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Educational Equity and School Structure:

School Size, School Overcrowding, and Alternative Organizational Structures

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Part 1: Introduction

Purpose

The purpose of this paper is to examine the interface between educational equity and the structure of schools. We concentrate on a few structural issues: school size, school overcrowding, and two features of school organization: magnet schools and schools-within-schools. We organize the paper as an interpretive summary of existing studies of these topics, concentrating on how these structural issues relate to social stratification in student outcomes, particularly academic achievement. The evidence we provide is drawn from both national studies and, when available and appropriate, from research that discusses how issues of school structure play out in California's schools.

Because this paper draws together several topics that typically are not discussed together, our discussions of these issues is somewhat uneven. In some instances we focus on particular types of schools (e.g., high schools and not elementary or middle schools); in other instances we focus our discussion on California schools. The quality of the research we review is also quite uneven. We have placed more emphasis on studies that have been subjected to peer review, have tight research designs, and include statistical controls to account for possible selectivity bias. However, the research base for the topics we cover is inconsistent; in some instances we review research of somewhat lower quality. Our approach is eclectic; we review the work we were able to locate that concerns these topics. However, the "glue" binding these topics is our interest in educational equity.

Our review of research on school size and on schools-within-schools focuses on secondary schools. The body of existing research on these two topics includes studies we have conducted ourselves. Both existing research and our own studies are centered in secondary schools. In

contrast, our discussions of school overcrowding and magnet schools include both elementary and secondary schools. In general, our focus is on national studies. However, our discussion of school overcrowding focuses mostly on

California; California leads the nation, and Los Angeles leads California, in terms of overcrowded schools.

Organization of the Paper

The paper has five parts. Part 1 is an introductory section spelling out our purpose. Part 2 focuses on school size. In Part 3, where we discuss school overcrowding, we include a discussion of year-round multi-track schools. In Part 4 we discuss two important sub-issues related to school organization: (1) magnet schools, and (2) efforts to create smaller learning communities within secondary schools. Each part concludes with a summary of each issue, including our interpretation of its relevance for educational equity. In Part 5 of the paper, we draw some conclusions from the issues of school structure discussed here, particularly as they relate to larger issues linked to educational equity (in California).

Part 2: High-School Size

Why Study High School Size?

Although the ideal size for a high school has been debated since public secondary education began to expand about a century ago, this issue is currently the subject of intense discussion within a larger reform agenda. Most of these discussions advocate making high schools smaller than they are. However, there is little research grounding the debate about the ideal high school size. Neither is there much agreement about the outcomes on which the effects of size should be measured nor about the mechanisms through which size might translate into effects on students and teachers.

Reform agendas center on how to reduce the size of large high schools (creating new schools or breaking up existing ones into smaller units), but the discussions surrounding the reform seldom address more fundamental questions. What is it about small schools that supposedly makes them better? Does an "ideal size" apply to students of different social backgrounds? Could high schools be *too* small? Sociological research on school size suggests that small schools should have at least two advantages over large schools: relationships among

school members are more personal and the schools offer a narrower curriculum (typically confined to academic courses). Large schools are said to be impersonal and bureaucratic. But do they have advantages as well?

Two Research Strands Underlying Research on School Size

Enrollment size is an important ecological feature of any educational organization. In an essay locating school size in a large organizational context, Lee (1999) distinguished two streams in the body of research about school size, most of which focuses on high schools. One strand is more sociological in nature, directing attention toward how size influences a school's other organizational properties. As schools grow, they typically become more bureaucratic. Consequences to the organization flow from such changes, including how specialized the instructional program is and how formal human relationships are. Another strand, typically conducted by economists, directs attention to the costs and benefits that might result from an expanded scale. Research in this strand typically highlights the potential for increased efficiency through reduced redundancy and an expanded resource base as schools get bigger. Conclusions from the two streams are not consistent: although the studies with an organizational focus generally favor smaller schools, the research with an economic focus tends to suggest benefits from increased size.

Economy of scale. Studies of the cost efficiency for "producing" a given level of student achievement favor school consolidation and larger size (Kenny, 1982). Logically, savings should accrue as core costs are spread over a larger pupil base. The savings can be used to expand academic offerings. It is argued that larger size results in either more resource strength, greater curriculum specialization, or both. Here specialization is seen as an advantage. Although greater size is assumed to result in economic efficiency (Guthrie, 1979; Michelson, 1972), savings projected by proponents have seldom materialized (Chambers, 1981; Fox, 1981). As schools get larger, their support and administrative staffs usually expand. In rural areas, the cost of distributing materials and transporting students often offsets any savings (Chambers, 1981).

Bidwell and Kasarda (1975) offer evidence of an indirect relationship between size and academic outcomes, with the positive effect mediated through hiring more and better-trained staff to support students' special needs. The relationship between school district size and resource availability varies across communities, based on financial status (Friedkin & Necochea,

1988). Although larger districts in low-income areas typically have access to more resources than smaller ones, the higher incidence of "exceptional problems" in such populations introduces constraints that contribute to lower achievement.

Organization of the curriculum. Research documents a relationship between organizational size and program specialization. In principle, larger schools have more students with similar needs, and thus are better able to create specialized programs to address those needs. In contrast, small schools must focus resources on core programs, with marginal students (at either end of the ability or interest distributions) excluded from programs or absorbed into programs that may not meet their needs as well (Monk, 1987; Monk & Haller, 1993).

Despite the logic of a specialization argument ("meeting the needs of the kids"), research on tracking suggests that extensive differentiation in curricular offerings and students' academic experiences has negative consequences (Gamoran, 1989; Oakes, 1985). Increasing size promotes curriculum specialization, resulting in differentiation of students' academic experiences and social stratification of student outcomes (Lee & Bryk, 1989; Lee, Bryk, & Smith, 1993). However, a recent qualitative study found that even small high schools wanted to specialize their curriculum, but were not able to (Lee, Smerdon, Alfred-Liro, & Brown, 2000). A research perspective that focuses on the communal aspects of learning would be critical of curriculum specialization. This perspective has motivated empirical work on curriculum effects that links differences in students' academic experiences to stratification in academic outcomes (Garet & DeLaney, 1988; Lee & Bryk, 1988, 1989; Lee & Smith 1993). When they change in size, schools alter their course offerings differently by sector. As they grow, Catholic schools add academic courses, while public schools typically add courses in personal development and other non-academic subjects (Bryk, Lee, & Holland, 1993).

Organization of social relations. Sociological theory suggests that human interactions and ties become more formal as organizations grow (Weber, 1947). Organizational growth generates new bureaucratic structures, as connections between individuals becomes less personal. These structures can inhibit communal organization (Bryk & Driscoll, 1988). This general theory has been confirmed in research identifying the organizational characteristics of effective schools. In school climate studies, for example, size operates as an ecological feature of the social structure, part of the physical environment that influences the nature of social interactions (Barker & Gump, 1964; Bryk & Driscoll, 1988; Garbarino, 1980; Lee, et al., 2000).

The general conclusion from this research is that smaller schools can benefit students in several ways. The more constrained curriculum in small high schools is typically composed of academic courses, so that almost all students follow the same course of study, regardless of their interests, abilities, or social background. This results in both higher average achievement and achievement that is more equitably distributed (Lee & Bryk, 1988, 1989). Social relations are also more positive in smaller schools. The preponderance of sociological evidence about high schools suggests that "smaller is better" (Lee, Bryk, & Smith, 1993).

School Size and Student Outcomes

Size, learning, and equity. A large-scale quantitative study using nationally-representative and longitudinal data attempted to identify the ideal size of a high school, based on student learning (Lee & Smith, 1997). The study explored these issues for about 10,000 students in 800 public and private schools in the U.S. Although prior research was framed within a "bigger vs. smaller" mode, the objective here was to estimate an appropriate balance point of how much students learn as a function of size.
Achievement gains in mathematics and reading over the course of high school were found to be largest in middle-sized high schools (600-900 students). Smaller schools were favored in terms of social equity, in that the relationship between SES and achievement gains was lower in schools enrolling fewer students. Lee and Smith also found that even though the same "ideal size" was consistent across schools identified by their average SES and minority concentrations, school size was a more important factor in determining learning in schools enrolling more disadvantaged students. Investigating the effects of school size in Chicago's elementary (K-8) schools, a recent study also found favorable effects for smaller schools in terms of both teachers' willingness to take responsibility for their students' learning and for student learning itself (Lee & Loeb, 2000).

There is a tension between equity and excellence in many schools. This tension focuses on such issues as whether to offer a constrained academically oriented curriculum or to offer many curricular choices that cater to every possible "consumer" (Powell, Farrar, & Cohen, 1985). Tensions also arise regarding whether to group students by ability in order to manage instruction more easily or to avoid the harmful effects of tracking (Oakes, 1985). Whether or not

to offer high-end electives when the school is small and strapped for money is also fodder for policy debate among parents, students, and administrators nationwide.

School reform and size. The arguments underlying policies targeted at making schools smaller reflect concerns expressed in an essay about school size and adolescent development (Garbarino, 1980). The author suggested the particular importance of school size for marginal students. Echoing Barker and Gump's (1964) seminal study, Garbarino described "a threshold effect" whereby the benefits from increases in high school size over about 500 students were minimal. Relatively small high school size was considered acceptable even by James Bryant Conant, the acknowledged father of the comprehensive high school. Although Conant (1959) considered a high school with a graduating class of 100 sufficiently large to implement his recommended curriculum, in general Conant advocated larger schools. More favorable to small schools are writings by John Goodlad, who indicated that he "...would not want to face the challenge of justifying a senior high of more than 500 to 600 students" (1984, p. 310). Although the Coalition for Essential Schools has made no specific recommendations about high school size, founder Theodore Sizer listed "keep[ing] the structure simple and flexible" among the five "imperatives for better schools" (1984, p. 214). One of the Carnegie Foundation's major goals for middle schools is "to create small communities for learning" (Carnegie Council on Adolescent Development, 1989, p. 9). The first recommendation of another Carnegie report on high school reform is that "...schools must break into units of no more than 600 students so that teachers and students can get to know each other" (NAASP, 1996, p. 5).

In the last decade, the Annenberg Foundation committed $500 million to the reform of urban schools. Each of the very large grants to several large cities emphasized the importance of reducing school size. A series of front-page articles in the *New York Times* (May 22-25, 1995) presented interesting stories about several of the (then) 46 experimental public high schools that New York City opened over the previous two years. The major criterion defining these schools was small size (in the 110-660 range). Joseph A. Fernandez, the New York Schools Chancellor at that time, decried that, "Our high schools were just too large, and there were a lot of problems with kids not feeling people even knew who they are," as he launched the movement in 1992. According to the *Times* articles, 50 more small schools were on the drawing boards in New York, with support for the movement from a $25 million grant from Annenberg to reform New York City schools. The number has grown considerably since then.

Chicago's proposal to the Annenberg Foundation also aimed to change schools to create "...smaller, more intimate learning communities" (Chicago Annenberg Challenge, 1994, p. 4), resulting in a $49.4 million grant over five years. The Challenge's major request for proposals (RFP) from schools highlighted size as one of three structural obstacles to progress in education (the others were time and isolation), and it emphasized that successful proposals should focus on changing these school characteristics. The RFP emphasized smaller size to "create conditions for a more personal and student-centered learning experience and permit closer interactions between schools and families" (Chicago Annenberg Challenge, 1995, p. 4). Clearly, a well funded national school reform effort considered reducing size a high priority.

 Not all small-school news is good. A recent qualitative study explored issues of curriculum and social relations in nine small and large high schools located in rural, suburban, and urban areas, as well as a small and a large Catholic high school (Lee, et al., 2000). Large schools were defined as those that enrolled over 1,500 students, and small school enrolled fewer that 500 schools. The authors made special efforts to select small schools that did not have a special purpose. Six were public high schools serving students from designated catchment areas; three were schools of choice (two Catholic schools and one small public school).

Although without exception, teachers and students felt that social relations were more personal in the smaller high schools, this was not always seen as a benefit. A few students in the smaller high schools reported that they were unable to "live down" the negative reputations of their older siblings or even parents. Some teachers in such schools had to work hard to keep a modicum of privacy. In terms of curriculum, the authors hypothesized that smaller schools would be more likely to offer the "constrained academic curriculum;" however, this was not confirmed. Regular small public high schools worked hard to construct themselves as comprehensive high schools, with the result that teachers often taught out of their specializations, bizarre curricula were offered in any given year, and a general feeling was shared that their small sizes (and resulting restricted state funding, which was computed on simple student head counts) did not allow the schools to "meet the needs of the kids." Only in the small Catholic high school was the constrained academic curriculum in place.

A Bit of Caution May be in Order

Reform is ahead of research. The studies reviewed here present empirical evidence about school size and how it influences students. We are struck by the energetic focus of such reform documents as Turning Points (1989), Breaking Ranks (1996), advocacy from the Coalition of Essential Schools (Sizer, 1984), and the large investments in urban school reform from the Annenberg and Bill and Melinda Gates

Foundations -- all directed toward making schools (especially high schools) smaller than they are. We are also struck by the rather modest research base supporting these reformers' solid support of reducing the size of high schools. On this issue, reform seems to be somewhat in front of research.

Advocacy v. research. On one hand, it is exciting to see so much public enthusiasm about an issue to which we ourselves have devoted considerable time and energy conducting empirical research. However, we suggest an "on the other hand" skepticism. There is a current enthusiasm among policymakers for small schools that seems to us to go well beyond what is warranted by existing empirical research. Much of what we see published about this topic (particularly the so-called "small-schools research") feels more like advocacy than objective research. Many literature reviews on this topic cite others with a similar advocacy feel, which perhaps gives the appearance of well grounded conclusions that we don't believe are necessarily warranted.

As reported in the Lee et al. (2000) study, not all outcomes are favorable in small schools. Moreover, not all small schools consider "smallness" to be an advantage. In that study, we devoted considerable efforts to locating and studying "regular" small high schools. The study's conclusions differentiated between schools that were "small by design" and those that were "small by default." Much of the enthusiasm for small schools focus on those small schools that *want* to be small, often have selective entrance criteria, and are staffed by innovative faculty and attended by committed students. However, the large majority of small U.S. high schools are "small by default;" often in rural areas where populations are declining or located in urban or suburban areas where students and families seek out other educational alternative (private schools, choice or charter schools, or cross-district enrollments). Although our own research findings generally favor smaller high schools, we offer a caution about the research base on this

topic: the focus should be on empirically grounded studies, and there should be attention devoted to possible negative consequences.

The number of students who are educated in a particular building can be viewed from several different vantage points. In Part 2, we have focused on research that investigates how the total number of students influences other organizational features of high schools and, ultimately, the effect of total school enrollment on student outcomes. However, the total number of students in a school building can be viewed from the vantage point of the building itself, asking whether the capacity of the school's physical facilities are adequate for the number of student it serves. This issue has particular relevance to educational equity, in that overcrowded schools often educate the most disadvantaged children. Moreover, the response of a school or a school district to conditions of overcrowding differs according to the types of children served. We turn now to this discussion, targeting particularly the difficulties, responses, and solutions that emerge when the school's capacity is strained by too many students. Part 3 both broadens and narrows our focus. Our approach is broadened because elementary, middle, and high schools are included in this discussion. We also narrow our focus, as the discussion of school overcrowding is mainly directed to how the problem has played out in one state: California.

Part 3: School Overcrowding

Although school size is measured in terms of total numbers of students, school overcrowding is measured in terms of the number of students enrolled compared to the number the facilities were designed to serve. This difference drives a shift in focus away from such matters as communal or bureaucratic organization and constrained curriculum toward concerns about basic resources. The issue of school overcrowding has attracted national attention because of concerns about equity: inadequate facilities imply limited educational opportunities. There is considerable research to support such a connection, but further research is required to identify causal mechanisms and even to strengthen basic findings.

The quality of empirical research on school overcrowding is, on average, not high. Because schools, districts and states vary widely in how they characterize and measure overcrowding, large-scale investigations are difficult. Moreover, national surveys generally ask school or district personnel such limited and subjective questions as, "Is this school overcrowded?" (NCES, 2000). Respondents at two otherwise identical schools might answer

such a question differently. Another difficulty is that some school districts define school capacity in district-wide terms, rather than the capacity of individual schools; districts with both overcrowded and under-enrolled schools may yield an overall figure indicating the district's schools are not overcrowded, when some in fact are (Muraskin & Stullich, 1998).

These issues of identification and definition are further complicated because school enrollments -- and therefore determinations of overcrowding -- depend on the time of year students are counted. In many urban secondary schools, spring enrollments are considerably lower than those in the fall due to high levels of student mobility and attrition during the school year, and to the fact that some schools remove unwanted students (see Fine, 1991). Districts also vary in whether they include portable classrooms and trailers in figuring enrollment capacities of individual school buildings (Muraskin & Stullich, 1998). This oversight is important because a school enrolling, for example, 2,400 students in a building originally built for 2,000 students may accommodate the 400 additional students in portable classrooms, and may or may not consider this school subsequently overcrowded. In sum, there are no universally accepted means of calculating or defining "school overcrowding." The State of California uses an unusual school capacity standard: approximately 60 students per acre. This standard fails to account for whether the school is more than one story high or whether classrooms are housed in portable trailers.

A more logical (and simpler) definition of overcrowding is used by the National Center for Education Statistics, which considers a school overcrowded when "the number of students enrolled in the school is larger than the number of students the school was designed to accommodate" (NCES, 2000, p. 45). Importantly, this definition does not include portable classrooms; the U.S. Department of Education considers the use of portable classrooms to be a *symptom* of overcrowding, and not a long-term *solution* (NCES, 2000). The authors calculate the percent a school is over- or under-enrolled by subtracting intended capacity from current enrollment, and dividing the difference by intended capacity. For example, a school enrolling 2,200 in a building intended for 2,000 would be considered ten percent overcrowded. Schools that are over or under five percent of their capacity are considered "at-capacity." Schools between six percent and 25 percent above capacity are considered by NCES to be "overcrowded," and schools beyond 25 percent capacity are deemed "severely overcrowded." Similarly, schools that are between six percent and 25 percent below capacity are considered

"under-enrolled," and schools that are more than 25 percent below capacity are considered "severely under-enrolled."

Using these guidelines, the 2000 NCES study reported that 14 percent of U.S. public schools are overcrowded; eight percent are severely overcrowded. One third are under-enrolled, and 19 percent are severely under-enrolled. Secondary schools are more likely than elementary schools to be outside their capacity limits (although this may not be the case in California). Likewise, compared to medium and large schools, small schools are less likely to be at-capacity. Schools in rural areas and small towns (where small schools are typically located) are more likely to be severely under-enrolled. Of special important in this discussion of educational equity, schools enrolling mostly minority students are more likely to be overcrowded than schools with less than half minority enrollment. (NCES, 2000).

The Effects of School Overcrowding

There are few reliable analyses quantifying a relationship between school overcrowding and student or teacher outcomes. Although we have described several solid empirical studies that explore the relationship between school size and various social and academic outcomes for students, school size is not necessarily related to overcrowding. For example, schools with large enrollments may be below capacity, and even very small schools can be above capacity. One study that investigated the effects of school overcrowding on student achievement among New York City public schools was careful to account for class size in order to examine the particular effect of school-wide overcrowding. The authors reported that between two and nine percent fewer students passed reading and mathematics proficiency tests in overcrowded lower-income schools compared to students in non-overcrowded lower-income schools (Rivera-Batiz & Marti, 1995).

Lower achievement in overcrowded schools may result from increased stress among students and teachers, the fact that classes are sometimes held in gymnasiums or other non-classroom facilities, or the deteriorated condition of school facilities. Overcrowded schools are twice as likely to report that their buildings are in "less than adequate condition" than at- or under-capacity schools (NCES, 2000, p. 48). Specifically, schools beyond their enrollment capacities are more likely to have inadequate or sub-standard electrical and lighting systems, life safety features, heating/ventilation and air conditioning systems, and floors and foundations.

Common Responses to Overcrowding

A variety of methods are used to address overcrowding. Indeed, one reason so little research exists on the effects of school overcrowding may be that causal relationships between school overcrowding and achievement depend heavily on particular responses to the problem. For example, one would expect a different relationship between school capacity and student achievement in an overcrowded school that does nothing to address the problem compared to one that responds by extending the school day or creating additional classrooms (although such responses may be both temporary and inadequate).

Increasing class size. The most appropriate response of school districts to overcrowding is to build more schools. However, for many school districts, especially urban districts, the costs associated with major construction initiatives are prohibitive. Because of a lack of funds for the construction or operation of new schools, the only option available for many overcrowded schools is to increase class sizes by placing more students into already-existing classrooms. Although this "solution" may seem cost-free in dollar terms, the quality of students' educational experiences is surely diminished.

The effect of class size on student outcomes is a contested, politically charged issue that we do not address here. However, the general consensus is that elementary school students in classes that are small (13-17 students) learn more than students in regular classes enrolling 22-26 students (Finn & Achilles, 1999). Drawing on data from the famous Tennessee class size experiment, Nye, Hedges, and Konstantopoulos (1999) report that by the end of first grade, students who have been in small classes for two years are roughly two months ahead of their larger-class peers. Furthermore, the benefits of attending smaller classes in early elementary school do not fade; they were found to last at least through seventh grade. Moreover, the positive effects of smaller classes are two to three times greater for minority students.

Temporary structures and use of non-instructional space. As noted, another common response to overcrowding, used by 36 percent of overcrowded schools, is to install temporary structures (usually portable trailers) on school grounds for use as classrooms (NCES, 2000). For some schools, portable classrooms are a temporary solution. For many others, trailers are a permanent fixture, remaining in place for decades. Another frequent response (employed by 20 percent of overcrowded schools) is to hold classes in spaces not originally intended for use as

classrooms, such as gymnasiums, cafeterias, and computer labs (NCES, 2000). Of course, this "response" diminishes the quality of students' educational experiences by preventing schools from using such spaces for the purposes for which they were originally intended.

Year-round Schedules

A less common response to overcrowding -- one chosen by only five percent of overcrowded schools nationwide -- is to rearrange school schedules and calendars so that not all students are in the building at the same time (NCES, 2000). Schools making use of this option typically operate split-day schedules, where two "shifts" of students attend the same school on the same day. For example, half the students may attend school between 7 a.m. and noon, and the other half attends between noon and 5 p.m.

Schools may also tinker with the year rather than the day. Some abandon the traditional nine-month calendar, choosing to operate schools year-round. During the 2000-2001 school year, more than 3,000 U.S. schools, enrolling over two million students, operated on some form of year-round calendar (National Association of Year-Round Education [NAYRE], 2001). The vast majority of these schools (97.5 percent) are public. In California, almost 25 percent of all public schools students (over one million students) attend year-round schools (Mitchell & Mitchell, 2001).

The single-track YRE model. Year-round structures can be divided into "single-track" and "multi-track" models. The form a school implements -- single- versus multi-track -- depends largely on *why* it has decided to adopt a year-round model. In the single-track model, all students and teachers operate on the same calendar and have vacations at the same time. Instead of the traditional three-month summer vacation, students have shorter vacations spread more evenly throughout the calendar year. The most common single-track calendar is often referred to as a 45/15 calendar, because the year is divided into four nine-week academic sessions (45 school days each) separated by three-week (15-day) vacations (Kneese, 2000; NAYRE, 2001). However, the single-track model *does not* alleviate overcrowding. When students are on vacation, school is not in session. Schools using the single-track model make this decision for educational reasons, generally citing the academic losses that students (especially low-income students) often suffer during long vacations (see Entwisle, Alexander, & Olson, 1997; Heyns,

1978). Essentially, the single-track model can be viewed as a proactive response taken by schools in an attempt to further student learning.

The multi-track YRE model. In the multi-track model, students are organized in three or four groups, with one group on vacation at any time. Unlike the single-track model, multi-track schools are constantly in session. In most plans, students have two long vacations per year, each lasting 41 school days. The most common multi-track plan in California is "60/20," which involves four tracks; each track alternates between 60 days of school and 20 days of vacation. The second most common model is Concept 6, which divides students into three groups, with one group always on vacation. The Concept 6 model requires that students attend school for only 163 days per year, compared to the traditional 180-day calendar. To compensate for this reduced instructional time, multi-track schools typically add between 20 to 40 minutes to each school day. Unlike the single-track plan, the vast majority of schools that adopt a multi-track model do so for one reason: to alleviate overcrowding (NAYRE, 2001).   Among the several types of MTYRE schedules, Concept 6 reduces overcrowding the most, expanding enrollment capacity by 50 percent. Superficially, the adoption of MTYRE may *seem* to be the best solution to the problem of overcrowding, but it is a reactive response the purpose of which is *not* to improve student learning opportunities.

Studies investigating single-track year-round schedules generally report that students are not academically disadvantaged; some even indicate small positive gains in achievement from reducing summer drop-off. In contrast, empirical scrutiny of multi-track schools yields less positive results. Resnik (1993) reported lower achievement among students in multi-track compared to single-track year-round schools in Oakland, California. Two studies, by White and Cantrell (2001) and Quinlan, George, and Emmet (1987), reported that of all calendar types, students in multi-track schools in California have the lowest scores in mathematics and reading. In a study of public elementary schools in one Utah district, on the other hand, Shields and Oberg (1999) reported that multi-track schools outperform traditional calendar schools. Appropriate research on this topic would need to not only control for meaningful differences among schools and school populations, but should employ more sophisticated statistical (and multi-level) research methods. None of these studies described here have such designs or use such methods.

Although shifting to a MTYRE schedule may initially be less expensive than building new facilities, MTYRE may cost more in the long run. Because they are open year-round, MTYRE schools spend more on utilities, transportation, maintenance, and staff salaries (Kern, 1992; Kreitzer & Glass, 1993). The wear and tear on the facilities would also mean more repairs (with no "down time" to accomplish them). This is, of course, beyond the costs to students in terms of less learning.

The California Context

California is ground zero for America's school overcrowding problems for at least three reasons. One is Proposition 13, passed in 1978 by California voters, which reduced property taxes and required that future local school construction bonds pass by a two-thirds majority. In the wake of this sea change for school finance, many localities could no longer pass bond issues to respond to needs for new school construction. Proposition 13 effectively shifted the responsibility for new school construction from localities to the state. Although the state increased funding somewhat for such construction, the level of funding made available has been demonstrably inadequate in comparison to the state's enormous enrollment growth.

A second reason for the overcrowding is the rapid increase of the state's school-age population. In this regard, California leads the nation. Between 1984 and 1999, 1.9 million additional students were added to California public schools (U.S. Department of Education, 2000). Four of the 26 U.S. school districts that experienced the greatest increases in student enrollments between 1988 and 1998 were in California (Los Angeles, Long Beach, San Diego, and Elk Grove Unified; U.S. Department of Education, 2000). This incredible growth in student enrollment is predicted to continue into the foreseeable future. The U.S. Department of Education estimates that an additional 1.68 million students will enter California's classrooms between 1999 and 2009 (U.S. Department of Education, 1999). To put this in perspective, over the next decade, Nevada, Utah, Colorado, Idaho, Washington, Tennessee, Hawaii, Alaska, Wyoming and Oregon *combined* will add fewer public school students than California (U.S. Department of Education, 2000).

Beyond Proposition 13 and population growth, California's school overcrowding problem has a third important source: the state's class-size reduction (CSR) policy. This well-intentioned and research-based policy, which limits K-3 class sizes to 20 students, has created

overcrowding in even otherwise uncrowded schools (CSR Research Coalition, 1999; U.S. Department of Education, 1997). Classrooms that could have been used to accommodate the entire student population are instead used to reduce class size for younger children. Although gymnasiums, libraries, and computer labs have been converted into classrooms, the school facilities most often sacrificed to CSR are special education classrooms, which were reduced or lost completely by 40 percent of the state's schools (CSR Research Coalition, 1999). Only two out of five schools met CSR guidelines after the first two years; of the 60 percent that did not meet the guidelines, 81 percent cited limited space as the central reason for non-compliance (CSR Research Coalition, 1999). Of course, the CSR initiative has also added enormous financial demands by requiring more teachers, leaving even fewer funds for construction.

California and Portable Classrooms

Although no state agency keeps an exact count of how many portable classrooms are in use in California, we can construct a picture of their growth and prevalence. By 1991, portables were already quite common. The California Auditor General estimated that 1.2 million students attended class in one of 48,000 portable units throughout the state. In the early 1990s an amazing 72 percent of California public schools used portables, housing 27 percent of the state's public school students (EdSource, 1998). Another study estimated that California schools had 50,000 portables in use in 1996 (CDHS, 1998). The Los Angeles Unified School District (LAUSD) alone uses more than 6,500 portables (Ross & Walker, 1999). Using an average of 25 students per classroom, over 35 percent of California public school students (2.16 million) attended classes in a portable trailer each day in 1999 (Ross & Walker, 1999).

California's class size reduction initiative, begun in the 1996-97 school year, resulted in an increase in the number of portables to over 86,500 for the 1997-1998 school year (EdSource, 1998; Ross & Walker, 1999). Fifty-six percent of CSR classrooms in the first year of implementation were held in new portables (Legislative Analyst's Office, 1997). One estimate attributed 13 percent of all portables in use to the class size reduction policy (EdSource, 1998).

Several reasons drive the widespread use of portables as a response to overcrowding, the primary reason being their cost. The average portable sells for between $30,000 and $35,000, while the average classroom in a new school costs roughly $100,000. Although the CSR funds provided by the state are sufficient to build (or lease) portables, they are generally insufficient to

construct permanent additions or new schools. The use of portables has actually been encouraged by state statutes. Since 1976, California law has required that all new schools receiving state construction funds be built with at least 30 percent portable classrooms. In 1998, a measure was added to the law stating that districts could not charge school construction fees to developers unless 20 percent of new school classroom space involved portables (Ross & Walker, 1999). The logic behind this legislation may be that the provision of education is itself a temporary activity. Although a school may currently be crowded, in ten years it may not be. The unused portables could be relocated to other schools or districts or sold to outside businesses.

Numerous studies and reports have questioned the environmental safety of portable classrooms (see California Department of Health Services, 1996). Student and teacher health problems associated with prolonged exposure to portable classrooms have been documented in California's Orange, Santa Clara, Riverside, and Sacramento counties. Portables can result in significant exposure to hundreds of airborne toxic chemicals, some of which are known to cause cancer, birth defects, brain and nerve damage, and asthma (Ross & Walker, 1999). The leaks often found in the roofs of portables can also lead to toxic molds. Of greatest concern is exposure to volatile organic compounds such as formaldehyde, benzene, and toluene, which are used in particle board, plywood, fiberglass, carpets and glues in these small and confined spaces. In some portables, exposure to formaldehyde is two to three times E.P.A. standards (Ross & Walker, 1999). Although these materials are also used in the construction of regular schools, the smaller spaces, fewer windows, and generally weaker ventilation systems allow these toxins to become concentrated in portable classrooms.

California, Los Angeles, and Multi-Track Schedules

Over one million students attend one of California's 1,000 multi-track year-round (MTYRE) schools, most of which are located in poor and minority communities (California Department of Education, 2001a; Helfand, 2000). Almost half (45 percent) of all K-12 students in the Los Angeles Unified School District (LAUSD) attend multi-track, year-round schools (Mitchell, 2000). Consistent with (but far exceeding) national trends, there are clear distinctions between California schools that employ single-track and multi-track plans: most single-track schools are located in suburban districts, whereas multi-track schools are much more common in

lower-income urban districts. Half the students in California MTYRE schools are English
Language Learners, and the rate of poverty among the student population (as measured by
AFDC and free and reduced lunch) in MTRYE schools is almost twice the California average
(Helfand, 2000; Lee, et al., 1998). Compared to non-MYTRE schools, MTYRE schools are also
staffed by fewer teachers who are fully credentialed and more teachers with emergency
credentials (California Department of Education, 1999).

Multi-track high schools in California are essentially a Los Angeles phenomenon. All
but one of the multi-track high schools in the state are in the LAUSD (Helfand, 2000). In fact,
Los Angeles currently has 17 multi-track public high schools -- more than New York City,
Chicago, Philadelphia, Miami and Houston *combined*. The LAUSD expects that by 2006 all of
its high schools will be on a multi-track schedule (Helfand, 2000a). Even its use of the
ostensibly most efficient Concept 6 plan (80 percent of the multi-track high schools use this
approach) does not alleviate overcrowding in LAUSD high schools; each of the LAUSD multi-
track high schools enrolls between 3,000 and 5,000 students, meaning that 2,000-3,300 students
(two-thirds of the total enrollment) are taking classes on campus at any given time.

The multi-track response to overcrowding raises five important concerns. First is *size*.
Considerable research documents the negative effects on student learning of attending large
schools (e.g., Lee & Smith, 1997). The number of students attending school at any one time in
multi-track high schools makes them large by any standard. Second, is *academic* differentiation.
As different students (and sometimes different kinds of students) attend school at different times,
the multi-track plan has produced schedules that closely resemble the academic "tracking" found
in traditional comprehensive high schools. For example, in some multi-track high schools,
advanced courses are available only in certain tracks, meaning students who are on vacation at
the time are denied access. Also, for efficiency reasons, ESL students (who constitute a large
proportion of LAUSD students) are sometimes all placed in the same track, which may result in
stigmatization and further isolation. Some magnet schools are created as single tracks, resulting
in the more able students who typically select magnet schools being in a single track (Helfand,
2000).

A third concern relates to the social inequalities associated with educational *choice*.
This "planned" stratification occurs through structural mechanisms favoring those who typically
take advantage of choice. In most MTYRE California elementary schools, one track -- often the

"C-Track" -- aligns closely to the traditional (and most desirable) September to June calendar. Another common feature of MTYRE schools is that student assignments to different tracks are allotted on a "first come, first served" basis. It is well-documented that parents with better information -- who also tend to be more affluent and better educated -- are quicker to take advantage of school choice plans (see Howe, Eisenhart, & Betebenner, 2001). Because the C-Track is more convenient and more desirable for most families, and more-affluent parents tend to select their children's tracks first, advantaged students are more often enrolled in the C-Track. An investigation of eight multi-track elementary schools in one California district reports that these C-Tracks enroll more White, English-speaking, and gifted and talented students, and fewer Hispanic, free-lunch eligible and highly-mobile students (Mitchell & Mitchell, 2001). Teacher characteristics also vary between tracks, as teachers often have choice or are selected for tracks to serve client demand. On average, C-Track teachers have more teaching experience and are less likely to hold alternative teaching certificates (Mitchell & Mitchell, 2001).

This high level of between-track stratification makes it difficult to evaluate the success of multi-track schools as a whole. One Concept 6 school could, in reality, be three separate schools each enrolling quite different groups of students. A study of over 380,000 LAUSD children reports that students in three-track elementary and middle schools do not perform as well in math and reading as their peers in traditional and four-track schools (White & Cantrell, 2001). These achievement gaps exist even after comparing only demographically similar schools. However, the lower achievement in three-track schools is largely driven by the "B-Track" students, who perform considerably lower than their A- and C-Track counterparts. The authors speculate that the differences in tracks may be related to the stratification resulting from how teachers and students are assigned to the various tracks.

A fourth concern relates to *time*. Although the Concept 6 multi-track plan in Los Angeles adds roughly 40 minutes to each school day, the extra 6-7 minutes per class seldom results in additional instruction (Helfand, 2000b; Herman, 1987). The loss of 17 instructional days allows fewer nights for teachers to assign homework. The fewer available days also cuts back on districts' flexibility for scheduling, e.g., staff development days. Importantly, the Concept 6 plan requires that one track of students must start its vacation after only eight weeks of instruction, further disrupting educational continuity.

A fifth concern is not, strictly speaking, academic. It is a loss of the ability to take advantage of enrichment activities. Multi-track plans can disrupt co-curricular and extra-curricular activities and sports, as some activities are offered during only one or two tracks. Academic enrichment and internship programs are often based on traditional school calendars as well, denying many students in multi-track high schools opportunities to participate. School facilities that are constantly in use are unavailable for supplemental instructional services and such community resources as adult education – programs that are particularly needed in the low-income communities that tend to have MTYRE schools. Multi-track schedules can disadvantage students whose vacations occur immediately before crucial standardized tests such as Advanced Placement tests, the SAT, or the Stanford 9 (Helfand & Groves, 2000). Again, these would seldom be C-track students whose parents recognize the importance of these tests.

Conclusion

We conclude that there is only one acceptable solution to the problem of school overcrowding: the construction of new and permanent schools. Many school districts, faced with the immediacy of having to serve too many children for the existing facilities, have been forced into undesirable responses: larger classes in the upper grades, more temporary and portable classrooms, the reorganization of spaces meant to enrich children's educational experiences into classrooms, building new schools with modular units, and multi-track year round schooling. Although all of these responses seem to temporarily "relieve" what is obviously an enormous problem, each has been shown to have negative effects on children's learning.

Part 4: Alternative Organizational Structures

Parts 2 and 3 of this paper have focused on the structural issue of how many students a school is responsible for serving and the adequacy of the school's facilities for educating these students. In Part 4, our focus on school structure expands beyond school size and capacity to center on two other organizational features of schools that have particular relevance for educational equity: magnet schools and high schools divided into schools-within schools. Magnet schools were originally seen as a voluntary alternative to court-ordered school desegregation. The idea of dividing large high schools into smaller and semi-autonomous sub-units, or schools-within-schools is neither new nor is it necessarily seen as particularly relevant to issues of educational equity. However, this reform has been implemented mainly in large

inner-city high schools, particularly those that have been seen as requiring drastic change. It is
not surprising that the schools where this particular structural reform is most common are those
that enroll high proportions of low-income and minority students. Our discussion of these two
structural elements of school organization moves back to the national context, as they are neither
more nor less common in California than elsewhere in the U.S. Magnet schools occur at every
level -- elementary, middle, and high schools. However, the schools-within-schools structural
reform occurs mainly in secondary schools.

Section A: Magnet Schools

During the late 1960s and early 1970s, as "White flight" drained urban schools of their
non-minority students, many urban districts explored means to draw White students back without
forced student reassignment. One solution was to create alternative public schools with unique
curricula, specialized programs, and selective admissions. The hope was that these magnet
schools would "attract" students from racially segregated neighborhoods, thereby creating more
racially balanced schools. These magnet programs rested on the assumption that students would
select them because of their superiority to regular public schools.

In 1972, Congress passed the Emergency School Aid Act (ESAA) which offered federal
financial support to "encourage the voluntary reduction, elimination, or prevention of minority-
group isolation" (U.S. Department of Education, 2001a). Many school districts used these funds
to create or expand magnet schools and magnet programs. Magnet schools were further
encouraged in the mid-1970s by the federal courts, which endorsed their use in desegregation
strategies (Blank, Levine, & Steel, 1996; Smrekar & Goldring, 1999; Rossell, 1990). Although
ESAA funding ended in 1981, it was replaced in 1984 with the Magnet School Assistance
Program (MSAP). This program provides funds to encourage magnet schools in districts under
voluntary and court-ordered desegregation plans (Steele & Eaton, 1996). Since 1984, over 170
school districts and over 1,000 magnet schools (80 percent of which are elementary schools)
have participated in the MSAP program (Yu & Taylor, 1997). By 1992, 230 school districts
offered magnet schools enrolling over 1.2 million students. Roughly a third of magnet schools
emphasize specific curricula (such as math or science); another third stress particular
instructional approaches or pedagogies. The remaining third are organized around specific
careers or the arts (Blank, et al., 1996).

Several different magnet school models are currently in use. "Whole-school magnets" involve all students in the school, and may be organized into autonomous school-within-a-school programs. Another model, commonly referred to as a "partial magnet," creates one school-within-a-school magnet within a larger non-magnet school. Such schools enroll two types of students -- those enrolled in the magnet program and those who live in the school's attendance zone and are in the school's regular classes. Partial-magnets are often created in schools located in predominantly minority neighborhoods with the goal of attracting White students. Eighty-nine percent of schools receiving MSAP funds are whole-school programs; the rest are partial magnets with individual (usually high school) programs situated within non-magnet schools (U. S. Department of Education, 2001).

Where are magnet schools, and who chooses them? Two-thirds of magnet schools are located in urban districts (U. S. Department of Education, 2001a). Nationwide, over half of school districts that enroll over 10,000 students offer magnet programs (Smrekar & Goldring, 1999). On average, the 1,068 magnet schools that received MSAP funds in the late 1980s and early 1990s were located in school districts that were 58 percent minority, with minority enrollments increasing at an average rate of one percent annually. Seventy-four percent of these magnet schools enrolled mostly minority students (Steele & Eaton, 1996).

Students' opportunities to attend magnet schools may depend on the availability of transportation and the location of magnet schools within the district. More than 20 percent of school districts provide no transportation for students attending middle and high school magnets (Blank et al., 1996). In Chicago, access to magnet schools is dependent on the neighborhoods in which students live. Because of the strong relationships between race, class, and housing patterns, access to magnets is also related to students' backgrounds. Families living in wealthier Chicago neighborhoods have somewhat greater access to magnet schools (Allensworth & Rosenkranz, 2000).

Although previous research reported that parents choose schools based largely on convenience and location (see Bridge & Blackman, 1978), a contemporary study reports that parents select magnet schools based on schools' academic reputations, expressed values, and the degree of safety they afford (Hausman & Goldring, 1997). The criteria parents use, however, may depend on their social backgrounds. In explaining their magnet school choices, relatively more affluent parents in Cincinnati and St. Louis cited schools' academic reputations, while

lower-income parents more often cited the availability of transportation or their child's need for specialized instruction. White parents cited the quality of teachers in the school, but minority parents more often selected the school based on its racial/ethnic mix (Yu & Taylor, 1997).

Magnet schools and stratification. The most common criticism of magnet schools is that they would seem to increase social stratification of educational experiences. That is, they remove (or "cream") more able students from the regular public schools, leaving neighborhood schools with fewer high-achieving students and weaker academic and social climates. Furthermore, magnet schools may also attract more involved and politically adroit parents, further weakening support for non-magnet public schools. Such fears may be well-founded.

The proportion of special education and limited English proficiency students in magnet schools averages only two-thirds of their district-wide representation (Blank et al., 1996). Although magnet schools may help to reduce racial isolation in some school districts -- especially in school districts enrolling substantial numbers of White students -- they may *increase* socio-economic isolation. For example, the proportion of Black students enrolled in magnet programs in Cincinnati and Nashville is identical to that found in the district. Compared to the regular public schools, however, students in these cities' magnet schools are more likely to come from two-parent households and to have affluent, well-educated parents (Yu & Taylor, 1997). In the early 1990s, students in Nashville's regular public schools were five times more likely to have parents earning under $15,000 per year than were children enrolled in magnet schools. Importantly, these differences also existed *within* racial and ethnic groups; high-SES minority parents were more likely than low-SES minority parents to select magnet schools for their children.

Magnet schools and student outcomes. Political justifications for magnet schools have changed substantially over the last several decades. As noted, support was originally rooted in progressive beliefs that magnets programs would and should create racially integrated schools. However, accountability movements in recent decades have pushed support for magnet schools in a conservative direction to include those supporting school choice (Blank et al., 1996). For example, in the 1980s both the Reagan and Bush administrations sought (unsuccessfully) to allow the MSAP to fund "excellent" magnet schools of choice, regardless of whether or not they were part of desegregation plans (Schmidt, 1994).

Magnet schools are still increasingly touted as a way to salvage crumbling urban schools districts, although the rhetoric has shifted away from desegregation arguments to arguments favoring choice and "islands of excellence." With charges that few urban students are engaged in school, magnet schools' more focused curricula and programs may increase the achievement of committed students by allowing them to take classes with other students "like them." Authors' conclusions about the effects of magnet schools on student outcomes differ depending on the specific outcomes investigated, the data, and the analysis methods used. Some studies focus on individual schools or districts, while others use data from multiple districts or nationally representative samples. The analytic methods also vary, ranging from descriptive statistics to multivariate analysis and multi-level modeling. Appropriate assessments of the effectiveness of magnet schools should take into account the reality that compared to students in regular urban public schools, magnet school students in the same district usually have more advantaged social and academic backgrounds. Studies that do not take these factors systematically into account overestimate the benefits of attending magnet schools.

In Duval County (Jacksonville) Florida, public school students eligible for free or reduced lunch were found to have higher achievement if they attended magnet schools (Poppell & Hague, 2001). However, Adcock and Phillips (2000), who employed multi-level methods to analyze data from Prince Georges County, Maryland, found no achievement differences between magnet and regular public school students. Moreover, the researchers found that Prince Georges County magnet school students actually learned less than their regular public school peers once they accounted for their higher entering ability levels.

Yu and Taylor (1997) used simple descriptive statistics to report that magnet school students in St. Louis were more likely to graduate than their non-magnet peers. However, these findings could result from selectivity bias because more able students choosing magnet programs in St. Louis. Conversely, a recent study of career-based magnet high schools in New York City reported that among students with comparable academic abilities, career magnet students actually had lower math scores and were less likely to graduate (Crain et al., 1999). However, career-based magnets may better prepare students for life after graduation and induce more positive affective outcomes than regular comprehensive high schools. After graduation, career-based magnet graduates were shown to be less likely to be involved in fights, to smoke or drink alcohol weekly, to become pregnant or make someone pregnant, and were more likely to have a

"best friend" with career plans (Crain, et al, 1999). The authors speculated that career-based magnets may focus more on career and life skills than on academic preparation, which would explain their findings.

Gamoran (1996) used nationally representative data and multilevel methods to compare learning in urban and suburban magnet, public comprehensive, Catholic, and non-religious independent high schools. Despite their less advantaged backgrounds, magnet school students were found to complete slightly more coursework in math and science and to learn more in English and social studies than their regular high school counterparts. Further, the social and academic climates found in magnet schools were more positive than those in regular public high schools. Importantly, the magnet school advantages in student learning persisted even after taking into account magnet schools' more positive academic and social climates.

Some who assert that magnet school students learn more often credit this success to the increased autonomy such schools typically enjoy in hiring teachers, developing curricula, and creating budgets. This freedom is claimed to aid the formation of cohesive educational missions and coherent communities among students, teachers, and parents. The less problematic environments found in many magnet schools may also attract more qualified teachers. In St. Louis and Cincinnati, more magnet school teachers had advanced degrees (Yu & Taylor, 1997). Another reasonable explanation is increased funding; compared to regular public schools, per-pupil expenditures average 10 percent higher in magnet schools (Goldring & Smrekar, 2000). Although a direct causal link between fiscal resources and student achievement is not well established, magnet schools that use additional funds in academically focused ways may create programs that result in increased student learning.

The effectiveness of magnet schools in reducing segregation. The ability of magnet schools to reduce racial isolation depends on the racial composition of the school district. In majority minority districts that receive MSAP funds, the percentage of minority students in magnet schools (68 percent) is lower than the overall percentage of minority students in the districts (80 percent). For example, in the early 1990s 21 percent of St. Louis public school students were White, but 35 percent of students in the city's magnet schools were White (Wells & Crain, 1997). Conversely, in majority White MSAP districts, magnet schools have higher proportions of minority students (46 percent) than the district averages (31 percent). In these districts, magnet schools are more often used to avoid the creation of minority isolated schools.

Magnet schools are more apt to reduce racial isolation in majority White school districts, although such districts are less likely to offer magnet schools in the first place. Reducing racial isolation is less successful in districts with large (and increasing) proportions of minority students. Of course, most magnet schools are located in just such districts. Between 1989 and 1991, less than half (47 percent) of magnet schools receiving MSAP funds were successful in either reducing, eliminating, or preventing minority student isolation (Steele & Eaton, 1996). In districts where minority students are the majority, within-district magnet schools can only increase racial isolation; magnet schools that attract White students necessarily increase the proportion of non-White students in the district's other schools.

In Montgomery County, Maryland, a large and relatively affluent suburban district outside Washington, D.C., White families were more likely to select magnet schools that were closer to home, located in higher-income neighborhoods, and enrolled fewer minority students (Henig, 1995). In this instance, although race did not completely determine the schools parents selected, their decisions had implications for the racial compositions of schools because of the segregated nature of housing in the district.

Magnet schools also have the potential to shift segregation from the school to the program or classroom level (West, 1994), especially in schools housing a magnet school-within-a-school. On average, only 61 percent of students in school-within-school magnet programs are minority, while 71 percent of students in the non-magnet portion of the school are minority (Blank et al., 1996). Most districts compute school racial compositions as building averages, ignoring the fact that racial composition varies enormously by course and curricular program. As a result, a building enrolling mostly minority students that houses a school-within-school magnet program enrolling mostly White students could be classified as integrated, despite the presence of two separate and racially identifiable schools where students' actual educational experiences are far from integrated.

The most ambitious attempt to use magnet schools for voluntary desegregation was in Kansas City, Missouri, which spent over $2 billion dollars between the mid-1980s and 1999 to improve the city's public schools. Of these funds, over $700 million were used to create magnet middle and high schools to entice White suburban and private school students back to the city's public schools. At the program's outset, between 1,500 and 2,000 White students participated. Most returned to their former schools after the first year, however, citing disappointment with the

quality of programs and difficulties with transportation (Gewertz, 2000). In 1995, after decades of litigation in Missouri and federal courts, the U.S. Supreme Court ruled that the State of Missouri was no longer required to fund the Kansas City magnet program. The district subsequently dismantled many of the programs and resigned itself to almost totally segregated and minority schools, even in a city whose residents are mostly White.

The Charlotte-Mecklenburg (North Carolina) school district for many years was under a federal court mandate that its K-6 schools not vary from system-wide racial proportions by more than 15 percent. Racial enrollments in its secondary schools were to mimic district proportions. To meet these guidelines, the district created magnet schools in racially isolated neighborhoods. After several years of the program, almost all (90 percent) of Charlotte-Mecklenburg's magnet schools met the racial guidelines. However, the White enrollment in three of the district's seven more academically elite International Baccalaureate (IB) programs did not meet the racial guidelines (Charlotte-Mecklenburg Schools, 1995). The relative success of Charlotte-Mecklenburg's magnet program in creating racially balanced schools was surely associated with the district's 50% White enrollment.

Magnet schools may be more effective in reducing segregation in combined city-county districts such as Charlotte-Mecklenburg. In geographically large county-based districts (which are more common in the South), the social and economic costs of flight from the public school system are much higher, because families typically must move a great distance to leave the school district (Orfield, Bachmeier, James, & Eitle, 1997). These school districts, which encompass urban and suburban schools, tend to enroll more White students than large urban districts in the North. As a result, segregation in metropolitan areas such as Charlotte is much more likely to occur between schools *within* individual school districts, allowing magnet schools to be much more effective in reducing racial isolation. Conversely, in the North, metropolitan areas often encompass dozens of independent school districts. In these cases, segregation is much more likely to occur *between* school districts, reducing the ability of within-school magnet programs to diminish segregation.

Summary. Ironically, magnet schools, which were originally viewed as an effective means for voluntary school desegregation, may actually increase racial isolation, especially in heavily minority school districts. Indeed, some White and affluent parents see magnet schools as a way to ensure their children encounter only motivated, high-achieving students. One might

argue that in some cases, magnet programs are private schools at public expense. Of course, the extent to which magnet schools stratify students by race and class depends on the types of choice school districts permit. Several school districts, including Cambridge, Massachusetts, and Montclair, New Jersey, operate "controlled choice" plans that attempt to balance racial enrollments among their specialized programs.

Overall, assessments vary about the ability of magnet schools to achieve their original goal of school integration, or their more contemporary aim of increasing student engagement and achievement. In most urban school districts, magnet programs that do not attract White suburban students can only rearrange racial isolation. However, as Kansas City's efforts attest, even well-supported magnet schools are unlikely to entice White students back into schools they view as dangerous, dysfunctional, and ultimately less desirable than local suburban or private schools. Although magnet schools may raise student achievement for those who attend them, they may do so at the cost of increasing racial, social, and academic isolation within the districts where they are located.

Section B: Schools-Within-Schools

For decades, researchers, pundits, and politicians have disparaged the state of the public high school (see for example, NASSP, 1996; National Commission on Excellence in Education, 1983; Powell, Farrar, & Cohen, 1985; Sizer, 1984, 1992). These indictments generally concentrate on three broad areas: 1) high school curricula that are unfocused, undemanding, and stratifying; 2) social environments in which students are not known well by their teachers; and 3) low-levels of student commitment and achievement. As we discussed in Part 2, these unfavorable social and academic characteristics are more frequently found in large high schools. With the agreement that smaller high schools are generally beneficial to students' social and academic development, what policy options are available? It is quite unlikely that taxpayers would support the construction of many small high schools and the abandonment of the buildings that now house large comprehensive high schools. In many locations with large public high schools, particularly inner cities, even maintaining *existing* schools is a financial challenge.

A logical (and seemingly less expensive) alternative to constructing new schools is to divide large high schools into several smaller schools that inhabit the original building. This design, often referred to as "schools-within-schools" (SWS), has recently attracted considerable

interest from many of the same practitioners, researchers, foundations, and government agencies who have touted small schools. Despite the groundswell of support for this reform, the empirical base on schools-within-schools is quite sparse (compared to the somewhat more solid literature about school size reviewed in Part 2). Those who advocate the SWS model often cite research on school size and small schools to justify the SWS reform. However, it is unclear whether research on small schools and school size is directly applicable to the schools-within-schools structure.

Although the SWS model has received increased interest over the past decade, the ideas behind the structure claim a longer history. Barker and Gump (1964) suggested a "campus model" for high schools decades ago wherein,

> …students are grouped in semiautonomous units for most of their studies, but are usually provided a school-wide extracurricular program. The campus school provides for repeated contacts between the same teachers and students; this continuity of associates probably leads to closer social bonds. A common sense theory is that the campus school welds together the facility advantages of the large school and the social values of the small school (p. 201-202).

Two decades later, John Goodlad advocated a high school structure incorporating "houses organized vertically, so that each contains students from all secondary grade levels" (1984, p. 311). The first recommendation in Breaking Ranks, a recent and influential report recommending reform directions for secondary schools issued jointly by the Carnegie Foundation and the National Association of Secondary School Principals asserts, "Schools must break into units of no more than 600 students so that teachers and students can get to know each other" (NASSP, 1996, p. 5).

For centuries, elite British boarding schools have employed the "house" system which organizes students into groups with whom they take classes and play on intramural sports teams. Under the watchful eye of adult "house masters," students and teachers in these schools generally develop tightly knit social bonds (Oxley, 1989). In the U.S., this design is usually referred to as the "schools-within-schools" (SWS) model. Although the term has several meanings, we use the term "schools-within-schools" to refer to high schools where all students and most faculty are members of one of several smaller instructional sub-units. This "full-model" SWS structure is distinguished from a more common format, where large high schools offer only one or two small schools, and most students remain in the regular high school program

(Lee, Ready, & Johnson, 2001). For example, Stern, Raby and Dayton (1992) describe the career academy movement in California, which often involves one or two career-based "schools" within a larger comprehensive high school. Likewise, Muncey and McQuillan (1996) investigated the implementation of several individual and self-contained Coalition of Essential Schools programs within larger high schools. Neither of these models are whole-school reforms. In fact, Muncey and McQuillan concluded that implementing such partial-model SWS structures was a poor idea because of the animosity that can develop between a "special" sub-unit and the remainder of the school, mostly around differential resource allocation.

The terminology SWS high schools use to describe their smaller units differs from school to school, with labels such as "houses," "academies," "blocks," or "small learning communities" all referring to the smaller organizational groups. To avoid confusion, we use the term "sub-unit" to describe these smaller units found within larger SWS high schools. Sub-units are typically organized around curricular, pedagogical, or (most often) career themes. For example, a sub-unit might focus on the fine arts, cooperative learning, or careers in health or business (Lee, Ready, & Johnson, 2001; Oxley, 1989, 1994; Raywid, 1995). Some SWS high schools organize special sub-units for the school's youngest students (usually ninth graders), which McPartland, Legters, Jordan, and McDill (1996) refer to as "freshman academies." Students generally take at least their core classes with classmates and teachers associated with their sub-unit. Because individual sub-units are small, such elective classes as music, art, foreign language, and advanced placement courses may enroll students from several sub-units. Such classes occur in whichever sub-unit the particular teacher is located, or outside the sub-unit structure. Administrative functions including homeroom or advisory, guidance counseling, and all but the most serious discipline infractions are handled within the sub-units (Oxley, 1989).

Raywid (1995) actually refers to such organizational units as "mini-schools," and reserves the label "schools-within-schools" for sub-units that are fully autonomous, and who report directly to district-level administrators and not to personnel within the building. However, in a recent nation-wide search for SWS high schools, Lee, Ready, and Johnson (2001) located very few schools employing the model Raywid describes. Most that were located were in New York City. For example, the Julia Richman Educational Complex in Manhattan consists of six small autonomous schools located in the former Julia Richman High School (see Cook, 2000).

Substantial governmental and foundational support has recently coalesced around the SWS reform. The U.S. Department of Education's Smaller Learning Communities Grants allocated $42.3 million in 2000 to high schools attempting to divide themselves into smaller units (U. S. Department of Education, 2001b). Over the past few years, the Bill and Melinda Gates Foundation has awarded over $200 million through different grant programs to high schools seeking to create smaller, more personalized learning environments. One reform initiative funded by the Gates Foundation, the Washington State Achievers Program, supports high schools in that state who restructure themselves into "small, autonomous learning environments of no more than 100 students per grade level" (Gates Foundation, 2001). The Annenberg and Carnegie Foundations and the Pew Charitable Trust have also directed substantial resources to high schools implementing schools-within-schools, especially in Philadelphia and Chicago (Gewertz, 2001). Although the popularity of the SWS model is increasing in suburban areas, the reform is most often implemented in urban schools enrolling substantial proportions of minority and low-income students (Gewertz, 2001; Lee, Ready, & Johnson, 2001).

SWS high schools commonly allow students to select their sub-unit, based presumably on their individual preferences and attraction to the various sub-units' themes and offerings (Lee, et. al., 2001; McPartland, et al., 1996). The goal of permitting sub-unit choice is to foster commitment among students and to increase their engagement with school. In any context, however, choice can only function as an effective mechanism for fostering commitment if differences (either real or perceived) exist among the available options. Raywid (1995), a strong SWS advocate, warns that sub-units that do not distinguish themselves will flounder, because they offer few reasons for students to select them. This free-market logic suggests that sub-units should have distinctive identities that are easily recognizable by students and parents. Students then base their choice of sub-unit on the "fit" between the themes and identities of the various sub-units and their own interests and future educational and occupational plans (Oxley, 1989).

Allowing student choice in selecting sub-units, although logical in the context of commitment building, raises the same concerns expressed about educational choice in general. Permitting students to choose both courses and sub-units could result in *two* levels of segregation and stratification within a single SWS high school (Ready, Lee, & LoGerfo, 2000). First, students' social and academic backgrounds may be associated with their sub-unit choices, just as

the educational choices parents make for their children are related to their racial and socioeconomic backgrounds. Some sub-units may also be *designed* to attract certain types of students, or may develop reputations that draw students with particular characteristics. Indeed, Oxley (1994) warns that "[sub]-units must not intentionally screen out particular students or inadvertently attract only certain groups of students" (p. 256). The second level of stratification may occur within individual sub-units. Although the relatively smaller sub-unit size reduces the number of courses and choices sub-units can offer, individual sub-units may decide to offer a self-contained differentiated curriculum that permits *internal* stratification. Essentially, a single SWS high school could produce the stratification and segregation that commonly results from school choice *and* curricular choice.

       Summary.   Our warnings regarding the potential of the SWS structure to segregate and stratify should in no way be read as an indictment of the reform. In several different areas, the SWS structure offers potential solutions to problems that have plagued comprehensive high schools for decades. Our own research about the SWS structure has identified many benefits, including enhanced social relations among school members, safer and more orderly school atmospheres, and improved student attendance. An equally important outcome is the reform's potential to produce radically new processes and social and academic organizations, especially in terms of curricula, the use of time and space, and the relationships between teaching and learning. Perhaps the most important benefit of the SWS structure is that it forces schools considering the reform into meaningful school-wide conversations about what they want their students to know and be able to do. Many such schools begin to rethink their missions, and consider exchanging the "shopping mall" format for a more focused program that is shared by the majority of students. In this sense, the processes and dialogues surrounding the reform are themselves worthy undertakings.

Part 5: Conclusions

School Structure and Educational Inequality

       High-school size. Facets of school structure such as enrollment size and overcrowding are typically not regarded as elements that are either social policies in themselves or amenable to specific educational policy interventions. Schools are typically built with practical considerations

that focus on accommodating particular numbers of students. Very seldom does a logic drive such decisions as, "What size high school might work best for the students who will attend?" "What do we really want to accomplish for our students, and what is the optimal number of students to accomplish these goals?" The research about high-school size has generally concluded that today's high schools are larger than they should be. In large high schools, teachers typically do not know their students well, nor do they usually teach the same student for more than one year. On the other hand, the evidence does not favor very small stand-alone schools either, unless they are special-purpose schools serving particular clienteles.

There is also evidence that size and curriculum structure are linked, in that large high schools typically offer a more differentiated curriculum. The accumulated evidence on high school size concludes that high schools are larger than they should be to optimize student learning. Moreover, there is also evidence that size is a more important issue for students from disadvantaged social backgrounds, both directly in terms of learning and indirectly in terms of differentiating environments that seldom favor minority and low-income students. Thus, it is often the case that the students who would benefit from smaller high schools the most -- minority and low-income students -- actually attend the largest schools.

California's overcrowded schools. Conclusions about high school size are drawn from a national context. However, they are surely applicable to California's secondary schools. Not only are many California schools that enroll disadvantaged populations quite large in terms of the number of students they were meant to educate, but schools built for a particular number of students are currently having to educate many more students than these already large buildings were constructed to accommodate. Our conclusion is that the only appropriate solution to school overcrowding is to construct new schools. However, there have been many responses of most California schools to this problem: adding portable classrooms, using non-classroom space for instruction, hiring unprepared teachers, adopting year-round schooling, and introducing multi-track year-round schooling. Each of these responses is short-term, each is accompanied by several costs, and each is differentially detrimental for the state's most disadvantaged students. Thus, we conclude that none of these responses represents a solution to the problem; in fact, many actually exacerbate inequality in educational outcomes by race, ethnicity, and class.

School Organization and Educational Equity

Magnet schools. Although enrollment size and overcrowding are most often seen as "givens" in a school system rather than amenable to policy interventions, the other structural elements considered in this paper are typically seen as responses, reforms, or policies. Magnet schools were introduced into the educational environment in the 1960s, during a period in our nation's history where school segregation was seen as a problem to be solved, school desegregation as an imperative, and magnet schools as one means to desegregate schools. The intentions of those who developed this solution were surely toward increasing social equity.

However, as the magnet school policy has played out in our nation's urban and suburban schools over the last few decades, quite the opposite has occurred. White students have not returned to largely minority schools or school districts, even to seek out what have been touted as high-quality magnet schools. In school districts enrolling a diverse student body, magnet schools have tended to be "more White" than surrounding schools. Even within largely minority school districts, magnet schools have increased social and academic stratification, by attracting more affluent and talented students and leaving the schools they left at an academic disadvantage. Yesterday's purpose for magnet schools -- increasing educational equity -- have yielded to today's seemingly more compelling policies of school choice.

Schools-within-schools. A much more recent reform initiative, breaking large high schools into smaller sub-units, or "schools-within-schools," is often implemented with the intention of improving the academic and social environments in schools that enroll high proportions of disadvantaged students. At present the research base on this reform is still quite sparse, but the number of schools moving in this direction is growing rapidly. There are considerable financial incentives for high schools to think about this reform. What research exists on schools-within-schools suggested that secondary schools that engage in this reform improve their social environments. However, early indications also suggest that the reform may increase internal stratification inside high schools, especially if unrestrained choice is the means used for students to be matched to sub-units.

At present, there is not research that documents overal achievement gains as a result of the SWS reform. Thus, the jury is still out on this reform, but we are quite hopeful about its potential to improve the nation's secondary school climates. However, we suggest that the

internal designs of this reform in each high school be scrutinized to carefully avoid increasing social and academic stratification between sub-units in the same high school.

Is Inequality Inevitable?

By no means do we believe that all students' experiences in school should be identical. Our definition of educational equity does not include such homogenization. However, we believe that social differences that students bring to school should not be translated into academic differences, nor should schools magnify the academic differences students bring with them. Schools should hold as high goals that *all* their students learn, not just proclaim this as a mantra. We strongly advocate reforms that are associated with high achievement that is equitably distributed by race, ethnicity, class, or family origin. Reforms that raise achievement of children toward the lower end of the distribution without damaging those at the top are ones we believe our nation should strive for.

Our own ideals lead us to strongly support the plaintiffs' case in the Williams class action suit. The state of California, through its public schools, must deliver a high-quality education to all its citizens. We hope that this paper provides some evidence to help define which size high schools are best for all students (under 1,000 students), which responses to school overcrowding are appropriate (building more schools rather than
adding portable classrooms or multi-track year round schooling), how magnet schools can decrease rather than increase inequality (by making regular public schools more like magnet schools), and how creating smaller learning communities in high schools can work well for everyone (by not allowing this mechanism to increase stratification).

We do not believe that unequal education treatments are inevitable. Not only do we advocate that every child deserves a high-quality education, but we suggest that it is a social imperative that public authorities be committed to the social policies that actualize this goal. Of course, we are under no illusion that this is either easy or that the solutions will not engender controversy. If we as a nation subscribe to improving the common good, then education is a crucial place where this should play out. The Williams case is a means to remind California's educational authorities of their responsibilities.

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