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Mapping the Research Task for the Construction of a Federal System for Classifying the Nation's Rural School Districts

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The current efforts underway at the federal level to better understand the diversity in the public school universe must acknowledge the increasingly apparent differences in the nation's large rural-school component. The research task necessary to achieve this objective is formidable and includes addressing a large number of definitional, conceptual, methodological, and policy-application issues. Each of these four interrelated clusters of research issues is further broken down into a series of lead questions in order to facilitate the development of the proposed itinerary for mapping the research task required to construct a meaningful classification system.

Introduction

There is a growing awareness in federal policy circles that we strive for a better understanding of the existing diversity in the huge elementary-secondary education enterprise in this nation. There should be little doubt of the magnitude of this enterprise: In 1989-90, over 109,000 public and private schools having a combined enrollment of approximately 45 million students were in operation (National Center for Education Statistics, 1991a, p. 93).

In recent years, for example, the National Center for Education Statistics (NCES) has developed a system for classifying the nation's public schools by type of locale. The Johnson Code (Johnson, 1989) establishes the location of the nation's approximately 83,000 public schools and over 15,000 school districts in seven types of locale: large city, mid-size city, urban fringe of a large city, urban fringe of a mid-size city, large town, small town, and rural. More recently, NCES issued a report on the public school universe that made use of state, regional, locale, and relative wealth clusters (Davis, 1990).

The locale cluster is of most interest here. Each school in the annual Common Core of Data survey was assigned to one of four locale divisions, based on the ZIP code of a school's mailing address. The four divisions are city, urban fringe, town, and rural (Johnson, 1989, p. 4). These data were then converted to what is referred to as an urbanicity cluster that builds on the seven locale types in the Johnson Code (Johnson, 1989). The seven urbanicity clusters are city, city-urban fringe, city-urban fringe town, city-town, city-urban fringe-town-rural, city-town-rural, and town-rural (Johnson, 1989, p. 7).

Still another example of the movement by NCES to better understand the existing diversity in the nation's elementary-secondary schools is the recent proposal to alter the current classifications used for describing the universe of private schools (McMillen & Benson, 1991). Heretofore, NCES reported data on the nation's approximately 27,000 private schools in two basic ways: "Church Related and Non-Church Related" or "Catholic, Other Religions." The new proposal is designed to better reflect the diversity in private schools by making use of a nine-category typology based on governance features and program type.[1]

[1] The complete nine category typology has three major categories, each having three sub-groups: Catholic (parochial, diocesan, and private); Other Religious (affiliated with a conservative Christian school association, affiliated with national denomination or other religious school association, unaffiliated); and Nonsectarian (regular programs, special emphasis, special education).

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Perhaps the most significant example of the new federal commitment to develop more meaningful processes for profiling elementary-secondary education in the nation is NCES's School District Mapping Project. Mandated by Congress, work on this project has been underway for a number of years and is scheduled for completion in 1993. This effort, described more fully in a later section of the paper, will provide the policy and research communities with the most comprehensive national and state data sets on public schools yet devised.

These four examples of recent actions by a unit of the U.S. Department of Education parallel similar efforts in other spheres of federal activity. Perhaps the most ambitious are the two policy-impact codes, developed by the Economic Research Service (ERS) of the U.S. Department of Agriculture. The first of these, the Beale Code, stresses the population size of both metro and nonmetro counties, and nonmetro counties that are then classified by population size and adjacency to metro areas; four categories of metro counties and six categories of nonmetro counties are used (Bulter, 1990). The second ERS policy-impact classification, the Bender et al. code (Bender, Green, Hady, Kuehn, Nelson, Perkinson, & Ross, 1985), classifies nonmetro counties by primary economic activity: farming-dependent, manufacturing-dependent, mining-dependent, specialized government, persistent poverty, federal lands, destination retirement, and unclassified.

Both of these efforts have added substantially to our understanding of the diversity of nonmetropolitan regions in the United States. The Bender et al. code in particular should clearly establish the meaninglessness of equating rural and agriculture, which still prevails in some quarters.

At the state level, there also appears to be new interest in the need to differentiate education policies. Fuhrman's (1989) work, based on a literature review and telephone interviews with representatives of 25 state education agencies, identified a number of new practices used by the states to provide differential treatment of school systems.[2]

Elsewhere, I identified nine major state actions that were judged to represent extraordinary strategies undertaken by states to assist the rural component of the in school systems (Stephens, 1992). The majority of these were initiated a number of years ago, and thus stand as only partial evidence of a new surge of interest on the issue of differentiation. Several, however, were spawned in recent years. The purpose of this exercise was an attempt to uncover any patterns regarding (a) the primary intent of the initiatives (e.g., enhancement of the instructionat program, programming for special populations of students, quality of the professional staff, or improvement in the institutional capacity of the rural school) and (b) the use of one or more generic policy instruments as the preferred method of implementation (e.g., mandates, inducements, capacity-building, or system-changing).[3]

Factors Accounting for Recent Interest

The relalively new interest in the federal education policy community can be traced to a number of factors. Certainly not the least of these must be the broad-based, though still seemingly uncoordinated, drive by both legislative branch and executive branch interests to establish more sophisticated profiles of the condition of education in the nation. The prominence given in most of the proposals thus far advanced stress contextual features under which schools and school systems function, virtually assuring that the dominant prevailing practice of viewing the public school universe as monolithic is clearly no longer defensibte.

Another precipitating factor is what would appear to be an acceleration of the congressional practice of earmarking both urban and rural set-asides as part of

[2]Fuhrman identified seven forms of differentiated treatment. The first three were labelled traditional approaches to achieve differentiation: formula or project grant efforts that benefit some districts more than others; technical assistance and oversight efforts that reach some districts more than others; and administrative waivers from compliance requirements. The remaining four Fuhrman viewed to be newer approaches that one primarily related to the new emphasis on both school and student performance: performance-based accreditation rewards and sanctions related to various levels of performance targeted assistance to low-performing districts and, flexibility to support innovation.

[3]The nine major illustrations were (a) seek reorganization of small enrollment size districts into larger administrative units; (b) promote use of locally-determined multi-district sharing of whole-grades and/or staff; (c) promote use of locally-governed, multi-district regional single-purpose schools for special populations; (d) promote use of locally-governed, multi-district regional comprehensive secondary schools; (e) seek creation of state network of locally-governed, limited purpose regional service centers; (f) seek creation of state network of locally-governed, comprehensive regional service centers; (g) seek establishment of state network of state-governed regional technical assistance centers; (h) promote use of distant-learning technologies; and (i) seek modifications in state funding formula to reflect sparsity; other revenue enhancement plans (Stephens, 1992, p. 10).

the authorization—or in some cases, reauthorization—of federal assistance programs. This practice is especially true of assistance programs targeted for special populations of students (e.g., the disadvantaged, the homeless, migrants, immigrants, students with limited English proficiency, American Indians, Native Hawaiians, vocational students, or students with disabilities). The designation of students attending rural schools is recent. The growth of these practices suggest, in part, that congressional interests are struggling with ways to acknowledge that there is great diversity in the public school universe and, further, that ways must be found to respond to this complexity if equity and fairness standards are to be addressed in more meaningful ways.

A final explanation for the apparent renewed interest in rethinking how the federal government can more adequately describe the public school universe is also directly linked to equity issues in the disbursement of federal aid, especially as this issue relates to the rural share of this assistance. The one conclusion that can be drawn from an examination of virtually every major recent congressionally-mandated inquiry of the rural share of federal programs is that the "rural school" is very difficult to establish, and only then if one is willing to accept a number of assumptions concerning the exceedingly different ways that "rural" tends to be defined (Stephens, 1990). The necessarily awkward executive-branch responses to inquiries concerning the recipients of federal assistance programs has motivated interest in resolving such issues. In this regard, the rationale offered by McMillen and Benson (1991) for developing the NCES proposal for a new typology of private schools is instructive:

> With private schools increasingly drawn into educational policy debates (see for example, Chubb and Moe, 1990) and into school effectiveness comparisons with the public sphere (Coleman and Hoffer, 1987), it is increasingly apparent that the current private school typologies are incomplete. To more fully capture the diversity of private schools requires an expanded typology. (p. 1)

Also instructive is the following statement of NCES's intent for issuing the report on state, regional, urbanicity, and relative-wealth clusters:

> Examinations of the status and quality of education in the United States are often based on comparisons among states. Comparisons of this type are most useful, valid, and constructive when states are examined alongside others with similar characteristics. It is also helpful to have a variety of factors that are important to education conveniently arrayed by individual states. Toward this end, *Key Statistics on Public Elementary and Secondary Education Reported by State and by Regional, Locale, and Wealth Clusters, 1987-88* reports regional and subregional division characteristics of public elementary and secondary education in the nation; it also reports characteristics associated with urbanicity and wealth. The factors examined are those most commonly used to present a thumbnail sketch of the resources, needs, organization, and special characteristics of education within a state. They are displayed in numeric and graphic form to make them useful to a wide range of audiences and purposes. (McMillen & Benson, 1991, p. 1)

Clearly, there is a new interest at the federal level to develop new processes that will result in more useful profiles of the status of elementary-secondary education. Perhaps the best evidence of this new commitment is the large increases, in both relative and absolute terms, of the recent budget appropriations for NCES, the primary national education information system supported by the federal government.[4] Equally clear is that NCES, because of its larger appropriations, is acquiring the institutional capacity to address technical issues for expanding its information systems. Indeed, substantial progress is being made. Most observers in the policy and research and school improvement communities, as well as practitioners, no doubt cheer efforts to enhance the ability of NCES to strengthen and expand its traditional roles.

The Need to Acknowledge the Diversity in the Rural Component of the Public School Universe

These efforts to better understand the diversity in elementary-secondary education are, without question, encouraging developments. The hope is that such efforts will result in federal assistance pro-

[4]The increases in the NCES budget since 1985 demonstrate this new commitment. In 1985, NCES's appropriation was $12.6 million. This was increased to $39.7 million for 1990 and $63.5 million for 1991; the appropriation was $77.2 million for 1992.

grams that will enhance the debate concerning the critical policy issue of the equity, adequacy, responsiveness, and appropriateness of these initiatives.[5]

As useful as the current efforts are, however, the thesis of this paper is that they will be incomplete unless new approaches for viewing diversity in elementary-secondary education do not address what is even more diverse: the rural school component of the public school universe.

The claim that rural districts are more diverse than other major components of the public school universe is supported by several lines of argument. Foremost, the proposition centers on the assertion that rural school systems tend to reflect the socioeconomic and political traditions of the communities they serve moreso than do other classes of school districts.

Many earlier observers of rural systems have noted the tendency for schools of this type to mirror their communities (Brubacher, 1947; Butterworth & Dawson, 1952; Commission on Schools in Small Communities, 1939; Department of Rural Education, 1955; Fox, 1948; Henry, 1953; National Commission on School District Reorganization, 1948; Reeves, 1945). The strongest evidence, however, comes from the relatively recent work of researchers employing case-study methodologies that typically included on-site observations of school-community dynamics (Carlson, 1990; DeYoung 1991; Nachtigal, 1982; Peshkin, 1978; Sher, 1977; Tyack, 1974). These scholars have provided rich documentation of the extraordinary association that tends to exist between a rural community and its school.

My purpose for identifying the centrality of this unusual bond is that this facilitates the use of the rich quantitative data available on the condition of different segments of nonmetropolitan regions of the nation. A discussion of the status of different parts of nonmetropolitan America is not possible here.[6] What can be said is that there is substantial documentation that the big international and national socioeconomic trends (e.g., the transformations in the world economy, the restructuring of the national economy, the changes in population patterns) and political trends (e.g., the changes in the federal role in the federal system, the deterioration of the fiscal capacity of local governments, the shifts in the political power of local governments) underway, especially during the past decade, are having a profound effect on rural regions. Moreover, these developments, are affecting sectors of nonmetropolitan regions in different ways. The consequences of the relatively recent national and international sea changes have simply added to the already existing pluralism in rural America due in part to the socioeconomic, political, or religious traditions dominant in many rural communities.[7]

It would seem, then, that generic federal programs that are intended either to provide general assistance to all school districts or to affect change in certain parts of public education both will fall short of their expectations unless the great diversity of rural regions is addressed. Sher's (1977) insightful admonition of a decade and one-half ago would appear to have even greater currency today:

> The point is that rural America is far too heterogeneous and complex to be amenable to simplistic definitions or comfortable stereotypes... Like rural America as a whole, rural schools and

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[5]The criteria of equity, adequacy, responsiveness, and appropriateness are used throughout this paper. The definitions applied to them here are intended to follow the lead of Dunn (1981): *equity* refers to the distribution of effects and efforts among different groups in society; *adequacy* refers to the extent to which any given level of effectiveness of alternative policies satisfies the needs, values, or opportunities that the policy is intended to address; *responsiveness* is the extent to which alternative policies satisfy the needs, preferences, or values of those who are to benefit from the policy objective; and *appropriateness* refers to the value or worth of the objective of the policy and whether or not the assumptions underlying these objectives are appropriate for society.

[6]The most comprehensive recent profile of the condition of rural America is a series of papers included in an Economic Research Service report (Brown, Reid, Bluestone, McGranahan, & Mazie, 1988). The 17 papers covered a wide range of topics, including performance of the rural manufacturing, agriculture, and natural resources sectors; rural human resources; the rural infrastructure; and rural policy issues. This report, supplemented by other information, served as a rich resource for a report on the implications of recent socioeconomic, political, and educational developments for rural education (Stephens, 1988).

[7]I continue to find Nachtigal's (1982) brief introductory chapter to be especially insightful for establishing the implications that the socioeconomic and political traditions of a rural community have for rural school improvement. A discussion of local attitudes of rural communities toward social and economic change is provided by Lapping, Daniels, and Keller (1989) who cite Blakeley's (1985) five general types of communities on this matter. Though examples of Blakeley's typology are no doubt present in larger communities, Lapping and his colleagues suggest that it is particularly true of smaller rural communities.

> school districts are distinguished by their diversity. Despite increasing standardization, rural schools still tend to reflect the pluralism found among the rural communities they serve...As a consequence, treating rural schools and school districts as if they were a unified, monolithic entity would be a serious mistake (p. 1).

There are other rationales for acknowledging diversity in rural school systems. A summary of several themes I have used in the past include (Stephens, 1991a, pp. 11-15):

1. Rural districts in 1989-90 represented nearly one-half (47.2 percent) of the nation's 15,123 operating systems, enrolled slightly less than one out of eight (11.8 percent) of the 39.9 million students in public schools, and employed slightly more than one out of eight (13.4 percent) of the 2.2 million public school professional staff (Elder, 1991).

2. Federal support for elementary-secondary education (though never major as a proportion of total revenues for education and has declined appreciably in recent years) is still significant, especially for special populations of students. This is so even though the rural share of existing federal aid is problematic.

3. The renewed interest in the formulation of a comprehensive, cohesive, and integrated national policy for rural development continues to give prominence to the importance of a strong, viable educational infrastructure. Knowledge of the current status of rural schools begs that better measurements of the condition of these schools be available.

4. Importantly, many of the education data systems put in place by the states are greatly influenced by federal data requirements. It is highly likely, then, that the use of a classification system by the federal government would, in one stroke, result in the establishment of a consistently uniform system in each of the states.

Though a well-grounded, pervasive argument that the federal government should take additional steps to acknowledge the diversity in rural systems is possible, this goal will by no means be easily achieved. There are significant issues inherent in such an undertaking. A discussion of these matters follows.

The Research Task

The research task required to construct a federal classification system that would acknowledge the diversity present in the rural district component of the public school universe is a complex one, indeed. Many issues need to be resolved for a classification system to better inform policy actions that will pass the tests of equity, adequacy, responsiveness, and appropriateness. Here, I arbitrarily group these issues into four categories: (a) *definitional issues* concerning what constitutes a rural school district; (b) *conceptual issues* concerning how one should best view the workings of rural systems to facilitate the assessment of their condition; (c) *methodological issues* concerning evaluation so that conclusive evidence is available to justify that extraordinary differential treatment is warranted; and (d) *policy-application issues* concerning how the results of the classification system are to be used.

Each of the four categories is discussed separately, though it is recognized that they are not mutually exclusive. That is, in a number of cases, the choice one makes for the resolution of an issue in one category will influence the debate surrounding an issue in one or more of the other categories.

In the discussion that follows, I chose to break down each of the four issue areas into one or more lead questions. I hasten to acknowledge that the wording of a question can contribute further to the arbitrariness and subjectivity of the use of four categories of issues that together must be considered in the construction of a meaningful research agenda. Worse still, perhaps, is the danger that doing so will contribute to what Dunn (1981) describes as making errors—choices in this case—of the third type: "providing the wrong substantive or formal presentation of a problem when one should have provided the right one" (p. 109). These concerns notwithstanding, the intent of the use of lead questions was viewed to be helpful for illustrating the major dimensions of each issue area as well as the enormous complexity that is present in each.

Each lead question is followed by a brief discussion. The primary intent of the use of this procedure is to establish what is regarded to be the main features of the choices that are posed in the lead question. The function of the discussions, then, is to illuminate further the complexity of the issue area associated with the lead question. They also serve in part as a brief statement of rationale for posing the questions in the form that they are cited. Furthermore, the discussions associated with each lead question help reduce, but certainly do not eliminate, the arbitrariness and subjectivity of the procedures used here for mapping the research task. (An overview of the itinerary used for mapping the research task as it is being developed here is provided in Figure 1.)

One final point. I treated the rural school *district*, not the *school*, as the unit of analysis. With respect to this decision, it is assumed that both the flowering site-

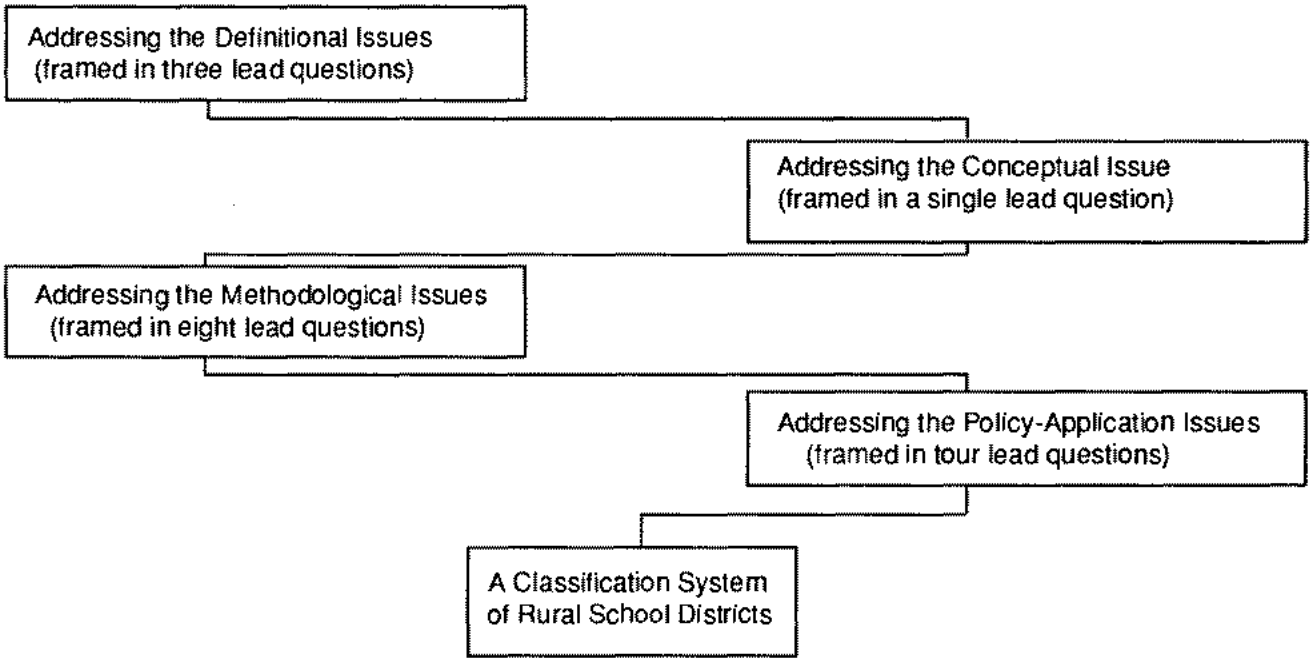

Figure 1. An overview of the itinerary used for mapping the research task.

management movement underway across the country, as well as some of the newer derivations of it (e.g., charter schools), will not fundamentally alter the final legal accountability of a school district as the organizational unit of record. Accordingly, the appropriate unit of analysis was thought to be the district, not the school.

The Definitional Issues

Definitional problems have plagued the field of rural education studies for a very long time, though some progress has been made in the forty years since Butterworth and Dawson (1952) reminded us that rural education should not just be equated with schools serving agricultural communities, but also those located in sparsely populated fishing, mining, and lumbering communities. However, we have not seen a great deal of movement toward a comprehensive, universal definition, as a panel chartered by the American Association of School Administrators (1984) concluded after an extensive examination of current practices. In its review, the AASA panel reported that a large number of criteria are to be found in the literature or in use by federal and state agencies (e.g., sparsity or density of population, isolation or distance to an urban center, smallness in size of enrollment, a variety of economic and social features, a wide range of sociocultural values, the primary occupation of residents). Even more surprising, perhaps, is the recent confirmation that a single federal department might itself have multiple definitions (Stephens, 1990, pp. 42-47).[8]

Many proposals have been offered over the years regarding a preferred way to define a rural school district. A common theme is a sparsity factor. Beyond this, however, there does not appear to be any consensus on other measures to be employed. Rather, a wide range of both quantitative and qualitative factors have been proposed.

Of course, the field of rural education studies is not alone in confronting the definitional problem. Jordan

[8]Certainly a researcher's purpose will dictate how the phenomenon that is the focus of the inquiry should be defined. The "surprising" nature of my observation is that differing definitions of rural are built into the core data systems maintained by the U.S. Department of Education. Among other issues that this practice raises, it virtually assures that differing definitions of rural will be used in the analytical studies that make use of one or more of the core data systems.

and Hargrove (1987) have concluded that researchers tend to use two basic approaches to operationalize the concept ot rurality:

> (a) ignoring the problem by asking the reader to accept on taith the rurality ot their samples or (b) using some measurement of the geographical environment as their method. Researchers who have used the second method have conceptualized rurality as either a categorical variable (i.e., rural-urban) or a continuous variable. (p. 25)

In their comprehensive review ot the literature on rural sociology and rural mental health, Bosak and Perlman (1982) observed that both a variety of quantitative as well as qualitative measures were employed. Perhaps more striking is their tinding that slightly more than 40% ot the authors provided *no* definition ot rurality. Bosak and Perlman (1982) conclude their literature review with the familiar theme that the continued use of multiple definitions makes difficult the analysis ot hypothesized urban-rural differences, hampers replication studies, and, ot special interest for this exercise, handicaps cross-sectional studies of different rural regions.

The lack ot a consensus concerning detinition has, among other problems, led to contusion at the most tundamental level of policy analysis: a reliable estimate ot the number of rural districts. As a result, the federal policy community has been forced to pick and choose trom conservative estimates of their number that range from two fifths to one halt ot the nation's approximately 15,000 public school systems to the more ambitious estimates that indicate that their number is closer to two thirds of the operating districts.

Clearly, one ot the tirst research tasks in the construction ot a tederal system for classitying rural districts is the resolution ot the detinitional issue. There simply cannot be any meaningful movement toward the creation of a system tor establishing the diversity among rural systems that will enjoy long-term usage tor the formulation of tederal policy until the basic building block for such a system—a consensus definition of a rural district—is in place.[9] Guttenberg (1977) argued that "the first requirement ot any taxonomy is a clear conception of the taxonomic unit, i.e., the object to be classified. Where this is lacking, the search tor order can only be a blind and fumbling process" (p. 2).

Below, I pose three lead questions to delineate the definitional issue area.

1. *What is the best use to be made of NCES's "School District Mapping Project" or the "Johnson Code" for arriving at a definition of a rural district?*

The completion in 1993 ot NCES's School District Mapping Project will establish one ot the richest data bases heretotore available tor use by tederal, state, and local decision makers, as well as the research and school-improvement communities, tor profiling important features of the public school district universe. An overview ot the major features ot the project is provided below:

The project will provide more than 200 state and local district tabulations ot demographic data on each public school district in the nation. These data are derived from the 1990 decennial census conducted by the Bureau of the Census. The Bureau has developed the Topologically Integrated Geographic Encoding and Reterencing (TIGER) System that provides 10,000,000 census block boundaries that are digitally encoded (to six decimal places) on computer tape.[10] NCES subsequently worked with the Council of Chief State School Otficers to have each state draw school district boundaries on maps provided by the Bureau of the Census. The boundaries of all school districts and other education agencies were then digitized and encoded in the TIGER system. This permitted the conversion ot data trom census blocks to local school districts and other education entities (NCES, 1991b, p. 21).

Thus, an accurate geographic description of each public school system is now within our reach. The difficult choice that must be made is how best to use this new capability. Two major options seem readily available.

One option is to make use ot the classitication system that NCES will use for classifying school districts in its 1993 report to Congress (Table 1). This system will initially stress how current tederal grant

[9]In a recent article that attempted to structure a debate concerning the issue of a system for classifying rural districts, I chose to put the definitional issue aside in order to lay out what was viewed to be the line of discussion that the called-for debate should follow (Stephens, 1992). The definitional issue of course cannot be tabled in this exercise, as it was in the context of the previous piece.

[10]For a description, see Bureau of Census (1990).

Table 1
NCES School District Mapping Project: Two Analytic Geography Tabulations for School District File

Tabulation	
Urban/Rural by size	
Inside Urbanized Area:	
2.5 million or more	(In central city; not in central city)
1 to 2.5 million	(In central city; not in central city)
500,000 to 1 million	(In central city; not in central city)
250,000 to 500,000	(In central city; not in central city)
100,000 to 250,000	(In central city; not in central city)
Below 100,000	(In central city; not in central city)
Not in Urbanized Area:	
Place ≥ 25,000	
Place 10,000 to 25,000	
Place 5,000 to 10,000	
Place < 5,000	
Rural - Non Farm	
Rural - Farm	
Metropolitan and non-Metropolitan by size of place	
Inside Metropolitan Statistical Areas:	
MSAs and PMSAs of 2.5 million or more	(In central city; not in central city)
MSAs and PMSAs of 1 to 2.5 million	(In central city; not in central city)
MSAs and PMSAs of 500,000 to 1 million	(In central city; not in central city)
MSAs and PMSAs of 250,000 to 500,000	(In central city; not in central city)
MSAs and PMSAs of under 250,000	(In central city; not in central city)
Not inside Metropolitan Statistical Areas:	
Place ≥ 25,000	
Place 10,000 to 25,000	
Place 5,000 to 10,000	
Place < 5,000	
Rural - Non Farm	
Rural - Farm	

Note. From unpublished material provided by NCES staff, February 27, 1992.

programs administered by the Department of Education are allocated. The system will also be used by independent researchers, or those contracted by NCES and other federal units, in subsequent reports on the condition of education.

A second option is to make use of the aforementioned Johnson Code which classifies each public school into one of seven locale types (Table 2). As will be recalled, I argued earlier that the school *district* is the appropriate unit of analysis. Elder (1991) demonstrates that it is possible to establish within an acceptable level of confidence the number of rural school districts in the rural locale (a place with fewer than 2,500 people or a place having a ZIP Code designated rural by Census). Specifically, Elder established the standard that "if the percent of rural school enrollment was 75% or more of the total enrollment, then the district was designated a 'rural district'" in his analysis (p. 14). He stated further:

Table 2
The Johnson Code

Large City	Central city of a Standard Metropolitan Statistical Area (SMSA) with the city having a population greater than or equal to 400,000 or a population density greater than or equal to 6,000 people per square mile
Mid-Size City	Central city of SMSA, with the city having a population less than 400,000 and a population density less than 6,000 people per square mile
Urban Fringe of Large City	Place within SMSA of a Large City and defined as urban by Census
Urban Fringe of Mid-Size City	Place within SMSA of a Mid-Size City and defined as urban by Census
Large Town	Town not within SMSA, with a population greater than or equal to 250,000
Small Town	Town not within SMSA and with a population less than 25,000 or greater than or equal to 2,500 people.
Rural	A place with less than 2,500 people or a place having a zipcode designated rural by the Bureau of the Census

> Thus, we intentionally have adopted a "conservative" estimate of the number of rural districts. Consequently, the proportion of rural schools, rural students, and rural teachers in urban districts may be slightly overstated by our analyses. In my case, the difference is relatively slight because most districts are entirely rural or urban and a broader breakpoint (say 50%) would affect only 246 (1.6%) out of 15,133 districts. (pp. 14-15)

Both options above entail certain costs and benefits. The two lead questions that follow should establish some insights concerning several of these costs and benefits.

2. *Regardless of which approach is used, what, if anything, is to be done about rural districts that are present in "small towns," however defined?*

A rigid adherence to either approach will likely exclude a number of districts that should be included as rural. For example, a number of districts that should be regarded as rural would be caught in the lower end of the "small town" locale type in the Johnson Code (town not within an SMSA and with a population less than 25,000 or greater than or equal to 2,500). The "small town" locale type in 1989-90 included 19,970 schools (25.2% of the nation's total), and 9.7 million students (24.2% of the national total) (Elder, 1991, Table 1). The number of rural districts within this locale type is not known, but assumed to be fairly large. A decision needs to be made, then, of either pursuing this matter, or abandoning it altogether. The same problem is present in NCES's School District Mapping Project.

3. *Should the standard for defining a school district be dependent exclusively on a general population measure for the locale where it is located and its proximity to an urban center, or should the use of additional multidimensional measures also be considered?*

Both the Johnson Code and the School District Mapping Project make use of a general population measure and a measure of the proximity of a rural district to an urban area. The use of these two quantitative measures is consistent with the norms of federal policy making. A choice needs to be made whether or not to stay with these factors in building a definition of a rural school district, search for other

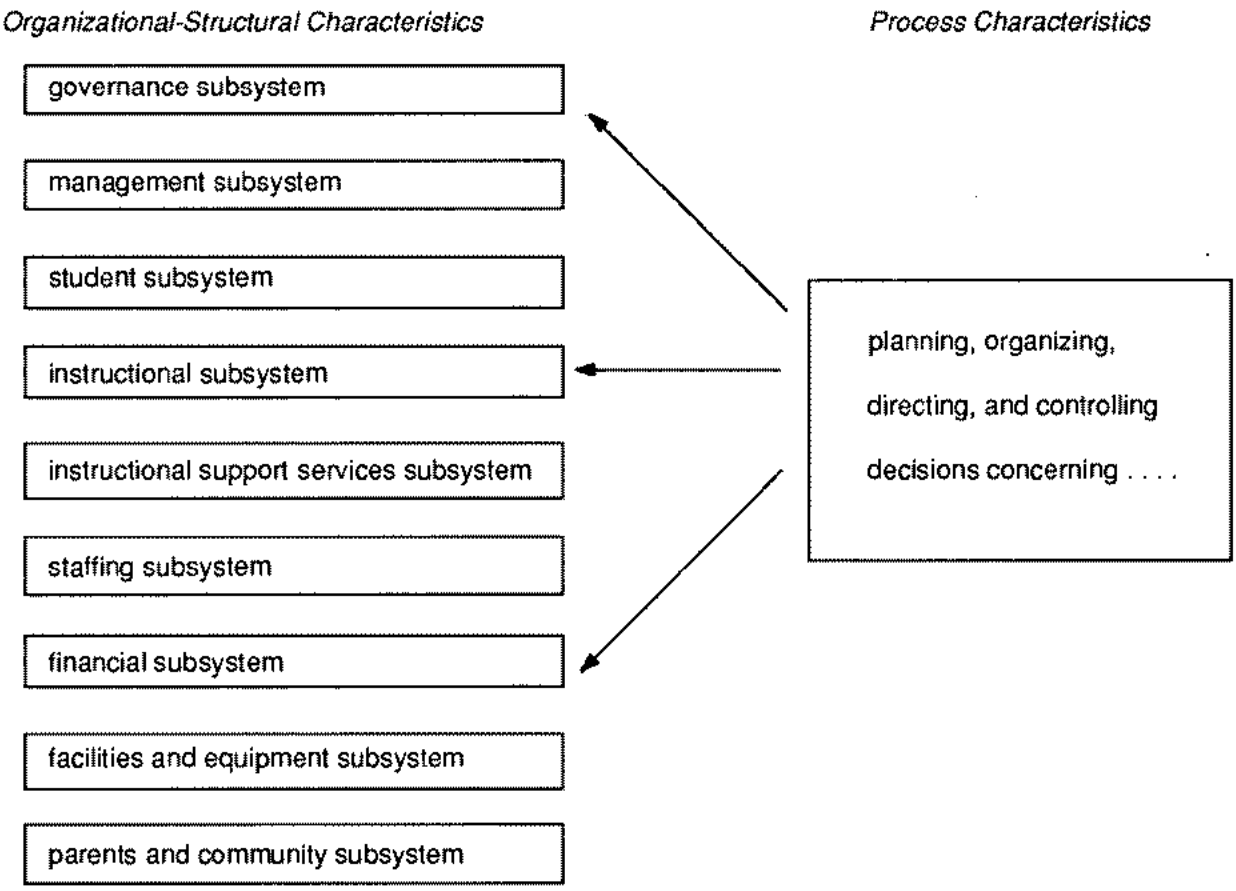

Figure 2. One view of the universal properties of a school district (Stephens, 1991b).

quantitative measures, or seek to include additional qualitative measures.

This question relates to the level of precision that is felt to be required, or possible, for the determination of a common definition of a rural school system. As established earlier, a common definition is an essential prerequisite for the construction of a system for classifying rural districts that will enjoy long-term use. This point seems indisputable. Again, there are costs and benefits associated with whatever choices are made. Further, compromises will likely be required.

The Conceptual Issue

The resolution of the definitional issues will go a long way toward identifying the object of this exercise. The research task now is to arrive at a meaningful conceptual framework for viewing the nature of the rural school district as an organizational entity. This step inextricably forces one to confront a perplexing number of existing theories that purport to be the preferred conceptualization of educational institutions.

The major conceptual issue, framed in question form, is:

1. *What is the most meaningful way to view the properties of a rural school district, how these properties relate to each other, and how they relate to the health and performance of the system?*

One of the more common conceptualizations of educational organizations views school districts as a system composed of interacting subsystems; an analysis of the factors that account for the performance of the total system is enhanced if the relationships between these parts is better understood. An example of such a view is provided in Figure 2. In this illustration, an understanding of the health and performance of a

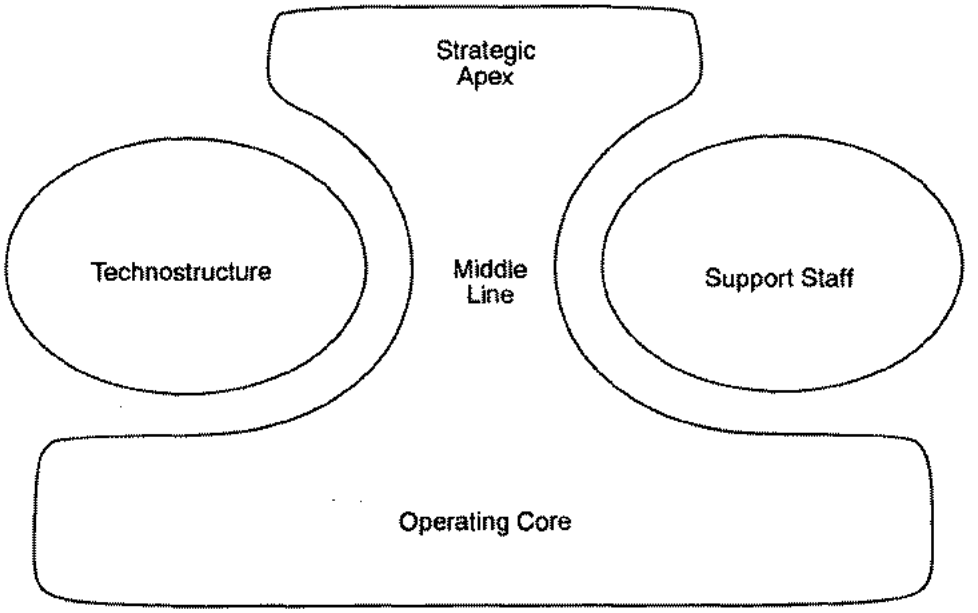

Figure 3. Mintzberg's five basic parts of the organization

rural district would be incomplete if the organizational-structural and process characteristics are not addressed.

Mintzberg's (1983) seminal work on how organizations tend to structure themselves has attracted widespread interest in a number of fields, including education, and provides still another conceptualization. One of his principal theses is that

> Every organized human activity—from the making of pots to the placing of a man on the moon—gives rise to two fundamental and opposing requirements: the *division of labor* into various tasks to be performed, and the *coordination* of these tasks to accomplish the activity. The structure of an organization can be defined simply as the sum total of the ways in which its labor is divided into distinct tasks and then its coordination is achieved among these tasks. (p. 2)

Mintzberg's position is that most organizations of any complexity consist of five basic parts, as shown in Figure 3. Further, his work is premised on the perspective that there are a limited number of basic configurations that explain most of the structural tendencies of organizations (a) *Simple Structure*, based on direct supervision, in which the strategic apex is the key part; (b) *Machine Bureaucracy*, based on standardization of the work processes, in which the technostructure is the key part; (c) *Professional Bureaucracy*, based on standardization of skills, in which the operating core is the key part; (d) *Divisionalized Form*, based on standardization of outputs, in which the middle line is the key part; and (e) *Adhocracy*, based on mutual adjustment, in which the support staff (sometimes with the operating core) is the key part (Mintzberg, 1983, p. 23).

The relatively recent interest in the use of metaphors as a way of thinking about the nature of organizational life also has enlisted many advocates. Lakoff and Johnson (1980) view metaphor as central to the human thought processes; in reality, one's conceptual system is predominantly metaphorically structured. Morgan's (1986) work in applying metaphors to the study of organizational life is equally supportive of its use, though he acknowledges, that metaphor provides a partial, "one-sided insight" (p. 13), not complete perspective.

In an earlier synthesis, Clark (1981, pp. 45-46) discussed ten alternative perspectives for viewing educational organizations that satisfied one or more of the selection criteria he used in his literature review (e.g., frequency of citation in the current literature, likely application to educational settings, exemplification of the range of alternatives being discussed). The ten perspectives selected were:

Loosely coupled systems. Organizational functions often assumed to be sequential and responsive (e.g., goal setting and operating activities) may, in fact, be neither sequential (activities may precede goals) nor responsive (activities may not match goals).

Organized anarchies. Schools, colleges, and other educational agencies display problematic preferences, unclear technology, and fluid participation. They seldom solve problems and, in most instances, would not know if a problem had been solved.

Incentive system paradigm. Personal satisfactions and rewards supersede organizational goals/purposes in determining organizational actions.

Natural selection model. Most changes that occur in educational systems are short-term adaptations, untested, opportunistic, based on idiosyncratic selection criteria.

Marxian perspective. Organizations, organizational forms, and the structures employed to study them are creatures of the historical processes that gave rise to them. Many of the structural contradictions in educational organizations are overlooked because they support pervasive social values.

Dialectical view. If structural elements of educational organizations can be dereified, they can be examined for what they are—organizational variables, alternative structural characteristics, optional organizational forms.

Adaptive implementation. In most organizations innovations will fail because they are not responsive to the school context.

Collectivist perspective. In many organizational subunits and ad hoc groups in education, authority resides in the collectivity; social controls, relations, and organizational rewards are primarily personalistic; and the organizational status structure is egalitarian.

Organizations as clans. The clan concept may best explain the maverick urban school or, for that matter, the elite graduate school. The process of socialization is the source of control.

Institutionalized organizations. Schools and colleges can be better understood if one assumes that their success depends on their ability to conform to social or institutional roles (accreditation, certification) rather than their ability to enhance student achievement.

Earlier, Carlson (1964) depicted schools as domesticated organizations. By this he means that school organizations have no control over who participates in them nor do their clients have a choice about attending the schools they are enrolled in. This metaphor would seem to be especially useful today for describing educational organizations in a rural setting, where the current emphasis on choice options is less relevant than it is for urban or suburban systems.

The differing conceptualizations that have been briefly introduced here represent alternative paradigms of organizations. As Tuggle (1978) reminds us, paradigms shift over time as communities of scholars adopt new ways of modeling problems and their solutions. Most observers would agree that the field of organizational studies has been characterized by frequent paradigm shifts. Nonetheless, a major issue is deciding on the conceptualization of how best to view the workings of a rural school district. This choice is critical in that this decision will influence subsequent ones, especially those concerning the use of indicators for establishing the nature of diversity in the health and performance of a rural school district.

The Methodological Issues

The initial focus on the need to resolve the definitional issue of what is to constitute a rural school district was intended to stress the importance of identifying the basic building block of this taxonomic effort. This was followed by the introduction of another important prerequisite for establishing the diversity present in the object of this exercise: how best to conceptualize a rural district. Completion of both of these steps sets the stage for consideration of how best to establish the important similarities and differences in this component of the public school universe.

The methodological issues that need to be addressed in the design of a rural school district classification system are, as expected, both numerous and challenging. It is here where the meta-interests, those that lie behind and beyond this exercise, come into perhaps their greatest play. Eight major lead questions are framed to delineate this issue area.

1. *What level of precision in a classification system is required to establish diversity?*

Posing this question is my way of introducing what is likely the most volatile issue in taxonomic work of this type: the homogeneity-of-cells issue. In the physical and biological sciences, this question is nonnegotiable, requiring complete allegiance to the stipulation that all variables of analysis under study be placed in one, and only one, cell in the typology being constructed. However, divergent viewpoints concerning this matter, are apparent in the social sciences.

Bealer's (1987) position on this issue represents one viewpoint. Though he endorses typology work as worthy of social scientists, he stresses that the goals of these efforts, like all inquiries, must contribute to the ability to predict causal relationships. Bealer's criterion hinges on the homogeneity of cells issue:

> Ideally, the goal of typological procedures is to sort data so that within each classification cell—however many get used, be it 2, 20, or 2,000—there is perfect homogeneity while, at the same

> time, there is maximal heterogeneity among or across the cells of the classification. Then, if the thing or things (i.e., dimensions) used to sort cases into the different cells are causally linked in the real world to other events—and, if we get good measures to allow that causal connectedness to show through; well, then, by glory, we are going to be in the researcher's nirvana. We will get correlations of 1.0 and our predictive capability will be perfect. Whether stated or not, this is the goal that typological work is after. Good typological work is a self-conscious attempt to improve the predictive capability and, by turn, the potential utility of research data. (p. 5)

Dunn's (1981) position on the need for homogeneity is similar. One of Dunn's five rules of classification for structuring policy problems is clear concerning this point. In what he labels the rule of disjointness, Dunn argues that "[c]ategories must be mutually exclusive and independent. Each subject or situation must be assigned to one and only one category or subcategory" (p. 121).

It is probably the insistence on adherence to the homogeneity-of-cells test that caused a virtual cessation of earlier work on the development of typologies of organizations, the class of typology work most closely associated with the focus of this exercise. Interest in the construction of organizational typologies was especially strong in the early 1960s when a number of scholars produced a variety of classification schemes viewed to represent the complexities of organizations: Parson's (1960) typology that was based on an organization's goals or functions; Katz and Kahn's (1966) elaboration of Parson's work to include consideration of the interaction of the organization's goals and functions; Etzioni's (1961) typology where compliance is the core variable; and Blau and Scott's (1962) approach that stressed the prime beneficiary of an organization's work as the major criterion (Hrebiniak, 1978, pp. 327-338).

Though there is today no universally accepted typology of organizations, most observers would likely agree with Hall's (1972) position that, to be effective, a classification of this type must reflect the complexities that characterizes most organizations. To do this, Hall argues that the system used must account for at least three things: (a) the array of external conditions that surround an organization, (b) the total spectrum of actions and interactions within an organization, and (c) the outcomes of organizational behavior (p. 41).

Hall's three standards for judging the utility of a classification system does not include homogeneity of cells as an explicit requirement. Nor does it seem to be included as a major expectation of several other social scientists engaged in typology work that attempt to classify organizations. For example, Hrebiniak (1978) asserts that

> Typologies are intended to provide insights into and an understanding of organizations. Their real utility derives from their application. They are most useful when providing clues about underlying similarities and differences across organizational types. Perhaps they serve this purpose best by suggesting hypotheses about organizations that otherwise would not readily be apparent.
>
> The second point is that there is no shortage of elements or variables that can be used in typologies. On the contrary, because organizations are complex systems, there is an abundance of classificatory items. It must be emphasized, then, that the choice of items or dimensions for use in classifying organizations depends solely on the researcher or practitioner and the issues he or she wishes to analyze. (pp. 328-329)

Hrebiniak's position concerning the value of typologies is based on two major premises:

> It is assumed, first, that variables on which organizations might be similar or different can be stipulated and measured. Second, it is presumed that organizations can be categorized into classes or types by using defining characteristics. The assignment to types is intended to allow for generalizations about organizations, thus providing an insight into their behavior and the behavior of their subunits or elements, including the "unique" individuals involved. (p. 328)

Hrebiniak clearly establishes his position concerning the issue of the function of typology work in the study of similarities and differences in organizations when he states that

> The goal of typologies is an increased understanding of complex organizations. Acts of classification are intended to further scientific simplicity. The variables or elements included

> must be relevant. They must have a basis in theory and be meaningful to the student of organizations. Meeting these criteria, the typology can be applied as an instrument to stimulate thinking and organizational analysis. (p. 363)

The issue of precision in a classification system is also addressed by Wilkinson (1987). In making a distinction between types and classes in a classification system, he asks the question, "Can a case (or a category of cases) belong to more than one type in a typology?" His answer: "Nothing is wrong with it as a general rule, but a great deal can be wrong with it in particular instances. The purpose makes all the difference. Why is the typology being constructed?" (p. 174).

Hondale (1987) also dismisses the overlap issue and cites three useful applications of typologies that in social science may in fact include overlapping cases. Typologies can

> educate the public, policy makers, service providers, and others about changes in society . . justify programs—by demonstrating that there are diverse clientele with distinct needs . . . and . . . target policies—with limited resources, it is always helpful to know where to put scarce program dollars. (p. 171)

A number of existing typologies that have enjoyed widespread use seem to support those who argue that rigid adherence to the homogeneity-of-cells issue should not restrain efforts to develop classification systems (i.e., contribute to the understanding of the similarities and differences among organizations, promote useful policy-relevant generalizations and tendencies present in complex sets of data, or generate research hypotheses that can then be tested). Certainly the previously cited policy-impact code developed by the Economic Research Service, which classified the nation's nonmetropolitan counties by primary economic activity, is one of these. Though criticized by some (Luloff, 1987; Pickard, 1988), and most assuredly containing overlapping counties, the code has nonetheless sharpened an understanding of the significant diversity present in the vast regions of rural America.

Similarly, an earlier classification system of education service type organizations that were established in many states in the late 1960s and in the 1970s would seem to enjoy continued use by policy makers and by practitioners, and importantly has spawned additional research (Stephens, 1979). This classification system was based on over 100 governance, fiscal, programming, and organizational features of education service type agencies. It was concluded that no "pure" cells could be established, but clear patterns were evident concerning the strong tendencies of the different configurations of regional service agency type organizations.

2. *What other rules of classification should be used in the construction of the classification system?*

The issue of homogeneity of cells was considered first because of its centrality to the debate concerning the merits of typology work in the social sciences. But there is a set of other issues surrounding the rules of classification that require choices to be made in the construction of a system for classifying rural school districts.

One of the most useful syntheses of these issues is provided by Luloff (1987) in a paper that stressed construct, design, and measurement issues in typology work in the social sciences. Though Luloff is an advocate of the close adherence to the independence of-cells requirement, his discussion of other rules of classification that are judged to be especially germane to this exercise are summarized at some length below.

Concerning the classification of the constructs used in a classification system—first order constructs or existential types, and second order constructs or constructed types—Luloff assures that the use of second-order constructs

> allows researchers to reduce the diversities and complexities of phenomena to more coherent levels. Constructed types do not represent literal translations of true courses of action, but rather are heuristic tools by which real events can be compared and comprehended within a larger framework. (p. 94)

Citing McKinney (1966, p. 5), Luloff (1987) defines the constructed types as

> "purposive, planned selection, abstraction, combination, and (sometimes) accentuation of a set of criteria with empirical referents that serve as a basis for the comparison of the empirical cases." Through the use of such devices, the myriad phenomena of a social action or situation are reduced to a more coherent level. The result is not literal; i.e., it is not a representation of a unique circumstance (or set of circum-

> stances). Rather, through reduction, the constructed type represents an "objectively probable (empirically relevant) source of action, situation, etc." (p. 85)

Luloff suggests that there are two alternative ways to approach reduction: mechanical methods, which generally support the original monotheticism of the data, or theoretical methods, which "are marked by the establishment, a priori, of a set of relevant types of dimensions" (p. 86). Though Luloff acknowledges certain strengths in the use of theoretical methods, he also asserts that the greatest weaknesses of this approach "is that monotheticism is generally sacrificed with the result often being the creation of fully polythetic types" (p. 86). Luloff concludes his discussion of the issue of measurement reduction with the acknowledgement that in the social sciences, typology work generally means the use of a less powerful polythetic typology. But he also adds his frequent caution that whatever choice is made, monothetic or polythetic,

> it is clear that if either typology is to have more than a theoretical use, it must allow empirical specimens to be assigned to types. In order to accomplish this goal, the set of types must, at a minimum, be mutually exclusive and exhaustive. (Luloff, 1987, p. 87)

Luloff's reference to the requirement that a typology must be exhaustive is also shared by others. Dunn (1981), for example, includes this as one of the five rules that he offers as guidelines for helping ascertain that the classification system selected by the analyst is both relevant to the problematic situation under study, and further, will stand the test of logical consistency.

Dunn's (1981, pp. 121-122) five rules of classification are based on his premise that the basis of any classification system depends on the analyst's purpose and that there are no known techniques that permit one to know with confidence whether or not the bases selected for the classification are the right ones to use.

1. *Substantive Relevance.* The basis of a classification should be developed according to the analyst's purpose and the nature of the problematic situation. This rule, deceptively simple in theory, means that classes and subclasses should conform as closely as possible to the "realities" of the problematic situation. Yet since what we know about a situation is partly a function of the concepts we use to experience it, there are no absolute guidelines that tell us when we have perceived a problem correctly.

2. *Exhaustiveness.* Categories in a classification system should be exhaustive. This means that all subjects or situations of interest to the analyst must be "used up," so to speak.

3. *Disjointness.* Categories must be mutually exclusive and independent. Each subject or situation must be assigned to one and only one category or subcategory.

4. *Consistency.* Each category and subcategory should be based on a single classificational principle. A violation of this rule leads to overlapping subclasses and is known as the fallacy of cross-division. This rule is actually an extension of rules of exhaustiveness and disjointness.

5. *Hierarchical Distinctiveness.* The meaning of levels in a classification system (categories, subcategories, sub-subcategories) must be carefully distinguished. This rule, which is really a guideline for interpreting classification systems, is derived from a simple but important axiom put forth by philosophers Alfred North Whitehead and Bertrand Russell: "whatever involves *all* of a collection must not be one of the collection."

3. *What is the best approach to use for the derivation of classes in the classification system?*

The choices to be made regarding this question will be influenced by the decisions made previously concerning the level of precision and the other rules of classification that should be used. However, the resolution of the two preceding questions in many ways still leaves open the question of how the classification system is to be derived.

There are three choices available here.[11] First, the system can be conceptually derived. This approach relies heavily on the researcher's broad knowledge of the phenomenon that is the object of the exercise—the diversity among rural school districts in this case. There are many excellent illustrations of conceptually derived classification systems that have served to inform policy debates by providing useful insights

[11]Many scholars have commented on the three major methods for the derivation of classes used here. See Imber and Thompson (1991) for an interesting discussion of these approaches for the development of a system for classifying the highly volatile field of litigation in education.

concerning, for example, the nature of rural communities. Nachtigal's (1982) preferred use of three categories to classify the status of rural communities—rural poor, traditional rural Middle America, and rural communities in transition—set the stage for his meaningful discussion of the differing values and socioeconomic and political tendencies present in many rural communities. Nachtigal's typology and that of Gjelten (1982), who used five categories of rural communities (stable, depressed, high growth, reborn, isolated) stress the implications of differences they perceived to be present in rural communities for rural school improvement strategies. The work of the Northwest Regional Educational Laboratory (1988) in establishing a "rural school-poverty index" is still another outstanding example. These three typologies have proven to be valuable in raising the quality of the debate surrounding the status of rural schools.

The second approach to the derivation of classes is empirical. In this case, the phenomenon is examined prior to the creation of the classes and avoids much of what Hrebiniak (1978) labels "the theoretical bickering that often accompanies deductive efforts" (p. 359). The empirical, or inductive, approach to the derivation of classes would of course be favored over the deductive, or a priori, approach by those most concerned about the homogeneity of cells and other measurement issues previously outlined.

The third choice for the derivation of classes is to combine the two approaches, much like was done in the Bender et al. (1985) classification of nonmetropolitan counties by primary economic activity, Stephens' (1979) classification of education service agency type organizations, and what is perhaps one of the most rigorous examples, the McMillen and Benson (1991) proposal for classifying private schools. Another example of this combined approach is Jordan and Hargrove's (1987) application and testing of eight categorical definitions of rural in Nebraska.

There are obviously costs and benefits associated with each of the three choices outlined above. In the final analysis, though, the decision concerning this matter should be based on the intended purpose that the classification system is to serve.

4. *How many classes of rural districts is it possible to use that will not only establish the diversity in the universe, but will also enjoy utility in the policy communities?*

The issue of the number of classes to use in a classification system of rural school systems was in part addressed in one of the preceding discussions. It is separated here because of the special significance for the assumed primary goal of this exercise, the utility of the classification system for the federal policy communities. This assumed overriding goal of this exercise, though not minimizing the value of a classification system for both researchers and practitioners, nonetheless forces one to consider in very special ways the number of classes of rural schools that should be used. These have to do with equally complex questions that arise out of concern about the tendencies of policy makers to make use of social science research. Whereas the preceding discussion, especially that of measurement reduction, is usually done largely uninhibited by concerns such as this, focusing on the information needs and related interests of policy makers clearly raises the issue of compromises that ordinarily must be made if the classification system is to have utility for the policy communities.

There is a growing literature on these two related considerations — the use of social science research in the policy communities, and more recently, the focus on and the information needs of policy makers (Caplan, Morrison, & Stambaugh, 1975; Cohen, 1985; Fuhrman & McDonnell, 1985; Kirst, Meiser, & Rowley, 1984; Lindblom, 1986; Stern, 1991; Webber, 1987). This literature cannot be reviewed here. However, it does seem clear that there probably is a relatively limited number of classes that can be used in the classification system and that choices will need to be made concerning what this limit should be. The development of a lucid, easily understood way of classifying rural systems based on important features that help account for their diversity will likely conflict with the researcher's need to establish a useful level of discrimination between classes of rural districts. Compromises will again be in order. Elsewhere, I addressed this issue in what was called the "rule of numerical relevance," suggesting that the use of this rule of classification "would probably be violated if the number of classes exceeded a range of five to seven" (Stephens, 1991, pp. 72-73).

5. *What criteria should be used to select measures for not only establishing what the distinguishing features of rural districts are that pertain to their health and performance, but in addition, how these can best demonstrate diversity among these units?*

This question is even more multi-faceted than the way it has been framed above. This is so because it not only requires the use of selection criteria that will

establish measures for distinguishing unique features of rural districts generally as well as for demonstrating diversity within this component, but must also do so in a way that is compatible with choices made for the preceding three questions: the level of precision deemed appropriate for the classification system, other rules of classification to be used, and the number of classes to be used.

It also is useful, I believe, to further break down the issue of what are the most appropriate selection criteria to use into what are essentially content criteria as well as criteria that should be used for data collection. Following this lead, issues to be addressed include (a) To what extent must the measures provide a comprehensive, as opposed to only a partial, view of the health and performance of rural districts? and (b) To what extent must the measures be place-neutral, not only free of a significant urban, suburban, or rural bias, but equally critical, be place-neutral within the rural component?

The issues that need to be addressed concerning data collection criteria are common to any large-scale federal data collection exercise similar to the one required here. These include (a) Do the data to be collected fall within the current understanding of the federal responsibility or will an expanded mission be required? (b) Are the data to be collected currently available at the (especially rural) school district level or will new procedures be required? (c) Can the data to be collected be made available to the federal policy and research/school improvement communities supported by it in a timely manner? and (d) Is the burden for the collection of the data cost-effective?

6. *Do all measures have equal importance for establishing the health and performance of a rural district?*

There are many statistics available on rural school districts. However, some would argue that we use only those that satisfy the working definition of an indicator proposed in the final report of a recent Office of Educational Research and Improvement (OERI) task force formed to explore the use of educational indicators. The task force defined an educational indicator as follows:

> Indicators, or statistics that reveal something about the health or performance of the educational system, constitute the basic building blocks of state performance accountability systems. However, not all statistics about education can function appropriately as indicators. Statistics qualify as indicators only if they serve as gauges, that is, if they tell a great deal about the entire system by reporting the condition of a few particularly significant features. For example, the number of students enrolled in schools is an important fact about the size of the educational system, but it tells little about how well the system is functioning. On the other hand, a statistic that reports the proportion of secondary students who have successfully completed advanced study in mathematics provides useful information about the level at which students are participating and achieving in that subject. This statistic provides considerable insight about the condition of the system and can be appropriately considered an indicator. (OERI, 1988, p. 5)

The working definition of an indicator adopted by the OERI task force enjoys widespread use. It is important to note, however, that there might be huge differences concerning how individuals view indicators that "serve as gauges; that is . . . tell us a great deal [about) the condition of a few particularly significant features" (p. 5). Grandy's (1989) discussion of the complexities in developing educational indicators is an especially useful reminder:

> In the social and behavioral sciences, we also speak of indicators: social indicators, economic indicators, and education indicators. In these sciences, unfortunately, it is not always clear what is an indicator of what. From common usage of the word, an indicator must indicate something. That "something" may be a type of event observable in the future, or it may be a construct, that is an abstraction that is not observable in itself but consists of many elements, generally too numerous to list. Examples of constructs include intelligence, knowledge, ability, attitude, socioeconomic status, poverty, happiness, and health. Similarly, the indicator itself may be observable or it may be a construct. The distinction between observables and constructs is important to make, not only so that we are clear about the nature of the indicator and how to generate it, but because the distinction has important implications for establishing the validity of the indicator.
>
> Test scores in mathematics (observables) are indicators of mathematical knowledge and

> skills (constructs). Education indicators are nearly always indicators of constructs, and those constructs are rarely well defined. The result is that the linkage between an indicator and what it allegedly indicates is often tenuous. (p. 12)

Jaeger's (1976) comments concerning this issue are also helpful:

> [There is] virtually uniform agreement among measurement specialists that standard setting is a judgment process. . . . No amount of data-collection, data analysis, and model building can replace the ultimate judgment act of deciding which performances are meritorious or acceptable and which are unacceptable or inadequate. (p. 18)

Thus, choices made here are critical. Consideration of this question will likely surface a host of values, not only concerning the nature of schooling, but other aspects of education as well.

7. What approach should be used for the development of indicators that will distinguish the health and performance of rural systems?

There appear to be three emerging positions in the rapidly unfolding debate concerning how best to approach the issue of indicator development: the causal modeling approach, the general goals-specific objectives-measurement approach, and the major policy issue approach. In-so-far as these three descriptions of approaches to the development of indicators seem to enjoy conventional use, they will be employed here, though the distinctions between the latter two, are not always clear. A choice will need to be made regarding which of the three is to be followed in the construction of a rural school district classification system. A summary of the major positions advanced by proponents of each of the approaches follows.

The argument for the use of a causal model to represent the important features of an educational system is made forcibly by Shavelson, McDonnell, and Oaks (1989):

> National indicators must represent, at least roughly, the important components of an educational system. . . . In addition to monitoring outcomes, indicators should reflect the characteristics of students and communities served by schools, the financial and human resources (especially teachers) available to the schools, and other educational inputs. Moreover, they should reflect the adequacy of the curriculum and instruction received by students, the nature of the school as an organization in pursuit of educational excellence and equity, and other educational processes. Finally, indicators must be related to one another so that their relationships, and changes in these relationships, can be ascertained to suggest possible "explanations" for observed changes in outcomes. (pp. 6-7)

Shavelson et al. (1989, p. 13) establish four assumptions that guided their work in the development of a causal model: (a) an indicator system should be based on a conceptual model of schooling; (b) the model and its major domains should be empirically, rather than normatively, derived; (c) a major criterion for selecting the potential indicators within each domain should be their ability to measure core features of schooling; and (d) where possible, indicators should be derived from research that identifies the factors associated with important schooling outcomes.

Still another extended quote from the Shavelson team is provided as support for the causal model approach to indicator development:

> Understanding the educational process requires attention to all levels, as well as specification of the relationships among conditions at each level and student outcomes. This task will inevitably generate considerable methodological frustration, but neglect of multilevel elements will lead to superficial and simplistic portrayals of schooling. Far from clarifying the dynamics of the schooling process, simplification can ignore critical factors. How schools organize educational resources and learning opportunities and improvement efforts are often neglected, even though few would deny their importance. However, these elements must be simplified if they are to be studied. The inevitable tension between comprehensiveness and clarity must be resolved by identifying the meaningful factors that are actually measurable in a standardized way across schools. (p. 14)

The work of the National Education Goals Panel (1991) represents one of the most visible examples of what is called the general goals-specific objectives-measurement approach to indicator development. The Goals Panel has adopted a number of specific objectives for each of the goals. The work of the Goals

Panel, and the six resource groups if created to provide technical assistance, has concentrated on the identitication of potential indicators and measurement strategies for use in the issuance ot annual "national report cards."

The recently released report ot the Special Study Panel on Education Indicators (NCES,1991c) makes a number of strong arguments in support of the use of the major policy issues approach as the most usetul way to address the question of indicator development. In arguing for a policy issue-oriented approach to indicator development, the Special Study Panel advanced tour main themes. Because of the importance ot this issue, the rationale used by the Panel in support of its position is cited at length:

> First, most members of the panel have serious reservations about the wisdom ot relying exclusively on the major theoretical model used to justity indicator development in the past, namely a model focusing on a triumvirate ot "educational inputs-educational processes-educational outputs." Most panelists view this approach as tlawed because it encourages the view that the education system produces "products" by taking various raw materials (e.g., students or resources) and processing them in schools. Such a model may seriously mislead decisionmakers if it encourages school "improvement" in ways that create solutions for the wrong problems.
>
> Second, although another model for indicator development—general goals-specific objectives-measurement (i.e., the model explicitly embedded in the statement of national goals)—appeared promising, the panel ultimately rejected it. However useful this model is tor detining goals, it is largely oriented toward policies subject to change. An indicator system organized around today's goals cannot respond to tomorrow's.
>
> Third, the panel hoped to create an issues-oriented indicator system incorporating essential aspects ot a "system": it would be comprehensive and complete in itself, incorporating enough fundamental ideas, priorities, and concepts to allow the public to appreciate interconnected aspects of the educational enterprise.
>
> Finally, perhaps most importantly, indicators developed around properly chosen major issues offer an inherent advantage as a means ot communicating essential information to the public. Indicator information can serve the needs of educators, or of policymakers, or of the research, analysis, or business communities. But the panel believes that indicators will fail if they do not fulfill their potential to intorm the general public about the quality of the educational enterprise. Indicators organized around major educational issues offer many advantages: They provide the opportunity to capture for the public large and enduring educational themes. They can stir debate and discussion. They should provoke thought and controversy. Above all they can add depth and breadth to the public's understanding of some of the most important social institutions in the United States, the nation's schools and colleges. (NCES, 1991c, pp. 9-10)

The Panel established what it regarded to be six tundamental principles that ought to guide the development of an "effective indicator information system . . . in a new vision of how data can help us understand and improve the educational enterprise" (p. 19). These principles are:

1. Indicators should address enduring issues. We should assess what we think is important, not settle for what we can measure.
2. The public's understanding of education can be improved by high-quality, reliable indicators.
3. An effective indicator system must monitor education outcomes and processes wherever they occur.
4. An indicator system build solely around achievement tests will mislead the American people.
5. An indicator system must respect the complexity ot the educational process and the internal operations ot schools and colleges.
6. Higher education and the nation's schools can no longer be permitted to go their separate ways. (pp. 19-22)

Guided by these principles, the Panel established three criteria that it deemed essential for the selection ot indicators:

1. Indicator information must focus on what matters most about learning and about schools and colleges.
2. Indicator information must assess the social context within which education takes place.
3. Indicator information must reflect important national values and aspirations for education. (NCES, 1991c, p. 23)

8. *What alternative indicators are available for use in establishing diversity in the rural district component?*

The important decision concerning the final selection of indicators to employ should be guided, of course, by the choices made in response to the preceding lead questions used here to frame the methodological issues associated with this task. This would be true regardless of which of the three basic approaches to indicator development is selected.

There certainly is no dearth of potential indicators from which to choose. Possible indicators are presently being advanced as the preferred design of an indicator information system by advocates of each of the three perspectives to indicator development: the causal modeling approach, the National Education Goals Panel approach that reflects the general goals-specific objectives-measurement approach, and the Special Study Panel on Education Indicators approach that reflects the major policy issues approach.

There are duplications in the lists of preferred indicators supported by each of these three perspectives. There will be a continuous need, nonetheless, to consider at length the costs and benefits of the use of the remaining wide-ranging indicators currently supported by each perspective. This debate is not likely to be resolved soon.

Policy-Application Issues

The primary concern here is the application of the classification system once choices regarding the preceding definitional, conceptual, and methodological issues have been made and a classification system is in place. The issue is what uses are to be made of the code. This most assuredly will entail policy choices. Hence the use of the term *policy-application* for the designation of this category. Some might argue that the inclusion of application issues in a discussion of the research task associated with the development of a classification system is inappropriate. I obviously am not one of those, but rather, hold the view that an attempt at mapping the research domain would be incomplete if application issues were excluded. There are indeed costs and benefits inherent in application issues and these must be explored.

Four straightforward lead questions are framed to breakdown this issue area into the most critical choices that need to be made. These tour questions, though admittedly oversimplified, nonetheless strike directly to the purpose of this exercise, which is to influence not only federal but state policies and practices as well.

1. *What is the best approach to use to assure that NCES makes use of the classification system?*

I start with this question because of the centrality of the need for the federal government's largest education data information system to be aligned in such a way that valid and reliable data on the classification system will be available to the policy, research, and school improvement communities. NCES's major current data systems are impressive and include the following: the Common Core of Data, the Schools and Staffing Survey, High School and Beyond (1980-92), the National Assessment of Educational Progress, and the National Education Longitudinal Study of 1988 (OERI, 1990, p. 8).

One or more of these five major data bases have served as the primary source for an ever-expanding series of important reports on various aspects on the condition of education in this country. Equally impressive, moreover, is the potential for expansion of NCES's current activities (NCES, 1990). It also seems clear that the work of the National Education Goals Panel, and NCES's own Special Study Panel on Education Indicators, will result in additional pressure on NCES, as will the School District Mapping Project discussed earlier.

It is imperative, then, that the rural school district classification system—in whatever final form it takes—be considered in NCES planning. Moreover, assuring that this occurs soon must be given a priority as it is quite certain that decisions made by NCES in the near future will likely "lock-in" for some time the exciting possibilities cited for the expansion of NCES's information systems.

There are several choices for doing so. First, NCES could align its information system voluntarily, a request that is consistent with its broad mission to "collect, analyze, and disseminate statistics and other data related to education" (NCES, 1991d, p. ii). Further, NCES would be following the lead of several of its own recently chartered study groups that have called for the significant expansion of the national education information system.

A second choice is to achieve the installation of the classification system by Presidential Executive Order. A third option would be for Congress to mandate that this be done. There are obviously costs and benefits associated with each of the three options. Moreover, there should be little doubt that substantial additional resources would need to become available to NCES no matter which option is chosen.

2. *What is the best approach to use to assure that the Department of Education makes use of the system*

in the administration of its elementary-secondary assistance programs?

The Department of Education (ED) administers a large number of assistance programs totalling 229 in 1991 (U.S. Government Printing Office, 1991). Many of these are targeted for elementary-secondary education and can be the form of either a formula or discretionary grant. ED's share of the federal government's $54.6 billion support for elementary-secondary education in fiscal year 1991 was $24.4 billion, or nearly 46% of the total federal outlay for education (Hoffman, 1991, p. 9). These monies include the big-ticket programs such as Chapter I, Grants to Local Education Agencies to Improve Education for the Disadvantaged, Education for the Handicapped, Chapter 2, School Improvement Programs, Vocational and Adult Education, and a long list of lesser programs.

As indicated earlier, an assessment of the rural share of current programs administered by ED is problematic. Use of a uniform definition of a rural school district, a requirement of this exercise, especially for the large-ticket programs, would remove some of the concerns about the equity of these programs, as this construct is conventionally defined. However, the use of the classification system would seem to be the most effective way to address still other criteria that should be applied for judging the worthiness of ED's assistance programs, such as the adequacy, responsiveness, and appropriateness of these programs.

Options for achieving this goal are similar to those available to install the classification system in all of NCES's existing or planned data information systems. In part, it could be achieved through voluntary action by ED where administrative discretionary authority is possible, a Presidential Executive Order, or through a Congressional mandate.

3. *What is the best approach to use to assure that other federal departments and independent agencies administering assistance programs make use of the system?*

A number of large-ticket education assistance programs are administered by other units of the federal government. These include the Department of Agriculture's Child Nutrition Programs (with a $24.4 billion expenditure in fiscal year 1991), Health and Human Resources Head Start program, and the training programs and Job Corps program administered by the Department of Labor. Indeed, over one-half (54.4%) of all federal support for education in 1991 was administered by federal units other than the Department of Education (Hoffman, 1991).

These programs represent important sources of assistance to rural districts. The use of the classification system would not only promote the achievement of the goal that rural districts as a group receive their equitable share of these monies, but importantly, it would also facilitate the determination of their adequacy, responsiveness, and appropriateness relative to the differing needs of differing types of rural systems.

The choices to be made here are similar to those present for the two preceding questions: Should one strive for voluntary action by the departments and independent agencies where administrative discretionary authority is possible, seek the issuance of a Presidential Executive Order, or go the congressional mandate route?

4. *What is the best approach to use to assure that the states be required to make use of the system as a condition of eligibility to receive federal funds?*

The use of the rural district classification system by all federal departments and independent agencies will create a process that should promote the development of superior policies and the implementation of programs at this level that reflect the diversity among districts of this type. This action, however, should pay even larger dividends. On the one hand, it is generally acknowledged that federal data information systems tend to structure those maintained by state governments who are anxious to closely align their systems in order to facilitate the securing of grants or remain in compliance with federal data requirements. This is especially true in the field of education.

Moreover, an assessment of the equity of the rural school district share of the federal government's big-ticket state formula grant programs would be facilitated if the states were required to make use of the uniform definition of rural called for in this exercise.[12] The use by the states of the classification system

[12]See Harned (1989), for a discussion of a number of the issues involved in the design of existing state education agency information systems to make them user-friendly for rural systems. Harned's paper establishes several key points concerning the difficulties that would need to be addressed in any attempt to bring into being a closer alignment of federal and state data information systems.

would facilitate an assessment of the adequacy, responsiveness, and appropriateness of a state's action. Some would view the establishment by the federal government of this requirement as a condition for eligibility to receive federal funds as a contradiction to the spirit, if not the intent, of "the new federalism." Others, however, would likely support this move as warranted on at least two grounds: (a) none of the current state formula grant programs is entitlement programs and (b) the states presently have substantial discretionary authority regarding how they disburse grant monies. These perceived limitations in current practice would be reduced, if not totally eliminated, if the states were required to follow the federal lead.

Assuring that the states follow suit, then, is an important issue. The costs and benefits of this move would need to be determined. The choice available to achieve this goal would seem to be limited to that of seeking congressional approval.

Summary

There are a number of encouraging signs in recent years that the federal government is increasingly committed to improving procedures that will acknowledge the great diversity present in elementary-secondary education in this nation. A priority must be given in these efforts for addressing the diversity issue as this applies to the nation's significant number of rural school districts. The thesis of this paper is that there has always been greater diversity among rural districts than is true of their urban and suburban counterparts, and that this pattern is even more pronounced today than in the past. Failure to reflect this dominant feature of what represents nearly one-half of the nation's approximately 15,000 public school systems will contribute to the continued formulation of federal policies and practices that are subject to equity, adequacy, responsiveness, and appropriateness challenges.

The research task required to construct a federal classification system that would acknowledge the diversity in rural school districts is complex. Four categories of issues are used to discuss the nature of this complexity: definitional issues, conceptual issues, methodological issues, and policy-application issues. It is stressed, however, that the four are not mutually exclusive, but rather highly interrelated. The purpose for considering each category of issues separately is based on the judgment that this procedure is the best approach to use for the development of an itinerary for mapping the research task. Another procedure followed is to make use of one or more lead questions in each of the four issue areas, followed by a brief discussion, in an attempt to further delineate the dimensions of the research task.

Important choices must be made concerning the critical definitional issue of what is to constitute a rural school district, the first of the four categories of issues. Certainly NCES's current efforts to complete its School District Mapping Project as well as the use of the Johnson Code will permit the identification of districts located in locales having a general population of 2,500 or less. The use of either one of these coding systems will provide reliable data for a large number of districts that most would judge to be rural. Yet it is also assumed that there are a number of rural systems located in the lower portion of locales having a general population of 2,500 to 25,000 (the small-town category). These will not be identified as rural in the present plans. Moreover, agreement must be sought on the proposition that the general population measure and the proximity to an urban center are the best indicators to use, or whether other equally important measures should also be employed. It is clear that a number of compromises will be required for the resolution of the definitional issue that is an absolute first requirement in the design of a rural classification system.

The second category of issues, though in many ways not nearly as critical as is the definitional question, is nonetheless important. The choice that must be made here is concerned with establishing the most meaningful conceptualization of the properties of a rural district, how these relate to each other, and how they relate to the health and performance of the system. Perhaps the greatest difficulty in resolving this issue is that the choice is one of selecting from a perplexing number of existing theories that purport to be the preferred way to view the workings of educational organizations.

The methodological issues that need to be addressed are extraordinarily difficult, as expected. Choices will be required concerning a series of questions, including the level of precision necessary in the classification system to establish diversity, the rules of classification to be used, and the approach to be employed for the derivation of classes. Other critical questions that need resolution deal with the selection criteria to be used for the choice of measures for not only establishing the distinguishing features of rural systems, but also which of these best demonstrate diversity among these units. Certainly the additional choices that need to be made concerning both the approach to use for the development of indicators, and

the final selection of indicators, will be difficult. The likelihood is also great that compromises will be required for the resolution of each of these matters.

The fourth and final category addressed in this article is labelled the policy-application issue area. The focus here is on the use of the results of the classification system by federal departments and independent agencies who administer education assistance programs. It would seem possible that some federal units might voluntarily make use of the classification. Other strategies available include the issuance of a Presidential Executive Order, and the encouragement of a Congressional mandate. There are costs and benefits associated with each approach. A choice also needs to be made concerning how best to encourage the states to also make use of the classification system.

Concluding Comments

My objective was to establish a number of the definitional, conceptual, methodological, and policy-application issue that must be addressed in the design of a federal system for classifying the nation's rural school districts. It was not my intention to take a position on these matters. This is certainly not the last word on this topic. Rather, its completion should probably be viewed as an example of what someone had in mind when coining the expression that a journey of a thousand miles must begin with a few small steps. The decision made here to map the research task by using four issue areas, each accompanied by one or more lead questions, as the preferred way to organize the discussion, will likely be argued. This possibility notwithstanding, it is nonetheless felt that the approach used represents movement in the right direction.

Further, the two articles that follow in this special issue of the *Journal of Research in Rural Education* focus on the utility of selected economic, social, and state and local financial indicators (Reeder) and the use of selected contextual features (Elder) in the design of the needed classification system. Both articles greatly enrich our understanding of a number of the policy and technical issues introduced here, and, importantly, also identify still other definitional, conceptual, methodological, and policy-application issues that need to be resolved. A few more steps in the journey will thus have been taken.

The hope is that, collectively, the three articles (and the commentary) will prove useful for raising the level of the debate concerning the most meaningful way to structure federal policies that will reflect the great diversity present in the rural school district component of the public school universe in this nation. That this debate should take place seems irrefutable if the federal policy community is serious about not just profiling the condition of education, but of equal importance, making use of this information for the subsequent design of policy strategies that are equitable, adequate, responsive, and appropriate.

This journey will not be an easy one, for it poses a number of intellectual and practical challenges that will require compromises that are not likely to satisfy everyone's interests, or needs. But the large number of students who attend rural school districts in this nation require no less than the full commitment of those having a legal or professional responsibility to begin the process.

References

American Association of School Administrators. (1984). *Report on definitions: Rural community, rural school district, small school district.* Arlington, VA: Author.

Bealer, R. C. (1987). Metatheory: Unlocking the mysterious door to typologies. In A. E. Luloff (Ed.), *Proceedings of rural people and places: A symposium on typologies.* University Park, PA: The Northeast Regional Center for Rural Development.

Bender, L. D. (Ed.), Green, B. L., Hady, T. F., Kuehn, J. A., Nelson, M. K., Perkinson, L. B., & Ross, P. J. (1985). *The diverse social and economic structure of nonmetropolitan America.* Rural Development. (Research Report No. 49). Washington, DC: U.S. Department of Agriculture, Economic Research Service.

Blakeley, E. (1985). *Community attitudes toward change.* Paper presented at the annual meeting of the American Collegiate Schools of Planning, San Francisco.

Blau, P. M., & Scott, R. W. (1962). *Formal organizations.* San Francisco, CA: Chandler.

Bosak, J., & Perlman, B. (1982). A Review of the Definition of Rural. *Journal of Rural Community Psychology. 3*(1), 3-34.

Brubacher, J. S. (1947). *A history of the problems of education.* New York: McGraw-Hill.

Bureau of the Census. (1990). *TIGER: The coast-to-coast digital map data base.* Washington, DC: Author.

Bulter, M. A. (1990). *Rural-urban continuum codes for metro and nonmetro counties.* Washington, DC: U.S. Department of Agriculture, Economic Research Service, Agriculture and Rural Economy Division.

Butterworth, J. E., & Dawson, H. A. (1952). *The modern rural school.* New York: McGraw-Hill.

Caplan, N., Morrison, A., & Stambaugh, R. J. (1985). *The use of social science knowledge in policy decisions at the national level.* Ann Arbor, MI: Institute for Social Research, Center for Research on Utilization of Scientific Knowledge.

Carlson, R. (1964). Environmental constraints and organizational consequences: The public school and its clients. In D. E. Griffiths (Ed.), *Behavioral science and educational administration.* (63rd Yearbook of the National Society for the Study of Education, Part II). Chicago: The University of Chicago Press.

Carlson, R. V. (1990). What does it mean to work in a rural setting? A study of rural influences. *Journal of Rural and Small Schools, 5*(1), 41-47.

Clark, D. L. (1981). A sampler of alternative perspectives and models for viewing educational organizations. *Alternative perspectives for viewing educational organizations.* San Francisco, CA: Far West Laboratory for Educational Research and Development.

Cohen, M. (1985). *Meeting the information needs of state education policymakers.* (Executive Summary.) Washington, DC: State Education Policy Consortium.

Commission on Schools in Small Communities. (1939). *Schools in small communities.* Seventeenth Yearbook. Washington, DC: American Association of School Administrators.

Davis, J. (1990). *Key statistics on public elementary and secondary education reported by state and by regional, locale, and wealth clusters, 1987-88.* Washington, DC: National Center for Education Statistics.

Department of Rural Education. (1955). *Rural education: A forward look.* Washington, DC: National Education Association of the United States.

DeYoung, A. J. (1991). *Struggling with their histories: Economic decline and school improvement in four rural southeastern school districts.* Norwood, NJ: Ables.

Dunn, W. N. (1981). *Public policy analysis: An introduction.* Englewood Cliffs, NJ: Prentice-Hall.

Elder, W. L. (1991). *A descriptive analysis of rural schools and rural school districts.* Columbia, MO: University of Missouri, Office of Social and Economic Data Analysis.

Etzioni, A. (1961). *A comparative analysis of complex organizations.* New York: Free Press.

Fox, L. K. (1948). *The rural community and its school.* Morningside Heights, NY: King's Crown Press.

Fuhrman, S. H. (1989). *Diversity amidst standardization: State differential treatment of districts.* New Brunswick, NJ: Rutgers, The State University of New Jersey, Center for Policy Research in Education.

Fuhrman, S., & McDonnell, L. M. (1985). *Mapping instate information networks in education policy: An exploratory study.* Washington, DC: State Education Policy Consortium.

Gjelten, T. (1982). *Ensuring excellence in rural education.* Arlington, VA: American Association of School Administrators.

Grandy, J. (1989). Models for developing computer-based indicators of college student learning in computer science. *Signs & traces: Model indicators of college student learning in the disciplines.* Washington, DC: U.S. Department of Education, Office of Research.

Guttenberg, A. Z. (1977). Classifying regions: A conceptual approach. *International Regional Science Review, 2*(1), 1-13.

Hall, R. H. (1972). *Organizations: Structure and process.* Englewood Cliffs, NJ: Prentice-Hall.

Harned, C. (1989). *Describing rural primary and secondary education: The role of state education agency information.* Elmhurst, IL: North Central Regional Educational Library.

Henry, N. B. (Ed.). (1953). *The community school.* (The 52nd Yearbook of the National Society for the Study of Education, Part II.) Chicago: The University of Chicago Press.

Hoffman, C. M. (1991). *Federal support for education: Fiscal years 1980 to 1991.* Washington, DC: National Center for Education Statistics.

Hondale, B. W. (1987). Typologies: Issues related to the interface between basic and applied research. In A. E. Luloff (Ed.), *Rural people and places: A symposium on typologies.* University Park, PA: The Northeast Regional Center for Rural Development.

Hrebiniak, L. G. (1978). *Complex organizations.* St. Paul, MN: West.

Jaeger, R. M. (1976). Measurement consequences of selected standard-setting models. *Florida Journal of Educational Research, 18*(22). pp 12-23.

Johnson, F. (1989). *Assigning type of locale codes to the 1987-88 CCD public school universe.* (Technical Report CS 89-194) Washington, DC: National Center for Education Statistics.

Jordan, S. A. & Hargrove, D. S. (1987). Implications of an empirical application of categorical definitions of rural. *Journal of Rural Community Psychology. 8*(2), 14-29.

Katz, D., & Kahn, R. L. (1966). *The social psychology of organizations.* New York: Wiley.

Kirst, M. W., Meister, G., & Rowley, S. R. (1984). Policy issues networks: Their influence on state policymaking. *Policy Studies Journal, 13*(2), 247-263.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by.* Chicago: University of Chicago Press.

Lapping, M. B., Daniels, T. L., & Keller, J. W. (1989). *Rural planning and development in the United States.* New York: The Guilford Press.

Lindblom, C. E. (1986). Who needs what social research for policymaking? *Knowledge Creation, Diffusion, Utilization, 7*(4), 345-366.

Luloff, A. E. (1987). Typologies: Construct design and measurement issues. In A. E. Luloff (Ed.), *Proceedings of rural people and places: A symposium on typologies.* University Park, PA: The Northeast Regional Center for Rural Development.

McKinney, J. C. (1966). *Constructive typology and social theory.* New York: Appleton Century-Crofts.

McMillen, M. M., & Benson, P. (1991). *Diversity of private schools.* Washington, DC: National Center for Education Statistics.

Mintzberg, H. (1979). *The structuring of organizations.* Englewood Cliffs, NJ: Prentice-Hall.

Mintzberg, H. (1983). *Structures in fives: Designing effective organizations.* Englewood Cliffs, NJ: Prentice-Hall.

Morgan, G. (1986). *Images of organizations.* Beverly Hills, CA: Sage.

Nachtigal, P. M. (Ed.). (1982). *Rural education: In search of a better way.* Boulder, CO: Westview.

National Center for Education Statistics. (1990). *A guide to improving the national education data system.* (Executive Summary.) National Forum on Education Statistics. Washington, DC: Author.

National Center for Education Statistics. (1991a). *Digest of education statistics.* Washington, DC: Author.

National Center for Education Statistics. (1991b). *Programs and plans of the National Center for Education Statistics: 1991 edition.* Washington, DC: Author.

National Center for Education Statistics. (1991c). *Education counts: An indicator system to monitor the nation's education health.* (Report of the Special Study Panel on Education Indicators.) Washington, DC: Author.

National Center for Education Statistics. (1991d). *OERI directory of computer data files.* Washington, DC: Author.

National Commission on School District Reorganization. (1948). *Your school district.* Washington, DC: National Education Association of the United States, Department of Rural Education.

National Education Goals Panel. (1991). *Measuring progress toward the national education goals: Potential indicators and measurement strategies.* Washington, DC: Author.

National Education Goals Panel. (1991). *The national education goals report: Building a nation of learners.* Washington, DC: Author.

Northwest Regional Educational Laboratory. (1988). *End of the road.* Washington, DC: Council for Educational Development and Research.

Office of Educational Research and Improvement. (1988). *Creating responsible and responsive accountability systems.* Washington, DC: Programs for the Improvement of Practice.

Office of Educational Research and Improvement. (1990). *Institutional projects funded by OERI.* Washington, DC: Author.

Parsons, T. (1960). *Structures and process in modern society.* New York: Free Press.

Peshkin, A. (1978). *Growing up American: Schooling and the survival of community.* Chicago: University of Chicago Press.

Pickard, J. (1988). A new county classification system. *Appalachia, 21*(3), 19-24.

Reeves, F. W. (Ed.). (1945). *Education for rural America.* Chicago: University of Chicago Press.

Shavelson, R. J., McDonnell, L. M., & Oaks, J. (1989). *Indicators for monitoring mathematics and science education.* Santa Monica, CA: The RAND Corporation.

Sher, J. P. (Ed.). (1977). *Education in rural America: A reassessment of conventional wisdom.* Boulder, CO: Westview Press.

Stephens, E. R. (1979). *Education service agencies: Status and trends.* (ESA Study Series/Report No. I.) Burtonsville, MD: Stephens Associates.

Stephens, E. R. (1988). *The changing context of education in a rural setting.* (Occasional Paper No. 26.) Charleston, WV: Appalachia Educational Laboratory.

Stephens, E. R. (1990). *An exploratory profile of federal and state policies and programs and voluntary efforts of others targeted on rural, small school districts* (unpublished report). Washington, DC: Council for Educational Development and Research.

Stephens, E. R. (1991a, March). *The condition of the diverse regions of rural America at the start of the decade of the 1990s.* Paper presented at annual conference of the American Education Finance Association, Williamsburg, VA.

Stephens, E. R. (1991b, May). *What we know, believe we know, and clearly do not know about the condition of rural education.* Samuel L. Hicks Executive-in-Residence Lecturer. Athens, OH: Ohio University.

Stephens, E. R. (1992). Classifying extraordinary state policy strategies for assisting rural school districts. *Journal of Research in Rural Education, 8*(2), 32-46.

Stern, J. D. (1991, April). *Methods for communicating with state policymakers about research findings related to the financing of rural small schools.* Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Tuggle, F. P. (1978). *Organizational processes.* Arlington Heights, IL: AHM Publishing.

Tyack, D. (1974). *The one best system: A history of urban education.* Cambridge, MA: Harvard University Press.

U.S. Government Printing Office. (1991). *Guide to U.S. Department of Education Programs.* Washington, DC: Author.

Webber, D. J. (1987). Factors influencing legislators' use of policy information and implications for promoting greater use. *Policy Studies Review, 6*(4), 666-676.

Wilkinson, K. P. (1987). Overlapping types: A basic-science perspective. In A. E. Luloff (Ed.), *Proceedings of rural people and places: A symposium on typologies.* University Park, PA: The Northeast Regional Center for Rural Development.