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REASSESSMENT OF THE SCHOOL LOCATION PROBLEM--A MULTI-FUNCTIONAL ROLE FOR THE SCHOOL IN THE URBAN ENVIRONMENT.

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RISING PRESSURES OF COMPETITION FOR LAND IN URBAN AREAS SUGGEST THE NEED FOR NOVEL APPROACHES TO PLANNING PUBLIC LAND USE FOR FOSTERING HIGHER LEVELS OF LIVING DESIRABILITY OF THE URBAN ENVIRONMENT. EMPIRICAL INVESTIGATIONS IN BOTH ECONOMIC AND NON-ECONOMIC DISCIPLINES SERVE AS THE BASIS FOR A BROADER CONCEPT OF THE URBAN SCHOOL LOCATION PROBLEM. TO THE EXTENT THAT THE FUNCTIONAL PRODUCTION POTENTIAL OF THE SCHOOL FACILITY CAN BE EXPANDED THROUGH USES AND SERVICES OTHER THAN EDUCATION, SCHOOL SITE DECISION CAN BE INTEGRATED WITH THE MORE GENERAL PROBLEM OF URBAN PLANNING AND CAN RAISE THE EXPECTED RATE OF SOCIAL AND ECONOMIC RETURNS ON A NECESSARY SOCIAL INVESTMENT. THIS PAPER WAS PRESENTED AT THE WESTERN REGIONAL SCIENCE ASSOCIATION MEETINGS (SAN DIEGO, CALIFORNIA, FEBRUARY 1-4, 1968). (AUTHOR/JK)

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Jeanne Dost

ABSTRACT

Methods for determining the optimum location site for the educational plant have traditionally classified the school as uni-functional in its production activities. Rising pressures of competition for land in urban areas suggest the need for novel approaches to planning public land use for fostering higher levels of living desirability of the urban environment. National concern about the less than optimum use of social investments in educational plants can be juxtaposed to the urban land use problem.

Empirical investigations in both economic and non-economic disciplines are drawn upon to provide a broader concept of the urban school location problem. The multi-functional production potential of the school facility can raise the expected rate of social and economic returns on a necessary social investment. Thus, the school site decision is integrated with the more general problem of urban planning.

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I

Underutilization of public educational investments has long been recognized. Since the economic merit of any investment is a measure of expected returns relative to expected costs, suggestions have been made for raising the rate of return on educational investment. For example, a few years ago the NEA proposed the adoption of a staggered 12 months school year. This solution would not necessarily raise the stream of total benefits but would only change their seasonal flow.

Revitalizing slum schools is a critical problem in our modern urbanized society. The inadequacy of such schools increases the need for finding ways in which community participation in education can be increased and the use of these public facilities stimulated.

There is an increasing awareness of the failure to provide locked-in urban dwellers with focal points for community cultural, recreational, and social activities. Rising costs of providing public services and growing competition for urban land indicate the importance for society to optimize the functional capacities of public land use.

Discussions of the school location question have traditionally assumed the educational plant to be unifunctional.(1) Even when the broader problems of educational planning have been examined, the determination of administrative area or size and number of schools has been considered only in terms of the facility use for educating the school-age population.(2,3) Exploring the potential of the educational plant site for production of multiple public services changes the dimensions of the location problem.

The purpose of this paper is to extend earlier discussions by examining the school facility as multifunctional within a broad socio-economic framework. This proposed extension of the role for the school implies that educational planning should be re-examined within the context of total urban planning by interrelating social, cultural, and economic goals in the school investment decision-making process. Broadening the productive capacity of the educational plant would raise the potential rate of return on this investment and could give the school facility a more meaningful place in urban community life.

Paper presented at Western Regional Science Association Meetings, San Diego, California, February 1-4, 1968.

II

Professor Webber has suggested that an urban community can be defined by variations in levels of social interaction.(4) For our purposes, the metropolitan village is simply defined as a subpopulation with a residence-based cohesiveness and a high propensity for participation in community-oriented activities. As in East Harlem, residents may need a spur for creating a higher level of interaction within the neighborhood.(5) School planning may serve as a catalyst for such an increase where the only common element is spatial coexistence. Creation of such focal points for communication may encourage greater homogeneity of interests.(6) Some small communities within the urban complex do already have high levels of group participation based on certain common characteristics of the population.(7,8,9)

Multipurpose use of urban land parcels is by no means a new idea. (10) Thompson has made some limited proposals for increasing the rate of utilization of our educational plants.(11) This paper is not concerned, however, with just the problem of underutilization of school investment but with the potential of this investment for increasing rates of return on other types of social outlays. However, members of the neighborhood should be involved in planning the education-public service complex.(12) Experience has shown that urbanites are concerned about the kinds of schools they have and do engage actively in the planning and implementation process.(5, 13) This participation tends to increase the need for public focal points of communication. The school may initially try to fill this need on an ad hoc basis. However, as this use was not recognized in designing and locating the school, these attempts are generally unsuccessful.

The premises on which the school may be examined as a potential multi-functional public service complex are threefold. First, the production site is generally located near the market. This market includes not only students but their families. Second, residential locations of the members of our modern urbanized society are more and more important as determinants of their opportunities for cultural, social, and economic, as well as educational, opportunities.(14,15) Where people live influences the ways in which their human resource needs are, or are not, met. Thus, households are considered not only as suppliers of labor for which educational inputs are partial determinants of the productivity of that labor but also as consumers of public services. Lastly, so many of our nation's population now live in cities that the quality of urban environs is a more important influence on the levels of achieved social and economic welfare.

III

The school can be a logical and well-located focal point for public service activities. Since more and more attention is being given to the inadequacy of education in the urban economy, this may well be an ideal time to examine ways the school plant can be designed and located for flexible and improved service to metropolitan communities.

Possibly, school facilities could be used during non-school hours for drama work shops and programs or for group indoor athletic and social activities. The school library could be open. Job placement centers could be incorporated into this complex as adult vocational education programs are expanded. Employment office sub-stations, conveniently located for the surrounding population, could improve the flow of labor market information. It appears that the effect of employment office locations on information dissemination and frequency of use by different socio-economic groups has not been studied. It would seem more important to locate sources of employment information closer to residential sites when the population is known to have low spatial mobility. Expansion of manpower training, vocational counseling and placement programs at the school site would multiply the available sources of labor market information and bring into closer association the relationship of training and job requirements.

Expanded medical and dental services at the school for all children in poverty communities would increase participation in such programs where the resistance of space impedes recognition and use. Park and outdoor recreation areas would provide open space to youngsters during school hours and to the community the remainder of the time. Mental and physical health referral agencies for use by all community residents could encourage increased participation in urban public health programs.

The flow of benefits from social outlays for producing these various services could be raised by reducing the resistance of distance to their use by intended recipients. The actual mix of services would vary depending upon the needs and desires of the community members to be served by the complex.(5,13)

IV

A criterion for determining optimum location of the school has been efficiency in cost terms.(1) The concept of benefits received by users makes it possible to enlarge the analysis of this location problem.

Where the production of public services involves large economies of scale, it can be expected that the cost per unit of service will decline as the size of the area served increases.(2) On the other hand, benefits received per unit of population will tend to decrease as the distance between users and the production site increases.

There is no doubt that building and operating the proposed multi-service complex would be more costly. It may be possible, however, to gain certain economies of scale by locating the production of a number of public services at the same site. Thus, without increasing distance between the production plant and potential users, lower per unit production costs may be achieved by expanding the market or increasing the number of potential users in a given area. On the benefits side, greater community use of one kind of service may increase the frequency of use of other kinds of public services. For example, greater participation in non-educational activites could result in a higher ratio of

the population engaging in education and/or a greater retention rate of the school age population. These effects would tend to increase the level of human capital stock and raise the incomes of participants. (17,21)

Empirical investigations suggest that income and educational attainment are inversely related to the importance of distance as a resistance to population movement.(18,19) In a poverty area, the frequency of use would tend to decrease at a faster rate as effective distance increases. Therefore, consideration of location in public land use will be more important, the lower the educational attainment and income levels of the market to be served.

For each alternative site, the location of the market and size of the service area is given by the spatially cohesive residences we have called the urban community. The frequency of use (u) of any public service (i) will be some function of the effective distance between the service production site and the potential consumers of these services. Thus,

$$u_i = f(d)$$

where:

u_i = frequency of use per capita of public service i,

d = effective distance between service production site and potential consumers.

Given the low spatial mobility of poorer populations and the apparent high propensity to use shank's mare as a mode of travel, walking distance is probably a good measure of effective distance in poverty areas.

Assume that for each alternative location, there are m public services proposed. Total benefits at a given location, j, in some time period will be given by:

$$B_j = \sum_{i=1}^{m} b_i(1-P_i)u_{ij}S_i$$

where:

B_j = total benefits accruing to social investment at site j.

b_i = cost to user for purchase of service i in the private sector.

P_i = probability that service i can be purchased;

u_{ij} = average frequency of use per capita of service i located at site j.

S_i = potential users of service i in given administrative area.

This means that the benefits accruing to a social investment in outdoor recreation, for example, will be dependent upon the costs to

consumers of buying the service weighted by a factor reflecting ability to afford alternative outdoor recreation. Therefore, the more affluent the community, the more likely residents could buy the service and the lower would be the potential benefits that would be gained from a public investment in outdoor recreation facilities in that administrative area. The greater the expected use of the outdoor recreational facilities, given the size of population, the larger would be the expected benefits from such a public investment.

It is apparent that optimum location may not be that site at which cost per unit of service is least. Given the importance of location on the potential stream of benefits, evaluation of potential sites should be based on a consideration of both benefits and costs.(20). The optimum location site will be that for which the ratio of present value of future benefits to present value of future costs is greater than that for any alternative location, given a finite number of alternative locations.

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