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ABSTRACT

This paper presents a researcher's view of the foundations on which to research rural schooling. Three sections each discuss a different parameter of rural education research into science and mathematics education. These sections advise a conservative approach to research methodology, a liberal approach to content, and a radical approach to application. One wants to conduct research that will make a difference. So one chooses a method that is comprehensible and accessible to a wide audience, and one should choose conservatively for this reason. A post-positivist perspective allows the researcher to establish relationships among contexts, processes, and outcomes using methods that are widely accepted and understandable. This increases the chance that findings will get a hearing. Second, one must approach the rural context liberally, meaning respectfully, to allow oneself to see clearly the object of investigation. This means avoiding certain biases--stereotypes of the rural context as fundamentally deficient or assumptions that "best practices" will work in any context. Finally, one wants to design provocative research that intends critical responses in the public domain, but without giving the researcher the voice of all-knowing expert. The desperate rush to find out what works and then to make "what works" work is futile, since evaluation findings mask substantial variability. Rather the radical perspective on application should support conversations by ordinary people about the processes and purposes of education. Examples of research questions that follow this counsel are offered. (SV)

Understanding the Circumstances of Rural Schooling: The Parameters of Respectful Research



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Craig Howley

Craig Howley has researched rural education and published his findings widely. He has taught mathematics at the University of Charleston and has evaluated math and science projects in the rural schools. He is co-editor (with Hobart Harmon) of *Small High Schools That Flourish* (AEL, 2000) and co-author of a well-received monograph titled *Out of Our Minds: Anti-intellectualism in American Schooling* (TC Press, 1995). Dr. Howley is director of the ERIC Clearinghouse on Rural Education and Small Schools and Adjunct Professor in the Educational Studies Department at Ohio University.



Understanding the Circumstances of Rural Schooling: The Parameters of Respectful Research



This paper presents my view of the foundations on which to research rural schooling. I'm interested in rural schooling in mathematics and science partly because I do a form of science enabled by statistics, most of it focused on dilemmas in rural schools and communities. I'm looking forward to doing more of this work and helping others do it too.

I was asked to cover the "parameters" of rural education research. Please note that I'm not going to tell you precisely *what* to study, but more like how to study it. However, this task means helping you to see the connections between *what* and *how*. This isn't easy work, considering the challenges outlined below:

Objectively speaking, rural education is important to American schooling because Local Education Agencies are the main actors in educational governance, and rural and small-town *school districts* comprise an astounding 63.8 percent of all public school districts in the U.S, and about 20 percent of these districts are located within *metropolitan* counties. The rural setting is therefore far more common than most of us realize.

And yet, very few scholars devote any attention to rural education. Alan DeYoung, from the University of Kentucky, is the leading rural education scholar, and he went to Stanford for his doctorate. Jonathan Sher was previously the leading rural education scholar and he went to Harvard. Unfortunately, the habit of looking to Stanford and Harvard for world-class scholarly leadership in rural education research is actually part of the rural problem for *us*. We don't need world-class leadership as much as more locally grounded leadership.

Many institutions with reputations less bright than those of the elite schools would gladly sell out their host communities in rural areas in order to lay their hands on a fraction of the soft

money that flows so easily downhill to places like Stanford and Harvard. Higher education institutions have global reputations to build or maintain and they don't really want to be *seen* with their hick neighbors, much less *working* with them.

There *are* individual exceptions, however, even in the natural sciences.

Nick, for instance, is a physics professor at the University of Wisconsin. Nick has been interviewed, together with a dozen other people, every seven years since he was seven years old for Michael Apted's famous "Up" series. The series began in 1958 with 7-Up and has recently concluded with 42-Up.

The latest interview was conducted when Nick visited the old homeplace in his rural community. The off-camera interviewers asks Nick, "It's incredible that it all started here, isn't it?" Nick, is quietly annoyed, and he replies,

"Yes and no — you shouldn't underestimate what resources people have. You shouldn't look at this little place and say, "How surprising that anything could emerge from here." I mean, these are fantastic people and you don't get better teachers anywhere else than we had. So, no, it is not surprising." (Singer, 1998, p. 89)

Nick went to Oxford University — more elite even than Harvard — for his undergraduate and graduate degrees. And he's saying he *had no better teachers*, by which he also means the neighbors from whom he learned how to live, than in his little podunk of a home place. At the beginning, my best counsel is that we try fully to understand what Nick is saying. His statement applies to *us and the work we have to do*. On to the main points.

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Think of each of the three main parts of this paper each as a different parameter of rural education research into mathematics and science education. The three parts deal with (1) research method, (2) content, and (3) the application of research. I advise a *conservative* approach to method, a *liberal* approach to content, and a *radical* approach to application. Let's begin, then, with a consideration of method.

Method

If you really get into research, you'll soon enough give up the simple word "method" and start using the word "methodology" instead. It's a word that means "method" but has the added advantage of scaring audiences. That feature is very handy if your audiences are graduate students who need to take this stuff seriously, but can hardly believe it's necessary to *have* a stance toward reality, or to question the *existence* of reality, or to decide *how to study it* whether it "really" exists or not. They think you're kidding them when you talk this way. By the time they get to the dissertation they're no longer laughing.

My *conservative* perspective on method is really quite simple. Reality exists. We can know many of its features by devoting sufficient care and attention to our investigations. A more liberal position says that reality is debatable, but that we can sort of intuit it. A radical position would insist that social reality is created almost entirely by ideology and that in order to know reality, what you really have to know is ideology.

I believe that the radical version is true, and that it's a fine grounding for political critique. But it's much less useful for designing research that you expect anyone but academics or literati to heed. This means I don't advise critical theory or postmodernism as a research paradigm for this work. Now for a bit of background.

We've subjected our doctoral students at OU to Lincoln and Denzin's tome on qualitative methods, and maybe you're familiar with their four-part scheme describing research perspectives. The four parts are something like *positivist*, *post-positivist*, *critical theorist*, and *constructivist* (really meaning postmodernist). That's it! All you need to know to pigeon-hole every pinhead on the planet! It's very handy for graduate students, but a little too simple for reality.

The basic ideas behind the four perspectives are simple. Is there really something solid "out there" to study? Or do words constitute reality, so that reality is really the way words (and other symbols) are used? Positivism and post-positivism shade toward the former position — the existence of a solid reality — and critical theory and postmodern-style constructivism toward the latter-reality as a sort of text. Positivism and post-positivism are more conservative, whereas critical theory and "constructivism" are considered more intellectually radical. Whether they are politically more radical is a topic of ongoing debate.

I advise a *post-positivist* approach to rural education research.

Why not any of the others? Positivism is too deterministic for the social sciences. Critical theory and constructivism, on the other hand, are twentieth century innovations specifically in the social sciences, which means you can use them to understand the history and politics of science, but applying them to the study of the material reality of natural science would strike even some of their proponents as a misdirection.

I believe we ought to treat rural context as structurally conditioned and therefore presenting a material reality. By structure, of course, I'm referring to *very durable* features of economics, politics, history, and culture that fashion the circumstances that we somehow so solidly encounter as "rural." The structures constitute, or condition, or guarantee a material reality that is *available* for us to study.

Now, this insight about the wisdom of studying the influence of durable structures in the rural circumstance means that "rural" is *not* reducible to a geographic category, nor to a residual category of "urbanized place."

The rural circumstance is *not* about *residence*, just as being a person of *color* is not about *color*. The rural circumstance is much more than residence, and that's what so many people apparently cannot fathom. Most of what rural people do and are is invisible from the cosmopolitan perspective of university research and multinational business. And that is precisely why it's incumbent on rural education research, in designing its studies, to grapple intellectually with the material structures of economics, politics, history, and culture that condition the rural circumstance. The education of individuals is profoundly shaped by these structures, and these structures shape even more profoundly the institutions and technologies of schooling, into which contemporary society tries desperately, and unsuccessfully, to pour so much of the process of education.

Coming to know mathematics and science in rural schools and communities, then, is nested within all these structures, not just for us, but also for students. The structures inevitably shape the *engagements* of learning and teaching as well as the *evasions* of learning and teaching that transpire in rural schools and communities. This is a complex reality. Please note what this complexity indicates. It indicates that, from the vantage of living and loving in rural places, we'd probably find that some of the *engagements* make *bad* sense and that some of the *evasions* make *good* sense. Some of what we must find will be counterintuitive; if it's not, we're not doing research.

The rural circumstance exists. You can see it, touch it, live in it and live from it quite well, though with difficulty. The ways it looks, feels, nourishes, and challenges one arise from centuries of social relations so durable as to be largely habitual and predictable. Rural is not *willfully* shaped by discourse or superficial changes in discourse. Rural is there, it's real, and we can study it rather objectively. To frame our questions, however, we critically need to reflect on rural economics, history, politics, and culture.

While we cannot very well establish *laws* relating the various features of schooling and the rural circumstance, as we would try to do in the positivist perspective, we can, in the post-positivist perspective, actually establish tantalizing relationships among contexts, processes, and outcomes. By adopting a post-positivist stance, as well, we can establish these relationships using methods that are wide accepted and understandable. This means there's a chance our findings will get a hearing.

This conclusion about method is a *terrible* irony, because it means that we adopt a materialist, post-positivist perspective on reality in part because the discourse it uses to interrogate reality and to report its findings is more *comprehensible* to a wide audience than would be the products of any of the alternatives.

Content

Recall that the foregoing remarks advocate a conservative stance toward method. Here I'm advocating a *liberal* approach toward content. I'm not modeling my use of these terms after partisan politics. In this instance, by "conservative" I mean to suggest a degree of narrowness with respect to method and by liberalism I simply mean to indicate a more circumspect, and less narrow, view of content. There's a light side of this issue and a dark side.

On the one hand, a conservative view of content would take the position that research about mathematics and science education in the rural context is about mathematics and science education. That's narrow and it sounds quite sensible and is certainly the way most research into the topic *has* actually been done.

The problem is that this position assumes that we really know what best practice looks like and that it's the same everywhere. The clear task is how to get more of it actually happening, and so context principally presents the challenge of how to tweak best practice so that more of it can happen in particular places—for instance, in Adams County, Ohio, or MacDowell County, West Virginia, or in the Philadelphia or DC Public Schools.

Conversely, a more liberal view of mathematics and science education in the rural context accepts the well-known fact that context actively influences educational purposes, processes, and meanings. But more importantly, it will focus not on mathematics and science curriculum and instruction per se, but more on their *interactions* with context. It's a somewhat "constructivist" view, not of instruction so much, but of the lived experience of being in rural schools and communities. A fair minority of mathematics and science educators, if the recent AERA program is a good indicator, have engaged this idea of social constructivism in science education. And in fact, the old SST curriculum—science, society, and technology—embraced the challenge of context decades ago, not in reality, of course, but as a definitive part of the science curriculum.

Now with respect to the light side of the issue of content, one's stance is seen as contingent on a technical point having to do with perceptions of the role of context in reality. Is context pretty tangential to the real work of schooling, or is it quite influential and therefore worthy of *considerable* attention? If you believe that the real work of schooling has to do with things like instructional design and curricular scope and sequence, you'll likely embrace a more conservative — or, a narrower — stance. If you believe the real work of schooling has to do with the cultivation of intellect in all its powers — ethical, political, historical, and cultural — you'll doubtless take a more liberal, or broader — turn. This sort of liberality is the sort of liberality represented by the liberal arts, and it's germane to the fact that the home of mathematics and science in universities is typically in colleges of liberal arts.

To clarify this position, the price of doing research that focuses on *rural context* is that you carry through with that focus, and that carry-through *requires attention to the interaction of the context of schooling with the content of schooling*. I'm saying further that schooling cannot constitute a decent education absent context. A lot of who we become is our families and communities and those we love. You can drop out of school, but you can't drop out of education.

Now for the dark side of this issue of content. The lighter version of the conservative position comes with an embedded, but quite hidden, view of rural that is the kiss of death to studying the rural context. That *inscribed*, but often tacit view, is that the rural context is *fundamentally deficient*. Jim Goad in *The Redneck Manifesto* points out correctly that rural people are the only group to have escaped the injunctions against bigotry.

Country people can be mocked as ignorant and clownish with impunity any time. I saw it happen to Paul Houston at the American Association of School Administrators annual meeting a couple of years ago. Paul is the executive director of AASA and he comes from West Virginia. As he mentioned his roots, a member of the audience piped up, "We all have our crosses to bear." The rest of the audience laughed. We hissed loudly.

The realization that he was confronting exactly this deficit view is what Dr. Nick, our physicist, was bridleing against in the interviewer's question. He surely continues to have this deficit view inflicted on him in much the same way Paul Houston does. But in their experiences, and in mine as well, rural people are just as obviously worthy, maybe among the most worthy on the planet. They get that way not through schooling, but through tough times, courage, love, and, most importantly, unrecognized *intellectual application*. Surely, Nick was saying, these qualities are the foundation of a true education! It's priceless and it's not for sale anywhere. If schools and communities are not pretty closely in tune, both schooling and education suffer. They *are* suffering. This makes the work we need to do quite practical.

This hidden curriculum of the conservative stance toward content is the principal *negative* reason I advise a more *liberal* stance toward content. The principal *positive* reason I advise a liberal stance is that it's logically consistent with a rural focus. If you don't respect something, you shouldn't study it. Far from harboring a bias, a respectful stance *actively constitutes objectivity*. The deficit view is a hidden bias that's fatal to the object of study.

Application

My stance on application is radical. The radical approach is to insist on seeing an issue with its roots dangling in full view. Therefore, a conservative method has a narrow focus, a liberal content has scope, and a radical *application* has roots.

Let's begin with a repudiation of the conservative view of the applicability of research. Note that I'm not saying the conservative approach is wrong, misguided, or unworthy. It is, however, inapt to our proper purposes, which are to respect and understand the rural circumstance in hopes of improving mathematics and science education in and, critically, *for* rural communities. This hope is our motive for being involved with application at all. It makes application *necessary*.

The traditional, conservative, narrow view of application, which I learned in high school, rests entirely with advancing the consideration of interesting intellectual problems and not very immediately with the problems of the real world. We've pretty much abandoned this view of natural science, much to my chagrin. My teacher, Artie Lehrhaupt, tried to cultivate in his students the *high* and *noble* purposes of science, the serene beauty of contemplation, and the wonder of natural laws lurking unseen in reality. It was very convincing, and Artie helped me see the connection between philosophy, music, mathematics, and science, and he encouraged us to read; I'm still grateful for his gift. It's served me very well.

In the conservative view, applications are the concern of technologists, not of scientists. That's the view I learned in high school, but to educational researchers, this view sounds like wasteful luxury. There is much to admire in the conservative view. In particular, the conservative perspective acknowledges a key truth that liberally-minded educationists don't. The conservative perspective understands that *desperation* to apply research findings, or desperation to conduct research for practical reasons, is bound to be *thoughtless*. Scientists learned this lesson in developing the nuclear bomb, and they've written extensively about their insights. Desperate times drove them desperately on, and they've given humankind an evil legacy. The bomb is there and it will *inevitably* and *unavoidably* be used again, sometime. History is long and we forget that.

There is way too much desperation in the application of the findings of educational research, and the desperation increases precisely because so many people clamor for educational research

that is *truly and immediately practical*. The longing for research that is truly practical is desperation that is masquerading as common sense. And it's welcomed as common sense, and in this disguise does great mischief as will be explained shortly. So I do think a conservative approach to application has something to offer; it's remove from the real world, however, means that it just doesn't comprehend enough of the story to guide us, once we've adopted a respectful attitude toward the rural life world.

In the liberal view, by contrast with the conservative view, there is not really any such thing as educational research since nothing like *basic research* is possible in a field like education. What we have in education is *applied* research, and I know this is true because Gene Glass says so. Gene Glass is mathematically brilliant, author of the most comprehensive and best-selling text in statistics for educational research, and inventor of meta-analysis, but he claims he's wised up and is no longer "a quantoid." A quantoid, if you don't know, is a positivist with a very simplistic view of what's real. If you can count it, say the quantoids, it must be the truth. Glass's view of application has become quite sophisticated, and he seems to believe that application is a conversation with reality. His is a radical, not a liberal view. You'll recognize elements of critical theory and the postmodern in it, though I doubt Gene Glass is either a critical theorist or a postmodern.

I agree with his stance on application. What else could application be *but* a conversation with reality? I'm getting ahead of myself, however, and want to explain the liberal perspective a bit more.

Like Dr. Glass, the liberal perspective does not view any educational research as "basic." If you have doubts about this, ask yourself what basic research problems education as a pure discipline would be asking that sociology, psychology, and political science aren't already asking. Those would be the questions that history, philosophy, literature, and religion would be asking. In the liberal view, research should be more like evaluation, and this seems to me the prevailing view with respect to application.

The problem of what works (see Glass, 1987), looms large in our field and we have dreadful difficulties talking about it since most of us were classroom teachers who, at one time, were very, very sure that some of what we did "worked" and some didn't. We think the same sensibility must apply to the educational system and to educational programs as a whole. Everyone is rushing, and rushing desperately if you ask me, to find out what works and then, even more desperately rushing to make "what works" work.

In the liberal mode, we want to put *research* to work telling us what works. In its most debased form, then, the liberal view turns *every* research project into an *evaluation* project. Each year that I attend AERA, more of what is talked under the rubric of research is very ordinary evaluation.

So what? It's just that, alas, evaluation *also* has trouble telling practitioners the truth about what works. This is so because in all efforts to show the validity of reform programs or products, the overall positive effect sizes given in evaluation reports mask substantial variability. Yes, on average, there are benefits, but, no, in many schools the achievement benefits not only don't materialize, but achievement deteriorates and doesn't bound back to higher levels. For instance, in two-fifths of the cases, statistically significant improvements materialize; but in only half of those cases are the statistically significant improvements are significant in practical terms, as well; in two-fifths of the cases, no statistically significant improvements are noted and the fine print won't tell you that in one-fifth of cases, things get worse at statistically significant levels, and in half of these cases the damage done is significant in practical terms.

In essence, you have a validated program that does real good in 20% of sites and real damage in 10% of sites. In actual programs, of course, the proportions of good and evil vary, but the pattern of uneven success is constant.

It's always a question of odds rather than certainty. Just because the odds are better than even doesn't necessarily make us all winners. And we shouldn't mistake better-than-even odds for an underlying certainty of universal good that would materialize if we just got rid of the human beings who mess things up (Mintzberg, 1998). *Our special burden in education is human beings who always mess things up.* We're only human, especially as social science researchers.

Do we really want to do more of this sort of "research" just in order to determine if Math Program X is generally better in rural schools as compared to Math Program Y? In the end, you know, we'll be stuck with exactly the same problem. The rurally validated program will be a bad fit in *some* rural places. And the rurally unvalidated program will be a good fit in *some other* rural places. We probably need to do some of this work from the vantage of rural competence rather than rural deficit, but this work should be of second or third rank.

Far from being wild-eyed, what I'm calling the radical view has a more sober view of reality than the other views. The conservative view says that reality doesn't matter all that much. The liberal view says that research should improve reality without knowing what reality is. The radical view says that reality is complex and application will always be compromised and ambiguous. The radical view is also honest about what works: nothing works in the sense of working everywhere. Large sums are spent developing and validating good programs. They need to work, therefore, but the actual workers *are only human*.

This outlook is heresy, but the radical view does something even more heretical. It says that, given the limited practical benefit of validating programs, we need to be very suspicious of our notions of "what works." Works for whom? Damages whom? What does it work to do? Is this good work? Why and why not?

What is required? Who says so? In the radical view, these are not questions for experts because it's most important for ordinary people to ask and answer such questions. Indeed, cultivating that ability is the work of education. Schooling could help.

A radical perspective on application appreciates the fact that research results enter a conversation about how ordinary people would like reality to be. What research needs for this work, but too often lacks, and which evaluation is by definition *designed to avoid*, is an edgy critical outlook on reality. And please note that in dealing with content of *difference from the mainstream* (as in studies of the African American circumstance or the rural circumstance), this critical edginess is what animates the research project at the outset and enables its application in the end. That's why a respectful view of content is critical.

Conclusion

One wants to conduct research that will make a difference. So one chooses a method that is comprehensible and accessible to a wide audience, and one should choose conservatively for this reason. Second, one must approach the rural context liberally, meaning respectfully, simply in order to allow oneself to see clearly the object of investigation. But third, one wants to design research that is provocative, that *intends* critical responses in the public domain, but without giving the researcher the special authorial voice of all-knowing expert.

The funny thing is, the more practical we try to make it, the less practical educational research becomes, since our obsession with practicality makes us continually more desperate and less thoughtful. When this is our approach, we're really helping to disseminate what doesn't work, and doing it in a way that magnifies the problem. It's like purposely designing feedback loops that create increasing disorder. Jay Forrester (2001), one of the grandfathers of dynamic systems theory in the natural sciences, thinks this is exactly what the educational accountability movement is doing. It's making things worse, he claims, through feedback loops that magnify dysfunction.

I do want to end with a few contrasts to suggest what applying this counsel might look like. I'm trying to be practical rather than desperate, and it's a fine line to tread.

1. Instead of asking, "What features of rural schools encourage successful use of world-class curriculum in elementary mathematics instruction?" ask

"What interactions between rural schools and communities make the boundary more permeable between school mathematics and mathematics in the rural life world?"

2. Instead of asking, "How can we overcome rural parents' disinterest in mathematics education?" ask

"What do rural parents expect in mathematics curriculum and what does it mean that they hold such expectations?"

3. Instead of asking, "Why do some rural districts prefer Saxon Math to Connected Math?" ask,

"What connections to or influences from local rural communities or circumstances distinguish effective rural mathematics classrooms from ineffective ones?"

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