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Appalachian Collaborative Center for Learning, Assessment and Instruction in Mathematics

The Third ACCLAIM Research Symposium: Mathematics Education: Reform and Resistance in the Life-worlds of Rural Schools and Communities

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ACCLAIM's mission is the cultivation of *indigenous leadership capacity* for the improvement of school mathematics in rural places. The project aims to (1) understand the rural context as it pertains to learning and teaching mathematics; (2) articulate in scholarly works, including empirical research, the meaning and utility of that learning and teaching among, for, and by rural people; and (3) improve the professional development of mathematics teachers and leaders in and for rural communities..

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Acknowledgements

Organizing the third of the Center's research symposia was a professional development experience for me. I got a lot of help. In particular, thanks go to my assistant, Lori Spencer, for making travel arrangements, establishing the menu, suggesting the venue and lodging arrangements, and arranging and tracking the related payments. Four months later, I'm still pleased that all these things proceeded so very smoothly. **Thanks so much, Lori**.

Our rural mathematics education doctoral students served on panels, introduced major speakers, facilitated "conversations" and took notes (and provided them to this editor in timely fashion). Thanks, dear colleagues: **Johnny Belcher, Deb Britt, Vic Brown, Jamie Fugitt, Sharilyn Granade, Sherry Jones, Kevin Kenady, Courtenay Mayes, Lisa Music, Mike Ratliff, Paula Schlesinger, Nickie Smith, Ron Smith, Debbie Waggoner, and Jeremy Zelkowski** (cohort 2) and **Barbie Buckner, Craig Green, and Sue Nichols** (cohort 1). Your dedication, your thoughtfulness, and the way you "get" rural and intellectual commitments, meanings, and outlooks (and mathematical ones, as well) is immensely gratifying to the faculty, from far and wide, who have staffed the Center.

Vena Long, the Center PI, assured me that despite my total lack of experience in planning meetings (a lack of experience carefully engineered and protected over 30 years in this business), everything would be fine. She and I in particular conceived the theme of the symposium together over the course of several months. Members of the ACCLAIM Management Team also provided reactions to tentative plans at several stages. **Thanks to the whole team, but especially to Vena**.

The seven colleagues who took on the role of conversationalist need medals! We couldn't have predicted that all would actually get ample company at their sessions—participants chose freely what conversations to take part in. In the event, though, all sessions were equally well subscribed. Those in which I took part each dealt with potentially difficult matters with care, civility, thoughtfulness and *variety*. Thank you: **Alan, Aimee, Jim, Noran, Paul, Rico, and Ted**. Noran Moffett is someone no one expected and whose observations seemed to delight participants.

Noran's daughter, Nurah, accompanied him and attended some sessions. She was not the only actual child in view, either: Lori Spencer's son Garrett (3 years old) was also present. I mention these kids because evident concern for family among all participants at the symposium is so strong that it has compelled us to spend lives devoted to caring about all families and all children. **Thank you for standing in for all children everywhere, Nurah and Garrett**. And we thank your parents for bringing you. Actually, several students and faculty were also accompanied by family members, including, I think, other children. It takes an entire family to raise a doctoral student—as some of us know extremely well from our own experience.

The symposium owes a big debt of gratitude to our major speakers—David Gruenewald, Marta Civil, and Sarah Lubienski. Their talks were *brilliant*, *challenging*, and *frank*. The actual papers, now posted to the web in the Center's Research Clearinghouse (as Working Papers 30, 31, and 32—URLs appear later in this paper) arrived as remarkably clean manuscripts, a miracle much appreciated by editors. These scholars' three voices were so authentic, so intellectually firm, and so self-assured that listeners marveled. Each offered generous insights to the domains of meaning and reality that passionately preoccupy them.

Thank you so much for standing and delivering, David, Marta, and Sarah. Your struggles are ours. You *are* heroes.

This event was comparatively unusual in the lives of faculty and doctoral students, and would not have taken place lacking the support of the funding agency. I am certain that I speak for all involved in thanking the **National Science Foundation** for five years of generous support and for its continuing interest in the work that remains to be done in the future.

This Occasional Paper might be the only proceedings document we produce from our series of symposia, for a variety of reasons. Because the agenda was packed so insanely tight, and because the ideas considered were so varied and so dense—documentation of the event seemed an obligation this time. The tight packing reflects my own sense that life is tragically short and that sheer productivity is therefore important. This might be the poet speaking in me, so I was touched to hear David Gruenewald advise us (quoting the poet Mary Oliver) to ask ourselves: What will we do with our one wild and precious life?

We're trying. Thank you, every one of you and all your kin and neighbors.

Craig Howley
Albany, Ohio
September 22, 2006

Introduction

The Third ACCLAIM Research Symposium took place over three days from May 18 through May 20, 2006. The Center's doctoral students took prominent roles, especially the entire second cohort of doctoral students. Three members of the first cohort also participated in events. Overall, the symposium staged a generative mix of voices new and familiar to the Center, of rural and urban voices, and of voices articulating varied cultures—and it brought both rising and established scholars together as colleagues: more than 40 altogether.

We met at Cherry Valley Lodge in Newark, Ohio.Events were divided between three plenary talks on the one hand (by David Gruenewald, Marta Civil, and Sarah Lubienski) and on the other hand by eight small-group conversations (sponsored and led by Ted Coladarci, Alan DeYoung, Rico Gutstein, Aimee Howley, Craig Howley, Jim Lewis, Noran Moffett, and Paul Theobald). ACCLAIM doctoral students cordially and effectively facilitated each of these events, and prepared notes. Their notes inform this proceedings document.

The more formally arranged sessions (plenary talks and conversations) were punctuated, as well, by six panels. Three panels composed of two doctoral students and a faculty member opened the responses to the plenary talks. In addition, the symposium convened three stand-alone panels: (1) *What Does Resistance to Best Practice Mean?* (all panelists were faculty); (2) *Students Interrogate Participants* (all panelists were students, posing questions to faculty participants); and (3) *Students Sum Up* (all panelists were students, reflecting on issues and dilemmas raised).

The event included a planned slow-down on the final half-day. It wasn't enough, partly because participants were pretty well mentally exhausted by then! Pacing may be more leisurely at the next symposium, if the Center is able to hold one. But life is short, and everything remains to be done.

Students' Roles

A privileged purpose of the symposium was to help students problematize issues of reform and resistance, as a possible entrée to worthy topics, issues, dilemmas, and research questions for dissertation research—or at least to serve as an instance of colleagues demonstrating to one another how they "problematize" phenomena. This is dreadfully important because, in their tenure as doctoral students, those intending to write dissertations read a lot of finished studies. *Finished* studies give the erroneous impression of neatness and finality—but the messiness of intuition, the numerous missteps, the ubiquitous tensions (of many sorts), and the occasionally gratifying triumph of epiphany, all these are mostly omitted from the finalized and peer-reviewed accounts that we all read in the academic journals.

Participation in research projects during the years before designing one's own first study are a partial introduction to the idea of problematizing presenting realities (or presenting illusions). A symposium of this sort, however, hopes to offer a broader view of the work of "problematizing," and perhaps it does so most productively from multiple perspectives. Our students, at any rate, got to interact with scholars they would never encounter otherwise, and in rare ways, as they problematized ideas about "reform" and "resistance."

Students (**Craig Green, Kevin Kenady, and Johnny Belcher**) introduced plenary speakers, responded as panelists to those speakers (**Craig Green, Jamie Fugitt, Nickie Smith, Victor Brown, Sharilyn Granade, Paula Schlesinger**), interrogated faculty as panelists (**Jeremy Zelkowski, Courtenay Mayes, Mike Ratliff, Paula Schlesinger, & Ron Smith**), and provided summative reflections as panelists (**Deb Britt, Debbie Waggoner,**

Sherry Jones, Lisa Music, Johnny Belcher). They also both facilitated the small-group conversations (**Debbie Waggoner, Lisa Music, Courtenay Mayes, Nickie Smith, Kevin Kenady, Paula Schlesinger, Johnny Belcher, and Jamie Fugit**t), and took notes during the conversations (**Deb Britt, Ron Smith, Mike Ratliff, Jeremy Zelkowski, Sherry Jones, Jamie Fugitt, Victor Brown, Sharilyn Granade**). In addition, **Sue Nichols (**from the first cohort of Center students) joined discussions and took photographs, as did Lori Spencer, of the Research Initiative staff. **Barbie Buckner** (also from the first cohort) took part in all sessions as conversationalist. As previously noted, **Craig Green** (another first cohort participant) introduced keynote speaker David Gruenewald, and he assumed this function because he had interviewed Dr. Gruenewald for the *Rural Mathematics Educator*. That interview remains a richly informative source for anyone interested to puzzle out the theoretical connections that link place with teaching and learning.

Substantive Synopsis

The good and the bad news are perhaps the same: Both the *failure of resistance* and the *success of reform* are momentary. Both are our responsibility, and so are the actual *moments* of success and failure. We are well advised to be less certain about reform and resistance than we usually seem to be, and this is where *research* comes into play. We need more doubt and less belief, some of us would argue. Doubt, in particular, is a form of resistance to unfounded or unsupported belief.

Life-world. Rural people understand resistance in their everyday worlds, however. The secret about keeping animals in a field, for instance, has less to do with fences than most people think and more to do with the nourishment inside the fence. Animals like to be fed well. When they are not fed well, they resist. Fences won't hold them. Students are the same.

Far too often, they are confined to huge feed lots where there's no food or rotten food…and an awful stench of excrement. They and their families and communities and whole cultures are bound to think badly of the experience.

The symposium took up resistance of this sort in several events. Marta Civil's plenary talk, *Working Towards Reform in Mathematics Education: Parents', Teachers', and Students' Views of Different* (recently published as ACCLAIM Working Paper No. 31) and Rico Gutstein's and Alan DeYoung's conversations were in this mode (Rico's was titled "Understanding Student Resistance: How Can Teachers Transform It?" and Alan's was titled "Going Global or Staying Local?"). These sessions considered the sort of resistance that prevails in this domain of everyday, moment-to-moment life where humans actually spend most of their time.

System-world. Other sessions, by contrast, dealt more with the system-world than with the life-world. Farmers worry about the system-world too. They sit down at their computers and stare at the bottom line. It doesn't look too good. Do the math. World-class cheap food in America. Big and expensive machines that guzzle fossil fuel. Farmers hear from business and government alike that resistance is futile. This is the system-world of farming. Not a pretty picture.

But this circumstance should sound familiar to mathematics educators in rural schools. Schools are this way, too, and also the systems within the educational system-world that govern what we make and don't make of mathematics in schools: what "school mathematics" is, who it is for, what it does, and some say, who owns it.

A number of sessions took up this thread. David Gruenewald in his keynote titled *Resistance, Reinhabitation, and Regime Change* (recently published as ACCLAIM Working Paper No. 30) and Paul Theobald in his session (titled "Education, Patriotism, and Civil

Disobedience") dealt partly with things from this vantage. So did Aimee Howley, in a conversation titled "Resistance to Grades as a Technology of Surveillance," but in a kind of bottom-up look from the classroom.

The unseen. Still other sessions dealt with something rather different from life-word and system-world—call it the aesthetic dimension or the spiritual enterprise or the life of the mind, or, following the great English novelist E.M. Forster (*Passage to India, Howard's End*), "the unseen." Take your pick among these conceptions; they all embody separation from the here-and-now.

Interestingly, the farmer, too, knows a great deal about this dimension of life. There is no good reason for doing the hard and dicey work of farming except the love of it. Farming is contrary to all common sense—or rather it's contrary to the conventional wisdom that masquerades so frequently as common sense. There are brilliant farmer-writers who explain all these matters and at least one of them, Wendell Berry, should get the Nobel Prize soon (and probably won't). None of this is to deny the practicality of a good novel, a good proof, or a good spot of education research. But these projects reach for something more, as well, and it's good to remember that fact.

More to the point, though, intellective work of this sort takes up the project of critique, and as academics we have the amazing privilege to *do* and *bear* critique in our everyday lives. Critique comes up in committee work on campus, in the classroom, in the locker room, at gatherings like the symposium, and not only in print. This responsibility can be scary for anyone unused to the role of academic resister.

It's true that one might call this sense of critique *the Nancy Reagan school of intellectual inquiry*: Just say no. But resistance of this sort is a great deal more than refusal, of course. And sometimes, or even often, it doesn't end in refusal, or not usually in mere

refusal. It crucially involves elaborating issues and developing evidence about the issues, one way or another. The "one way or another" is where objectivity comes in. Many of us still believe in objectivity!

Sarah in her talk, *Reflections from a Working-class Scholar who Resists and Embraces Scholarship in Mathematics Education* (recently published as ACCLAIM Working Paper No. 32) considered these matters from the experience of her own career, partly the resistance *of the academy* to working-class scholars—and partly the sort of resistance that the project of research represents. Jim Lewis's session ("Whose reform is it anyway? Finding common cause with Joe Sixpack") belonged to this category as well, and so did mine ("Mathematics as Elite Knowledge") and Ted Coladarci's ("Conceptualizing the Dissertation with Rural and Research – and Graduation – in Mind"). Working also from this vantage was Noran Moffett ("What is Research that Resists the Educational Status Quo?").

Three Major Papers

The major papers delivered at the symposium have each been copyedited, prepared as Working Papers of the Center, and posted to the Center's Research Clearinghouse. See the full papers for the best representation of the authors' ideas. We have encouraged the authors to seek publication beyond the Center's series of Working Papers, and we understand that David Gruenewald's manuscript has already been solicited by a peer-reviewed journal. [Since this was originally written, David's revised paper has been accepted and published in the *Journal of Research in Rural Education* as volume 21, number 9: http://www.umaine.edu/jrre/21-9.pdf .]

The short descriptions of each paper, which follow, were prepared by the authors prior to the completion of the actual manuscripts. These descriptions, which appeared in the symposium agenda, are therefore better understood as preliminary intentions for what the authors subsequently wrote, rather than as synopses of their papers.

Resistance, Reinhabitation, and Regime Change (keynote speech; Working Paper 30;) by **David Gruenewald** (Washington State University)
URL: **http://www.acclaim-math.org/docs/WP30.pdf**

David observes that, given the current dominance of "accountability" discourse in education, it is ironic that few people are paying attention to, or keeping track of, the alarming variety of educational experiences, theories, and practices that are being ignored. We need, he suggests, to pay attention and avoid everyday acts of complicity. He offers some suggestions to help preserve critical traditions and diverse views, and also suggests that educational leaders and researchers can "reload" their work by clarifying purposes, commitments, and the implicit educational practices. [A revised version of this paper was published August 14 in the Journal of Research in Rural Education, volume 21, no. 9: http://www.umaine.edu/jrre/21-9.htm -- ed.]

Working Towards Reform in Mathematics Education: Parents', Teachers', and Students' Views of Different (Working Paper 31) by **Marta Civil** (University of Arizona)
URL: **http://www.acclaim-math.org/docs/WP31.pdf**

Marta shares some of her journey with the concept of reform. She focuses mainly on her work in low-income, Latino communities and her efforts to bridge between the mathematics of everyday life and school mathematics. She addresses the notion of valorization of knowledge and the reactions to difference, particularly in the context of immigration. (She speculates that parallels exist between her experiences and ACCLAIM's experience of rural communities).

Reflections from a working-class scholar who resists and embraces scholarship in mathematics education (Working Paper 32) by **Sarah Lubienski** (University of IL, Urbana-Champaign)
URL: **http://www.acclaim-math.org/docs/WP32.pdf**

Sarah traces her own career path as a *working-class scholar*, describing how her work *has interesting raised questions* about the conventional wisdom of mathematics education reform and research on issues of equity. Not surprisingly, she shares advice for working-class people interested in academic careers.

Eight Conversations

The conversations led by participating scholars, and joined by all participants, are by their nature ephemeral—except for the fact that Center students took notes on them. This section of the proceedings is therefore able to provide detailed accounts of these eight sessions. No attempt was made to standardize students' accounts of these conversations, as the conversationalists were encouraged to structure their sessions as they best saw fit. Each conversation is prefaced by the advance description provided by the organizer.

Conversation No. 1 (Alan DeYoung and participants):
Going Global or Staying Local? Constructing future academic and career agendas that don't involve higher order math in rural high schools. (*description from symposium agenda:* This conversation was based on Dr. DeYoung's remarks on the history and philosophy of using high schools and (now) regional technical universities to obtain local or regional employment, not college attendance and the more distant job possibilities they imply, with examples from Alan's work in one eastern Kentucky high school where the contest between academics and vocational preparation was still visible and important in 2001.)

Notes by Deborah Britt, ACCLAIM Cohort 2

The conversation started with Dr. Alan DeYoung making remarks on the history and philosophy of the use of schools. These dealt with vocational curriculum leading to employment opportunities as well as academic curriculum leading to further education. Both could lead to students' distancing themselves away from local community.

Dr. DeYoung shared several examples from his research. He emphasized that his work is about schools and not always about education. Questions he tries to address in his work are: What happens in these buildings? What is going on everyday and over time? What are the mutual relationships among the groups? What is important as evidenced by the research? What are the subgroups? He pointed out that the curriculum may not be noticed much at all and that the extracurriculum may be dominant.

It has been important in his work, he said, to ask, “Where does school lead?” One of the statements he made about “losing a school is a major attack on the values and on the community” has major implications for everyone concerned with rural life-worlds. He reiterated this idea when he commented that “local economic decline leads to moral decline.” He suggested watching the movie “Hoosiers” to see the tensions between athletics and academics and how each was treated, in the film, with dignity.

He suggested reading about understanding high schools and their stratification by Hollingshead in the 1940s [*Elmtown’s Youth*,1949]. Hollingshead discusses cultural wars within the school over vocationalism. Prior to the 1960s, school seemed to be more about improving the local community and not exporting the students out of the community. He suggested reading Peshkin’s work, in which a school board in the 1970s was not interested in school reform [*The Imperfect Union*, 1982]. Dr. DeYoung recounted an interesting remark by an AP physics and calculus teacher in one of the schools he studied: “I have never had a single person ask me about things of the school.” It seems that schools are and have been contested sites where the decision about who is more moral (i.e., more right, whose ideas about practice are best) continues.

Some of the conversation included issues of mathematics as the gateway (or gate*keeper*) to further schooling. The mathematics curriculum is certainly affected by decisions made about who occupies the moral high ground and where schooling leads.

Conversation No. 2 (Craig Howley and participants, assisted by Oscar Chavez): *Mathematics as Elite Knowledge.* Is math per se elite knowledge, or does it take schools to make knowledge of any sort "elite"? In what sense is *school* mathematics elite knowledge? How did school math get this way? Is this how it is? Is it liberating to know math? Or is it confining? How does this compare to reading? What might Bob Moses say? Rico Gutstein? How might one resist school math as elite knowledge in-school and out?

Notes by Ron Smith, ACCLAIM Cohort 2

This session was organized as a focus group to raise issues around the perspective of the symposium theme, based on a series of questions posed by Dr. Howley to the group. Distinguishing between education and schooling, Dr. Howley noted that Henry Adams, the great historian and observer of American culture, claimed [in his autobiography *The Education of Henry Adams*] that schools should teach just two things: mathematics and languages. The observations in these notes are perhaps best read as claims or speculations. Originating across participants they are by no means presented as consistent arguments; indeed, they often conflict with one another. No individual attributions are given in the notes.

Question 1: What makes knowledge elite? Or, why is it improper to insist it is exclusive or privileged?

Parties to the conversation responded variously: Knowledge opens doors that are not available without it. Knowledge is an enabler that allows access. There are 2 ways that knowledge enables:

1. It provides power and puts the possessor at the top of a pyramid.
2. It opens doors to understanding how things work.

Knowledge by itself (observed one participant) is not elite, because many have the potential to obtain knowledge but never reach their potential. One possible reason for this lack of achieving potential could be a result of the educational system. John McPhee, who wrote

Levels of the Game, stated that tennis is not an elite game. You never reach the top performance level, but you continue to improve. Similarly, one never reaches a complete level of knowledge but continues to gain more. People tend in part to be limited by their own capacity. Some tennis players have more capacity to play at a higher level than others. Some Kenyans tend to have a greater capacity to run marathons than other nationalities. Is it possible that some become elitist in their knowledge due to their capacity? In order to make more sense of this statement requires a definition of elite. For instance, one can be elite in their field of expertise depending on your definition of elite.

Other observations included: (1) Is it the purpose of education to create a political aristocracy as Thomas Jefferson believed? (2) A teaching license or doctorate degree does provide a degree of freedom to the holder of such credentials.

Question 2: In what sense is/is not the discipline of mathematics elite knowledge (not school mathematics)

One participant observed: Mathematics is often seen as being the "keys to the kingdom". Often, mathematics closes doors to individuals. For instance, why do journalists need to be successful at calculus in order to be admitted into the journalism school (reportedly the practice at one university)? Mathematics is used to weed out candidates in other departments. Do mathematicians feel they are smarter than others simply because they know mathematics? Mathematics is used as:

- A filter
- A judge of intelligence

Most people would agree that those who are good at mathematics are intelligent. However, it cannot be assumed that if a person has not shown themselves to be good at mathematics then that person is not intelligent.

There is an elite form of mathematics. The problem is when courses such as calculus are put into this elite category because calculus should be a class for everyone. These general mathematics courses should not be used to weed students out of programs. Instead, the universities should create mathematics courses that benefit these students. The purpose of these classes should be to widen students' general knowledge, not to keep them out of areas of study. Is it the aesthetic side of mathematics that is elite, or is it the pragmatic, "tool" side? There is a belief that the "bigger and better" your tool set, the better prepared you are for society.

Another comment: One source for the feeling of elitism among mathematics folks is that schools are actively seeking teachers of mathematics and are willing to pay extra for these individuals. In these days of programs being cut by districts, there is seldom a cut in mathematics and science. Both of these facts contribute to the aura of elitism in mathematics. Many schools, and states, are using student scores on the PRAXIS mathematics test to weed out teachers. How do rural schools deal with this problem?

Some educators believe that mathematics is beyond the reach of some of their students. Officials of one public school mentioned by a participant were upset when "too many" of their students were successful on a test to determine who should be placed in elementary algebra. Apparently some or many schools are not organized to accommodate the actual success of "too many" students.

Should success on these tests determine which students enter certain classes or programs? Many Latinos do not, for instance, perform well on these tests, but they are nonetheless very capable. Many students fail to perform well because they do not want to succeed academically. Some communities have higher expectations than others. Often it appears that rural students are not expected to achieve.

Question 3: To what extent do privilege and exclusion constitute a problem, dilemma and a challenge for teaching math?

The way that a teacher sees students is often based on the teacher's background. Many teachers do not respond negatively out of ill-intention, but do so quite unintentionally. For example, some teachers in low-income schools do not see the importance of higher-level mathematics for their students. In an attempt to counteract this problem, one university is requiring their pre-service teachers to participate in an exercise to see how students can perform better than expected.

We need (claimed one participant) to get beyond the teaching of algorithms by themselves. Students find the algorithms boring and without reason. The algorithms appear to them to be "magic." Some teachers teach their students tricks in order to "protect" them from the mathematics. So why do we teach algorithms? Is it due to high stakes testing? Is it due to pressure from administrators to get results, without concern for understanding? Have the standards contributed to this problem? It appears that when there is a standard, then teachers will teach to that standard to the detriment of the educational process.

Currently one state mentioned by a participant has short response questions on their test, but they are considering removing them. The reason for their removal has been partly attributed to poor student performance on these items. There have been occasions where teachers teach students how to respond to the open response questions to the point that student answers begin to look alike (claimed this participant).

Question 4: What are the implications for what we had to say about appropriate/ inappropriate elitism, especially for rural communities?

In one state mentioned by a participant, mathematics has a heavy weighting on the state test. Part of the problem in this state is reportedly school consolidation.

Participants posed questions about effectiveness in teaching mathematics:

- What are the different views of education?
- What kind of mathematics do we teach?
- What is the purpose of learning mathematics?
- How do rural issues elsewhere in the world compare to American rural issues?
- Are there cultural and international perspectives?
- What about local vs. international according to Geert Hofstede?

One participant cited Kieran Egan on schooling, in *Getting it Wrong from the Beginning*. There he describes three goals of education—all of them together mutually incompatible. Schooling cannot accomplish everything.

References and relevant sources:

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Whitehead, Alfred North (1929). *The Aims of Education*.

Henry Adams. (1918). *The Education of Henry Adams*.

J. Glenn Gray. (1968). *The promise of wisdom*. A second edition was published in 1984 under the title *Re-thinking American education : a philosophy of teaching and learning*.

A Mathematician's Apology, by G. H. Hardy.

Geert Hofstede (2001). *Cultures and Organizations*; also see *Culture's Consequences*

Kieran Egan. (1999). *Children's Minds, Talking Rabbits & Clockwork Oranges: Essays on Education*, a compilation of essays and articles published elsewhere (http://www.educ.sfu.ca/kegan/ChilMinds.html). Two of the essays in that book are in full text on his website: http://www.educ.sfu.ca/kegan/Competingvoices.html .

The following, one of Egan's best, was published as "Some presuppositions that determine curriculum decisions" in the *Journal of Curriculum Studies* (vol. 10, no. 2, pp. 123-33, 1978): http://www.educ.sfu.ca/kegan/Presuppositions.html .

His is also (2002) *Getting It Wrong from the Beginning: Our Progressivist Inheritance from Herbert Spencer, John Dewey, and Jean Piaget*.

The Values and Mathematics Project (VAMP), now known as Values in Mathematics and Science Education. This site includes links to papers they have published.(http://www.education.monash.edu.au/centres/sciencemte/vamp.html).

Conversation No. 3 (Paul Theobald and participants)
Education, Patriotism, and Civil Disobedience. Paul held this conversation as a possible delineation of the cultural assumptions that translate into widespread compliance with the status quo on the part of educators generally, and among rural educators, specifically. His hope was to consider what it might take to cultivate a *civilly disobedient school board*, or a *civilly disobedient school*.

Notes by Michael Ratliff, ACCLAIM Cohort 2

Theobald began the session with a brief reflection on teaching the rural education course to ACCLAIM Cohort 2 the previous fall. His emphasis was on how much he learned from teaching the course (e.g., mountaintop removal – a continuation of the desecration of the Appalachian region). He then turned his attention to what Wendell Berry refers to as "modern superstitions." The example Theobald gave was Berry's comment on humankind's ability eventually to make the burning of coal environmentally neutral; however, coal is a finite resource – i.e., there is enough to "power" the United States for approximately 250 years (two *clongs* on "The Clock of the Long Now"). Theobald posed the following question: Is it permissible to continue to consume given (1) the resource is finite and (2) the effects of burning coal on our atmosphere?

Theobald's next point was that most academicians are privileged with a very manageable workload, often studying and researching their interests. Given this privileged status, academicians have the responsibility to attend to such existing circumstances as

environmental desecration, the widening gap between the wealthy and poor in our society, the inability to afford or get health care, pensions being taken away, and a minimum wage that hasn't been raised in over 10 years (though Congress has given itself five raises). He implied that these kinds of pressing circumstances are those that the academicians should be focused on, yet there is a disconnect, he claimed, between educational discourse and these circumstances.

Theobald then commented on the previous two presentations (David Gruenewald's and Martha Civil's) emphasizing that schooling of the 20th century was very much factory-like and attempted to produce experts (*specialization* as defined by Charles Elliot, President of Harvard University in the late 19th and early 20th centuries) in all realms of life including education, where teachers were the experts and parents and the public were reduced in their roles in public education. On the other hand, more recent educational research (such as Marta's work) has focused on the role of the "public" entering back into public education.

As a premise to the session's topic, Theobald reflected on his time in the Education Department at Texas A&M. During this time, the first draft of "No Child Left Behind" (NCLB) became a proposal for the state of Texas (under a different name – but, never became state law). [An aside: Theobald and others in the A&M's education department had no input into the document yet it came from their department.] One of the pieces that prompted the document was an enormous survey of businesses and parents. The survey included results favoring accountability of schools for student achievement; accountability in the context of the proposed law implied yearly standardized testing (high stakes testing). However, Theobald suggested that had parents been aware of accountability in this context, most would have not favored the accountability of schools for student achievement in the survey. He asserted that most parents would prefer that their children not experience the level

of stress resulting from standardized testing and, in fact, many educators would agree. Accountability can, he observed, be defined and measured in other ways. Furthermore, Theobald hoped that accountability will be redefined at the school level (negotiated with the parents and public) rather than the national, state, or even district levels, when NCLB is reauthorized.

Theobald also pointed out that high-stakes testing creates a narrowing of the curriculum and the restriction of pedagogy—in addition to the high levels of stress imposed on students. Assuming that there are no great changes in a reauthorized NCLB, what can be done to combat this circumstance?

Theobald briefly described two study groups (from two rural school districts in New York) that he's working with on this negotiation of accountability; the accountability will probably mean that the districts will opt out of participating in the legal requirement – hence, the districts are *civilly disobedient*. He believes it is entirely possible in rural areas for schools and school districts to be civilly disobedient and to negotiate their own accountability systems. Some versions of education theory imply that decisions on educational matters involving students are best made by those closest to those students – hence, teachers and parents of the students. NCLB at the federal level is much too blunt an instrument to apply to the complexities of teaching and learning in particular places.

Theobald's proposition: If allowances are not made in the reauthorization of NCLB, then it is time for acts of civil disobedience in the educational discourse of our country. Theobald concluded and opened the floor to all participants.

Discussion

The following issues/questions were raised and discussed by various participants in the session.

(1) What about funding if a school/school district is civilly disobedient? It was pointed out that federal funding is most often less than 10% of a schools total budget. However, state funding accounts for much more and is a concern for a “renegade” school/school district opting out of legal requirements. Such renegade schools/school districts must have commitment and courage, but also good lawyers. Real change in this country requires acts of civil disobedience – e.g., the Constitution and Declaration of Independence were illegal acts of civil disobedience.

(2) How can we be sure that the assessments of these “renegade” schools are comparable to state assessments? The role of state departments should be the assessment of what local schools/school districts design for their accountability. This would not be an easy task because of cultural assumptions tied to the educational endeavor. Parents often define success as an education that allows their children to obtain a job that enables a secure life. The problem is many of the jobs are disappearing in our country. The educational process should include the political realm and should not be totally aimed at the economic realm. Training for competing in a global economy does not promote upward mobility. The key point: Education should be about work, but also the terms and conditions of work.

(3) What ensures that the NCLB and state assessments are good assessments? The question was raised as a counter to the previous question. Also, a point was made about the costs involved in the NCLB and state assessments. (A lot of people are making a lot of money from standardized testing!)

(4) How do you (Theobald) position yourself as a researcher in these two school districts (previously mentioned)? Theobald stated that he was very upfront with the administrators in that if you buy into the study group, your teachers will obtain intellectual leverage over the educational endeavor. He stated that his methodology was action research prompted by an agenda he shared with the school districts. The opting out of NCLB is not an agenda item for this project; however, he's hoping that the school districts think through opting out of NCLB as an alternative. The frustrations of NCLB are at all levels, especially administrators.

(5) A participant informed the group about the National Mathematics Advisory Panel. There were a few comments regarding the Panel's make-up (including cognitive psychologists, principal believed to not have a mathematics background, and chaired by a president emeritus and former chemistry professor from the University of Texas); but, the conversation was focused on an email discussion about constructivism. Constructivism was being cast as a part of the curriculum (method of discovery) rather than a learning theory by Panel members. Is this a situation where civil disobedience is appropriate? If so, how – what can you do? Theobald commented that this group appears to be one of those "think tanks" (often seen in *Education Week*) that money has been thrown at to address a problem. Only rarely do they actually address the presenting problem. And, even more rarely do they engage a problem that truly relates to the issues of the complex act of teaching and learning—for instance, researching what constructivism as a learning theory actually means for the instructional act, or what life in a democracy actually means for curricular choices.

Theobald observed that we, the public, are more likely to effect real change through a vehicle such as civil disobedience in the education realm than in the economic or political realm because of the great power differentials in our society (similar to the dilemma that

confronted citizens in Europe at the end of the Feudal Era). Furthermore, if you believe Plato, the educational realm is the most important because of its effect on the economic and political realms.

(6) Where do you begin? A participant who had taught preservice teachers for 19 years observed that she could probably count 10 of them who had the ability to take a leadership role in a civil disobedient act. Her concern is that many school districts are choosing curricula such as Saxon mathematics because most parents only know NCLB and the assessments associated with it. There may be a fear of other assessments, even school designed, as being worse. Theobald responded that there are certainly risks; however, in his view, the risks are worthwhile given the negative educational value of NCLB. Those risks are weighed against the education value of the local schools' and school districts' curricular choices. One of the positives that Theobald has observed in the past few years is the willingness of new teachers to try new things – hence, they are probably more willing to orchestrate acts of civil disobedience. Veteran teachers need to be involved though, he claimed.

(7) Are there lessons to be learned from charter schools? Theobald commented that in general, the concept seems good and the creation of charter schools means more schools (mostly smaller); but, the problem is that there is not always a fair distribution of resources.

A participant observed that often one looks at the power out there and thinks that the power must be changed. But, as a philosopher once stated, the power circulates and becomes internalized – so that one actually enacts that to which one is *opposed* (and often on a *daily* basis). One of the first steps of subverting that cycle is for each actor to examine their own actions to see exactly where one is being complicit in reproducing that power that one objects to; then, start undoing such personal complicity in concert with the community and with like-

minded others. Acting alone, this participant observed, is difficult, especially when risks are involved. This state of mind enables civil disobedience and, in fact, makes it easier.

Conversation No. 4 (**Noran Moffett and participants)**
What is research that resists the educational status quo? Dr. Moffett, who recently suffers from post-dissertation syndrome (PDS), observes that doctoral students select topics that concede nothing without a demand. They never have and they probably never will. What *is* your research agenda? What *are* you up to? This discussion seeks to engage ideas about the relationship of theory and practice. Noran believes that education research needs to be useful. But what's "useful"? The focal point will be self-disclosure and reflection about motive for doing research in the first place. [This session was more confessional than others, and the note-taker reported the identities of participants.]

Notes by Jeremy Zelkowski, ACCLAIM Cohort 2

Dr. Moffett first explained how the session would take place. He wanted each doctoral student to introduce themselves and then tell about their entry to the respective program and where they might be heading to a research question.

Four students from cohort 2 were present. Courtenay Mayes, Victor Brown, and Nickie Smith, and Jeremy Zelkowski. They each briefly answered the following questions:

1. Who are you?

2. What theory informs your research?

3. What practice has propagated your research passion?

4. What literature supports or challenges your passion?

5. Where do you go from here (dissertation and resistance)?

All the respondents answered more generally than directly. Jeremy Zelkowski went first and spoke about the desire to see a more prepared average student entering college level mathematics classes. The passion for this work comes from seeing properly motivated students who were nonetheless very poorly educated mathematically in high school. Jeremy indicated that a research topic exploring students who enter college, complete year one, but then fail to graduate even within 6 years. How are mathematics or mathematics courses

directly related to this group of students' failure to graduate?. In relation to this circumstance, a dissertation might possibly compare the university experience of students from rural and non-rural districts (for instance, in a given state and a given university, say, in West Virginia at WVU).

Courtenay Mayes gave reference to the study of the choice of African-American males to take or avoid advanced mathematics courses. Courtenay gave reasons why this dilemma is of strong interest to her, alluding to her family history.

Victor Brown first gave the fact of 20+ years in teaching, 5 years in publishing, and 5 years as a math coach for being the most significant reason for his passion. Victor commented on his desire to serve the population, since he has a wealth of experience. He also alluded to the vocabulary of mathematics (or its absence among many students). A dissertation idea may focus on getting teachers to better understand the mathematics vocabulary.

Nickie Smith presented her experience at community college (within a 4-year school) and that her present position is at one of Ohio's most rural teacher preparation schools. Nickie would like to pursue researching something at the community college level.

Then 4 professionals in the session were invited to comment and offer guidance. Dr. Moffett went first. His comments included his dissertation topic of 30+ rural K-8 schools. He gave a brief overview of his recent move from a rural teaching and administration position at his university. He commented that he is a lifelong student and loves to be so. His resistance was to prepare rural settings educationally.

Dr. Karen Mitchell was next and commented on Jeremy's comments first. She indicated that her university is focusing on how to retain students sense of community when at Marshall after leaving their home communities. She suggested a source for Victor to

consult relevant to his concern with mathematics vocabulary. She also noted for Courtenay that some research has centered on why African-American males do not and choose to participate in study groups.

Dr. David Gruenewald then briefly indicated how important it is to have an awesome working relationship with your dissertation committee. He went as far as saying a friendship.

Dr. Rico Gutstein observed that doctoral students must be clear on why they are doing the Ph.D. and must have a persistent journey. He asked the students in the room not to let their committee or university push them around.

Conversation No. 5 (Jim Lewis and participants)
Whose reform is it anyway? Finding common cause with Joe Sixpack. Educators seem to believe both that (a) math education reform is needed and (b) strong agreement about the nature of the reform needed exists (at least among those whose opinions matter). Jim questions whether the mathematics community is in full agreement. This conversation will pose a series of questions about educational aims and means, the hypothetical need for reform (and resistance), and the prospects for making common cause with citizens, parents, and other educators in (rural) communities? A particular concern is for Joe Sixpack, the ordinary rural citizen who asks, "Will changes down at the schoolhouse result in even more of our young people leaving our community never to return?

Notes by Sherry Jones, ACCLAIM Cohort 2

Sometimes educators act as if it is a given that reform in mathematics education is both necessary and that there is broad consensus (among those whose opinions matter) as to the nature of the reform that is needed. For example, in writing about recommendations in the 1989 NCTM Standards, *A Call for Change*, published by the MAA in 1991, says “Such substantive changes in school mathematics will require corresponding changes in the preparation of teachers…. This document calls for change in *how* and *what* mathematics is taught to prospective teachers.” Unfortunately, the mathematics community had not bought

into either the need for change nor the change that was needed, and the recommendations of that publication went largely unheeded in mathematics departments.

Successful reform almost certainly needs broad "buy-in" from many constituents who have an interest in the results of that reform. Among the concerns that must be addressed if mathematics education reform is to be successful are:

- The mathematician who asks, "Is the mathematics correct and will the reforms result in more students arriving at college ready to pursue study in a mathematically intensive discipline?
- The principal (or teacher) who asks, "Will our students be more successful on state mandated tests?"
- The parent who asks, "Will my child get into a good college and be ready to take calculus as a freshman?"
- The ordinary citizen (i.e., Joe Sixpack) who asks, "Will these changes result in even more of our young people leaving our (rural) community never to return?"

We will begin this small-group session by asking, "What is the aim of teaching mathematics in our K-12 schools and how does the mathematics teacher best achieve this aim?" We will then discuss both the need for reform of mathematics education and resistance to that reform. Finally, we will ask, "Can we find common cause with the citizens, parents and other educators in our (rural) communities?"

Questions and Comments

Question 1. What is the aim of mathematics in K-12 schools and how does one try to achieve that aim?

- The aim of mathematics is the best service of our students…to educate beyond the level they actually need.
- The aim of mathematics is developing a degree of facility and comfort level. Mathematics is a mental model of confronting the world in quantity, space, and logic. An appreciation of it and facility with it is too uncommonly grasped.
- The aim of mathematics is making sure kids can get through hurdles, to help students critique, and be smart consumers.
- The aim of mathematics, presently, is honing students for college. That is not necessarily the way it should be.
- The aim of mathematics is to help students keep options in their future open. Reasoning is needed in many disciplines. Students should have a familiarity with proof and an appreciation of the beauty of mathematics.
- The aim of mathematics should be to prepare students to be life long learners. Students will need logical thinking, reasoning, and problem solving skills for the many situations they encounter in life regardless of their occupation.
- Mathematics needs to be taught in such a way that students make sense of things and connections with how mathematics fits together. Students need to understand why.
- Real world situations should be brought into the classroom to help develop problem-solving ability, an appreciation of mathematics, and informed consumers.
- The aim of mathematics is "to produce an informed citizen who is able to interpret his environment."
- George Polya, Stanford professor, in answer to the question, "What is the aim of teaching mathematics in the primary grades," stated that this question is within the realm of the question, "What is the aim of the school?" Thirty-seven years ago, Polya

answered this question by saying the aim of the school is to "develop the inner resources of the child."

Question 2. Is reform needed? And, if so, why is there resistance to reform?

- Reform is needed because the way math has been taught in the past is not effective for many people.
- Students learning problems in mathematics is evident in the high percentage of students in developmental college mathematics courses.
- Colleges need to change their approach to teaching mathematics and in turn, the K-12 levels need to change.
- The "blame game" needs to stop and we need to work together.
- A system level of reform does not look promising.

Question 3. Can we find a broad consensus with citizens, parents, and other educators in our rural communities.

- National standards will provoke a fight for who is going to control the standards and determine what they are.
- The problem is much deeper than just reforming mathematics. There is resistance among students in this country against learning. Is it because we are a "goods focused" nation and our students have become spoiled? Putting gas in a car won't help if the tires are flat.
- A major problem is that many elementary teachers do not understand the connections in mathematics well enough to help their students achieve a deep understanding.

- Nobody likes changes except babies in diapers.

Conversation No. 6 (Aimee Howley and participants)
Resistance to grades as a technology of surveillance. Measurement specialists make the claim that the primary purpose of grades is to communicate information (primarily to students) about academic performance. In practice, this use of grades is not the dominant one. Grades reward compliance, punish recalcitrance, and sort students into tracks. Math grades do all this and more. Do we need to use grades this way? Do we need grades in math classes at all? What would math classes be like without grades? What does this look like in rural places? With girls and boys? These questions will help structure a conversation about "technologies of surveillance" and the meaning of math grades in the lives of rural students.

Notes by Jamie Fugitt, ACCLAIM Cohort 2

Various technologies of control and surveillance are apparent in many facets of society and specifically in schools. For example, discipline is clearly a technology of control. Discipline is used as an attempt to normalize kids to appropriate behavior. What about grades? Are grades, as measurement specialists claim, primarily used to communicate information about academic performance to students, or are grades used to reward compliance, punish recalcitrance, and sort students based on their origins and probable destinies? Is the "appropriate" purpose of grades found someplace between these two views?

What about grades in mathematics? Grades in mathematics courses often serve as gatekeepers to other disciplines. For example, 100 students may be seeking a spot in a business program and a course titled *Business Calculus* is used to select the 25 students "best suited" for study in business.

One attendee shared that at the community college where she teaches, the nursing program is one of the most sought-after. In order for students to gain a coveted spot in this desirable program they must perform at a certain level in Intermediate Algebra. This requirement often increases the level of math anxiety already present for many of these students. This observation led to a discussion about the relationship between grades in math

classes and levels of math anxiety. While views were expressed that there may be a negative relationship between grades and math anxiety (the lower the grade the higher the anxiety level), the view was expressed that it may be the lack of understanding of mathematics on the part of the students, more than grades, which increase the level of anxiety.

Much of the discussion focused on three questions posed by Dr. Aimee Howley. After the following questions were presented, interesting discussion flowed freely from one question to another.

- Do we need to use math grades in these ways (compliance, punishment, sorting)?
- Do we need grades in math classes at all?
- What would math classes be like without grades?

In response to the third question, several participants expressed concern that without grades students would be less motivated to learn the material deemed appropriate by the teacher. One questioned whether it is reasonable to believe that all students will be internally motivated to study and learn mathematics. Another participant explained that her high school students, enrolled in advanced mathematics courses, are reluctant to complete work unless they first know how or if the work will affect their grades. Another participant recounted a very different situation in a terminal mathematics course taught at a community college. She explained how the extremely math-phobic students enrolled in this course seemed to relax and become more comfortable with mathematics and more confident of their abilities to do mathematics as the course progressed. She attributed this success partly to her attempt to move the focus of the course away from grades.

Additional interesting comments were elicited by the remaining questions. Several participants expressed the belief that some type of assessment is necessary in mathematics classes. One participant stated that because of the sequential nature of mathematics, grades

are necessary to determine if students have adequately mastered certain material in order to advance to the next level of mathematics. There was considerable discussion about alternative grading schemes such as checklists of competencies that students must master. Several participants expressed concern that this type of grading system is very time-demanding and that in the end parents and students still desire to have the checklist translated to a letter grade.

Several other observations related to the philosophy and purposes of grades were shared. These include the following:

- Michel Foucault's view of power as a web-like or grid-like system places people on a grid and gives individuals certain options and takes away other options. When viewing grades from the Foudauldian perspective of power, grades may be used to label a student as, for example, "just a C student" and thus take away certain options such as enrolling in advanced classes or seeking enrollment in certain college programs.
- Grades are an example of social Darwinism. This theory implies that there are expected differences in student outcomes. Some people are deemed to be less evolved than others. Differences in grades are then used to back up this theory.
- One alternative to grades in mathematics classes is mastery achievement. Another alternative is not to assess. Math class would be a set of opportunities for learning made available to all students. Students would have the opportunity to study and learn what they wanted and would not be placed into a grid based on assessment.

Continuation of interesting and thoughtful discussion was cut short by time limitations. Unfortunately, in the allotted time the discussion did not progress to the

questions specifically related to how all of this unfolds in rural settings. Hopefully a discussion of the role of math grades in the lives of rural students and how this role might differ for male and female students within a rural setting can be continued at another time and place.

Conversation No. 7 (Ted Coladarci and participants)
Conceptualizing the dissertation with rural *and* research – *and graduation – in mind.*
This conversation built on Dr. Coladarci's 2003 Occasional Paper, "*Reflections at 35,000 feet: An open letter to the ACCLAIM doctoral cohort*," which student participants had been encouraged to read prior to the symposium (http://www.acclaim-math.org/docs/occasional_papers/OP_05_Coladarci.pdf).

Notes by Victor Brown, ACCLAIM Cohort 2

Dr. Coladarci emphasized the definition of "rural education research" by focusing on each of the three words, one at a time. Most importantly, to be called "rural," the research study must clearly establish the *relevance of rural*, not just be a research study done in a rural setting or environment. The study must also clearly address an *educational* question, and for ACCLAIM cohort 2 members, it would be best to focus on a mathematics/mathematics education question. Finally, the *research* study's design must provide for warranted conclusions.

The rural education researcher must carefully describe a sample so that readers can make informed judgments about the context, and therefore, about the investigations import for rural schools and communities. As we know, there are many different definitions of rural. Dr. Coladarci offered this one for us to consider: "You know you're rural when the only time you lock the doors on your truck is when you go to church so the neighbors can't leave bags of squash on the front seat."

He suggested that this facetious definition is perhaps more informative—as a characterization of rural—than most rural education researchers' descriptions of their samples. A rural sample isn't enough, claimed Dr. Coladarci, and he posed the following

question: "Is the research investigating a true *rural phenomenon*, or simply a phenomenon that incidentally was observed in a *rural setting*?" To emphasize this point he noted, "Just because a cat has kittens in an oven doesn't make them biscuits." As rural researchers we must make a rural argument, otherwise, rural is simply relegated to the incidental.

If the research centers on an "inherently" rural phenomena, the rural argument is easy to make. Maureen Porter's example of the county fair was used to support this point. In a rural setting, the county fair is a forum for cultural transmission.[1] The county fair, at least as described by Porter, is incontrovertibly a rural institution. While analogous institutions may exist in non-rural locales, the county fair arguably is unique to rural communities and, therefore, arguably is an inherently rural phenomenon. Other suggested examples of inherently rural phenomena, or at least close approximations to it, were suggested: K-12 schools, island schools, one-room schools, harvest breaks, multi-grade classrooms, and long bus rides.

In the absence of an "inherently" rural phenomenon, rural education researchers must work harder to establish the rurality of their research investigation. For example, when posing the research question, the researcher must establish the limitations of the extant research vis-à-vis the particulars of the rural circumstance,[2] and establish just how the research study will address these limitations. The problem must be stated and the researcher must connect it to rural place.

Another challenge is data analysis and interpretation. Are groups or sites going to be compared or will the sample simply be all rural? If a comparison is going to be made with quantitative research, this might include a rural vs. non-rural variable (or a form of such a

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[1] Porter, M. K. (1995). The Bauer County Fair: Community celebration as context for youth experiences of learning and belonging. *Journal of Research in Rural Education, 11*, 139-156.
[2] Howley, C. (1997). How to make rural education research rural: An essay at practical advice. *Journal of Research in Rural Education, 13*, 131-138.

variable). It is important to establish statistical controls (e.g., for socioeconomic status) and consider allowing for interactions (e.g., socioeconomic status with school size). However, if the research is qualitative in nature, the researcher might consider field sites that differ in rurality and compare emerging themes. If an all-rural sample is being considered, the quantitative researcher might consider a comparison of treatments (or conditions). An example of this is Ron Eglash, who spoke at the previous ACCLAIM Research Symposium (see Eglash's Occasional Paper for ACCLAIM, *Black Chaos, White Trash*, at the following URL: http://www.acclaim-math.org/docs/occasional_papers/OP_07_Eglash.pdf):

Does the place-sensitive nature of Eglash's software really matter, or, rather, would comparable place-neutral software—involving equally attractive and intriguing patterns, but not demonstrably tied to local culture—produce the same outcomes? This question easily can be investigated by randomly assigning these American Indian kids either to place-sensitive or place-neutral software and then comparing outcomes across the two groups. An alternative design is to have all kids use both versions of the software (i.e., one and then the other).

If qualitative researchers consider an all-rural sample, they might consider logically relating their findings, themes, and issues to rural considerations. They could compare their findings to what has been reported by researchers pursuing related questions in non-rural settings.

With strong consideration of all of the above, researchers is well on the way to doing both rural education *research* as well as *rural* education research. Again, it is important to pose a well-informed and well-crafted research question and then to employ design or rhetorical strategies (if not both simultaneously) for establishing the rurality of the research findings.

When doing rural education research for a dissertation, doctoral candidates must keep their graduation date in mind. Consider the scope of the dissertation, because it's a lot like porridge; it can be too broad, too narrow, or just right. Do your best to strike a reasonable balance between feasibility and making a stunning contribution to rural mathematics education. Too much feasibility over contribution and the research is likely to have a narrow, trivial result; whereas, with too much contribution over feasibility, the research may become impracticable. Always keep that target graduation date in mind.

Conversation No. 8 (Rico Gutstein and participants)
Understanding Student Resistance: How Can Teachers Transform It? Camangian & Yang (2006) present a framework on transforming student resistance. Borrowing from Fanon [see http://en.wikipedia.org/wiki/Frantz_Fanon --Ed.], the Black Panther Party, and others, their starting point is that most urban students of color in the U.S. live in an internal colony and appropriately resist colonial education. They argue that teachers can transform this resistance by standing in solidarity with their students and devoting their lives to overturning an oppressive social order. Is this a valid proposition, how does it relate to rural youth, and how does mathematics education relate?

Notes by Sharilyn Granade, ACCLAIM Cohort 2

Dr. Rico Gutstein shared with us his prospective on youth resistance in urban and internal colonies. Internal colonies are usually people of color, but share with the Appalachian region a geographically boundary, minority status, and poverty.

Rico brought us parallel struggles from an urban prospective. Chicago public schools were going to build three new schools, two magnet schools in exclusive neighborhoods and one in an immigrant community. Then the school system decided that they had money to build only schools: the two in the exclusive communities. The immigrant community fought this nicely at first. They asked, pleaded, strolled mariachi bands around the school board, and so forth.. But to no avail. Next they organized a hunger strike beginning on Mother's Day of that year. After three weeks of the hunger strike and much negative publicity for the school

board, the board agreed to build the third school , a $68,000,000 building, which the citizens of the community decorated with cultural motifs. Within the school are four small schools: language, multicultural arts, math/science/technology, and social justice.

Rico is working with Patrick Camangian (Cam) and K. Wayne Yang in the social-justice wing of the school, and these three colleagues are addressing issues teachers are facing regarding how to think about youth resistance, how to engage urban students who are often disengaged from school, what teachers need to know and think about to practice transformative pedagogies in the context of public schools, and how teachers can support critical literacy and youth activism.

Within colonial status, there is resistance to teachers who are seen as an occupying force. Malcolm X said "Only a fool would let an enemy educate his children." Resistance is actually natural and healthy. In this sense it is not something, as we see, to be managed and controlled in the classroom. Cam said that his students don't resist him because they are all too busy resisting the system together. He tells his students "if you want to bang, bang for freedom." In other words, put your gangs to work for something useful. Cam is known as a revolutionary intellectual: he spent time in prison, which is where he learned to become politically involved. His English students study such authors as Paulo Freire, Peter McLaren, and bell hooks. The reason he gets away with studying such controversial authors is that he has no discipline problems and all 118 of his students passed the state exam in a school that has been taken over by the state for low test scores.

Questions and answers followed; these interchanges are summarized below:

Jamie F: How much does physical confinement of space play in colonial issues – not a rural issue? Plenty of space, and possibly miles before nearest neighbors.

David G: Part of the definition of colony is physical confinement to a region, especially when the economic base is limited. Being from a place or bounded by a place is similar.

Mike Mayes: Extractive industry is common in Appalachia: the reserves are taken out of region and someone else benefits. Tax rates are kept artificially low.

Sarah L: How can math be politicized without ridiculous a stretch?

Rico G: If you want to study an issue in 9th grade class because if affects their lives, how would they use mathematics to study that? How can we structure so students can use and learn?

Sarah L: When planning Connected Math the struggle was which came first, content? Or context?

David G: It doesn't really matter what you're teaching. Often in conversations about social issues, someone asks "what about the math?" The question is used as a conversation stopper mandating a retreat into narrow curriculum. The role of social issues gets de-centered.

Debbie W: My problem is moving from practitioner to researcher. I like to see it working.

Rico G: It's working in Chicago – the kids are being taught.

Debbie W: The problem I see when interdisciplinary units are being planned is that math is left out until the end, and then the math component is just reading the graphs.

Oscar C: Freedom from and freedom to. Children need to know algebra and by teaching them that, we are empowering them. Does CMP directly connect to their world? It doesn't matter if it helps kids understand. Motivation is a great, great thing. If students know that you care about them. [He then cited an example of a teacher who was admittedly weak in mathematics and was using Saxon text books. She did what she could, all the while considering herself the cheerleader, encouraging her students that they could do it, and they were successful.] Caring for mathematics and caring for students are not incompatible goals.

Noran M: Being a radical administrator doesn't help you keep a job, but it does keep your heart pure. When students' best interest are at heart…….

Rico G: In summary – The goal is not to "have socially relevant curriculum." The goal is to transform of society. The issue of love is fundamental. Pedagogy of access is fundamental. Getting more black faces in high places does not eliminate oppression without educating everyone about social justice issues. Pentagon engineers who have very rich understanding of mathematics are using their knowledge to build weapons of death, not for the common good.

APPENDICES

APPENDIX A

Speculations about the Symposium's Theme

What is 'resistance'? (a) The coefficients of static and kinetic friction. (b) The equal and opposite force that meets any force (or, better, that *comprises* all force). (c) The opposite of 'collaboration': working against.

Propositions (illustrative only):

P_1: Resistance to reform is to be expected.
P_2: Resistance to reform is sometimes, often, or always warranted.
P_3: Thoughtful resistance is possible; resistance requires thoughtful warrant.
P_4: Critique is a thoughtful (or theoretical) kind of warrant (e.g., for resistance).
P_5: Even reform requires critique.

What is 'best practice'? (a) The best way to do something. (b) The consensus of experts about the best way to do something. (c) A favored ideology of improvement. (d) A major object of reform according to a favored ideology of improvement. (e) The unrealizable dream of modernist constructions of expertise.

Propositions (also merely illustrative):

P_1: 'Best' varies by purpose and context.
P_2: The connections among best practice, progress, and research are weak.
P_3: The modern construct of *progress* has a long history of disappointment.
P_4: Any practice has beneficiaries and victims. Even one imagined as progressive.
P_5: The identity of the victims is predictable in the contexts familiar to us.

What about rural? "Rural' with us indicates more a meaning-making characteristic of rural life and less a geographic boundary line (although the line is useful too). Rural mathematics education aims to connect with that sort of meaning-making.

What about urban? In this symposium, there is plenty of room for comparisons and contrasts with city life, with varied languages and cultures, and with varied ways of knowing and being. Such variety inevitably embeds sharp questions about resistance (of many sorts), reform (of many sorts), and constructions (and distortions) of the ideas (e.g., of excellence and equity).

APPENDIX B

AGENDA
ACCLAIM Research Symposium 3, May 18-20, 2006
Mathematics Education: Reform and Resistance
in the Lifeworlds of Rural Schools and Communities

May 18

1:00 – 5:00 Arrival at The Lodge

Room: Jubilee DE (all events this evening)

6:15 *Short silent movie* (4 x 4, by OU film maker Chen Song)
6:25 opening remarks (**Bill Bush, Robert Mayes, Craig Howley**)
6:45 pm DINNER (approximate)
7:30 introduction of keynote speaker by student (**Craig Green** from 2002 cohort)
7:35 *Resistance, Reinhabitation, and Regime Change*; keynote speech, **David Gruenewald** (Washington State University)
8:05 Panel response (**Craig Green, Jamie Fugitt, Rico Gutstein**)
8:20 open-mike responses to keynote

May 19

8:30-9:00 **Room: Jubilee B** BREAKFAST
9:00 additional introductions and information updates
9:30-10:45 **Room: Jubilee DE** *Working Towards Reform in Mathematics Education: Parents', Teachers', and Students' Views of Different* **Marta Civil** (University of Arizona)
* introduction by **Kevin Kenady**
* panel response (**Vena Long**, **Nickie Smith, Victor Brown**)
* conversation (questions, challenges, research implications)

11:00-12:00 First Break-out Session (Alan, Tim, Paul)

Group 1. [**Room: Jubilee DE**] *Going global or staying local?* **Organizer: Alan DeYoung** (University of Kentucky) **facilitator: Deb Waggoner; note-taker: Deb Britt**

Group 2. [**Room: Library**] *Mathematics as Elite Knowledge.* **Organizer: Craig Howley** (Ohio University) **facilitator: Lisa Music; note-taker: Ron Smith**

Group 3. [Room: Flint] *Education, patriotism, and civil disobedience* Organizer: **Paul Theobald** (Buffalo State University) **facilitator: Courtenay Mayes; note-taker: Mike Ratliff**

12:15-2:00 **Room: Jubilee B** LUNCH

1:00-2:00 ***Lunchtime Panel*:** "What Does Resistance to Best Practice Mean?" **Jim Lewis, Aimee Howley, Bill Bush, Alan DeYoung, Paul Theobald**

2:15 **Room: Jubilee DE** *Reflections from a working-class scholar who resists and embraces scholarship in mathematics education* **Sarah Lubienski** (University of IL, Urbana-Champaign)
* introduction by **Johnny Belcher**
* panel (**Sharilyn Granade, Paula Schlesinger, George Johanson**)
* conversation (questions, challenges, research implications)

3:45 Second Breakout Session

Group 1. [**Room: Jubilee DE**] *What is research that resists the educational status quo?* **Organizer: Noran Moffett** (Clark-Atlanta University)
facilitator: Nickie Smith; note-taker: Jeremy Zelkowski

Group 2. [**Room: Library**] *Whose reform is it anyway? Finding common cause with Joe Sixpack.* **Organizer: Jim Lewis** (University of Nebraska)
facilitator: Kevin Kenady; note taker: Sherry Jones

Group 3. [**Room: Flint**] *Resistance to grades as a technology of surveillance*. **Organizer: Aimee Howley** (Ohio University)
Paula Schlesinger; note-taker: Jamie Fugitt

4:45 Informal kibbitzing (**lounge, courtyard or wherever you like**)
5:30 **Room: Jubilee B** DINNER
6:30 Panel: Students Interrogate Participants (**Jeremy Zelkowski, Courtenay Mayes, Mike Ratliff, Paula Schlesinger, & Ron Smith**)

May 20

8:30 **Room: Jubilee DE** BREAKFAST
9:00 Informal consulting & conversation (**Jubilee DE or where you prefer**)
10:00 Third Break-out Session

Group 1. [**Room: Jubilee DE**] *Conceptualizing the dissertation with* rural *and* research – *and graduation – in mind.* **Organizer: Ted Coladarci** (University of Maine)
facilitator: Johnny Belcher; note-taker: Victor Brown

Group 2. [**Room: Jubilee C**] *Understanding Student Resistance: How Can Teachers Transform It?* **Organizer: Rico Gutstein** (University of Illinois at Chicago)
facilitator: Jamie Fugitt; note-taker: Sharilyn Granade

11:00 Panel: Student observations and comments: **Debbie Britt, Debbie Waggoner, Sherry Jones, Lisa Music, Johnny Belcher**

12:00 LUNCH
1:00 Farewell, Thanks, Departure (**Robert Mayes, Vena Long**)

1:45 Van to Airport

APPENDIX C
Participant List

Evaluators

Jennifer Helms	(Inverness Research Associates)
Anita Smith	(Inverness Research Associates)

Faculty Participants

Bill Bush	(University of Louisville, mathematics education, ACCLAIM)
Theodore Coladarci	(University of Maine, rural educational; research methods)
Oscar Chavez	(University of Missouri, mathematics education)
Marta Civil	(University of Arizona, mathematics education)
Alan DeYoung	(University of Kentucky, sociology of education, rural education)
Jim Gleason	(University of Alabama, mathematics)
David Gruenewald	(Washington State University, rural education)
Rico Gutstein	(University of Illinois at Chicago, mathematics education)
Terri Hopkins	(University of Tennessee, Knoxville, math education, ACCLAIM
Aimee Howley	(Ohio University, education administration, rural education)
Craig Howley	(Ohio University, rural education, ACCLAIM)
George Johanson	(Ohio University, research methods, math education, ACCLAIM)
Robert Klein	(Ohio University, mathematics education, mathematics)
Jim Lewis	(University of Nebraska, mathematics)
Vena Long	(University of Tennessee, Knoxville, math education, ACCLAIM)
Sarah Lubienski	(University of Illinois at Champaign-Urbana, math education)
Mike Mays	(West Virginia University, mathematics, ACCLAIM)
Robert Mayes	(West Virginia University, mathematics education, ACCLAIM)
Karen Mitchell	(Marshall University, mathematics education, ACCLAIM)
Noran Moffett	(Clark-Atlanta University, rural education)
Edna Schack	(Moorehead State University, mathematics education, AAMTE)
Paul Theobald	(Buffalo State University, education history, rural education)

ACCLAIM Doctoral Student Participants (members of ACCLAIM's 2nd cohort, except as noted)

Johnny Belcher	(Pikeville High School, Pikeville, KY)
Deborah Britt	(East Tennessee State University, Johnson City, TN)
Victor Brown	(Eastern Kentucky University, Richmond, KY)
*Barbara Buckner	(Bradley High School, Cleveland, TN)
Jamie Fugitt	(College of the Ozarks, Point Lookout, MO)
Sharilyn Granade	(Wilkes Community College, Wilkesboro, NC)
*Craig Green	(Copper Basin High School, Copper Basin, TN)
Sherry Jones	(Glenville State College, Glenville, WV)
Kevin Kenady	(Bowling Green Technical College, Bowling Green, KY)
Courtenay Mayes	(Scarlet Oaks Career Center, Cincinnati, OH)
Lisa Music	(Big Sandy Community & Technical College, Mayo, KY)
*Sue Nichols	(Ohio University, Athens, OH)
Michael Ratliff	(Lindsey Wilson College, Columbia, KY)
Paula Schlesinger	(Mayland Community College, Spruce Pine, NC)
Nicolyn Smith	(Rio Grande University, Rio Grande, OH)
Ron Smith	(Harding University, Searcy, AR)
Deborah Waggoner	(Eastern Kentucky University, Richmond, KY)
Jeremy Zelkowski	(West Virginia University, Morgantown, WV)

* ACCLAIM Cohort 1