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Education Should Consider Alternative Formats for the Dissertation

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The dissertation is an enduring part of American doctoral training. The first doctorates awarded on American soil required a dissertation, and to our knowledge, so has every 'earned' doctorate awarded here since. The number of doctorates awarded, and thus the number of dissertations written each year, has grown steadily in the past several decades. Between 1960 and 1989, the number of doctoral degrees granted soared from 9,733 to 33,456 (Ziolkowski, 1990). In the 1994–1995 academic year—the most recent year for which we could obtain statistics—a total of 44,446 doctoral degrees were awarded and doctoral dissertations written (National Center for Education Statistics, 1997). And as more students are writing dissertations, more is being written about the writing of dissertations. Following this upward trend in the granting of doctoral degrees, a new niche has opened in educational publishing: the manual for writing the dissertation. Numerous manuals of this kind have been published, as a growing number of students struggle with the dissertation process and form.

The Ph.D. degree and its dissertation were imported from Germany in the mid-19th century to provide students with training in scientific methodology. Since that time, the prevailing view of the dissertation has alternated between that of the dissertation as a "training instrument" and that of the dissertation as an "original and significant contribution to knowledge" (Berelson, 1960, p. 173). Presently, the consensus seems to be that the dissertation should be both of these things. In this commentary, we argue that in the field of education, the dissertation in its traditional format does not adequately serve either purpose. By "traditional format," we mean a lengthy document (typically 200–400 pages in length) on a single topic presented through separate chapters for the introduction, literature review, methodology, results, and conclusions (e.g., Mauch & Birch, 1989). We propose that the dissertation in this format is ill-suited to the task of training doctoral students in the communicative aspects of educational research, and is largely ineffectual as a means of contributing knowledge to the field.

Given the proliferation of doctoral dissertations in this country in the last several decades, and given the significant amount of time and effort that doctoral students invest in the process of designing, researching, and writing a dissertation, it is worth examining why, how, and for whom dissertations are written. We begin by examining the dissertation through the lens of genre theory, as this theory helps to elucidate what makes the dissertation both so powerful and so problematic. We briefly discuss some of the perceived advantages to the traditional dissertation format, and then discuss ways in which different fields have considered and reconsidered dissertation formats appropriate to their discipline. Finally, we argue for the acceptance of a range of alternatives to the dissertation format that currently prevails as the standard in the field of education, and describe some alternative formats that we believe are especially promising.

The Dissertation Is a Genre

The traditional dissertation meets both classical and modern definitions of genre. In the classical sense (e.g., Aristotle, 1991), it is recognizable as a genre in terms of both *form* and *content*. The form is highly conventionalized, "a unified work with a single theme, including an introduction and literature review, a description of methods and procedures used, a presentation of results, and a concluding discussion of the meaning of the results" (Council of Graduate Schools, 1991, p. 12); and the content is restricted to an account of original research. Also following classical definitions of genre, the dissertation is written with a particular goal (or *telos*) in mind, and for a particular audience. The goal of the dissertation is to meet the requirements for receiving a doctoral degree, proving that one has mastered the skills necessary to succeed in one's chosen scholarly field while at the same time making an original contribution to that field. The audience of the traditional dissertation consists of the members of the doctoral student's committee, and perhaps the few friends, family members, and colleagues who can be persuaded to read it.

Using more modern definitions as a guide, the dissertation still constitutes a genre. According to Todorov (1976) genre is a "codification of discourse properties" (p. 162), which provides both "horizons of expectation" for readers and "models of writing" for authors (p. 163). No one will dispute that the dissertation does both of these things: When the proposal or the dissertation does not meet the "expectations" of the readers, it is sent with readers' comments back to the author, who then revises it to fit the "model" of an acceptable dissertation. The dissertation also meets views of genre as *social action* (Miller, 1994; see also Bazerman, 1994). It is written with a clear *motive*—receipt of a doctorate—in a specific *rhetorical situation* in which the dissertation committee represents doctored professionals in the field,

guiding and evaluating the writer's work with their standards for acceptable doctoral-level research. Another contemporary view of genre emphasizes the author's response to *contextual demands* (Campbell & Jamieson, 1978). This view of genre is especially appropriate for the dissertation in that it accounts for the forms within the form of the dissertation—that is, it recognizes the literature review, the research design, and so on as sub-genres, or even as genres in themselves. Here again, the dissertation meets a modern definition of genre.

But The Dissertation Is a Strange Genre

Although the dissertation is a genre, it is a strange—and, we will argue, problematic—genre in the following respects:

Limited Audience and Dissemination

The audience of the dissertation is unusual. Theoretically, the dissertation is a public document, usually available from a University library to anyone who requests it. But in fact, the readership of this "public" document is small in number and intimate in character. In most cases, the only readers of a dissertation are the three or four members of the writer's committee. Only in rare cases is a dissertation ordered from library archives for additional, albeit still limited, readership (Reid, 1978). Even if technological advances in the future facilitate more rapid retrieval of dissertations, there is no guarantee that the documents will have a significantly larger audience. However physically accessible dissertations become, the length and style associated with the traditional dissertation format make them impractical for many audiences. This is especially problematic for dissertations that are directly relevant to practitioners, whose jobs as teachers, counselors, and principals typically leave little time to seek out or read documents of this length and style.

Referring back to Aristotle's (1991) and others' inclusion of audience as a key element in the rhetorical situation that defines a genre, we must ask ourselves if the members of the doctoral student's committee are truly the only ones by whom the dissertation should be read, or for whom the dissertation should be written. Furthermore, the dissertation's limited audience makes its status as a piece of research as questionable as its status as a genre. As Halstead (1988) argues, "a piece of research is not recognized as having been completed until it is communicated, and others know about it and have enough information to enable them to test its authenticity" (p. 497). A more authentic rhetorical situation for the doctoral dissertation would allow it to be read and evaluated by a wider audience than its current limited distribution permits.

In order for dissertation material to be received by a wider audience, it must be reworked and altered from its original dissertation form. In education, this typically means either rewriting the dissertation as a book or, more commonly, rewriting the dissertation into an article or series of articles for a journal. W. Malcolm Reid (1978), in reference to the field of biology, captures the irony of this rewriting process nicely:

> Logistics of the final push toward assembling and getting approval of the traditional dissertation are wrong from the standpoint of revision for publication. The student is ending "a stylized charade in which the victim is encouraged to produce a 200-page tome, only to be told after its approval that *now* he's to operate on his teratoma for publication" (Chernin, 1975). Faced with a move to a new location and new work responsibilities, publication gets postponed for weeks, months, or indefinitely. (p. 652)

Indeed, many dissertations in our field, as in others, are never published, in the sense of being distributed widely in a public forum. We do not have current statistics as to the number for which this is the case, but as of 1973 from one quarter to one half of dissertations across fields never resulted in a published paper. In psychology, at the time, this was true of 51% of all dissertations (Boyer, 1973 cited in Reid, 1978). Moreover, as Krathwohl (1994) notes, the process of re-crafting the dissertation into publishable form(s) prevents new scholars from moving onto fresh projects and exploring the exciting possibilities afforded by their new status as doctored professionals. Not only does the traditional dissertation format have an unacceptably limited readership, but it also presents barriers to widening that readership through publication.

Lack of Generalizability

The dissertation is also an unusual genre in its lack of generalizability for the writer. That is, except for the very rare case of someone who has multiple doctorates, one writes (at most) *one* dissertation in one's life. This is not the case with nearly all other genres we could name—letters, lists, editorials, academic papers, personal phone books, and so on. If we have written or will ever write a letter, we will probably have written and will write many; if we have written or will ever write an academic paper, chances are we have written or will write many of them. It is difficult to identify any other genre that we are likely to produce only one of in our lives. In fact, dissertation handbooks and guides (e.g., Fitzpatrick, Secrist, & Wright, 1998; Ogden, 1993) make a point of emphasizing how the dissertation is unlike every other type of writing a graduate student has done previously. Perhaps the last will and testament is similarly limited: If someone writes a last will and testament, she will probably write only one. But even then she is likely to revisit and revise the document over time, which we cannot say of the dissertation. The baby book is another possible exception—parents with only one child might produce only one baby book in their lives, but even the most enthusiastic parent won't spend nearly as much time on the baby book as a graduate student will spend on the dissertation!

With an ungeneralizable genre comes a missed opportunity for transfer of knowledge and skills that will actually be of benefit to students in the long term. Indeed, for some time, many scholars (particularly those in the sciences) have argued that the dissertation provides poor training for future academic writing (Halstead, 1988; Reid, 1978). Speaking about education, David Krathwohl (1994) agrees, and points out that students are forced to write in this very ungeneralizable genre at precisely the time when they are in the best position to receive mentorship on writing more generalizable genres, such as the journal article and proposal for funding. He explains,

> The typical four- or five-chapter dissertation structure trains students in a writing structure they will probably never again use. Equally importantly, it wastes the opportunity for students to learn writing for publication under faculty tutelage. Given the usual individual dissertation supervision, faculty are in a far better position to pass on this capacity to their

> students than at any other time in the graduate experience. (pp. 30–31)

Even compared to writing a book or monograph, dissertation writing is not easily generalizable. Any student who has tried to convert a dissertation into a book, or any editor of academic books who has overseen this process, would agree. For even in those relatively rare cases in which the topic of a dissertation makes it appropriate for a book rather than a journal article or series of articles, major revisions are necessary in order to turn a traditional dissertation in education into an academic book in this field. If the aim of the work is to produce a book, would it not make more sense to write the dissertation as a book proposal or manuscript in the first place?

Other Fields Have Considered Alternative Formats for the Dissertation

The field of education appears to be lagging behind other academic fields in exploring alternative formats for the dissertation. In the fields of English literature and writing, for example, the novel has become an acceptable format for the doctoral dissertation in some departments, with the stipulation that the writer submit along with his or her novel a critical introduction or appendix, as proof that he or she has conducted substantial critical and historical research as part of the process of writing—or preparing to write—the novel (Sheppard & Hartman, 1989). In at least one case that we know of, a novel was accepted as a doctoral dissertation in education at Hofstra University (Gough, in Saks, 1996). Recently, graduate students in fields as diverse as speech communication and classical archaeology have taken advantage of the affordances of computer technology by submitting their dissertations in CD-ROM format, the interactive nature of which gives readers a better appreciation of visual data such as videos of people talking and 3-D models of Celtic tombs (Mangan, 1996).

Although experimentation with alternative formats is a relatively recent phenomenon in the humanities and social sciences, the so-called 'hard' sciences have been accepting alternatives to the traditional Germanic dissertation format for decades, usually in the form of a collection of articles that have already been accepted for publication in refereed journals (Monaghan, 1989). In the 1970s a movement began among members of the scientific community to transform this tacitly condoned alternative into a requirement, and the campaign to "stop the dissertation" gathered a following on many campuses (Williams, 1971, cited in Reid, 1978). In this case, the criticism of the traditional format was based largely on the belief that writing a dissertation in the traditional style does not cultivate the writing skills necessary to succeed in the "real world" of scientific research. Strong evidence to support this argument lay in the sad fact that not a single published article had emerged from some of the best dissertations in the sciences (Reid, 1978). Even in cases in which the doctoral recipient's work was eventually published, communication of important scientific findings was often delayed because the author had to take additional time after completing the dissertation to convert the work into a publishable form. The alternative format of multiple journal articles is now used regularly by degree candidates in chemistry, geology, and physics, and to a lesser extent in departments of biology and related fields.

So the format of the dissertation, once identical for all disciplines, now varies depending on the field—and the audience—for which it is produced. The Council of Graduate Schools, in the seminal 1991 report "The Role and Nature of the Doctoral Dissertation" acknowledged this trend and supported its continuance, concluding that

> [g]raduate schools would be wise to honor the disciplinary differences . . . even to encourage them. Departments are well advised to review periodically the expectations of their discipline, the mission of graduate education, and how the dissertation serves that mission. Dissertation research should provide students with hands-on, directed experience in the primary research methods of the discipline. The dissertation should prepare students for the type of research/scholarship that will be expected of them after they receive the Ph.D. degree. (Council of Graduate Schools, 1991, p. 15)

As of this 1991 report, 9 out of 48 graduate schools surveyed—or 19%—had officially approved other options for the dissertation, allowing their departments freedom to accept alternative formats. Anecdotal reports suggest that individual departments at other graduate schools accept non-traditional dissertation formats without official sanction at the institutional level. Clearly, the appropriateness and effectiveness of the traditional dissertation format has already been called into question in a number of institutions and disciplines.

So What's a Doctoral Candidate in Education to Do?

Some individuals in the field of education have given serious thought to the problems posed by the traditional dissertation format, and how they might be addressed. The topic of the novel as a dissertation in education has been raised at AERA in recent years. In a 1996 panel, reported in *Research in the Teaching of English* (Saks, 1996), Howard Gardner argued against the acceptance of the novel as a dissertation in education, in part on the grounds that writing a novel would not provide an educational researcher with the experience of mastering education as a discipline, such that one would then be able to pass one's knowledge of the discipline on to other researchers and practitioners. But if a traditional dissertation format is not sufficiently useful for our field, and a novel is not an appropriate form either, what is a doctoral candidate in education to do?

Our answer to this question, as you might well guess, is that doctoral candidates, and departments of education that serve them, should consider other alternative formats for the dissertation. We will offer a few possible alternative formats in the paragraphs that follow, and hope that members of the field will go on to raise others. Based on our analysis of the dissertation as a genre, we recommend that those evaluating possible alternative formats for the dissertation attend to the following two questions about the dissertation, in addition to those they would traditionally ask:

- Will the format of this dissertation make it possible to disseminate the work to a wide audience?
- Will writing a dissertation in this format help prepare candidates for the type of writing they will be expected to do throughout their career?

One alternative format that would meet these criteria for many doctoral candidates was suggested by David Krathwohl in his 1994 article, "A Slice of Advice," in *Educational Researcher.*

Krathwohl proposes that graduate students "... write the dissertation as an article (or series or set of such articles) ready for publication, [using] appendices for any additional information the committee may desire for pedagogical and examination purposes" (p. 31). While Krathwohl does not go into depth about what this might look like, as we envision it, each "chapter" of the dissertation would have its own abstract, introduction, literature review, research question(s), methodology, results, and conclusions—it would be a self-contained research article manuscript ready to be submitted for publication. As Krathwohl suggests, appendices could be used for any material that does not fit into the papers but is desired by the committee. An introductory chapter written specifically for the dissertation could be used to document the overall research program from which the enclosed papers arose.

If a doctoral student were given the option of writing the dissertation as a series of articles ready to be submitted for publication, it would address the problem of the limited readership of the traditional dissertation. From the outset the student would be writing the dissertation not solely for a small and familiar committee, but for a wider audience of professionals in the field, the same audience for whom he or she would be expected to write throughout his or her career. This would give the dissertation status as an authentic piece of research, in the sense that Halstead (1988) defines it, and would increase the potential of the dissertation to have a real impact on research and practice. Further, to the extent that the candidate would be expected to write research articles for publication throughout his or her career, writing the dissertation would support the development of a generalizable skill under the kind of close mentorship largely unique to doctoral training. Finally, writing the dissertation this way could improve the young researcher's mastery of education as a discipline in the sense that Gardner (in Saks, 1996) describes it. A doctoral recipient who has had the experience of writing multiple articles under the guidance and scrutiny of a dissertation committee will be in a much better position to train others in this skill than one who has only written a single, weighty tome now gathering dust in the archives of the library at the institution that granted his or her degree.

Notably, Krathwohl's suggestion can be extended to offer a range of alternative formats for the dissertation. In the version described above, the dissertation is a collection of articles ready to be submitted to research journals in the field. But in another version, the dissertation could be a collection of articles targeted at more practitioner-oriented publications. In yet another version, the dissertation could be a collection of policy memos intended for school districts, foundations, government agencies, and the like. Each of these offers the potential for wide readership, and all of these are potentially genres in which candidates would be expected to write throughout their career, depending on their career path. In essence, any genre that is authentic to the field could become all or part of an alternative format.

In another possible dissertation format, the dissertation could be comprised of a variety of different professional genres. For example, a dissertation could consist of one article targeted to researchers and a companion article aimed largely at practitioners, or one article for a journal in the candidate's narrow field of study and another for a journal in the candidate's broader field of study. In this format, the dissertation could offer a formal mechanism whereby students receive guided practice writing for different kinds of audiences. This offers important preparation for the nature of the field of education, in which we are expected to be able communicate effectively with a variety of audiences (and are often, as a field, criticized for failing to do so).

Opening up the dissertation to a range of professional genres, and thus formats, offers an opportunity for individual students, committees, programs, and departments to think through their goals and mission. Individual students and committees could have fruitful discussions about what kinds of articles would best suit their research project and their particular professional development needs. Programs and departments could consider whether different kinds of degrees and programs could call for different kinds of writing skills, and thus different dissertation formats, and what kinds of writing skills are common to all career paths and programs.

Another advantage of some or all of the alternative formats we have described is that they encourage doctoral candidates to take different angles on their data. This is excellent preparation for an academic world in which scholars present and / or publish several different papers stemming from a single study. Different articles could focus on data gathered by different methodological approaches, on data that address different questions, and so on. For example, the first author of this paper has recently completed a dissertation about classroom environmental print, print resources, and print experiences offered to students in 20 first grade classrooms in two distinct socioeconomic settings. Based on this project, she wrote two different articles for the dissertation, each immediately ready to be submitted for publication in research journals. One concerns the scarcity of informational texts found across the first grade classrooms; another examines differences in the print environments and experiences offered to students in the low– as compared to the high–socioeconomic status classrooms. Although both articles stem from the same research project, they use different subsets of data, require different analytic techniques, and lead to different conclusions. While there is some overlap, as there is for any series of papers emanating from a single program of research, it is clear that these articles were best written as separate pieces. Were she to have written a traditional dissertation based on her research project, she would have had to contrive a way to write them with one literature review ("Chapter 2"), one methodology section ("Chapter 3"), and so on. The simple description of the papers above demonstrates how difficult and ultimately unproductive this would be.

A Note of Caution . . .

In adopting alternative formats for the dissertation in education, it is important that we not overlook the strengths of the traditional dissertation format. Indeed, the dissertation in its current form would not have endured as long as it has if there were not a certain amount of consensus about the value of this form and the advantages it holds for doctoral students and the community of scholars who grant doctoral degrees. For example, it has been noted that the process of writing a dis-

sertation provides a central focus for all Ph.D. programs, and a shared experience for everyone who has achieved an academic doctorate (Isaac, Quinlan, & Walker, 1992). In accepting an alternative format for the dissertation in education, we would not want to threaten this shared experience. Departments should take care to emphasize training in processes, such as gathering and analyzing data, that are common across different dissertation formats.

Another strength of the traditional dissertation format is that it provides an explicit template for the writer to follow—in the words of Todorov, an explicit "model of writing" (1976, p. 163). Fitzpatrick et al. (1998) attempt to quell the anxieties of doctoral students in the dissertation stage with this advice: "[S]ome aspects of dissertations are rote and quite academic. . . . It doesn't take rewriting the English language to follow this type of format" (p. 8). We must be certain that whatever alternative format students choose for their dissertation, they have plenty of models to follow. This requirement should not be difficult to meet as long as the chosen alternative format meets the criterion of generalizability discussed earlier. If the format is one that is widely used in the author's field, and not just invented for the purpose of doctoral training, then the dissertation writer should have no trouble locating models, whether in research journals, among documents published by school districts, in published books, or elsewhere.

Furthermore, we should not lose sight of the fact that the traditional dissertation provides training in developing a substantial, coherent research plan through a single research study. This is an important element of dissertation training that should not be lost in adopting alternative dissertation formats. For that reason we advocate a requirement that all articles in an alternative format dissertation stem from and relate to the same study. Like Ziolkowski (1990), we are not advocating the practice endorsed in some departments in the sciences in which students are allowed to submit unrelated published articles in lieu of a traditional dissertation. Such a practice does not require the substantial, coherent research plan that educational researchers should learn to carry out as part of their training.

It is important to note that the dissertation as it is traditionally written is independent from publishing bodies, at least in the stages of data collection, analysis, and presentation of results. Decisions about acceptance of the dissertation in education are traditionally made by a student's dissertation committee, and not by outside organizations. We believe that this strength of the traditional dissertation format should also be preserved. Thus we would not advocate a model in which already-published articles are required for the dissertation, as is sometimes the case in the hard sciences. That model is problematic for two reasons. First, the publication process in education is typically quite lengthy. It is not at all unusual to wait more than 6 months for reviews of an article submitted for publication, and then to wait again when revisions of the article are submitted—revisions which themselves take time to write. And when the article is finally ready to go to press, there may be another wait, often of six months or longer if the article is to be part of a themed issue. To have dissertation approval on hold pending this process would be impractical and difficult for the student and would place substantial pressure on journal editors and others involved in the process.

A second reason we advocate a dissertation consisting of papers *ready* to be submitted for publication has to do with the content, rather than the process, of journal review. That is, there could be biases in the journal review process that prevent the publication of work that is nonetheless worthy of a doctorate. For example, there is a well-known publication bias against studies in which the null hypothesis, in effect, held true (e.g., Begg, 1994). We would not want someone to be denied a doctorate because they conducted a well-designed study that found, for example, that a particular intervention did not have a statistically significant effect. Similarly, we could envision scenarios in which an article might be ahead of its time, difficult to publish at present but publishable sometime in the future. Having a dissertation composed of articles ready to be submitted for publication lessens these potential problems.

A Final Appeal

Many fields have considered alternate formats for the dissertation appropriate to their particular discipline. It is time for education to do the same—in a comprehensive and serious way. We have tried to show here how the traditional format of the dissertation fails to prepare the doctoral candidate in education for subsequent professional work in the field on two counts: First, because it is not easily disseminated to a wide audience of professional colleagues; and second, because the format itself is not generalizable to the type of writing that the doctoral recipient will do after receiving the doctorate. We have presented a group of related alternative formats for the dissertation, but we encourage the educational community to more actively consider other alternatives suitable for the field of education. It is incumbent upon this field to adapt the dissertation to meet the professional demands faced by its members and thus to make the best possible use of this enduring institution.

Notes

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Rejoinder: Yes, Control Groups Are Essential in Program Evaluation: A Response to Pogrow

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Stanley Pogrow's response to my article on design competitions (Slavin, 1997) is, among other things, an assault on the very core of social science: the use of control groups in program evaluations. It is odd to have to defend a procedure that is so well validated, widely used, and respected. Is it necessary to point out that the control group comparison is the quantitative design of choice, emphasized in every research methods text in every branch of science and social science? In every scientific field, the control group is the hallmark of rigor in experimental research. There are other rigorous alternatives in some circumstances, but no scientist would argue that an experimental-control comparison between equivalent groups is inappropriate or unscientific.

As an alternative to the control group, Pogrow suggests that programs should be judged by the degree to which schools using them achieve "surprising" scores, especially scores at national norms. He gives no details about how this would be done in practice. If he means that a program is to be considered successful if and only if students who participated in it score above "national norms," this would mean that every experiment in a high-achieving, middle-class school would be considered a success. Presumably, Pogrow's implication is that if a high-poverty school scores at national norms, that is "surprising." But we only know whether the scores are "surprising" after the fact. Who is going to report on all the "unsurprising" or "surprisingly negative" findings for the same method? Who decides what is "surprising" enough to report? Further, not all high-poverty schools are equal in poverty or prior achievement. How impoverished does a school have to be before its performance at a given level is considered "surprising"?

Perhaps Pogrow's proposed procedure is to report gains in normal curve equivalents (NCE), percentiles, or grade equivalents, and recognize programs that produce large gains. In scientific terms, this is a pre-post gain design, which is utterly unacceptable (the fiction that the national norms for NCE gains can be used as a sort of "control group" was discredited more than a decade ago, which is why Title I no longer uses it; see Gabriel, Anderson, Benson, Gordon, Hill, Pfannenstiel, & Stonehill, 1985). In practice, what many developers do is to amass easily collected data from large numbers of schools and only report the ones that made great gains in a particular year. This has nothing to do with science or evaluation. It is how makers of miracle cures advertise their products; there's always someone who took their pills and lost weight, grew hair, or recovered from cancer (for reasons unconnected to the treatment).

The whole idea of experimental design is to provide unbiased evidence for and against the existence of a given causal relationship. An experimental-control comparison between well-matched (or, ideally, randomly assigned) subjects is able to provide powerful evidence for or against a causal relationship, because the researcher establishes the experimental and control groups in advance, before the results are known, and then reports relative posttests or gains. In contrast, Pogrow's search for "surprising" scores or gains begins after the fact, when the results are already known. This cannot establish the effect of a given program on a given outcome; any of a thousand factors other than the treatment could explain high scores in a given school in a given year. Pogrow seems to think that a large number of after-the-fact "surprising" scores is better support for a program's impact than a small number of experimental-control comparisons. This is obviously wrong. If an evaluation has data on 100 schools implementing a given program but only reports on the 50 that produced the most positive scores, it is utterly meaningless. In contrast, a comparison of