, 2013) that presents a history of the *Standards* movement in mathematics education based on a premise that the *Standards* were not simply documents, but monuments of a discourse (Foucault, 1972). In the spirit of the sociopolitical turn-moment in mathematics education research (Gutiérrez, 2013; Stinson & Bullock, 2012), this historical study combines Foucault's archaeology and genealogy as the methodological foundation to explore *Standards*-based mathematics education as a discourse. This study problematizes *Standards*-based mathematics education by positioning it as a discourse created and maintained through power relations. By representing a singular approach to mathematics education, this discourse has made certain statements possible and impossible, subsequently limiting ideas that fall outside of NCTM's purview.

Theoretical and Methodological Concepts

Discourse.

In education, the term "discourse" most often refers to talk and semiotics. However, Foucault's (1972) use of discourse is "more" than the signification of semiotics and "it is that 'more' that we must reveal and describe" (p. 49). The "more" that Foucault alludes to includes what is spoken, written, thought, and enacted, as well as what is silent, unthought, or unactionable (Walshaw, 2007). The term "has come to be used to embody both the formal system of signs *and* the social practices which govern their use" (Codd, 1988, p. 242). In this study, discourse is "a *system of possibility* which makes a field of knowledge *possible* [and impossible]" (Usher & Edwards, 1994, p. 90). This system includes the codes, mores, traditions, taboos, and habits of language that we accept in our daily lives and that govern the possibilities [and impossibilities] for thought, speech, and action under particular socio-political and –historical conditions. Functioning within discourse becomes second nature making it "difficult to think and

act outside it" (St Pierre, 2000, p. 485). Although we exist in and are surrounded by various discourses, we often remain unaware of their effects. For this reason, discourse often operates without critique.

Power/Knowledge.

For Foucault (1990), power is not an object or structure. Instead, it is a strategy used to exercise control in both positive and negative ways. He does not deny that power can be used as a means of oppression, but he does not limit power as a sovereign and constraining force. It can also work in productive ways to create and maintain knowledge and discourse (Fox, 1998). Power is not *a* thing that can be "possessed, seized or shared" (Foucault, 1990, p. 94), but rather *some*thing—"the multiplicity of force relations immanent in the sphere in which they operate and which constitute their own organization" (p. 92)—that circulates within relationships, hence the phrase *power relations*, and makes knowledge possible.

Foucault (1972) links knowledge and discourse by highlighting that "there is no knowledge without a particular discursive practice" (p. 183). Knowledge, therefore, is not without bounds; as the number of possible statements within a discourse is finite, so is the knowledge produced therein. While the power relations that maintain discourse also dictate knowledge production, Foucault also proposes the reverse: the knowledge produced also presupposes some conditions that make it possible (St Pierre, 2000). He popularized the term *power/knowledge* to illustrate this symbiotic relationship between power and knowledge.

Archaeology and Genealogy.

Foucault's methodological concepts of archaeology (1972) and genealogy (1995) provided a framework through which a decentered analysis of *Standards*-based mathematics education as a discourse becomes possible. Both of these approaches gather around statements as the building blocks of discourse. In archaeology, the guiding question is "How is it that one statement appeared rather than another?" (Foucault, 1972, p. 27), making apparent Foucault's intent to locate (or

attempt to locate) the "conditions of possibility" (Walshaw, 2007, p. 10) for the appearance of a statement. Archaeology allows the historian to investigate how statements become true within discourse and what discursive "rules of formation" (Foucault, 1972, p. 227) make that truth possible. The archaeologist studies the archive of discourse and "how 'things said' come into being, how they are interpreted, transformed and articulated" (Cotton, 2004, p. 220). In the spirit of the disciplinary archaeologist, the Foucauldian archaeologist begins by treating the texts that she or he approaches as monuments ripe for excavation.

Genealogy adds to archaeology "a new concern with the analysis of power" (Kendall & Wickham, 1999, p. 29). Foucault (1980) defines genealogy as "a kind of attempt to emancipate historical knowledges from subjection" (p. 85). He destabilizes the historical narrative and views it as "a field of entangled and confused...documents that have been scratched over and recopied many times" (Foucault, 1984, p. 76). Genealogy rejects history as such a metanarrative and favours historical accounts that are replete with incongruity, thus disrupting the romantic nature of historical narrative that is characterized by a clear beginning, middle, and end. Genealogy's goal is "to locate a precontext, to plot a particular historical 'surface of emergence,' to sketch a complex of events and circumstances" (Hook, 2005, p. 14) as opposed to the linear path of causation that connects the present to some "singular or determinant" (p. 14) origin that is the product of mainstream histories.

There is no consensus among scholars about the relationship between archaeology and genealogy, but I see them as complementary methodologies (Walls, 2009). The combination of archaeology and genealogy in this study is aimed at disrupting discourses that exist and function by excluding and subjugating knowledges that do not align with what is acceptable within them. Combining archaeology and genealogy allowed me to address not only the question of how *Standards*-based mathematics education became a discourse (through archaeology), but also of how that discourse became the dominant discourse (through genealogy).

Data Collecton and Analysis

Data for this exploration included the *Standards* documents and literature published in response to the *Standards* documents in

newspapers, magazines, and academic journals. Additional data came from 25, one-hour, semi-structured oral history interviews with several writers of the *Standards* documents. Narrators consented to forego anonymity after reviewing, editing, and approving the transcripts. I used holistic/descriptive coding and writing as a method of inquiry (Richardson, 1994) as analytical tools for the study.

Standards-based Mathematics Education as Discourse

Nearly all of the narrators in this study stated that the purpose of the NCTM documents was to provide direction for the field by establishing guidelines for what high quality mathematics curricula, teaching, and assessment should look like. Gary Martin described the *PSSM* as a rallying point: "It's like being the standard bearer in the old middle ages army or the guy with the flag in the Civil War and we're all gonna rally around the flag" (G. Martin, interview). The *Standards* could be no more than guidelines for curriculum because "education is the purview of the states" (D. Briars, interview). With no power to set state curricula, NCTM utilized its influence to create an environment in which the *Standards* became the basis for many states' mathematics curricula. In other words, they created a discourse: *Standards*-based mathematics education.

The data reflects that the process of creating the *Standards* began as a means of allowing mathematics educators to claim authority in mathematics education. I assert that neither the sole purpose for creating this discourse was the elevation or preservation of NCTM as an organization or any affiliated person or group of people, nor that the discourse of *Standards*-based mathematics education has formed in the way that the NCTM leadership may have intended. Nevertheless, my suggestion that the NCTM leadership did intend to create a discourse is not controversial. Romberg (1998) wrote:

> The vision of what mathematics students should have an opportunity to learn, how mathematics should be taught in classrooms, and how students and programs should be assessed and evaluated has been described in three documents prepared

> by NCTM: [*CESSM*] (1989), [*PSTM*] (1991), and [*ASSM*] (1995). (p. 8)

Although he may contest the language, it appears that Romberg is describing a discourse of school mathematics based upon the *Standards* in which what "should be" included on all fronts is clearly defined.

NCTM has been the leading voice of mathematics teachers and mathematics educators since its founding in 1920. NCTM's research journal, *Journal for Research in Mathematics Education* has been the flagship research journal in U.S. mathematics education and a leading journal internationally (Johnson, Romberg, & Scandura, 1994). The practitioner journals provide current information and instructional ideas for teachers that are not available elsewhere. Through these publications and its national, regional, and state meetings, NCTM has created a platform from which it has been able to direct the conversation within mathematics education.

NCTM used its organizational structure and assets, along with political positioning and media, to craft and promote its *Standards* as the guiding documents not only for the organization but also for school mathematics writ large. In several ways, the NCTM managed what I was able to know about the process by (a) not maintaining archives of primary data that are available to the public or to dues-paying members;[1] (b) publishing the only extended histories of mathematics education with the exception of the *Bold Ventures* study (McLeod, Stake, Schappelle, Mellissinos, & Gierl, 1996); and (c) publishing the majority of literature available related to the *Standards*. These observations may seem like an exercise in finger pointing, but these mechanisms of discourse management help to make my case rather than work against it. NCTM has done what any organization would do with its intellectual property: it has protected its investment in the *Standards* process by constructing a discourse around the process whereby the stories told about the *Standards* must be told, in large part, from NCTM's vantage point or with its endorsement.

Apple's (1992) description of the *Standards* as a *slogan system* based on three criteria provides additional support for positioning *Standards*-based mathematics education as discourse. First, the *Standards* were vague enough to create an umbrella large enough to cover those who may disagree with the message. Second, the *Standards* were specific

enough to give the audience something tangible in the moment. Finally, the *Standards* were charming, providing a call to action that inspired the mathematics education community to sustained action. This analysis is compatible with my discussion of *Standards*-based mathematics education as a discourse. The discursive representation addresses the *limits* that maintained the discourse while the slogan system described the *strategy* for maintaining the discourse.

Maintaining the Discourse

In its brief existence, NCTM has been through many changes. It has become "a recognized leader and a driving force in mathematics education" (Gates, 2003, p. 750) by engaging in a larger political project marked in 1966 by a measure that allowed it to take a more active stance on "controversial professionally related topics" (Gates, 2003, p. 749). As NCTM has changed, so has its political volume. The organization has been able to leverage its political connections in favor of *Standards*-based mathematics education. In the *Standards* movement, it experienced a shift where involvement in NCTM leadership took a notably political turn. Skip Fennell, former NCTM president, described:

> When we were on the Board you never spent time talking about mathematics, we were seemingly always talking about policy. That's a policy job.… I say to everybody that the job of the NCTM president is in Washington, DC. It's all about policy surrounding your subject. (F. Fennell, interview)

The NCTM leadership had a message that it wanted to deliver through the *Standards* documents and made personnel and editorial decisions accordingly. These measures were a form of *discourse management*. Discourse management is a mechanism of preservation or a strategy for making decisions that form and re-form a discourse to keep it viable and prominent. It is a step beyond keeping up with the pulse of the discipline; it also entails changing the pulse when necessary to redirect it to the desired discourse. NCTM engaged in discourse management through sponsorship, oversight, and dissemination of knowledge.

Managing Discourse through Sponsorship.

NCTM assumed sole authority over the contents of the *Standards* based upon its role as financier of the *Standards* documents. Aside from a small ($25,000) grant from the AT&T Foundation (McLeod, 2003) to begin the work of the *CESSM,* NCTM financed this initial standards effort. McLeod (2003) asserts:

> The lack of outside funding allowed NCTM an independence that other curriculum areas did not always have. Although other curriculum areas received up to $3 million in federal grants to develop standards, most NCTM leaders were pleased that they did not have to follow federal agency guidelines for such a project. (p. 772)

Lee Stiff echoed this point: "Unlike everyone else who created standards at this time who had federal government money to help them do that, the council paid for the creation of the standards document out of its own budget, which was millions of dollars" (L. Stiff, interview). Sales of the *Standards* documents helped to replenish NCTM's coffers and to support the later *Standards* efforts.

Managing Discourse through Oversight

The chief means of discourse management in the *Standards* movement was the selection of writers. Lee Stiff, NCTM president from 2000 to 2002, commented:

> In the guise of a democracy what that means [is] the people who were in charge didn't make themselves in charge…. The [NCTM] Board [of Directors] picked those people and the Board would know who those people are and what their perspectives are. So that when I pick you … I know who you are. I know what you've written in the past. I know what your perspective is … I believe in a very real sense the Board orchestrated this.… So in that sense the Board is creating the document in its own vision. It's just not writing the words. In reality … the dynamics will have outcomes that you may not have fully expected but in

> broad terms it's exactly what the Board and the president foresaw because they picked the people. (L. Stiff, interview)

Stiff's comments suggest a sort of secondary authorship assumed by the NCTM leadership as commissioners of the documents and conveners of the writing groups.

Olson and Berk (2001) posit that "[the *Standards* represent] the collective best thinking of the mathematics education community" (p. 306). Burrill (1997) argued that the *Standards* provided a framework to "ensure that discipline experts have a voice in helping states and districts make interpretations" (p. 335). Juxtaposing these assertions with Stiff's position calls into question if the *Standards* truly represent the community's best thinking or the best thinking that aligned with the organization's strategic plan. Stiff's comments demonstrate that the organization selected writers who were great minds that would likely legitimize the work and limit the threshold of variation from the message that NCTM wanted to bring to market.

In each of the *Standards* documents, NCTM exercised its ability to construct the document and the conditions of its public presentation. Mary Lindquist (2003) wrote of increased oversight from NCTM with each document:

> The different NCTM Boards during the five-year period of planning and developing [*PSSM*]…were much more involved in the process than previous Boards had been. They were no longer content…to react to a draft just as other NCTM members did and then to wait for the final version. (p. 831)

As NCTM changed as an organization over the years, so did its position with respect to the documents and their writers and its need to manage opportunities to deviate from its mission.

Managing Discourse through Knowledge Dissemination

NCTM's role as publisher of the *Journal for Research in Mathematics Education,* one of the leading mathematics education research journals,

makes it the gatekeeper for knowledge dissemination in mathematics education. Through this venue, the organization "influences the direction of mathematics education research" (Langrall, Martin, Ellerton, Hertel, & Fain, 2013, p. 338). Throughout the *Standards* movement, the NCTM practitioner journals functioned as supplementary instructional materials (Seymour & Davidson, 2003). In addition, NCTM has maintained a viable publishing arm that produced books that support the *Standards* agenda. The NCTM imprint is an indicator that it maintains controlling interest. Therefore, NCTM directs, in large part, knowledge production in mathematics education.

It became an unwritten rule for those who wrote for NCTM publications to demonstrate a link between their ideas and those values espoused in the *Standards*. Gerald Rising named this issue as a negative consequence of the *Standards:*

> The NCTM journals have been extremely strongly affected by [the *Standards*] ... If you write an article for [an NCTM] journal the first question they ask it "Does this fit the Standards?"… Once again it's saying, "Look, if you're doing anything that's different from the Standards, forget it." (G. Rising, interview)

It is evident that Rising perceived the *Standards* to be the arbiter of what is (im)possible for publication in NCTM's outlets. A glance through more recent NCTM journals reveals that Rising's sentiments still ring true (although the referent is increasingly shifting to the Common Core State Standards). In fact, the *Standards* became more than an obligatory reference; they have defined a movement of *Standards*-based mathematics education in which anything that has been thought, spoken, or acted upon must line up with the *Standards'* perspective in order to be considered true or valid (Parks, 2009).

Current Conversations

Efforts to problematize existing structures or ideas can be perceived as cynical or pessimistic and there may be some truth in that perception. However, it is not my intent to disparage NCTM in any way. To claim that *Standards*-based mathematics education has been "good" or "bad" is reductive; school mathematics is too complex for such simple

claims. Rather, the issue here is that positioning *any* single discourse as "right" for mathematics education is *dangerous.* Foucault (1983) explains:

> My point is not that everything is bad, but that everything is dangerous, which is not exactly the same as bad. If everything is dangerous, then we always have something to do. So my position leads not to apathy but to a hyper- and pessimistic activism. (pp. 231–232)

My pessimism, therefore, is more a healthy skepticism that keeps me from being lulled into complacency, believing that *Standards*-based mathematics education has solved any problems that it was designed to address or that it has not caused its own share of problems.

I charge the mathematics education community to maintain this sense of pessimistic activism. Although benefits are important and new ideas should breed excitement, we must exercise greater care in counting costs. However, we must watch for the moment when those ideas show potential for physical, psychological, or intellectual harm to *any* child. At that moment, we must be prepared to act. Maintaining this level of preparation means stretching the boundaries of mathematics education research so that we will be prepared with new possibilities to address existing problems (Bullock, 2012). It also means maintaining flexible curricular, instructional, or assessment structures that allow us to must maintain the humility of spirit required to abandon our individual and organizational agendas for the children's benefit.

Notes

1. I contacted NCTM as a part of this study to request access to official records from *Standards* era. I was told that the organization does not maintain such records.

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