Negotiating Place: Community Participation and Design in the Planning of Public Schools

by

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Bachelor of Arts in Geography
University of Texas at Austin 1994

Submitted to the Department of Urban Studies and Planning in Partial Fulfillment of the Requirements for the Degree of

Master in City Planning

at the
Massachusetts Institute of Technology

June 2002

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ABSTRACT

Schools play key roles in land use, community development and public policy issues. The construction of new schools, in particular, has come to be seen as a critical growth factor with broad impacts. A participatory school design process is proposed as a model to plan, design and build schools that respond to multiple stakeholder interests. In order to describe how such a process would work, research in urban design, school design, educational facility planning, and participatory design is combined with local case interviews. The results of the research and interviews promote an understanding of the challenges a participatory school design process would face, as well as the support on which such a process could develop. Ideas drawn from consensus building models and from urban design theorists address many of the challenges to which the cases provide no clear prescriptive guidance. These include the organization of a participatory process and the key physical design questions. Combining these models produces a basic framework for a participatory school design process. The framework recognizes that the uncertainty of institutional change and tensions that arise from basic value differences remain to be addressed through testing of the framework.

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Acknowledgements

The author gratefully acknowledges the support of Eran Ben-Joseph and Larry Susskind in the development of this thesis. The author also wishes to thank Henry Sanoff and Mark Puleo for their generous help. Special thanks to those who read drafts, gave helpful advice, and provided regular support – while writing their own – Rosemary Dudley, Hope Fang, and Justine Minnis. Extra special thanks are due those who provided food, conversation, and good examples on a daily basis: Elizabeth Bent, Antonio Gonzalez, and most of all Analisa Nazareno.

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1 School design as a planning problem

This paper seeks to address the challenges inherent in the school planning and design process. The specific problem is the quality of a participatory school design process; the specific question is how the dual goals of community participation (process) and school design (outcome) can be achieved simultaneously.

The answer to this question is approached through a series of related questions: What are the challenges to designing a process that combines the objectives of good physical design, fairness, and efficiency? How does one go about preparing for a process that involves the community from beginning to end? How does one encourage places whose physical form relationships support the activities and aspirations of users and neighbors? This paper does not intend to answer all of these sub-questions thoroughly, but enough to provide a framework that can respond to the main question.

This paper is structured around the following propositions: 1) schools are nodes of broad planning problems that require collaborative approaches; 2) a participatory school design process is an example of such an approach; 3) cases and literature demonstrate that this process faces challenges and can build on opportunities; and 4) consensus building, especially around key design relationship questions, addresses many of these challenges, and sets the stage for future testing of the proposed process and its elements.

Definitions

The two guiding themes in this thesis are *design* and *participation*. Both terms take on wide definitions here; *design* is used to refer to the study of the physical relationships between a school and its neighborhood context as well as the relationship to its town or city. That is to say that design addresses questions at a range of scales, from building height and setbacks, to the arrangement of parks and schools in the urban fabric.

Participation refers to non-professional decision-making in a professional context, meaning a context where most of the actors are trained experts. In this particular situation, those professionals include state administrators, architects, educational consultants, principals, superintendents, planners and city code officials. Non-professionals would include parents, students, neighbors, and teachers, if their expertise is a subject other than school design.

1.1 The importance of schools

Educational facility planning, in general, is a good context within which to explore these questions. In the arena of school planning, the importance of the physical design of space is taken for granted; likewise, the necessity of community process is assumed. Current debates focus instead on what kind of school design is best (large, efficient comprehensive schools or small, specialized neighborhood schools) as well as what kind of process is best (what level of local input and control is best for the school).

Also, public schools are flashpoints for a multitude of land use, community development, pedagogical and public policy issues. The education of children remains the primary programmatic goal of any school system – the fact that education is intimately related to a score of other social and political goals does not diminish the primacy of education. In fact, it is the critical nature of what takes place inside a school building that makes us increasingly concerned with what takes place outside of and in relationship to these institutions.

The following discussion shows how the school design process necessarily impacts a large and diverse number of stakeholders. This section describes the scope and tenor of the debates these stakeholders are likely to have, in order to get a sense of the complex landscape through which a given School Building Committee may have to navigate as it deliberates. Not all of these decisions are solely the Building Committee's to make. In fact, the point made here is that there are many stakeholders with interests in the outcome of a school planning process.

Schools and land use decisions

Building enough schools to educate a growing population is a local problem of national proportions. The prospect of funding additional schools is anathema to local taxpayers and their elected representatives. Even where no new schools are needed, the physical disrepair of older schools forces communities to make difficult choices. Should the older schools be repaired and modernized, or should they be demolished? Should new schools be built on the site of the old school, or somewhere else?

In land-poor cities and districts, population growth forces particularly difficult decisions. Should parkland be sacrificed in order to expand a school? Will remodeling the old school be economical? Given few outdoor facilities, how can athletic activities be encouraged? Will the state help finance a smaller school that does not conform to state standards?

In land-rich cities, school acreage standards often encourage siting new schools on large, inexpensive lots at the suburban periphery. This decision, while inexpensive in the short run for the school district, proves to be expensive for the city that must provide new infrastructure to support the residential development that inevitably follows. Schools have thus been labeled "sprawl-leaders", due to their impact on urban form in recent years (Beaumont 2000).

A school building is often represented as a traffic problem. The road network and parking areas near a school must accommodate multimodal congestion at peak times – pedestrians, cyclists, drivers and buses. A residential neighborhood may fight a school on the grounds of increased traffic, but siting a school away from any residential areas forces a reliance on buses – and/or parents who are willing to drive their children to school every day.

Environmental concerns on school sites are critical to new construction and renovation. Sites undergo greater scrutiny than ever before, and strict construction controls are more common (North Carolina DPI 1998). Recently, maintenance issues have come to national attention due to mold control problems (Caban 2002, Pinkerton 2002).

Efforts that promote the creative reuse of existing buildings make an explicit connection between land use and education. Across the country, efforts are being made to match the need to educate children with the resources of institutions that educate – even if these institutions are not "schools." Minnesota's School of Environmental Studies is known as the "Zoo School" because of its location on the grounds of the Minnesota Zoological Gardens. Roy Strickland's "City of Learning" concept has helped revitalize Paterson, NJ by adapting underused commercial and industrial buildings into educational facilities. Steven Bingler of Concordia Architects, who suggests locating schools in institutions such as museums or city halls, has designed a school within the Henry Ford Museum in Dearborn, Michigan (Boss 2001).

Schools and community development decisions

Schools are readily related to wider community development goals. The US public school system in particular is historically rooted in boldly democratic social goals. Whether the issue is neighborhood revitalization, greater community participation, grassroots organization, or local politics, school buildings are highly convenient catalysts – symbolic and actual -- for these debates (Loomis 2000).

Elementary schools, in particular, tend to be closely associated with their neighborhoods. This association can be made more meaningful, according to one line of reasoning, if these schools act as genuine neighborhood or civic institutions. This role may be particularly important where the role of religious institutions has diminished, and a demand exists for alternate intermediate institutions that can stimulate the creation of social capital.

One manifestation of this idea is a trend toward multiple-use of school facilities. "Some schools are now being built as a part of a larger complex of community service facilities: recreation grounds and parks, health and social service centers, libraries and cultural centers" (North Carolina DPI 1998, p.2). Promoters of the multiple-use concept share similar goals to those of Strickland and Bingler, as mentioned above:

> The research on learning calls for dissolving some of the traditional barriers between school and life and school and community. Finally, studies make it clear that students achieve best in environments where lifelong learning is a community value, where everyone is a learner, and where the school facility is central to the life and learning of the community, accessible not only during traditional school hours but at night and on weekends too (US Dept. of Education 1998, p.2).

Pedagogy

Any conversation about new school buildings will also touch on debates over educational methods. The question of the relationship of windows, lighting, colors, air conditioning or school size to test scores or other measures of academic achievement fuels dozens of ongoing research projects across the country.

Currently, a general consensus seems to be forming around the real benefits of smaller schools. Small schools seem to outperform larger schools by offering increased contact with teachers, while maintaining a smaller physical (and financial) footprint (Robertson 2001).

The supporters of large schools usually argue that larger schools offer efficiencies of scale and a wider curriculum. One common compromise is the schools-within-a-school model. Several small schools are accommodated within one large building or campus. Classrooms and entrances may be kept separate, but cafeteria, gymnasium and offices are shared (Robertson 2001).

Institutional context

An elementary school is one of the most local public institutions, but it is also one of the most nationally distributed. As a result, the local school board is hardly the only group with an interest in discussing new construction.

Neighborhood and civic groups will seek input as neighbors or potential neighbors. Their concerns will vary widely: traffic, financing/taxes, neighborhood revitalization, or the best way to educate their children.

In regions with school districts, local concerns will be reconciled with district-wide policies and politics. Similarly, state Departments of Education will set guidelines for such things as construction, financing, access, site selection and desegregation policies. For example, in Massachusetts a recent change in the law forced the Department of Education to alter its practice of giving funding priority to the poorest cities. Now, school building assistance is distributed strictly on a first-come first-served basis.

1.2 From problem to proposal

This section has argued that schools are at the nexus of a host of complex and interconnected debates, making any school project an important planning and design issue. No single crisis in the school system or in the city forces this reflection -- only the ongoing bundle of interrelated day-to-day institutional linkages and frictions.

The examples given here indicate that "complexity" means the following: impact on many stakeholders with different interests; the involvement of several different institutions with overlapping jurisdictions; the thorny problem of public funding; and a diverse range of professions who seek to influence the process. The situation resembles nothing as much as a multiparty negotiation. But, as discussed in Chapter 2, many school planning approaches do not usually recognize the situation in this manner. Instead, the process is often conceived more narrowly, risking the omission of important issues and interests.

The proposal made here is for a process that spans the awkward gap between education, urban design, and community participation. In theory, a participatory school design process could help users, planners, and designers articulate interests, deliberate effectively, and arrive at creative solutions. Such a process should be designed carefully in order to manage the wide range of information and insights that would be brought to the drawing board – ideas informed by and impacting land use, community development and pedagogical decisions. This paper proposes a consensus building process that devotes special attention to understanding the key physical design relationship choices that face a particular project. This thesis suggests *questions* that a participatory process should seek to resolve; not the answers to which it should arrive.

1.3 Methodology

In order to arrive at such a solution, answers had to be proposed to the questions raised at the beginning of this chapter: What are the challenges to designing a process that combines the objectives of good physical design, fairness, and efficiency? How does one go about preparing for a process that involves the community from beginning to end? How does one encourage places whose physical form relationships support the activities and aspirations of users and neighbors?

The main sources of ideas were 1) interviews with people who had worked in a local school planning or design process, 2) literature on educational facility planning, and 3) literature on school design. These sources provided an understanding of process basics, as well as an appreciation of the challenges to a participatory design process.

2 Challenges and opportunities

This chapter reviews educational facility planning literature and a handful of local cases to learn what current theory and practice have to say about improving the quality of participatory school design processes. The literature is diverse, reflecting the goals and perspectives of planners, architects, educators and engineers. The details of the cases were drawn from interviews with school representatives and architects.

The assumption was made going in that there would be conflicts between the goals of participation and design; what the literature and cases illustrate is that there are also complementary opportunities. It is to these challenges and opportunities that the proposed process directly responds.

This chapter reflects a certain disagreement over the role that community participation should play in the school planning process. Nobody ignores non-professional actors altogether, but most support a limited or advisory role. Others, including the U.S. Department of Education, argue for increased community participation. The interviews tend to portray community participation as required but not necessarily productive nor pleasant.

There is also a range of perspective on the importance of physical design. Many authors consider such issues to be outside of their realm of expertise, and make no commentary. A few will limit their comments to universal design requirements. Many designers devote most of their attention to building types and detailed design ideas, but few consider the school's physical relationships to neighborhood and city. The cases, on the other hand, are largely concerned with this last set of physical relationships, while displaying ambivalence toward the specifics of site design.

2.1 Summary of cases

This is a brief summary of the cases used in this study. The cases served as foils to the literature, helping to ground it with specific examples and counterexamples. The lessons drawn from these cases are integral to the next section as well as to the following chapters, and addressed therein. For every case, someone involved in the planning process (usually a Facilities Manager, or the equivalent) was interviewed. Photos are by the author.

Lafayette School, Everett

Figure 1: Small site means limited space for midafternoon recess

Everett undertook a citywide educational assessment effort beginning in 1995. The resulting plan recommended the construction of four elementary schools and the renovation of a high school. The plan would develop over 10-12 years, on a school-by-school basis with no overlapping construction, reserving the option to re-examine needs between schools. A School Board Advisory Group hired Flansburgh and Associates to design all the schools; Lafayette is one of their projects.

Site selection was an initial issue, given Everett's lack of undeveloped land. The choice of an 8-acre park in a residential neighborhood was supported by the mayor and ultimately selected as the site. Lafayette fits on 3 of those 8 acres. There was significant debate about the loss of public open space, and promises were made to rehabilitate the park, which had not received adequate maintenance in preceding years.

Figure 2: Lafayette's four stories makes it taller than the average elementary school

Eight acres is considered a small site -- as a result Lafayette is taller than many schools: four-stories in a residential neighborhood composed largely of one-story single-family residences. The building houses two schools: a middle school and an elementary school, for a total of 950 students and 80 faculty members. The building contains a gymnasium, and shares the park's baseball field (Puleo 2002).

Mary C. Burke Elementary School Complex, Chelsea

Figure 3: Burke maintains a pedestrian connection to residential areas (path at lower right)

In 1989, the management of the Chelsea school system was handed over to Boston University. BU conducted a needs assessment at the time and developed educational specifications that suggested a single, large campus to house the entire range of Chelsea schools, from Early Education through High School. The rationale for this proposal was the lack of open land in Chelsea: apparently the feeling was that it would be easier to assemble a single large parcel than to find several smaller ones.

The Receiver (who ran the city while Chelsea was in Receivership) created a Building Advisory Committee in 1991, and hired a Project Manager to implement the plan to build schools as recommended by the BU needs assessment. The Receiver also suggested that the schools be built for community use after school hours.

Both the School Committee and Massachusetts School Building Assistance opposed this proposal, on the grounds that the resulting development would be too dense, and would not be able to accommodate ballfields. Eventually, the single campus was broken up into four campuses: Early Education, Elementary, Middle School, and High School. Three architects were hired for the four campuses, in order to ensure a variety of designs. The schools were built simultaneously beginning in 1994.

The elementary school campus is now known as Mary C. Burke Elementary School Complex, and houses four separate elementary schools: Hooks, Berkowitz, Sokolowski, and Kelly. Each school is designed for 500 students. It sits in a transition area bordering a residential neighborhood on one side, abandoned industrial area on another side, and open water on the other (McCue 2002).

Lincoln School, Lincoln

Lincoln Town Meeting convened a Facility Studies Committee in 1991, and a few months later authorized a School Building Committee. HMFH was subsequently hired to do a building assessment, while an educational consultant was hired to do enrollment projections.

HMFH presented an initial conceptual design to Town Meeting in 1992. The town rejected the proposal, on the grounds that they wanted at least three options from which to select.

At this point, the town undertook institutional reform of its own: the School Building Committee was granted increased autonomy in order to be able to comprehensively manage architectural, educational, administrative, and engineering concerns. This new group of 15 members met weekly with the designers, and within a year came up with 3 proposals: build a new school, do a $12 million renovation, or do a $15 million renovation. Based on state reimbursement guidelines, the $12 million renovation proposal was the cheapest for the town (Smith 2002).

Fort Banks Elementary, Winthrop

Figure 4: Fort Banks occupies a low-lying area beneath a residential neighborhood

Winthrop undertook a needs assessment in 1985, which recommended, as in Chelsea, the construction of one large elementary school. Town Meeting failed to approve school bonds for this proposal several times over the next decade.

It was not until 1996, when a second designer (DiNisco) was brought in and proposed a new design that the Town agreed to fund the project. The second proposal was for two smaller schools on separate sites.

The Building Committee at this time was led by a retired principal, and was made up of a Selectman liaison, a school committee representative, the architect, a private citizen, and a representative from the business community. DiNisco used focus groups to develop initial programming and design ideas.

The two sites are very different. One is the site of the old elementary school, in the center of the town. The other is the site of an old military fort that had come into the city's possession. Fort Banks sits on the edge of a residential area, near marshland, a cemetery, and recycling center (Fazio 2002).

2.2 The literature

This section reviews the important lessons drawn from the school planning and design literature. For the most part, the literature approaches the topics of the school planning process, school design, and community participation separately. Only a few authors have written about these issues in combination. This section is correspondingly divided, but attempts to close that divide by summarizing both the challenges and most promising approaches toward participatory school design.

Descriptions of the school planning process

Linear

The simplest way to characterize the educational facility planning process is as a sequence of linear steps that lead from a beginning to an ending. This is, in fact, how Brubaker (1998), Castaldi (1994), Holcomb (1995), Graves (1993), Ortiz (1994) and Perkins (2001) describe the process. The first four describe the sequence as beginning with a needs assessment, or school survey, which is an analysis of the existing facilities versus the projected needs of a particular school system. Ortiz and Perkins refer to a separate stage of strategic or long-range planning. For Perkins, strategic planning occurs before a needs assessment, while for Ortiz, the long-range plan occurs concurrently or after a needs assessment. All of the local cases did begin with a needs assessment or a strategic plan.

Process Steps

The typical steps in the educational facility planning process include needs assessment, educational specifications, design, construction, and evaluation, as well as strategic planning, approval, and financing.

The purpose of *educational specification* is to determine the educational needs and goals of the town or school, and can involve the input of an educational consultant and/or teachers. In Winthrop, for example, the designers worked with a task force made up of educators to develop the educational specifications. These specifications are then meant to guide the design of the site, including the arrangement of classrooms, central resources, etc.

The *design* step is generally described as the architect making a series of presentations to a building committee or Town Meeting. Having gathered information from initial meetings with the building committee and/or educators, the architect creates proposals and then presents them for approval or comment and re-presentation when necessary. Sanoff (1994) is the only author to offer a different model, wherein educators, community members, and students remain involved through initial design stages.

Perkins (2001) is one of the few to devote ink to *financing* and *approval*, linking it to citizen-led advocacy and specific strategies to secure bond passage. Holcomb (1995) also mentions "Selling" as a critical strategic phase. In the cases, financing and approval of the project were closely linked and always figured prominently in the process narrative, whether it was achieved through careful strategy such as in Everett, or subject to much denial such as in Lincoln and Winthrop.

Most of the authors do mention that some kind of *post-occupancy evaluation* should happen after construction, but the level of detail varies; Sanoff offers the most detailed

evaluation suggestions, by far. Evaluation did not appear to be a critical element in any of the cases.

Non-linear process

Kowalski (1989) is one of the few to emphasize that educational facility planning can be a non-linear process. The advantages of non-linearity are the ability to consider several steps simultaneously, or to take those steps in an order that is relevant to the particular needs of communities.[1]

The case evidence supports thinking of the process as a semi-linear and semi-sequential process, and not as a linear set of steps: the logic of the process is inherently sound, but must account for delays, revisions, feedback and evaluation loops, and local resources. Everett's school-by-school plan continually brings together the planning, evaluation and construction steps. The experience in Chelsea and Winthrop demonstrate that a plan can stall and be revived years later, inheriting some of the initial assumptions and having to redo others. In Lincoln, a designer was hired before the School Building Committee was formed, but the eventual formation of the Committee meant re-defining the relationship with the designer.

Lackney has written a critique of the rational educational facilities planning model based on its impact on school infrastructure, a growing trend toward collaboration, and the political aspects of financing (1994, p. 63-66). Out of this critique, Lackney proposes a semi-linear model that incorporates community participation, expert and professional resources, and flexibility to local needs and resources.

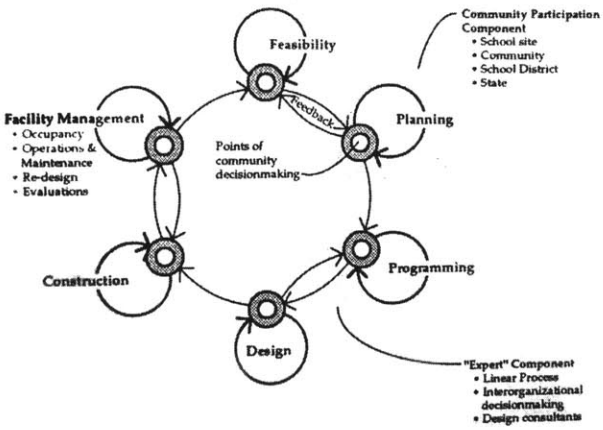

Figure 5: Lackney's planning model incorporates both community and expert decision-making

[1] Kowalski also discusses the difference between integrated and non-integrated processes, where non-integrated decision-making takes place in isolation from the interests of any other stakeholders. Non-integrated planning is based on a desire to avoid conflict and increase efficiency, but Kowalski warns that such an approach is usually politically dangerous and liable to produce errors.

Summary

Helpful ideas
This section identified the basic steps of a facility planning process, and how those steps can be related to each other. Additionally, Lackney offers a comprehensive model notable for its integration of community participation and for its flexibility. These qualities resonate with the process descriptions gathered from the local cases.

Challenges
Some planners conceive of the process narrowly, emphasizing the efficiency of a linear process. A participatory design process will likely have to overcome resistance from those who may not understand nor accept a broader, less linear model.

Attitudes toward participation

Clearing the hurdle

The role that community participation should play is a matter of some disagreement, but most agree that it does play a critical role – usually as a hurdle to be overcome.

Holcomb (1995) provides very specific and detailed advice on clearing that hurdle: be explicit, he tells the planner, about the advisory role that lay committees should play. Holcomb does not assume or recommend partnership or delegated power. In fact, Holcomb goes to considerable length to warn the planner that a lay committee expecting real authority is a potential disaster. His detailed recommendations are designed to make differing levels of responsibility as clear as possible:

> It is important that as soon as the advisory committee is appointed it be charged by either the superintendent or a member of the school board (preferably the board president) as to the *advisory* role it is to play. The charge should set forth clearly the duties of the committee, the expectations of the board in relation to the work of the committee, a suggested time-table, and the resources the board will make available to the committee (p. 3).

Holcomb sees a wide variety of responsibilities for such an advisory committee: "It can conduct surveys of existing school buildings, make utilization studies, make visitations to other districts, make recommendations for design and student usage, recommend whether an existing building is to be replaced or remodeled, and assists in the design of the community use of any new or remodeled construction" (p. 3-4).

Castaldi (1994), in contrast to Holcomb, assumes final citizen decision-making power, and worries that inadequate attention to professional advice can result in "decisions [based] more on the basis of emotion, tradition, and loyalties than on the basis of facts" (p.86). Castaldi limits his discussion of community involvement to the initial strategic planning stages of the process. Even an ad hoc school survey committee, however, should

be representative of the "total educational community" and report directly to the board of education.

Perkins (2001) describes educational facility planning as a collaborative process, but this term refers only to collaboration between multiple professional disciplines – planners, designers, and engineers – who occasionally seek approval from elected officials or school committees. It as this approval stage, however, that Perkins grants considerable power to "citizen-led advocates" who can make or break an election or bond-approval. The cases do support Perkins' focus on this stage: all the projects save Everett's were delayed at the approval stage – Winthrop's for ten years – and approval in Everett was directly linked to a strong mayor making strategic hiring decisions to leverage funding. In contrast to Holcomb and Castaldi, however, Perkins does not discuss participation at any earlier stage of the process.

The feelings about participation expressed in the interviews exhibit degrees of frustration and resignation. One architect who regularly works on school designs described most community opposition as vocal but misinformed (Beatrice 2002). Another granted that the building process is essentially and necessarily deeply disturbing, so that any change or proposed change will be initially opposed. As a result, he does not count on community support: he is resigned to being the bad guy until the project gets built, at which point the transformation is inevitably accepted and ultimately embraced (Padulo 2002).

Participation as vehicle

For another group of school designers and planners, participation is seen not as a hurdle but as an effective means to achieve multiple, simultaneous goals.

Graves (1993) discusses community participation as the best way for the architect to learn the community perspective. He proposes charrettes in order to get all ideas out onto the table – particularly if the school board or administration does not adequately reflect community concerns. Graves is one of the few to admit the possibility that community interests may not be fully represented at the school building committee.

Graves is also one of the surprisingly few to consider the child's perspective. As a designer, the primary concerns for Graves are question of building at the child's scale, and children's response to their surroundings. By asking children to draw and design the schools and classrooms they would like to use, he attempts to understand their perceptions and then incorporate those ideas into the design.

In addition to charrettes, focus groups are sometimes used to engage a certain level of participation. Designers working in Winthrop used focus groups to gather information from teachers and principals concerning programming questions. The information that came out of these small-group interviews was used to guide the initial designs (Fazio 2002).

Sanoff (1994, 2001) is by far the most thorough of the school designers, when it comes to community participation. For him, the participatory process must include opportunities for learning, problem-solving, decision-making, and implementation. Sanoff analyzes and discusses the purposes of participation, different forms of participation, levels of participation, and the variations in dynamics between small groups, organizations and the community. He also outlines methods of planning for participation, and participatory techniques he has found to be most successful.

The US Department of Education's 1998 publication Schools as Centers of Community gears its facility planning process proposals toward citizens who may see a need to take the planning initiative. Process principles begin by recognizing that communities are in themselves diverse, comprising differences in age, culture, gender, ethnicity, class, aspirations and abilities. The design process should consider all of these perspectives. "To ensure widespread, fully informed, critical participation of all stakeholder groups in the

design of learning environments, adequate time and resources must be allocated to the planning process. Such allocation must happen in advance of, or at least in concert with, the development of the school district's facilities master plan, educational specifications, technology plan and/or building designs" (p. 8).

The proposed process is described in detail from the initiation of a planning process, through finding funding, identifying a facilitator, putting together a core planning team, organizing a steering committee, and finally developing and implementing a Master Plan.

Summary

Challenges
Two very different attitudes are presented here concerning the utility of community participation. The pessimism of those for whom it is an obstacle cannot be dismissed out of hand – there is no doubt that participation is difficult and time-consuming work.
Holcomb and Perkins, as a result, limit and strictly define the role of participation in order to maintain a minimum degree of desired efficiency. The importance of clarifying roles and responsibilities is important and will be discussed below, but limiting the role of participation runs counter to the goals of this study, which is to explore techniques that can expand participatory activity, while maintaining fairness, efficiency and long-term stability.

Helpful ideas
The optimists respond that a long-term view rewards initial investments in a participatory process, guaranteeing the success of a project in a way that is impossible without community buy-in.
This paper accepts the ideas and suggestions of Bingler, Graves and Sanoff. Valuable contributions include: recognize community diversity and seek to build upon it, learn the child's perspective and scale, use charrettes and other small group activities to fully bring out interests, allow for learning, problem-solving, decision-making and implementation.

Attitudes toward physical design relationships

A substantial number of school planning authors remain silent on the topic of design. Neither Ortiz nor Holcomb make any design recommendations at all, but Holcomb does comment that "general appearance" should be part of the post-occupancy evaluation phase. Castaldi does get into bubble-diagrams of educational programs that have explicit design consequences, but the book does not explore those consequences. The US Department of Education publication mentioned above supports design principles, but goes no further. Kowalski's discussion of physical design is limited to an appendix devoted to universal design considerations.

One implication of this attitude can be seen in Everett. In order to keep costs low, the exploration of specific design relationships was tightly restricted. Instead, the city agreed to use the same footprint in several of their schools, changing only the elevations (Puleo 2002, Padulo 2002).

Another group of authors concentrates on the building and the site, to some extent in isolation from the building's context. The American Institute of Architects, for example,

periodically publishes a book focusing on innovative, award-winning educational facility designs. While some of the designs cannot be portrayed or discussed except as elements of dense urban settings, or against dramatic natural backdrops, most of the plans do not usually take into account how the school fits into broader context (AIA 1996).

Similarly, Perkins proposes a series of "unique design concerns" that should influence planning. These concerns include making the school inviting to children, determining the ideal size, incorporating technology, ensuring flexibility, responding to regional influences, conserving energy, sustainability, security, and storage. Most of these design concerns (except for "responding to regional influences") are largely site specific.

Graves *does* consider contextual impacts in his recommendations. The important design issues for Graves include safety, multi-purpose and specialized spaces, and site adequacy. Site adequacy is a contextual evaluation, referring to the site's location, size, site plan, access, service roads, traffic, parking, landscaping, lighting, fences, utilities, and neighborhood.

Most of the cases express concern for the broader design issues. All had to deal with problems of limited land, for example. Everett opted to lose some park space in favor of new schools. Everett was able to do so because the parks were in bad shape, and losing acreage to a school was made contingent on upgrading the park facilities that remained. Both Chelsea and Winthrop delayed their plans until the right design was proposed; in both cases, this was a reduction in size and increase in number of campuses. Winthrop and Chelsea found sites at the margins of use districts, while Everett preferred entirely residential surroundings.

Summary

Challenges

The range of attitudes toward physical design questions – silence, programmatic response, legally mandated response, architecturally oriented focus, or broadly contextual – correlate somewhat with the professional background of the authors. This is no surprise; 'design' is professionally subdivided into overlapping scales, and most authors will comment only on what they feel qualified to comment on. The deeper challenge that this diversity of professional perspective implies is lack of common models or even a common language on which to build.

Helpful Ideas

Given that this study is focused on the physical design relationships between the site and its broader context, the most relevant authors include Graves and Sanoff. Both of these authors propose key physical elements for this kind of analysis. The experience of the local cases, especially as concerns site selection issues, is also highly relevant. The choices made in situations of limited land options speak to the value of negotiated agreements and shared solutions.

2.3 Summary of Challenges

Judging from this review of literature and cases, the challenges to implementation of a model that seeks to improve the quality of a participatory design process fall into five categories: attitudes, institutions, unacceptable design options, professional turf, and physical challenges.

Attitudes: limited participation, self-limiting participation

Those who are hesitant about community participation will respond to our question, "How does one go about preparing for a process that involves the community from beginning to end?" by answering, "One doesn't." Instead, the proposal is a narrowly conceived participation, limited in authority and responsibility, and secondary to other goals such as efficiency.

Many who express this attitude do so as a result of having experienced blanket opposition to any kind of change whatsoever on the part of community representatives. While this attitude did not surface explicitly in the cases nor in the literature, it was referenced obliquely. For the purposes of this study, the term "self-limiting" participation will be used to describe this exclusive reliance on reflexive veto-power.

Institutional capacity

Cash-strapped municipalities may resist supporting a process that is not tightly controlled. Cost-cutting measures may first target efforts that offer limited short-term benefits, including participatory processes or detailed design exercises. One of the ways communities have found to cut costs is to limit the number of design options under discussion (Everett). Architects who are familiar with city's budget limitations may preemptively offer a very limited array of options (Lincoln).

Another challenging aspect is institutional inertia. School boards or Town Meetings may need to be convinced to try new approaches; even if individuals are willing to be convinced, the structure of committee responsibilities may preclude collaboration and participation.

Unacceptable design options

The cases offer several examples of design options that were not endorsed by local decision-makers, resulting in lengthy delays, if not effective death of the process. The large campus format, in particular, appears to have been proposed more often than it was implemented (Chelsea, Winthrop). Innovative (unfamiliar) school designs – even if based on sound design principles – may run the risk of early dismissal.

Professional barriers

The interdisciplinary nature of the school design process creates practical barriers between experts from different professions. The linear educational facility process mitigates for this friction by proposing very clear stages of input and responsibility. A process that seeks to expand discussion and decision-makers faces the challenge of building common languages and models among people with very different training and backgrounds. This is especially true when it comes to design. Many express the attitude that design problems are best left to design professionals.

Physical challenges

Several of the cases involved municipalities faced with a strictly limited supply of buildable land. This situation created difficult trade-offs: using parkland (Everett) or improving marginal land (Winthrop) for new schools; or, renovating or demolishing old schools (Winthrop, Lincoln).

2.4 Summary of Opportunities

This review also offers opportunities on which to build a process that seeks to improve the quality of participatory school design – and address some of these challenges. These can be described as: attitudes, institutional change, acceptable design options, and process solutions.

Attitude: Long-term benefits of participation

Those who support increased community participation in planning and design argue that the benefits of long-term education, buy-in and empowerment outweigh short-term costs. They also argue that projects stand better chances of approval and long-term support.

Institutional change

Institutions can and do change when it is clear that it is in their best interest to do so. A shift in responsibilities, a new committee structure – sometimes, small change is all that is needed to be able to manage a more successful process (Lincoln).

Acceptable design solutions

New ideas are not always suspect – especially if they are locally negotiated and solve difficult problems. The cases describe a range of design solutions in municipalities with limited space options. Loss of open space, although not preferred, can be compensated. Tall buildings can be mitigated through setbacks, materials and careful placement of the building on the site. Resources, such as parks, can often be shared (Everett, Chelsea, Winthrop).

Process solutions

Recognizing that local conditions set the timetable and steps of a planning process is the first step in designing a responsive process. Lackney's model represents this first step well.

Process details, however, are also important. The use of focus groups, charrettes, and other small group activities can help brainstorm, discuss ideas, and build a common vocabulary.

3 Participation and Design

Given the preceding chapter's list of challenges and opportunities to improving the quality of participatory school design, how can one ensure that the opportunities succeed in addressing the challenges? The previous chapter provided some examples of how this can happen on an ad hoc basis -- design solutions overcoming institutional capacity and inertia; institutional flexibility overcoming collaborative barriers; design solutions overcoming physical difficulties. However, basic prescriptive approaches and methods that can help meet these challenges more consistently do exist. These include consensus building, participatory design, and discussion of the key physical design relationship questions. This chapter discusses these approaches and their responses to the previous chapter's challenges.

3.1 Preparing for participation

How does one go about preparing for a process that involves the community from beginning to end? This section looks to consensus building and participatory design literature, for key qualities that can be used as criteria for designing a participatory process.

Consensus Building: Guidelines to ensure fair and efficient levels of participation

How can the participatory process be broken down into manageable steps? How can facilitation help groups arrive at agreements? A consensus building process is designed to seek unanimous agreement among parties whose interests differ. This section outlines the consensus building process, drawing largely from two sources: the Consensus Building Handbook (Susskind 1999), and "Schools as Centers of Community" (USDOE 1998). The Consensus Building Handbook breaks down the process into five steps: Convening, Clarifying Responsibilities, Deliberating, Decision-Making, and Implementation. For each step, examples specific to the educational facility planning process are offered below, as drawn from the Department of Education document and the cases.

Convening

The first decision to be made is whether or not to initiate a consensus building dialogue. One way to determine whether such a dialogue might be beneficial is to conduct a written convening assessment that enumerates the stakeholders that would be involved in such a dialogue, and what their interests might be.

The "Schools as Centers of Community" publication describes the importance of first acknowledging diverse interests in the community, and then building consensus and long-term commitment out of that diversity. "When community members become visionaries, creators and owners...they are more willing to work together to set goals, solve problems, and, ultimately, provide their schools with the kind of ongoing support they need to be successful" (USDOE 1998, p.8).

Initiating a school strategic planning process, for example, would involve identifying 4-6 key actors in the community (school administrators, educators, community representatives, city representatives, for example). This initial group, together with a facilitator, if desired, would discuss the option of organizing a community-based consensus building process to develop a school facilities master plan. A convening assessment would be done at this point to outline local issues, stakeholders and interests.

If a consensus building process looks promising at this point, then an action plan would be developed addressing funding -- proposed budget, potential sources of money, and a presentation supporting the benefits of this planning process. At the same time, representatives of the stakeholders identified in the convening assessment would be invited to join the planning team. Suggestions should be solicited for additional representatives. If stakeholders were overlooked during the assessment, then representatives for those groups should also be brought in.

The resulting planning team, or steering committee, should now be broadly representative of educators, parents, students, civic organizations, business organizations, and city departments. Such a diverse group may need to devote the first meeting to developing a common knowledge base, and it may need to provide for training.

Locating and securing the necessary funding for such a process is also critical at this stage. This model assumes that city or other public funds have not yet been secured, and that a citizen-led group that is well organized can successfully petition for such funding. The cases do not deny the possibility of such an approach, but none of them explicitly support it, either. The needs assessment and strategic planning in all of the cases were initiated by mayor, Town Meeting, or in the case of Chelsea, Boston University because of its control over the school system.

Clarifying Responsibilities

Before substantive issues can be discussed, the roles of facilitators and members of the planning team need to be decided and made explicit. A mission statement, agenda and ground rules should be discussed and set, and rules regarding any observers clarified.

The role of the facilitator can vary from that of a process manager who runs meetings and maintains a written record, to that of a mediator who has substantive knowledge, decision-making authority, or a stake in the outcome of the process. Facilitators can change for different stages of the process. The cases demonstrate that the chair of a Building Committee may act as a facilitator through the hiring of the architect, at which point the architect takes over those responsibilities. This practice may or may not be consistent with community goals: it is conceivably preferable to retain a single facilitator throughout planning and design to maintain consistency.

At this point the committee should agree on the roles of members of the planning team, as well. The ground rules will delineate how the group has agreed to treat such issues as consensus measurement methods, voting rules, and discussion rules.

As Holcomb and similar authors point out, the committee should be aware of its own ultimate authority, as reflected in the mission statement. Even a self-organized, broadly representative group will have limited (advisory) power when elected officials are the ones to make the final decisions. However, the strength of an advisory group's advice is directly related to the voting power of the groups represented. Bringing all the stakeholders to the table is key to the adoption and long-term support of a plan.

Deliberating

Discussion and deliberations should be pursued in a constructive fashion. Not all committee members may understand the practice of this principle – part of the facilitator's job is to offer practical guidance to any and all committee members, in order to nurture an environment where new ideas can be freely discussed. Brainstorming and other methods to generate new ideas should be separated from bargaining and other forms of commitment.

When necessary, subcommittees can be created to research technical issues or for specific tasks. Educational specifications, focused interviews, growth projections, cost analyses, funding presentations can all be done by smaller groups.

In order to improve the technical foundation and physical results of an agreement, expert advice should be sought whenever appropriate. Educational facility planning consultants provide broad procedural expertise; other professionals specialize in economic, demographic, or facilities analyses, engineering, or architecture. Chelsea hired three different architectural firms plus an engineering firm for the design of four schools; Everett limited its hires to one architectural firm.

Deciding

Joint gains should be maximized, in order to ensure a stable agreement. This means trying to produce a decision that all parties will not only respect but actively support. The record should clearly reflect this decision, so that it can be communicated effectively to other decision-makers and the larger community.

Implementing Agreements

A good agreement can be lost if implementation is not discussed. Both Winthrop and Chelsea sat on school designs for considerable periods of time. Lack of enthusiasm, or funding, or state support – any of these could have been taken into account during the process.

Participatory design

Participatory design is a set of practices that has evolved over the past thirty to forty years. A definition of participatory design includes two key concepts: groups of people working on architectural, landscape or other design questions, and the participation of non-designers. The design process itself is considered to be an important decision-making tool, and the argument for the participation of non-designers in a design process mirrors that of other attempts to increase user or citizen participation in decision-making. But special importance is sometimes attached to decision-making surrounding the design of physical spaces. Physical disruption has a more visceral impact than less visible policy changes. The spaces around which participation is organized are more often than not public in nature or function. As a result, the design process must find ways to incorporate public goals.

According to Kevin Lynch, "Most institutional site planning decisions are made without consulting the persons vitally concerned: students, secretaries, maintenance men, or even faculty...While this will cause delays and reveal dissensions, it will result in a better-fitted environment and can itself be an education. Beyond that, participation could be extended to neighborhood people on issues of joint concern: local service, parking, housing, and recreation. This will be a touchier business since there are real conflicts between the parties. Most institutions will look on community meetings as negotiations rather than participations" (Lynch 1986).

This quote reveals the mixed feelings some designers have about participatory process. While recognizing the ideals of such a process, the professional who also values efficiency cringes at the possibility of public dispute, delay and aggravation. This section describes the goals that make participatory design attractive, as well as some of the methods that can be used to ensure the success of such a process.

As education

At one level, participatory design can be used as an effective way to teach design elements and principles to users and other non-designers (Sanoff 1994). As such, the effectiveness of the process is measured by the participants' increase in facility with design concepts and practices.

As buy-in

At another level, the ultimate goal of engaging non-professionals in such a process is to ensure their acceptance of, and support for, physical change in their environment. The actual design outcome of the process may or may not be important, but what is critical for success is the ceremony of a process in which non-designers are given a chance to participate. Henry Sanoff relates the story of a waterfront development that had been rejected three times by local citizens. Sanoff was called in to orchestrate a participatory design process. The final design and result of that process – which was widely praised and subsequently built – was physically no different from the previously rejected proposals. The difference was the act of participation (Sanoff 2002).

As democratic practice

At the strongest levels, participatory design is seen as a necessary exercise of democracy, one that strengthens democracy by empowering its citizens.

On the one hand, democracy and design can reinforce each other. Explicit support for democratic principles ensures a more thorough design analysis. At the same time, a thorough contextual analysis cultivates a deeper understanding of the range of interests among which participants live and work. A design project will often undertake the equivalent of a stakeholder analysis, as would the conflict assessment described above.

Secondly, there is a sense that the visual and graphic nature of much design work is a good model of practice for other forms of consensus building. Stakeholder or context analysis is just the first step. The design process, essentially, is about making decisions between many good but conflicting alternatives. Designers will want to be able to have developed a reliable process that can produce creative, elegant solutions out of extreme diversity or conflicts of values.

Finally, significant design-making power is a direct form of enfranchisement for stakeholders. The power to shape one's own physical environment is no small thing: the responsibility is even greater when public spaces are involved. At any rate, there can be little doubt that guiding physical change is power and that being involved in the process is empowering.

Methods

Having accepted participatory design as a goal, how does a designer go about engaging non-designers? Sanoff's approach places community participation at the heart of design questions, and he proposes a systematic process that begins with consensus on objectives. These objectives are developed into desired activities that support the objectives, which in turn become spaces that support these activities. Spaces are arranged and re-arranged through a game-like process in order to arrive at a preliminary design. Visual preference surveys are used to give the designer a set of specific guidelines to use in formulating further designs. Other techniques can be used when needed throughout the process, including various kinds of small group activities. This list is drawn from Sanoff (1994), Taylor (2001), and Fazio (2002).

Method	Description
Attitude surveys	Questionnaires or interviews to gather basic preferences
Focused Group Interviews	Structured interviews with small groups, usually around a specific issue or topic
Group Facilitation	Techniques to facilitate group interaction and problem solving
Game Simulation	Used to abstract essential elements of a problem in a hypothetical situation
Workshop	Sessions to discuss issues in order to reach understanding of importance
Task Force	Special purpose committee for a clearly defined task
Charrette	Intensive meeting, design and decision-making with all stakeholders over a series of days.
Public Forum	Open meeting to present information about a project
Community Meetings	Public meetings called around a particular project or issue

Figure 6: Table of participatory design techniques

Summary of important participatory elements for this study

Convening
Who is convening the process? Have all stakeholders been identified? Are all represented? What are their interests? Has funding been secured for the process? Who is providing the funds? Are they contingent upon anything?

Clarifying Responsibilities
Who is the facilitator or mediator, and what are their responsibilities? Do they function simply as recorders, facilitators, or do they provide substantive suggestions? Have the agenda and ground rules been set? How was it done? How can they be amended? Do these ground rules include recognition of the role and responsibilities of participants? What are the goals of community participation: education, buy-in, or partnership? What is the role of subcommittees? What is the role of experts, such as architects, planners, building inspectors, or standard-setters? Is their input advisory or definitive?

Deliberations
What options are invented and how? How is commitment gathered from all the parties?

Design participation
What kind of participatory design methods are used? What were the results? How are various interests reflected in the products?

Decision making
What decisions were made? How were they decided? What does the record reflect?

Implementation
What is the ratification process? What kind of implementation strategies were discussed or proposed?

3.2 School Design: Relationships to city and neighborhood

How does one encourage places whose physical form supports the activities and aspirations of users and neighbors? What kind of physical relationships should the school planning process address? What design elements should be discussed? This chapter advances a framework for considering these physical design variables. At least two overlapping scales of concern are presented: the relationship of the school to its city or town, and the relationship of the school site to its immediate context. The first section of this chapter reviews ideas about the former; the second, the latter. The third section is a summary of key questions.

Relationship to the city: where are schools built?

Urban design theorists who use some definition of the neighborhood as a building block for urban form grant the elementary school primary importance. These models assert the key influence that school building location has on growth, circulation patterns and neighborhood identity. Other theorists have prioritized other urban elements. Three basic models emerge from a survey of the work of classic urban theorists: 1) school-centered residential neighborhoods, 2) "schools in the park", and 3) schools as civic buildings. These models are not mutually exclusive. This analysis is based on Reiner's 1963 survey of "Ideal Community" plans; the images are all from that volume.

Schools as neighborhood centers

This model assumes that the residential neighborhood is the city's basic building block. Each neighborhood unit, to use Perry's nomenclature, is nearly self-contained: comprising the commercial, civic and educational services that neighborhood residents need on a daily basis. The actual shape and connectivity of these neighborhoods can vary greatly between authors.

One constant is that schools are central to this model, in some cases forming the nucleus of the neighborhood and defining the boundaries of the neighborhood. In other cases where schools do not occupy the physical center of the neighborhood, they are brought into the residential areas for the convenience of residents.

Figure 7: Perry's Neighborhood Unit. Schools are located in the center of the neighborhood.

Clarence Perry's Neighborhood Unit (1929) is the most famous example of this idea. Each neighborhood unit is designed around one elementary school, with boundaries no further than walking-distance from the center. The size of an ideal neighborhood is thus roughly 160 acres, or large enough to accommodate enough people to require one elementary school. School and other neighborhood institutions are located at the center of each neighborhood, surrounded by residences. Commercial activity occurs at the periphery, on arterials that connect and separate adjacent neighborhoods. Optimum size of a neighborhood unit is based on walking distance to school: "not more than one half a mile". This formula results in neighborhoods with populations of 3,000 to 10,000 people.

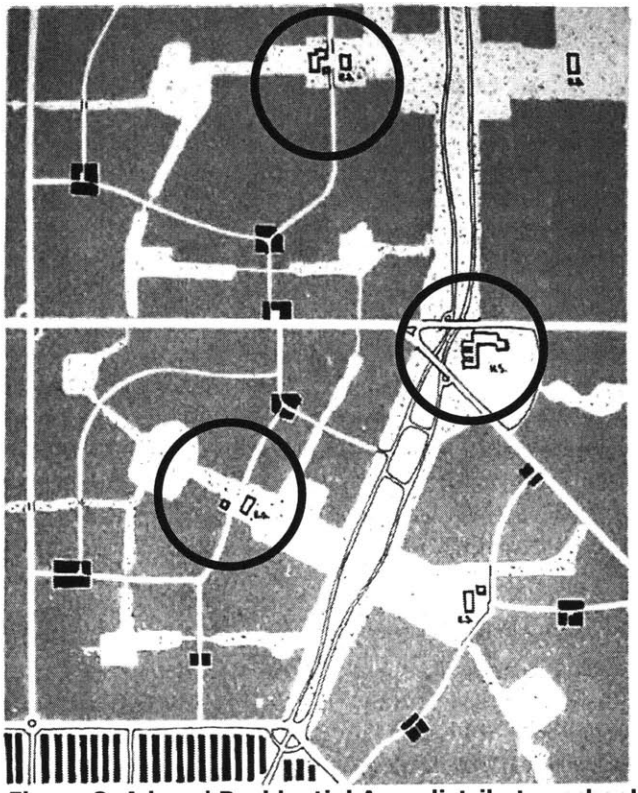

Figure 8: Adams' Residential Area distributes schools according to neighborhood and greenbelts

Another example can be found in Thomas Adams' 1934 design of residential areas. Adams uses neighborhood units that are very similar to Perry's, including the combination of a solid grid of arterials with loose internal streets. The main difference between the two is the use of interconnected greenbelts or parkways in Adams' plan. Also, while schools define each neighborhood, they are not necessarily built in a central location. Instead, school location appears to be related to the location of greenbelts. Elementary Schools are located at intersections of interior roads and greenbelts, while High Schools are proposed at intersections of major arterials and greenbelts. Adams' plan could be considered a combination of this model with the following one, the school-in-the-park.

Gropius and Wagner's, 1943 "Program for City Reconstruction" proposes a system of suburban communities linked to superhighways, composed of a variety of housing types in isolated cul-de-sac groupings. Each "pod" is folded around community centers and schools. This "Program" proposes a more isolated type of neighborhood than the previous ones, one reliant on automobiles for mobility. Nevertheless, schools remain closely related to each pod, and probably within walking distance of most of the housing.

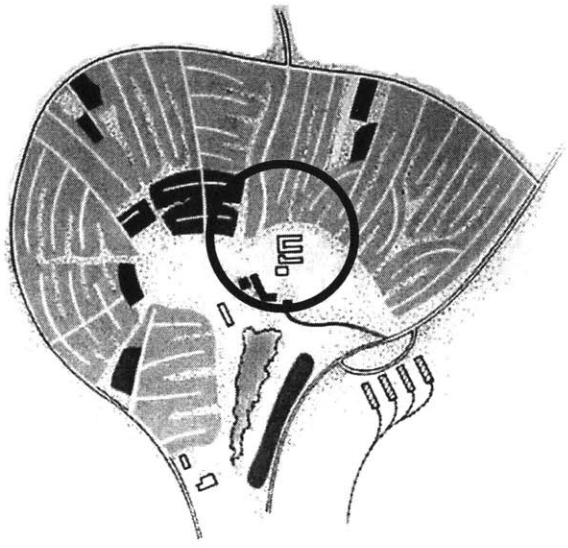

Figure 9: Gropius and Wagner "pod"

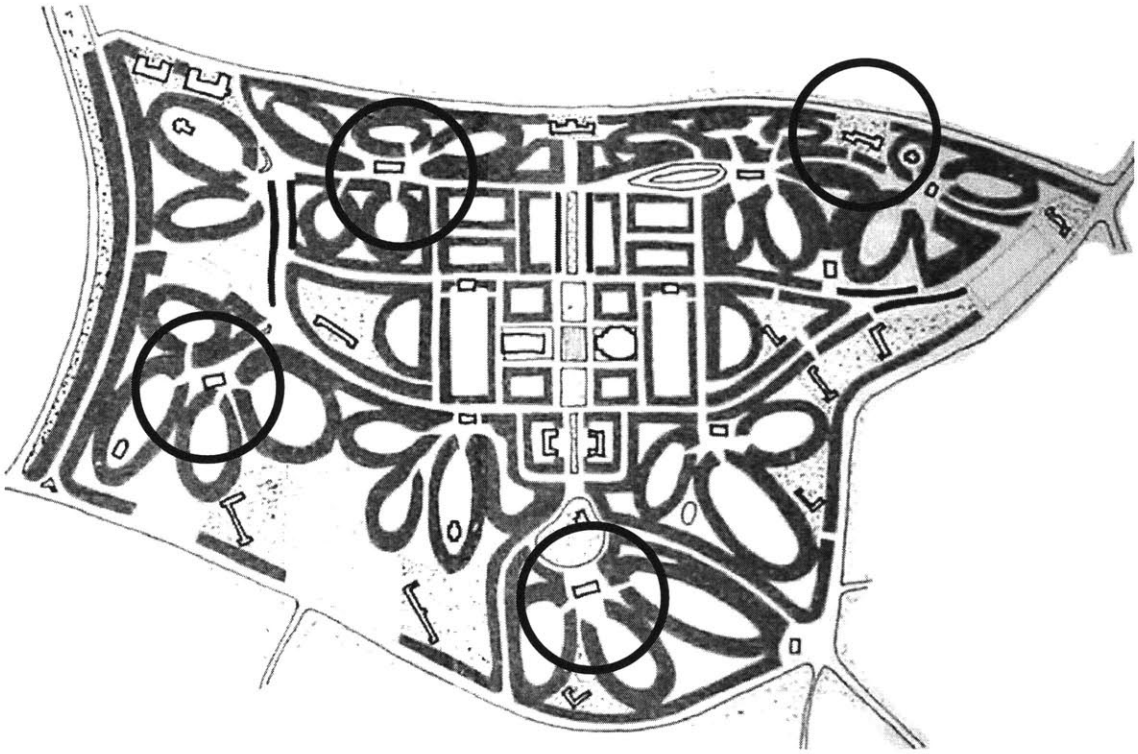

Figure 10: "Reilly Plan" with scattered school sites

Wolfe's 1945 "Reilly Plan" describes neighborhoods organized around semipublic "greens" around which thirty to sixty dwellings are built: one "Reilly Unit". Three or four Reilly Units share a community center and a school. Since this model proposes a strict separation of vehicles and pedestrians, schools are scattered within residential areas, along pedestrian paths.

Schools as park buildings

This model assumes that schools belong in parks or park-like settings, surrounded by ample land. Schools are separated from other urban fabrics, even residential areas. Schools are not associated with a particular "neighborhood", but serve more than one housing cluster.

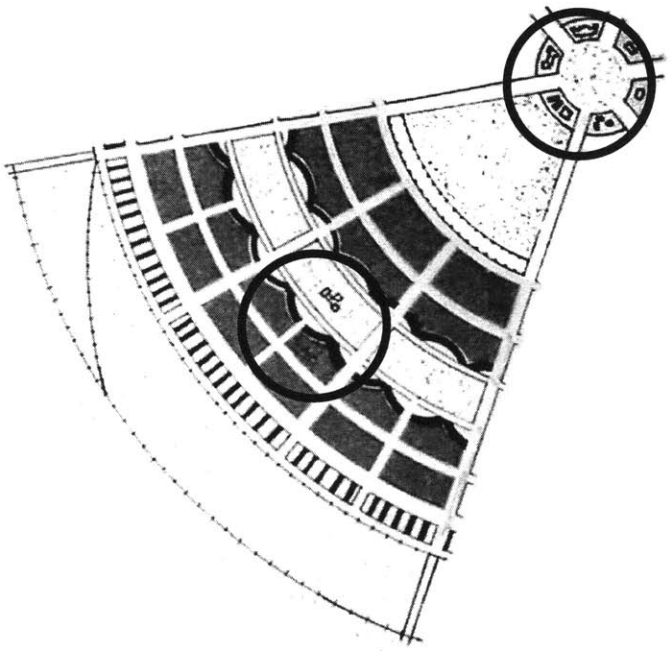

Figure 11: One wedge of a Garden City, showing school sites in the central core and in the midband greenbelt.

Ebenezer Howard's 1898 "Garden Cities of Tomorrow" house 32,000 people. Development occurs along wedges that expand out from the center of the city; each wedge is subdivided into sectors. While schools are not specifically mentioned in this plan, three locations are proposed for various institutions: 1) in the rural areas between individual cities, 2) within a middle ring greenbelt immediately surrounded by open space, but close to commercial and residential areas, and 3) in the central core, surrounded by open space. Howard's plan combines the importance of open space with the qualification of schools as civic buildings, making it also representative of the third model, discussed below.

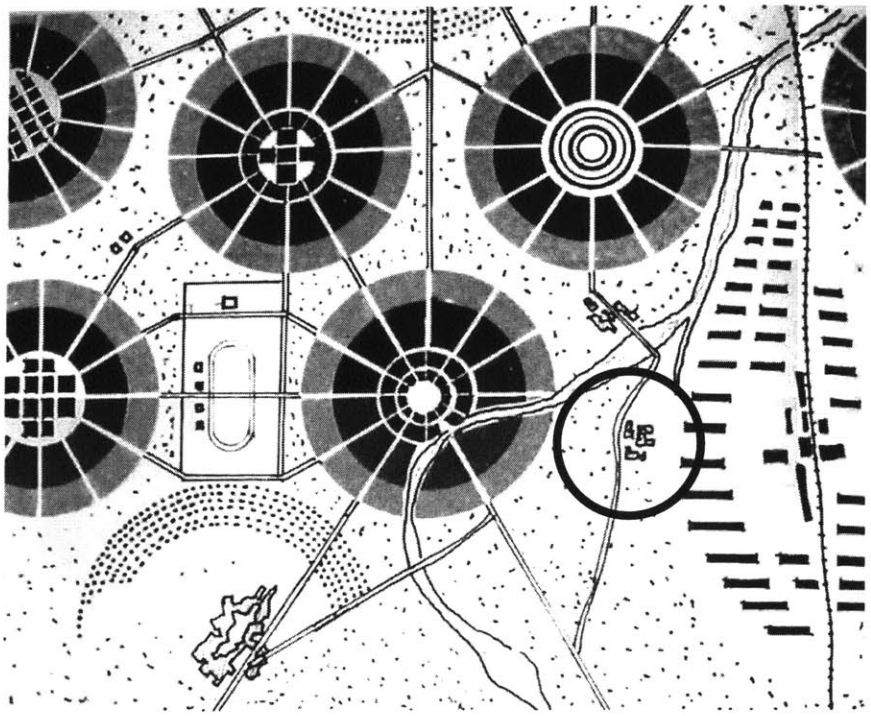

Figure 12: Gloeden's specialized cells, with school sites in the interstices

E. Gloeden's 1923 "Die Inflation der Gross-Städte" posits a network of economically specialized "cells". Each cell, with a population of 100,000, is made up of a specialized core surrounded by housing. The entire cell is no larger than a 15-minute walk in radius. Schools are built in the interstitial greenspaces between the cells, putting them within walking distance from the housing of various cells. Schools, then, do not reinforce the economic focus of each cell, but integrate residents of different specializations.

Thomas Adams' 1934 residential areas (mentioned above) could also be considered under this model. His residential areas use schools as neighborhood-defining elements, but his plan also gives high priority to a system of greenbelts. Schools are built only within this park-like system.

Schools as civic buildings

These models do not treat schools specifically, but consider them as elements of a larger class of civic buildings or institutions. The location of schools within the city is dependent on assumptions on the appropriate location of civic uses in general. For some, the center of the city is the most appropriate site for civic buildings; others hold that such institutions should be distributed throughout the city. Where accessibility is prioritized, the optimal civic site is at the intersection of major roads.

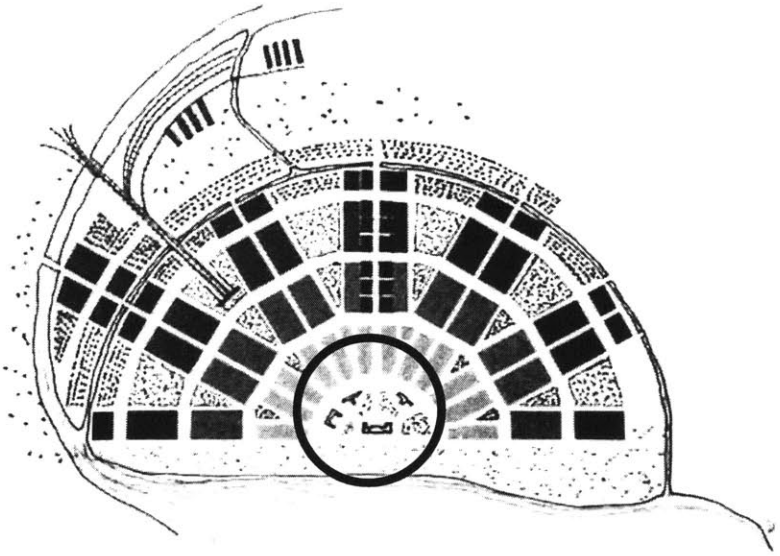

Figure 13: Fritsch's 1896 model with civic buildings at the core

One of the earliest examples of this class of theory, T. Fritsch's 1896 "Die Stadt der Zukunft" describes a wedge-pattern of development, linked by concentric ring roads. Civic institutions form the central core of the city.

Ebenezer Howard's "Garden Cities of Tomorrow" (as mentioned above) proposes three locations for civic uses: 1) in rural areas, 2) within a middle ring greenbelt immediately surrounded by open space, but close to commercial and residential areas, and 3) in the central core, surrounded by open space.

The form of Frank Lloyd Wright's 1932 Broadacre City (not shown) is based on a vast highway grid. Within the grid, Wright's model is relatively laissez-faire: "Public and semipublic facilities are deployed near highway intersections. Apart from these considerations, no guides to form or to land use distribution are offered" (Reiner 1963, 73).

R. Neutra's 1934 "Rush City Reformed" plan is also based on a superhighway grid, but offers more land use prescriptions than Broadacre City. Neutra subdivides the grid into narrow blocks, with civic institutions (including churches and schools) clustered at one end of the strip, near what might be described as a non-central CBD.

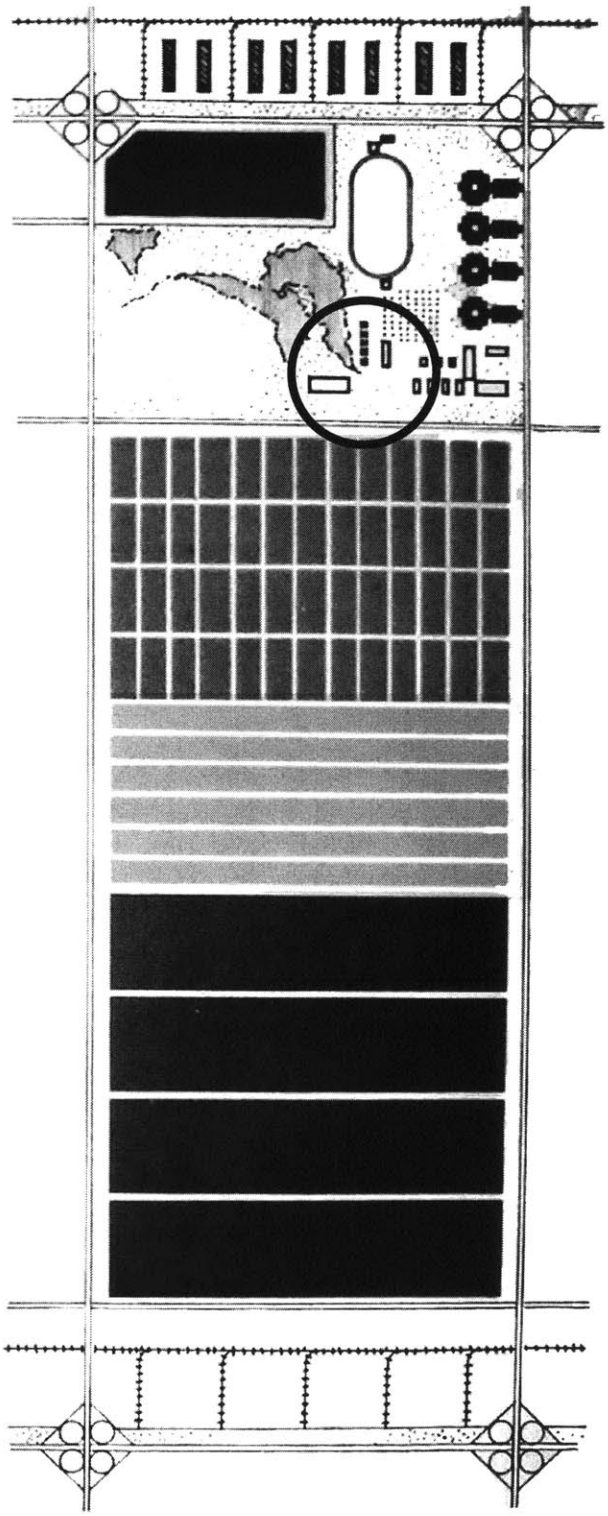

Figure 14: Neutra's 1934 model situates all civic buildings at one end of the city

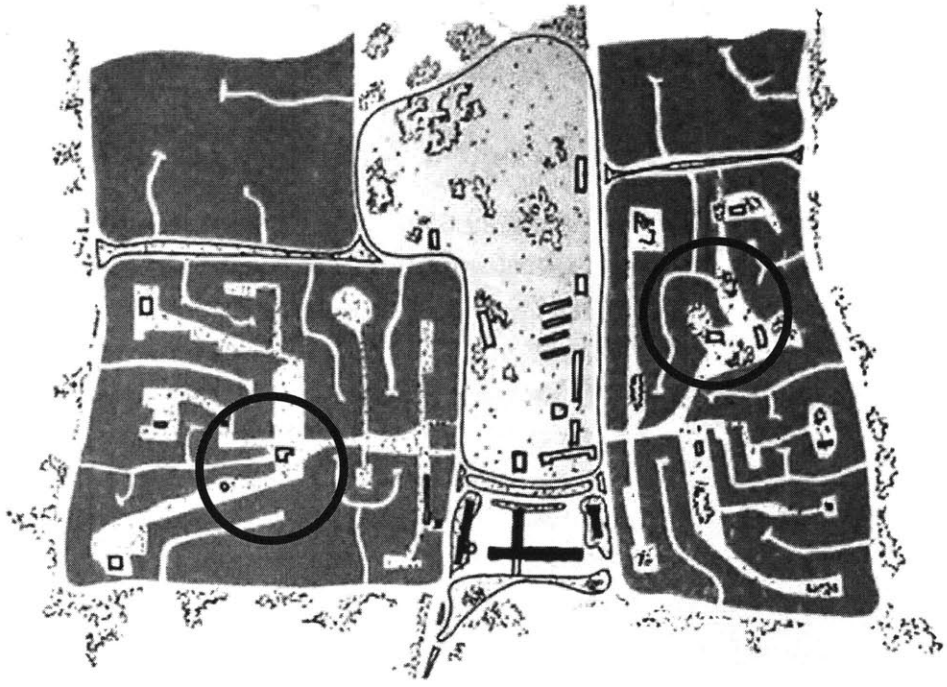

Figure 15: Herrey, Pertzoff and Herrey's Organic City limits vehicular access to schools

H. Herrey, C. Pertzoff, and E. M. Herrey proposed an "Organic Theory of City Planning" in 1944. According to this theory, civic facilities are distributed throughout residential areas, linked by pedestrian paths along greenways. The center of town is devoted to open space with more communal institutions. This suburban, pedestrian-oriented model highly limits and segregates vehicular traffic.

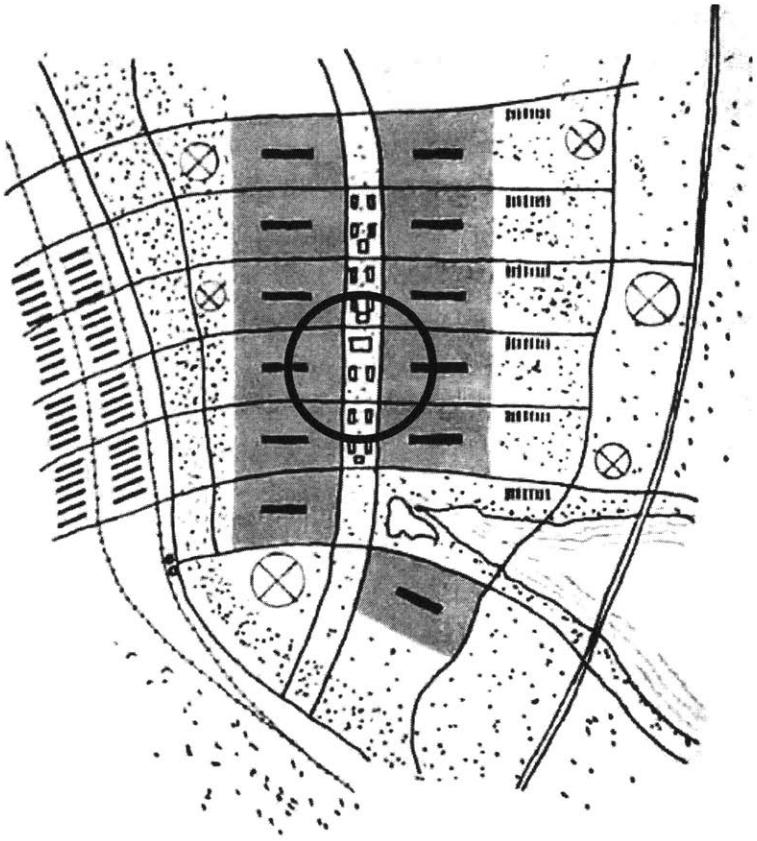

Figure 16: Sert's 1944 model concentrates civic buildings in a green linear core surrounded by high-density residential and commercial development.

J. L. Sert's 1944 "Human Scale in City Planning" proposal, like many linear cities, seeks to achieve immediate density in a rural setting. Sert uses greenbelts to separate residential areas from transportation and industry. The core of the linear system is a township center, made up of a series of civic institutions –including, presumably, schools -- in a park-like setting. Residential neighborhoods are arranged off the central axis in relation to a one-elementary school formula (5-10k). This model represents a combination of all three ideas discussed here.

Conclusions: Different values

This study does not claim that current school site selection decisions are based on deep familiarity with any of the theories presented above. However, two assumptions are made here: 1) many initial *city* planning decisions were influenced by the writings of theorists like those listed above; and 2) the classifications presented here are representative of differences in commonly-held values about the importance of school buildings, what kind of context is best for schools, and the proper physical and social relationships between school, neighborhood and city.

Theorists – and by extension school committee members -- who prioritize neighborhoods as the city's building blocks will grant highest importance to the proper location of the school building in a residential context, and within walking distance for children and parents. Others who feel that the critical need is to support the direct relationship between schools and economic and cultural institutions will be drawn to models that do not exaggerate the special nature of school buildings but rather integrate them with museums, libraries and business centers. Some may feel that the best setting for schools is in a park-like setting, and set "open space" standards accordingly. Similarly, some may seek to use natural settings – rivers, wetlands, forests – as important components of an educational curriculum. Finally, those who are more concerned with infrastructure as the city's guiding force will see school site selection as a logical but secondary consequence of other critical decisions: where transportation corridors are located and intersect, for example.

A school planning process should tackle these questions directly at the early needs assessment and strategic planning phases, in collaboration with the city and other stakeholders. The point is not to choose one value system over others – several models manage to combine two or more different sets of priorities – but to come to a consensus about what kind of relationships will be supported by long-term facility planning outcomes.

Relationships to immediate context

A finer grain of analysis examines a particular site and its relationship to its immediate area. One measure is instinctive: schools either blend in or stand out from their immediate physical context. But what makes this happen? How should schools incorporate public space? How should access to the site be handled? This section enumerates site-scale qualities that can be used to evaluate physical relationships. Ideas in this section are drawn from Sanoff, Lackney, Graves, and personal observations.

Height

School building height should be considered in the context of surrounding buildings and stakeholder objectives. If the objective is to blend the school into its neighborhood, then similar heights should be maintained. Alternatively, a difference in height sets the school apart from its context: taller structures that can be seen from a distance, for example, can serve as landmarks.

There are many opportunities for a combined approach. Height setbacks – increasing the distance from the street at higher stories – can maintain context at street level, but still allow for a larger building. Also, a site's context may differ substantially from one side to another, as in the Chelsea example where the school site lay between residential and industrial uses. Such a site has the opportunity to serve as a transitional element between the two areas. Such variations in height need not be externally driven – a school program often requires a mixture of small and large spaces.

Massing

Such a mixture of spaces also influences the massing of school buildings. But as with height, internal and external massing relationships should be balanced according to the desired degree of contextual harmony or contrast.

Maintaining constant setbacks at street level, for example, supports the sense of the street as an entire unit. Pulling the setback further back from the street, on the other hand, allows that space to be used for other uses such as pocket parks or parking.

Shadow effects can be partially controlled through massing and setback changes, as well. Shade is neither good nor bad – that judgment depends on climate and culture – but it is a direct physical impact, and as such an important element of discussion.

Another massing question relates to articulation, or the degree to which a façade differs from a wall. Where high articulation is desired, a range of techniques can be used: changes in roof line, arrangement of windows, treatment of entrances, changes in material, or slight variations in orientation. Again, the point is not variety for its own sake, but a reflection of -- or commentary on -- the school's context.

Circulation

The built elements that guide pedestrian and motorized circulation are designed to both facilitate and restrict movement, depending on mode and directionality. This makes sidewalks, service roads, parking lots, and streets critical design issues for schools. Schools require a design for the safe arrival and exit of hundreds of people on a daily basis.

For example, a school to which many students walk will be concerned about the design of its pedestrian spaces (covered/uncovered, quality of surface, and destinations, for example). Planners should also address the barriers to walking: arterial or high-speed roads, large parking lots, or railroad crossings, for instance. These may not appear to be

barriers to movement, until one considers the scale of perception and movement of grade school children. Similarly, a school that seeks to accommodate mobility-impaired students should pay close attention to stairs and other changes in level. A school that also functions as a community center will make decisions about how circulation patterns differ during evening functions.

Another set of questions specific to new construction ask how much of the contextual circulation pattern will be continued by the school site, and how much will be modified. Should existing pedestrian paths be preserved, or new ones created? Should street widths be narrowed as they pass the school, to slow traffic? Should through streets be preserved, or should the school site remain unbroken?

Wayfinding

Legibility is integral to circulation; perception is critical to legibility. Schools must take into account the perspectives of both children and adults. Signage, of course, is a main component of legibility, but design (through massing and arrangement) can influence the ease with which students and visitors enter or leave a site.

Entrances and exits usually tend to be well marked, but the contextual question may influence whether that entrance would be more legible mid-block, at the corner, flush with a pedestrian path, or opening onto a driveway or parking lot.

Another legibility discussion could focus on the interface between indoor and outdoor spaces. Should indoor activities be recognizable from the outside, and/or vice versa? That is, should one be able to tell a gym from a classroom from the outside? If the gym is being used for community meetings in the evenings, then it should be designed to be very easy to find, and perhaps retain a separate entrance for these occasions.

Public space

Not all schools are designed to incorporate public space. If arguments to bolster schools' roles as community centers are accepted, however, questions of accessibility, scale, traffic, and transition need to be considered.

The first question to address would be the kind of public space being considered. Is it a room to be used for meetings on weekdays? Workshop space for adult education on weekends? Library access? An athletic field? Will public access be limited by time of day? Are the spaces shared with students, or are they kept separate? The answers to these questions should be drawn from the stakeholders themselves, through a process of understanding the neighborhood's needs and resources.

If the school is attempting to encourage of wide variety of activities, the school's design will reflect that goal. Larger spaces are required for group activities, subdivided spaces for individuals or small groups. Interaction with natural elements requires the preservation and maintenance of small wildernesses; social interaction benefits from places to sit and talk.

If public park space is truly a local priority, for example, then school planners should consider strategies that respond at an appropriate scale. Perhaps an existing park can be modified (or improved, as in the case of Everett's Lafayette School) at less expense than an attempt to create new parkland. On the other hand, a shared school/park plan may be able to garner more public support (and money) to clean up brownfield sites in order to create new parkland.

If the school will be used more intensively, then traffic patterns will be different from a single-purpose school. These new patterns may impact parking and safety concerns.

Additionally, it may be important to designate "transition spaces" that delimit areas to which the public is invited at various times during the day.

A school that transitions into a neighborhood, if well designed, would be able to support a wide range of activities in a smaller amount of space. In such close-knit situations, design should respect neighbors' sense of appropriate levels of noise and light. The latter, especially, should strike a balance between increasing safety and increasing nuisance.

Flexibility

As planners and stakeholders articulate possible future scenarios, design decisions should be made about the facility's ability to change over time. If conditions indicate rapid growth potential in the vicinity, then future phases of construction should enter into the planning and design discussion. A design that is too 'finished' runs the danger of precluding future additions or use changes.

Resource availability

Neighborhood context is not just about community use of school facilities; it also concerns student use of nearby resources. A careful siting decision may be swayed by the possibility of students' using a local museum or university resources. Natural settings can also play important educational roles. Business partnerships can provide specialized training or additional resources.

Summary of important design elements for this study

City or town relationships

Importance of neighborhood concept: Is the school part of a specific neighborhood, or does it serve several neighborhoods?

Importance of park concept: Does the school sit in a greenbelt, park or park-like area? Is the creation of new park-like space an important goal?

Importance of civic concept: Is the school considered as similar to a library, museum or other civic building? Are connections between these institutions considered important?

Importance of other concepts: Is the school site decision based on other criteria, such as existing infrastructure or transportation connections? To what extent are these criteria controlling, and to what extent are they advisory?

Accessibility to city: How is the school connected to the rest of the city? Is it accessible via various modes, or is one mode preferred or necessary? Include an analysis of walkability, arterials, freeways, and public transit.

Immediate context

Type of context: residential neighborhood, commercial area, industrial district, etc.

Greenfield, infill, or adaptive reuse: Is the school located on a previously unbuilt site? Is it located in a building that was previously used for another purpose? If so, how does the school reflect or comment on its past lives? Does new infrastructure need to be brought in or expanded?

Topography: How does the school incorporate, ignore or otherwise deal with local geography? Are nearby natural resources used as educational opportunities?

Centrality in neighborhood: If the school is part of a neighborhood, is the school located near the center of the neighborhood? If not, what else surrounds the site? What kind of edge is it?

Neighborhood accessibility: does proximity translate into true accessibility? Are there barriers to walkability, for example? What types of streets serve the school site: what width, speed of traffic, and connectivity? Have previous connections been blocked by the school, or have new connections been added?

Architectural relationship to neighborhood: How does the school respond, architecturally, to the buildings around it? Does it respect the vernacular, stand out stylistically, or seek understatement? Are the buildings similar in height and massing to

surrounding buildings? Is the massing legible? Are shadow effects reduced/encouraged? Are setbacks consistent with neighbors?

Size of site: In comparison to surrounding plots, is the school site substantially large/small?

Access and circulation: Where are the entrances, how many? Are they readily found? Is signage necessary? How do the entrances connect to pedestrian paths? Is wayfinding adapted to the child's perspective?

Outside/Inside Interface: Is there visual access between inside and outside? Actual access? Is public space distinguished from private space?

Parking: How much parking is necessary? How big are the lots? Are potential pedestrian/motorist conflicts addressed?

Public space: What kind of public space is available on the school site? When is it accessible? For whom? Are there a variety of spaces to accommodate a variety of activities? Is there a safe, attractive and effective transition between public and private spaces?

4 Participatory School Design

The previous chapter demonstrates how a consensus building process that incorporates substantial attention to design relationships could address many of the challenges raised in Chapter 2. Even so, some issues remain necessarily unresolved. The goals and values that come into play in the school planning process can differ substantially. Ultimately, these differences cannot be "solved" – but, through negotiation, agreements that seek mutual gains can still be crafted.

This chapter begins by summarizing how the previous chapter's ideas can address many of the challenges from Chapter 2. Tensions that remain unaddressed are then identified, and suggestions made as to how they could be managed as a multiparty negotiation.

4.1 Addressing the challenges

The challenges identified in this study were described in detail in Chapter 2. That chapter also described how the cases address many of those challenges. For example, the cases of Chelsea and Winthrop illustrate instances of design solutions helping to overcome institutional capacity and inertia (even when caused by prior design proposals). In both cases, the proposal of a different campus arrangement was the catalyst for approval and financing. Lincoln is an example of how institutional flexibility can help overcome collaborative barriers. The School Committee was given additional authority and a redefined relationship with the architects, which clarified responsibilities for both parties and helped them develop three proposals to take to Town Meeting. Everett demonstrates how design solutions can overcome physical difficulties and further public goals. This was done through a negotiation that resulted in the sacrifice of a certain quantity of park for an improvement in the quality of what was left.

The cases do not provide much guidance as to the stalemate of attitudes: that participation of others should remain limited, that participants should rely on the unqualified veto, and that design issues should be reserved for design professionals.

The models described in Chapter 3 offer additional methods to address the challenges.

The consensus building process provides a mechanism by which to help manage participants' understanding of the problems, if not their underlying attitudes. The convening assessment, for example, is designed to map out all stakeholder interests – the city's, neighbors', students', educators', and others' – which at the very least begins to define the issues clearly.

Also, by explicitly clarifying responsibilities, the uncertainties of professional collaboration and institutional capacity can be addressed. Such a discussion could lead to a solution like Lincoln's, or to something entirely different – the use of an outside facilitator, for instance. In any case, the roles of subcommittees, the responsibility of the designers, and the responsibilities of participants would be clarified.

Finally, the emphasis on constructive deliberation can help the group generate new ideas, build community support, and educate themselves. The critical component is the time and opportunity allowed for argument and persuasion. Design proposals that are rejected by an initial Town Meeting, after additional discussion and reflection, may come to appear more appealing.

Additional challenges are addressed when design is no longer presented as a black-box process, but produced transparently and collaboratively through the discussion of key questions of physical relationships.

For example, the discussion of key questions is in itself an educational process, educating stakeholders and decision-makers as to how different design solutions impact their interests differently. This step is critical to avoiding the creation of an unacceptable design proposal.

Addressing key design elements also addresses knee jerk opposition, by involving those who could block a proposal in the generation of the proposal itself. Securing buy-in is possible without a participatory design process, but engagement in the creation of a physical proposal raises that possibility to a probability through the creation of a sense of ownership.

4.2 Negotiation

The quality of a participatory school design process can be improved by the use of a consensus building process and by addressing the key design relationships. That does not mean that all challenges are automatically met and all tensions automatically resolved. For example, it is unrealistic to expect that these models will change basic assumptions about the comparative values of capacity-building versus efficiency. Similarly, one cannot expect to completely resolve the tension between professional expertise, gained over the course of many years and many different places, and locally focused political concerns and knowledge.

Ultimately, these differences must be negotiated to come to mutually acceptable solution. The cases make clear that negotiation is a common part of a school planning and design process. The Lafayette school site in Everett was the product of a negotiation over site selection and development. Designers in both Everett and Lincoln negotiated with their clients over the number and quality of designs that would be proposed. There is no reason to believe that a participatory school design process will rely any less on negotiation as a tool to reach decisions.

However, the specific qualities of school planning make this process extremely complex. Any resulting negotiations will involve many parties (city, school committees, parents, neighbors, businesses, teachers, and others) with different interests. Different users will have different needs.

That "one agreement" can still satisfy multiple stakeholder needs, if the agreement creates value. The school design process offers many opportunities to create value, since people value different elements of the process differently. In Everett, increased building height was achieved through careful building setback and placement. Location and size are another tradeable set of goals, likewise time and money. To use Everett as an example again, the agreement reached there stretches out the build out of (and payment for) a set of schools, making the most of a limited budget.

The cases illustrate that school planning and design, when considered broadly, can be conceived as a multiparty negotiation. Among the various professions traditionally involved in the process, negotiation is nothing new. Fees are negotiated, as are responsibilities, schedules and final products. Even the process itself – its goals and steps -- may be negotiated. What may be unique, if anything, about the school design process is the involvement of non-professionals. The question facing a school committee, architect, or community participant in such a situation is whether or not the complexity of the process demands additional professional process assistance.

In the cases reviewed for this paper, the designer was usually asked to serve as facilitator for the community meetings, school building committee meetings, and others throughout the process. (In Lincoln, the exception, the Town Meeting designated a community member as the facilitator for the special-purpose committee.) The firms that work regularly on school designs accept that facilitation is part of their responsibilities.

This responsibility makes sense to the extent that designers are usually considered the lead on such projects, subcontracting with engineers, working with other city departments, and working with the State's School Building Assistance for critical reimbursement funds. This responsibility only makes sense, however, where the designer's role as facilitator is relatively clear, as a project manager. The facilitator's role becomes considerably less clear as the process is considered less as a capital project and more as a multiparty negotiation.

The consensus building process suggests three different roles that a third-party neutral can play: as a recorder, meeting facilitator, or mediator with substantive contributions. The key design questions discussion suggests three additional roles: as educator, "salesman" seeking buy-in, or organizer committed to empowerment.

A designer who is asked to take on facilitative roles, then, must consider which and how many of these roles he or she is being asked to play. Additionally, the designer is not a neutral in this process, but a party with a stake in the outcome. Finally, as an expert, the designer also functions as source of technical information, and more importantly, as a creative synthesizer of the needs and interests brought to the table.

It is clear that as more and more interests are brought to the table – according to the goals of community participation – the designer's responsibilities become increasingly complex. At some point, managing the process will require as much attention as design production. Large firms may provide their own in-house process specialists for such situations. But a small firm may not have that luxury. Instead, they may ask a member of the school building committee to serve as a facilitator, or choose to hire an outside neutral.

The decision to use a process professional relieves the designer of a bundle of responsibilities, and simplifies the role choices a designer must make. Such a decision also sets up an explicit process framework in which designer, community participants, school representatives and city representatives are each asked to play a role. A process consistent with the recommendations made in these chapters would establish goals, work out the responsibilities of each party, examine key design questions, and work toward creative solutions that respond to the interests of everyone at the drawing board.

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