STUDY S-321

CONSTRAINTS ON THE AGGREGATION OF FEDERALLY SUBSIDIZED, LOW-COST HOUSING

September 1968

INSTITUTE FOR DEFENSE ANALYSES
INTERNATIONAL AND SOCIAL STUDIES DIVISION

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FOREWORD

This Study is part of a research effort conducted by the Institute for Defense Analyses for the Director, Office of Urban Technology and Research, Department of Housing and Urban Development, in response to Contract H-931.

The several research tasks undertaken for the overall study are summarized in:

> An Investigation of the Opportunities for Reducing the Cost of Federally-Subsidized Housing for Lower-Income Families, by J. A. Stockfisch

The research tasks are described in detail in the following IDA Studies:

> Effects of Constraints on Single-Unit Housing Costs, by Richard F. Muth and Elliot Wetzler
>
> Supply Conditions for Low-Cost Housing Production, by Neil S. Weiner
>
> Land As an Element of Housing Costs: The Effects of Public Policies and Practices and the Effects of Housing Demand, two papers by Mason Gaffney and Richard F. Muth
>
> Cost-Reducing Condominium Systems for Low-Cost Homes, by G. C. Szego

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I

INTRODUCTION AND SUMMARY

This study examines constraints on the coherent aggregation of federally subsidized housing; strategies by which to simulate the aggregation of housing markets; some possible groupings of planned public and military housing in the Washington area that may offer possibilities for aggregation; a phased experiment in the aggregation of public and military housing in the Washington area; and a possible "gaming" approach to proposals for aggregation.

The constraints that are described--institutional and political, cultural and economic--are considerable, but not necessarily insurmountable. Reservations are stated with respect to aggregation of housing markets as a priority objective of public policy. Experiments in aggregation in order to develop and test innovations in technology, hopefully leading to savings in cost, are obviously in order. But a major goal of the Department of Housing and Urban Development is presumably to stimulate a vast increase in the construction of low and moderate cost housing, and acceptable strategies to stimulate aggregation and innovation must be designed to avoid conflict with higher priorities.

Possible strategies to effect aggregation of federally subsidized, low-cost housing are assessed. Opportunities for achieving aggregation through direct federal action are found to be limited, although not insignificant. The most promising strategy appears to be the indirect one of removing existing institutional and other constraints on the free operation of normal economic incentives.

A four-stage experiment is outlined, utilizing information drawn from an investigation of planned public and military housing in the standard metropolitan statistical area (SMSA) of Washington. It considers an attempt first, to aggregate military housing planned for

the Washington area; secondly an extension of the experiment to include also civilian housing on federally owned land in the District of Columbia; third an extension to include housing on privately owned land in the District; and finally, an extension to include nearby political jurisdictions outside the District of Columbia.

The possibility of "gaming" the second of the above aggregations is suggested as a means, at little cost in time and money, of discovering quickly the principal constraints and opportunities likely to be encountered in attempting an aggregation of housing which involves the interests of both federal and local agencies.

II

THE GENERAL PROBLEM OF INSTITUTIONAL CONSTRAINTS

This study is based on the hypothesis that the costs of federally subsidized housing for the urban poor can be significantly reduced by a substantial increase in the use of modern industrial technologies and mass production methods. No one particular form of production or technology is stipulated, and indeed the hypothesis includes the idea that research and development efforts may provide, in housing construction as elsewhere, new and previously untried technologies. The hypothesis recognizes that the characteristically scattered and diverse nature of the housing market has, up to now, inhibited the application of mass production methods and innovative technologies. It is hoped that means may be found to aggregate substantial chunks of this hitherto scattered and diverse market because it is believed that, if this can be done, large industrial and research and development resources that are needed will then be attracted to the effort.

The notion that modern technology and mass production methods somehow ought to be more widely applied in the housing construction industry in order to cut costs and construction time is an old idea, and it is also an old idea that the application of improved technology has been delayed because of the constraints embodied in building codes, labor practices, construction standards, and the like. The element of novelty in the hypothesis, therefore, resides in the emphasis upon coherent market aggregation as a central factor of a possible solution to the problem.

The present, largely traditional methods of constructing housing are deeply embedded in our society, and because of this there are formidable institutional constraints that must be overcome before much progress can be made in aggregating the market and thereby

revolutionizing the low-cost housing industry. A first step in this study, therefore, must be to examine these institutional constraints.

We are interested here in specific, real world experiments--pilot projects--to test the validity of the hypothesis, and it is evident that the force, and specific nature, and particular form of manifestation of constraints will vary from one situation to another, depending upon the immediate circumstances. Probably the details of constraints could never be predicted for any particular case--surely they could not be predicted until it was clear precisely what was proposed, in what form it was to be proposed, for precisely what groups of people and in what localities--perhaps even down to the final details of the architectural plans, the labor to be employed, the construction methods to be used, the street address, and the race or social class of the intended tenants.

A. THREE-WAY BREAKDOWN OF CONSTRAINTS

There are three primary elements in our hypothesis, each of which is a potential source of constraint without combining it with either of the others. The proposition, again, is: (1) to aggregate the coherent market (2) in order to encourage innovative technologies and mass production methods that will reduce the costs and time of constructing (3) federally subsidized housing for the urban poor.

There are institutional constraints, for example, that may be expected to handicap an effort to aggregate a market, independently of the other two. There are constraints that may be expected to obstruct the introduction of innovative technologies and mass production, regardless of the other two. And finally, there are constraints that surround and inhibit the provision of federally subsidized housing for the poor, entirely apart from the question of whether there are also any market aggregations or any innovative or mass production technologies employed.

Obviously, an effort that combines all three sources of constraint is likely to stimulate resistance on all three counts. But we note that in the real world, distinction among the different sources of

constraint is often blurred. Frequently this is because the real motivation for opposition is not expressed. Rigid adherence to zoning or building codes, for instance, may be advanced simply as the most practically expedient pretext for opposing a housing project that is not wanted for reasons of race, or to avoid unwanted public service costs, or to safeguard from outside competition some local labor, or real estate, or subcontractor interests. Moreover, the infinite variety of immediate circumstances attending a given project tends to produce a comparable variety in the ways in which constraints are made manifest. Nevertheless, for the purposes of selecting experimental programs, it is useful to categorize briefly the sources of probable constraints by the three primary elements included in the hypothesis.

1. Constraints Affecting Market Aggregation

By market aggregation we mean consolidation of some important aspect of housing construction into a group or groups sufficiently large to justify factory-style or other mass-production methods of construction. The simple and obvious type of aggregation, and the one that has been most often cited, would involve a contractural arrangement with a single builder for the on-site construction, in limited or contiguous areas, of enough housing units over a sufficient period of time to permit realization of the desired economies of scale. The requisite quantity could hardly be assuredly specified until it was clear what sort of housing was involved. Generally, however, the notion is that something on the order of 1000 units per year would be needed for a period of 3 to 5 years. Generally, too, the promise of economies of scale is made expressly contingent upon the market being assured.

There has been some apparent confusion on the subject of on-site aggregation in the literature, however. Whereas an express end purpose of aggregation has been to facilitate innovative structures and methods and to help the program of supplying low-cost housing to the urban poor--which implies largely high-rise or garden-type apartments--the estimates that have been supplied concerning the necessary

size of an aggregated market seem to be based on estimates of the size of a market necessary to cut costs for construction of conventional types of single-family houses.

For more radically different, innovative construction of single-family units by factory methods, the aggregation of the market may operate in a different way. Indeed, there must be a minimum market to warrant the capital cost of the factory, but this capital cost can normally be spread over a much wider area. Beyond a break-even point at the factory, the most crucial economic concern is the cost of transportation of components from the factory to the site. Thus, a factory located halfway between Washington and Baltimore might serve both cities with almost the same efficiency as it could serve either one if located within that city. It could produce single-unit structures for scatter-site locations with about the same efficiency as would be possible if all of them were located on a single tract. This is in contrast with the circumstances which presumably would be prerequisite to achieving significant economies in meeting the same functional requirements by means of mass production of traditional units. For these, the minimum number would need to be constructed on a single tract or at least close enough to facilitate closely coordinated, uniform handling of operations common to all. However, the minimum aggregation for high-rise or garden-type apartments to promise economies of scale, whether innovative or traditional, is not clear.

The most obvious type of on-site market aggregation would amount essentially to awarding a prime contract to a single entrepreneur. There are ways in which this might be accomplished with full legality. But the processes of aggregating the land comprising the site, and above all awarding the contract to a single (outsider) entrepreneur for experimental purposes imposed upon the community by HUD, would be extremely vulnerable politically. Recent experience suggests that community acceptability, which would be vital, could be expected only if some bargain involving a quid pro quo was made with local interests--especially the affected labor unions and building and subcontractor groups--and provided further that there was a large measure of community participation in planning the project.

Lack of local acceptability might be expressed in terms of overt opposition, but it would more probably come in the form of failure to find building sites or mere enforcement of already existing zoning and building codes. Generally speaking, it is probably true that in proportion as local participation in the enterprise is increased, constraints might be relaxed. Aggregation of an on-site market for housing could not be accomplished without political action by the local community. It need not oppose; it need only fail to act positively. The local community will always exercise veto power.

The major constraints that may be expected to hinder market aggregation for a single entrepreneur relate mostly to the legal and political problems of giving assurance of that market to a single party, and to the likelihood that monopolistic management of a local housing project will greatly enlarge the problem of community acceptability. The difficulties of such market aggregation are of course avoided, for the limited number of cases to which it may apply, by means of the special authority conveyed by Section 108 of the 1968 Housing Act.

There is the problem of HUD "red tape"--frequently cited by local authorities dealing with HUD--which results from the great diversity of legal provisions which authorize federal aid to housing. These authorizations comprise a miscellaneous jungle of imperfectly coordinated expressions of Congressional will. Some of the provisions respond to the demands of one group, some respond to the demands of another, and these diverse provisions are not always in concert. The 1968 law, like the housing enactments of previous years, is mostly comprised of amendments and additions to the original legislation of 1934 which created the Federal Housing Administration, and was then expanded with the Housing Act of 1937. New provisions are generally assigned to one particular agency for administration, but the functions of component agencies of HUD are now to a considerable extent overlapping--their policies and procedures probably offer more duplication than coordination and consistency. One may choose among many provisions of the law (if he is enough of a legal specialist in the

matter to find his way through them) and among different agencies and administrative authority, for means to approach a given housing problem. This room for choice may have some advantages; it reflects the different phases of evolving public and Congressional will over the past 34 years. But it is nowhere apparent that the range of options is systematically and deliberately arrayed in such a fashion that anyone other than a legal specialist in housing can be sure what the possibilities are.

It is also evident that some administrative practices within the agencies comprising HUD inhibit the capability of the Department to act promptly and with full effectiveness--especially in implementing new Department policies. The discrepancies between building standards of FHA and HAA are examples of one sort. The problems surrounding administration of the policies of "workable program" and not "rebuilding ghettos," discussed below, are examples of another.

2. Constraints Affecting Innovative Housing

Institutional constraints to innovative housing technologies can be put into two categories. One would be constraints to innovative types of structure. The other would be constraints to innovative methods of construction, regardless of the type of structure that resulted. This distinction is useful because it identifies two different sources of constraints.

a. Innovative Types of Structures. First, there are normal aesthetic inertias that must be overcome. Novelty of appearance and function is generally accepted slowly in all sorts of permanent handiworks, and in respect to housing and other architectural structures, the influence of tradition upon public taste is exceptionally strong. (Witness the continuing preference for Colonial, Georgian, and even Greco-Roman motifs.) These inertias influence the prospective tenants, the hierarchy of officials who must approve the plans (HUD, the Congress, local housing and planning and zoning authorities, for example), and the community interests who do not live in the housing nor have any official responsibility for it, but who may

nevertheless exert political influence on officials who do. This standard reluctance to accept novelty may be appealed to at times when the underlying objection concerns very different characteristics of the housing project in question.

b. Innovative Methods of Construction. Second, there are management and technological inertias which directly affect the labor practices and construction standards developed over the years in building traditional structures. On-site labor costs are inescapably a major target of efforts to reduce total construction costs. If housing demand were static, such reduction might imply reduction of the income of local labor engaged in the construction industry. In those circumstances, technological unemployment might result, and would be certain to be resisted. Established crafts, unions, and workingmen's livelihoods are bound up in the established way of doing things. (These problems, though, would presumably be eased to the extent that an expanding housing industry provided full employment despite changes in work methods.) If these established ways are threatened, it is a practical certainty that the threat will be vigorously opposed, to the full strength of those affected, unless some fully compensating measure is unmistakably included as a part of the proposal.

In addition to potential objections from labor groups and subcontractors, objections may arise because of what are simply obsolescent standards for appraising the quality of construction. The specifications which comprise building standards normally assume traditional materials and traditional construction methods, and accordingly are expressed in terms of these traditional means. Thus there are requirements for certain thicknesses of wood or concrete, for studs, joists, and rafters of certain dimensions spaced according to certain specifications, for iron or copper pipe of stated thickness and diameter, and so on. Such standards have not only been written into the local building codes, but also into the standard requisites for mortgage insurance by the Federal Housing Administration and for contract stipulations of public housing. Support of these traditional codes is commonly the particular method whereby the labor and craft unions and subcontractors seek to perpetuate their particular livelihoods and

their particular means of doing things when these seem threatened by innovation.

Time is generally the key and the requisite to acceptance of innovative types of structure because it requires normally a complex series of other changes--in the occupational and investment structure, in prices, and in the wages and skills required. Almost always it takes time because ramifying changes in the social order are involved. But, given enough time, almost always the innovations will eventually be adopted provided they are truly advantageous.

3. Constraints on Providing Subsidized Housing for the Poor

Federally subsidized housing for lower-income groups is only one aspect of a national policy concerning aid to this social group. As such, it is inseparable from other aspects of that national policy; whenever a specific project or program is made an issue by any group with a special interest in the matter, therefore, it is subject to whatever indecision, inconsistency, or ambiguity may exist in the public mind on this subject in general. And this is an area in which there are many inconsistencies and ambiguities in our public attitudes.

It is indeed a national policy to provide housing assistance; at state and local levels there is, in general, a widely approved policy of extending help to the poor. But many specific national and local provisions have only marginal and conditional general acceptance. Many qualifications and restrictions have been placed, therefore, upon bureaucratic dispensation of federal largesse. These inhibitions are determined and enforced not only by the law but by expressions of Congressional intent, and often by public pressure at times of critical decision with respect to individual programs or projects.

Among the bureaucratic provisions expressive of unmistakable Congressional intent, there are several that reflect the majority moral judgments of Congress (and hence of the American people), concerning the conditions under which aid should be extended to the poor. Tenants must have incomes not exceeding certain maximums in order to be eligible; rent supplements cannot apply to rentals exceeding certain

maximums; construction costs per unit must not exceed certain maximums. There are sumptuary restrictions forbidding swimming pools, air conditioning, or more than one bath. Construction-cost limitations commonly result in apartments that are commercially substandard because the rooms are too small or there is a shortage of facilities that are increasingly looked upon as necessities by all but the most hopelessly poor, but which are not yet accepted as such by the lowest levels of vulgar folklore. It is to be expected that any Congressman is likely to object--and perhaps persuasively--to any visible or prominent feature of subsidized public housing that is better than the housing of many of his constituents whom he listens to.

Some of the restrictions imposed by Congressional intent are widely accepted by other knowledgeable persons to be unrealistic. (This is repeatedly stated to be the case in Congressional hearings.) There are many poor who cannot afford even the most inexpensive public housing. On the other hand, the maximum permissible base rentals eligible for supplement payments are often below the levels prevailing in local housing markets for barely decent rental units. The construction costs per unit permitted are below the prevailing construction costs in many areas where housing is most needed.

It is accepted HUD policy not to build "a new ghetto," i.e., HUD does not approve of building a development to house none but the tenants of a former ghetto, and it disapproves public housing construction in ghetto areas unless there is also the opportunity to obtain housing outside the ghetto. It is also recognized, as the only workable policy, that there must be community acceptance of the project, generally interpreted as meaning no significant local opposition. Often however, it is impossible to follow one policy without violating the other. To avoid building a new ghetto means, in many cases, mixing races, income groups, and social classes. And in most places there will be some opposition to mixing races and social classes, which means there will not be the requisite "workable program."

Very commonly the only places where there is available space to locate public housing are areas where there is strong local opposition.

The opposition very often reflects racial and class prejudices. All of the passions surrounding this issue might be aroused. Another factor is that public housing would upset the prevailing distribution of taxes and of costs of public services, which often tend to favor the inhabitants of the still uncrowded areas.

The question of acceptability to prospective tenants and purchasers is complicated. The prospective tenants include all kinds of people, the only common quality being their current lower level of income. There is frequently a stigma attached to public housing or rent-supplement projects, and this will be variously felt and reacted to. Often the best tenants are those who want nothing more than to escape from public housing. Housing projects that are exclusively for the poor are generally predisposed to become slums. This becomes an urban renewal or urban relocation problem--an issue delaying decisions and action in construction of housing; construction often is delayed until general policy can be agreed upon. There is little escape from this difficulty because many of the most comprehensive and complicated aspects of urban planning, and probably of social reform as well, are involved.

If the tenants are strivers, they are very soon likely to want something better than is permitted them under law. If they are not strivers, some might find it easy to consider that they were not worth the help.

Because federal subsidy is involved and because the provision of the housing is a conscious attempt to correct certain specific inequalities in the distribution of wealth, the provision of housing constitutes a practical application of a political and social philosophy. Some of the most basic social and moral values are normally involved in planning a project, and in judgments of its success or failure, or of its correctness or incorrectness, or of its adequacy or inadequacy.

Because the recipients of the subsidized housing are the poor, their problem generally is not solely a matter of need for housing. Other things very commonly are needed as well. Were it not for this, they probably would not, in many cases at least, need help for housing. Their need for housing is not their only need--merely one

manifestation of a general disadvantaged condition--and unless other needs are satisfied the provision of housing alone will often not advance them. One official connected with the rent supplement program remarked, "The trouble is that we're generally dealing with a problem that cannot be resolved by bricks and mortar alone."

It often seems to require either a very experienced practical view, or a very sophisticated intellectual understanding, to grasp this. On the other hand, any given program may be judged on the highly simplistic basis of popular understanding which lacks both intellectual sophistication and immediate practical experience, and which adopts instead the attitude that the housing subsidy, being a gift, should be accepted with nothing but contrite gratitude, and should be regarded by its recipients as the complete answer to all their problems (which by implication are of their own creation). There is reason to suspect that in some urban areas there is reluctance to make too much good subsidized housing for the poor available, lest it attract still more immigrant poor, who will in the end only add to the total social problem.

Constraints of this sort, that are an expression of moral values or of racial or class prejudices, or that reflect a general conception of the basic nature of the problem, are the most pervasive, the most difficult to deal with, the most persistent--and sometimes the hardest to put a finger on. They are all enforced--or to be overcome, if overcome they ever will be--by <u>political</u> means. Not technology.

B. THE CENTRAL ISSUE--POLITICAL ACCEPTABILITY

In the real world, acceptability is the central and indispensable requisite of housing projects. The project must be acceptable to the intended tenants, to the community that surrounds it, to the many bureaucrats who attend its gestation, and finally to the ultimate authority in such matters that resides with the Congress.

There are some aspects of acceptability that might be called economic, others aesthetic, others social or psychological--but they can all be summarized as political. For it is ultimately political

power which enforces constraints--and it is ultimately political power which will overcome them, if ever they are overcome. In the extent to which there are actual or potential objections to a project, there must be compensatory benefits that are evident which may serve as motivating incentives to overcome these obstacles. There has to be a "deal," a quid pro quo.

We have concentrated so far upon the obstacles--the constraints. But constraints block the way only as long as there are no counterbalancing advantages that are evident to the complex of powers who make the decision. This is not mere theory; this is what has happened in a long series of recent occasions where one or another form of constraint has been removed. Section III discusses possible strategies for aggregation, implicit in which are counterbalancing advantages to offset or remove existing constraints.

III

STRATEGIES FOR COHERENT MARKET AGGREGATION

The Department of Housing and Urban Development is concerned with ways to build houses better, or cheaper, or faster, or (often enough) simply in larger quantities. Aggregation of coherent housing markets has been suggested as a means of supporting these goals. What is at issue is both the extent to which aggregation could contribute to HUD's goals, and the feasibility of coherently aggregating large housing markets in any event. Obviously though, the feasibility of aggregation will depend, among other things, on the extent to which a convincing case can be made for the advantages of aggregation.

This Section examines alternative strategies for encouraging market aggregation. First, it sorts out a number of questions affecting underlying policy judgments, then discusses possible strategies for aggregation, and finally summarizes the results of the discussion.

We must note at the outset, though, a certain limit on how far we can usefully (or indeed can even properly) carry the analysis. It should be clear that HUD policies in this area will necessarily be affected by political considerations. We are talking, after all, about changes--perhaps radical changes--in the structure of a very large industry, involving very large numbers of workers, business firms, established bureaucracies at all levels of government, and an annual level of activity of about $25 billion. Inevitably, changes in this enormous industry will not seem equally beneficial to all. Some interests may be hurt; many will fear they will be hurt more than they will be helped. In a technical analysis of the effects of aggregation, such political considerations can be set aside. But in an analysis of strategies for actually creating aggregations, these cannot be wholly set aside without destroying any sense of realism in

the analysis. We did not do so here. But we also did not attempt to reach political judgments which can only properly be made by responsible senior officials. Even more than is usually the case, our findings can only be inputs to judgments by senior officials, rather than self-sufficient recommendations for actions.

A. INCENTIVES AND CONSTRAINTS

Only slightly oversimplified, the basic notion behind "aggregating the market" is that if we could arrange for housing, or for major components of housing, to be mass produced to meet a reliable and substantial demand, then we would see a rapid and important advance in housing technology. Houses would no longer be built pretty much as they were a century ago, but would be mass produced like other modern goods. Hence, the expectation of a better house for a given price, or a cheaper house for given quality. This view is widely held, particularly by those outside the construction industry, and widely disputed, particularly by those within the industry.

There is wide disagreement on the practicality of radical changes in housing technology, on the importance of such changes as may be practical, and indeed on the fundamental question of whether the housebuilding industry really is significantly lagging behind other segments of the economy in productivity increases. Work done on other aspects of the overall project, of which this study is a part, addresses such issues,[1] as will the forthcoming reports of the Kaiser Committee and the Douglas Commission.

Nevertheless, it should be noted here that a strong case has not yet been made that advances in housing technology and reforms in the structure of the industry can be expected to produce savings of much more than about 15 percent in construction costs, or about 5 percent of the total cost of housing (of which only about one-third can be

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1. This work is summarized in An Investigation of the Opportunities for Reducing the Cost of Federally Subsidized Lower-Income Family Housing, Report R-148, Program Analysis Division, Institute for Defense Analyses (Arlington, Va., September 1968).

attributed to construction costs). There are hopes that savings might be higher, perhaps reaching 25 percent of construction costs but as of now, these hopes have not been strongly supported.

Nonetheless, even quite modest economies in an industry as large as housing represent large dollar savings. Even if we are talking about saving only a small percent, it is a small percent of a great many billions of dollars. Consequently, it is inevitable that there should be a strong interest in encouraging increases in output per dollar invested in housing.

It is also true that it is hard to predict what economies might be achieved by a housing industry which was not so fragmented as the American industry is today among many thousands of producers, suppliers, marketing agencies, and by a real jungle of local zoning restrictions, union practices, and building codes.

Given the context just outlined, two conflicting attitudes are to be expected, and are readily found. Among persons interested in the problem but with no commitment to the housing industry as it is currently organized, there is a strong disposition to judge the industry as self-evidently untidy, inefficient, and generally organized in a way that inhibits innovation and modernization. Even in the absence of specific, authoritative information on what a rationalized housing industry would be like, and how much more efficient it would be, such people would tend to lean strongly toward efforts to change the industry. And this view will tend to be especially strong among those persons whose principal experience has been in highly innovative or highly organized segments of the economy, such as the aerospace or automobile industries.

Equally understandably, persons involved in the housing industry will tend to be skeptical of proposals for altering it, particularly where their own interests will not clearly be advanced by the proposed changes. (Aggregation, after all, suggests taking business in its present form away from small firms and giving it to bigger firms; modernization of technology suggests making obsolete some of the skills in the building trades; reform of building codes suggests modification

of local authority, and suggests elements of uncertainty in the future for the substantial bureaucracies dedicated to enforcing the existing code system.) Some of this opposition will be reasonable, some unreasonable, and a good deal mixed. But, some resistant to such change, for good reasons and bad, is to be expected given human nature; and particularly in the absence of a compelling, explicit case for change, that resistance must be expected to be effective. Section II of this study described in some detail many of the constraints against aggregation of markets and generally against reforms in the housing industry.

Briefly, the major constraints appear to be as follows:

(1) There is the sheer inertia of the numerous bureaucracies and centers of power at both the federal and local levels, often with quite parochial interests, that must be overcome to get even an experimental approach going.

(2) There is sufficient dispute about whether the effort would be worthwhile to discourage many key people in and out of government from devoting the time, energy, and political capital that seems required to push through a major experiment.

(3) There is the basic fact already noted that a great many people and interests may be affected in any effort to change the construction industry, and some will actively oppose such efforts as a threat to their own positions.

(4) There is a lack of real desire to provide housing for lower income families outside a few central cities (and indeed quite common antipathy to such projects). This means that, for the most part, HUD has almost little politically practical leverage which it might use to direct aggregation of markets.

(5) There is the very fact that non-military federally subsidized housing, the housing over which either the federal or local governments have direct powers, has been averaging only about 50,000 units a year nationwide. Clearly, if HUD were to reach the goal of the new housing act (500,000 new units a year), the possibilities of sizable aggregations would be far greater.

(6) Finally, it is important to note that from an overall HUD point of view, the goal of producing experiments in market aggregation may conflict with (or be feared to conflict with) other HUD goals, including the goal just mentioned of a 10-fold increase in the quantity of subsidized housing being built. Other things equal, aggregation would be expected to serve that goal by making the

housing somewhat cheaper. But at least in the short run, seeking aggregated markets may sometimes conflict with that goal, for example by holding up some developments while an attempt is made to win agreement on an aggregated contract, or by reducing the politically significant interest of small local builders in winning approval for low-cost housing.

The implication of this discussion is that any successful effort to reform or encourage innovation in the housing industry requires a hardheaded analysis of where steps to encourage change will have real payoffs and a realistic prospect of success. Such analysis requires both technical and--in the broad sense--political judgments, a sense of priorities, an awareness of conflicts among priorities, and an understanding of the importance of recruiting the expertise and support of forces within the industry which are receptive to innovation.

B. TYPES OF AGGREGATION

In discussing possible strategies to encourage aggregation of housing markets, we have to be reasonably precise about just what we mean by aggregation and why we might be interested in a particular kind of aggregation. (Presumably no one is proposing simply taking business away from small firms and giving it to big firms on the theory that aggregation is inherently a good thing independently of any significant prospect of increased efficiency.)

1. Wholesale or Retail

We must distinguish between aggregation at the "retail" versus aggregation at the "wholesale" level: that is, between a single firm putting up large amounts of housing, and a number of manufacturers of industrialized housing (or components) having a large market, although one that may consist mainly of numerous small builders. Existing prototypes of "retail" aggregation are the operations of such large builders as Levitt & Sons and (in the case of apartment units) the 15,000 unit Co-op City development now being built in the Bronx, New York. Examples of "wholesale" aggregation are the operations of the larger trailer-home and some sectionalized-home manufacturers,

in which the housing units are mass produced in a factory, but sales, site preparation, on-site erection and finishing operations, are usually in the hands of local agencies. Wholesale aggregation could also involve components of housing, such as self-contained bathrooms, or standardized wall sections. Again there are existing prototypes of such aggregation: virtually any house built today uses some pre-fabricated components, even if only roof trusses, or cabinets, or pre-framed doors, and so on.

It is important to note the distinction between wholesale and retail aggregation since quite different changes in the housing industry may be needed to encourage one sort of aggregation than are needed for the other. Aggregation at the retail level beyond what already exists requires the creation of aggregated buying power in the housing field, for example, a consortium of local housing agencies to let a single large contract for low-cost housing throughout a metropolitan area. Substantial aggregation at the wholesale level, on the other hand, might result through existing market forces if there were, for example, sufficient uniformity in building codes, so that it became much more practical than is now the case for suppliers to mass produce standardized components which could be used by builders throughout the country.

Strategies for encouraging aggregation are therefore very much contingent on the type of aggregation that is sought; and similarly, judgments on what types of aggregation to attempt to foster will be very much contingent on what changes in housing practices it seems practical to attempt. A judgment requires a look at the interactions.

2. Indirect or Direct

Aggregation can be further categorized as "indirect" (resulting from market forces) or "direct" (markets created by the government). A decision to promote support for the more general use of uniform building codes, for example, would be "indirect" aggregation. If such an effort were successful, a significant amount of aggregation would certainly follow. But any aggregation that did result would come through normal market forces as they would be expected to operate if

the industry were freed from the fragmentation imposed by numerous local codes. The government role would be to weaken or eliminate a constraint on interstate commerce, not to impose its judgment of how the building industry should be efficiently organized.

An aggregated contract for housing in a metropolitan area, might be encouraged either by direct or indirect strategies. We will discuss some possibilities later. But clear-cut examples of "direct" aggregation can be found in the practices of France and other European countries where the central government is the predominant purchaser of housing. In several cases, the central government has for various reasons (not necessarily limited to construction economies) chosen to concentrate its housing programs with firms using industrialized building systems requiring a large, guaranteed market. In such cases, the government has decided what kind of housing industry it wants, and proceeded to use its control over the market to foster the preferred organization of the industry.

Given the American political system, we should expect that direct aggregation would have limited appeal in this country. But there are special cases where it seems reasonable, and other cases where it should be at least considered before being dismissed, and these will be treated in the discussion of alternative strategies.

3. Advantages

Finally, we must distinguish between advantages which accrue from weakening of bureaucratic, labor, and local political inhibitions against innovation in housing, aside from large-scale aggregation, and those which crucially depend on aggregation. Removal of all constraints presumably would lead to considerable aggregation at the retail or wholesale level, or both. Essentially everyone would agree that this would be accompanied by some significant economies. But there is a good deal of room for uncertainty about how far the economies would merely accompany the aggregation, and how far they would depend on the aggregation.

If the constraints imposed by local codes were relaxed, for example, we would expect to see an increase in the use of prefabricated

components. But we do not know enough now to say how far this increase would take the form of a sharp growth in the role of large firms mass producing for a wide market, and how far the prefabrication would most economically be done by local suppliers of building materials. To the extent the latter was the case, the disruption created for local firms and the local labor force would be far less than might be feared. Further to the extent that mass produced components became more readily usable, the interests of local craft unions and subcontractors in restrictive practices at the building site would be weakened: to compete with the availability of more mass produced components, local constraints other than code restrictions might be relaxed, and the net shift of work and value added away from local work might be substantially less than we would have anticipated on an assumption that practices at the work site would remain unaffected by new competition.

These possibilities are especially worth noting because other things equal, aggregation implies reducing the relative importance of small firms as they are presently engaged in the housing industry; and this, in turn, goes generally against the grain of American sympathies, and could very likely increase political resistance to reform proposals. Consequently, realistic strategies for encouraging progress in the housing industry would presumably try to avoid, as far as possible, identifying proposals for improving the industry with a blanket preference for aggregation, particularly to the extent that rationalization of housebuilding may in fact lead to less aggregation than local contractors and local labor force may fear.

C. DIRECT AND INDIRECT STRATEGIES

Currently, there is considerable interest in the housing industry by large industrial firms. Levitt & Sons itself recently became a subsidiary of International Telephone & Telegraph. An impressive number of major firms are investing in housing. The reason is quite simple: market forecasts are almost staggering in their optimism. A need is projected for 26 million new homes in the next decade, which is considerably more than the present housing industry could

supply. Also, we could build, again in the next few decades, dozens of entirely new cities. It has been estimated that by 1985, the total "infrastructure" of this country (roads, houses, schools, and the like) will have to be doubled. In short, demand for construction is foreseen to be enormous, and there would consequently seem a most beckoning opportunity for giant firms with access to the capital and sophisticated techniques to preside over the creation of entire new metropolises. And yet, at the same time, it must be noted that we do not, so far, seem to have had any great successes in such efforts. The result of nearly a dozen ventures by large corporations into housing since World War II was one of failure. Yet there appears to be a distinction between the incentives which produced the unsuccessful attempts to industrialize housing during the first decade or so after World War II and the efforts now underway. The former appeared to have grown mainly out of the attempt to apply mass production techniques to the conventional housing business. Today's efforts seem encouraged in large part by the potential of exploiting managerial and planning skills available only to a very large organization, and by a large corporation's access to capital, rather than solely by the hope of transforming housebuilding into a factory-type operation.

All of this seems to have two important implications for the issues at hand. First, in the future, much more than in the past, we are likely to have in the economy organizations with an interest and a capability to take up any opportunities for innovation and rationalization in the housing industry, and indeed a social force of some consequence in support of such initiatives. Second, unless the forecasts are completely unrealistic, we are likely to experience a period of expanding demand for the services of the housing industry and the people who work in it. In such a period, it should be markedly easier to institute reforms than in a period of stagnant or contracting markets. In an expanding market it may be possible for smaller firms and building-trades craftsmen to prosper even if their relative position in the industry is declining. Further, to the extent that change in the industry is recognized as required to

provide the level of housing and other construction needed in the country, the problem of mobilizing support for change obviously will be eased. Finally, the cost implications of the new housing bill (for which federal subsidies might total $100 billion over the next decade) alone provide considerable pressure for economizing on the cost of this federally subsidized housing. This point takes on special force if we consider the inflationary impact on inputs to housing that would accompany a large expansion of federal programs in the absence of efforts to cut costs.

1. Possibilities for Direct Aggregation

We turn now to a discussion of the implications of the background conditions we have been reviewing. Consider the following possibilities for direct aggregation and how they might fit into an overall HUD strategy for encouraging innovation and productivity increases in the housing industry:

(1) Aggregation of federally subsidized (low and moderate income) housing in a metropolitan area

(2) Aggregation of DoD dependent housing in an area with a large military population

(3) Aggregation of total development of a "new town" such as the projected Lincoln Park or Bolling-Anacostia developments

(4) Aggregation of federally subsidized housing in a very large central city, such as New York or Chicago

(5) Various combinations of the above.

The first possibility (aggregation of federal housing across a metropolitan area) sounds inherently attractive if it could be done, but for the near future anyway, it is probably unrealistic. The fundamental fact is that the great majority of suburban areas, and even some central cities, have (to understate the matter) no great desire for low income housing. In many cases, communities going ahead with housing projects are doing so reluctantly, or in the face of significant local opposition. Each community has an effective power of veto over most housing proposals, and has further any number of devices for delaying projects without a formal veto. Aggregation implies that local contractors would be denied participation in the

work (or at the minimum have their role substantially reduced) and further, in order for the project to be useful, aggregation may require that local housing agencies relinquish much of their control over the design of the housing. (The actual degree of control which must be relinquished would depend on the detailed economics of the situation. In order to provide a coherent market for the new techniques some standardization will surely be required. But considerable opportunity might remain for exercise of local preferences on such matters as land use and exterior facades of the buildings.) Overall, it is hard to avoid the conclusion that the federal government has nowhere near the leverage that would be required to impose such an aggregation, and no realistic prospect of obtaining that kind of leverage. The notion becomes only slightly less implausible if we postulate that a single metropolitan housing council, rather than HUD officials, would preside over the aggregation. This would weaken some of the concern about loss of local control, but it would not change the structure of incentives a great deal. Under existing law, which there seems no real short-run prospect of changing even if that was deemed wise, such a metropolitan housing council could only act under a rule of unanimity. The result that would realistically have to be expected of such an effort, if it was not rejected out of hand, would be endless delay.

A somewhat more hopeful view of the possibilities of aggregation across several local jurisdictions can be taken if we assume a change in the present structure of incentives for local jurisdictions to seek economies in housing. (Some of these possibilities are discussed below under "Indirect Strategies.") But the prospects of near-term direct, federally-induced aggregation in this context are not promising. Further, any effort that does not rely essentially on the willing cooperation of local authorities would probably have real political costs. Responsible officials would have to decide that such efforts were realistic enough and important enough to warrant using resources (including the sheer time and energy of senior officials) that might better be used on other problems requiring

cooperation across a metropolitan area, such as environmental pollution and transportation, or indeed even non-aggregated housing.

The second possibility, aggregation of DoD dependent housing, is much more feasible than aggregation of public housing. There is a natural, unquestioned federal jurisdiction; any experimental housing could be built free of local code restrictions. And indeed, as this is written, DoD is awaiting action by the Congressional appropriations committees on a request for funds for carrying out a major experiment in innovative housing. The Secretary of Defense has devoted a major speech to emphasizing the role DoD might play in supporting non-Defense innovation. Yet it may be unrealistic to expect a great deal more from DoD until the currently planned experiment[2] has run its course, which may take several years. A fundamental fact is that DoD's own direct interest in such innovative experiments extends only to the point that it can reasonably be argued that there will be a payoff to DoD itself, in terms of long-run savings on the family housing program. If there continues to be active support from senior DoD officials and from the White House, considerably more experimentation with housing is likely to be done by DoD than would be done if Defense considered only its own direct interests. But it has to be recognized that Defense does have difficulty justifying internally and to its Congressional committees experiments that go conspicuously beyond what can be justified by direct DoD interests. We can view that situation as regrettable and parochial, but it is a fact. Consequently, although the DoD effort is likely to have real value for HUD, it cannot be relied on over-heavily. Further, the extent to which HUD can win DoD support for housing innovations will plainly

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2. Under the experiment, General Electric would build a relocatable production line for producing components of housing. The line would be set up at a building site, turn out wall sections and the like, and then be moved to the next site. The experiment is designed to gain hard cost information on set-up costs and transportation problems, and in general to provide a confident basis for judging the economies that might be achieved, which are hoped to reach 15 percent compared to the cost of conventional construction.

be contingent on HUD's effectiveness in making a convincing case to Defense officials that experiments HUD wishes to encourage really have a substantial payoff. Lacking this, there is little foundation for the effort required of Defense officials in pushing through such programs. HUD must be able to give those officials a solid basis for advocating proposals which may run counter to the instincts and traditions of the Services and the relevant Congressional committees.

The third possibility, building an entire "new town" as an experiment in new housing techniques, is intrinsically the most exciting and probably the most valuable kind of experiment HUD might undertake. Further, although we have not been able to reach a judgment on the near-term feasibility of such efforts, they seem to have reasonable potential. In the Washington area alone, two such developments are planned--the Fort Lincoln development, and eventually (assuming Congress does not extend the restriction on the property transfer) the Bolling-Anacostia site. Each is planned as a community of some 25,000 residents, with stores, parks, and schools. The federal government itself is not the appropriate agency for overseeing the total development of such a community, of which only a fairly modest fraction will involve federally subsidized housing. Either a specially created quasi-public corporation, or one of the large corporations now venturing into developing new towns, or a consortium of interests might be given or sold development rights, subject to the requirement that an experimental town be built rather than a straightforward commercial development. (The Fort Lincoln development has already been turned over to the National Capital Housing Authority.) The federal government would underwrite any extraordinary financial risks involved in the experiment, but the hope and perhaps the reasonable expectation would be that the venture would pay for itself. There exists today great interest in this sort of experiment although the ideas are very ambitious, and such ventures are very likely to be undertaken within the next decade. A bold stand by HUD on these proposals may be quite warranted.

The fourth possibility, aggregation within a single large city, such as New York or Chicago, cannot be dismissed as flatly as was the

case described earlier of aggregation across a metropolitan area. We now have only a single political jurisdiction to work with, but one which is large enough by itself to have a market which, when aggregated might allow significant experiments in new technology or the possibilities of economies of scale given a large market. Even more important, these cities have a real interest in building the housing, and consequently are, in theory at any rate, subject to federal leverage in a way that the suburbs are not. Nevertheless the prospects and wisdom of aggregation at the initiative of the federal government, rather than on the willing initiative of the city involved remains doubtful. The basic problem is that HUD is hardly likely to find it wise to attempt to use the very fact that some cities really do want to move ahead on low income housing as a lever to coerce them to undertake experiments in housing which they deem unwise, or impractical, or to have severe political costs for the local authorities. Nevertheless, there may be cases where the city officials really are interested in the aggregation, but for various reasons would find it awkward to take the initiative themselves. In such cases, pressure from HUD might be covertly welcome. Further, as with the model cities programs, it may be possible for HUD to offer special support for aggregation experiments and invite interested cities to compete in offering proposals. It may well be that Section 108 of the new Housing Act (encouraging HUD to foster experiments in large scale building) provides HUD with the authority it needs to sponsor such a competition. Certainly Section 108 gives the Secretary of HUD a mandate to move in that direction. (We will discuss an interesting, apparently successful effort at market aggregation in Chicago in the section on indirect strategies.)

The final possibility to be considered employs various combinations of the proposals reviewed, such as attempting to aggregate DoD housing in a metropolitan area with public housing in the central city, or aggregating a "new town" development in or near a central city with public housing in the city. Experiments of this sort would have to overcome two major difficulties.

First, it is not easy to develop experiments that really show promise of providing a better or more economical demonstration of the

advantages of market aggregation than would experiments limited to just one of the above proposals. For example, it has yet to be demonstrated that there are any striking advantages to be gained from letting a common contract for military housing (almost all single houses, or clusters of town houses) and central city projects (almost all multiple-unit apartments). The market probably must be not merely aggregated, but coherent.

Second, it is important to recognize that government-sponsored aggregations are hardly likely to provide more than a very small fraction of the total subsidized housing the government hopes to build. Consequently, the more important objective of any experiments in direct aggregation is to demonstrate what that housing industry can do given an aggregated market, rather than to demonstrate that the federal government itself can aggregate the markets. This suggests that any attempts at direct aggregation be chosen so as to minimize the problems of creating the aggregation and allow a maximum chance of actually getting the experiment going. To attempt to aggregate across categories inevitably greatly complicates the problem of arranging the aggregation.

In short, in most cases, trying to aggregate across categories probably would weaken the economic incentives for trying the experiment in the first place, and in all cases would complicate the political problems of getting the aggregation experiment going.

2. Indirect Approaches to Aggregation

The discussion of possibilities for direct aggregation suggested that the federal government's opportunities to move effectively in this line were limited to some special cases. Where these opportunities do exist, they are important, for they offer a chance to develop and demonstrate innovations in housing which might not otherwise be available. But barring fundamental and currently unforeseeable changes in existing legislation, we would not expect any substantial fraction of federally subsidized housing to be built under federally created aggregations. In the direct experiments that may be feasible, we are pretty clearly talking about only some very small fraction of

the 500,000 new units per year aimed at by the Housing Act of 1968. Consequently, in terms of overall quantities of housing, and even to a substantial extent of demonstration projects and experiments, we would expect HUD to operate mainly through indirect mechanisms. The common characteristic of these indirect approaches is that such innovation as takes place comes primarily at the initiative of the local governments, private organizations, or business firms. These organizations, not the federal government, build the housing; and they do so because they find it in their own interest, not because the federal government has been able to require them to do so.

Two types of indirect strategies seem possible, and a reasonable policy would undoubtedly include elements of both.

First, the federal government can attempt to weaken constraints on the effectiveness of normal market forces in stimulating innovation. The most obvious example of such a constraint is the inconsistency of local building codes, and the effect this has in discouraging efforts to mass produce for a wide market. We would not have the present mass-construction automobile industry if there were a large number of local codes prescribing slightly different specifications for automobiles that could come within their jurisdiction. (Equally obviously, though, we should not assume too much about the obverse argument: the economics of mass producing houses are not to be casually equated to those of making automobiles.)

Second, the federal government can, at the same time, attempt to foster innovation by altering the structure of incentives to local agencies, businesses, and labor. There is an excellent example of such an alteration of incentives in the way HUD has moved to deal with the problem of increasing the quantities (and to some extent reducing the costs) of subsidized housing. Through the Turnkey system, HUD has now made it possible and profitable for private businessmen to take the initiative in putting together subsidized housing proposals. The possibilities for a change in the structure of incentives to aid aggregation might include the use of block grants to local governments and making available risk insurance or special subsidies to businessmen willing to try out innovative housing techniques.

The two approaches complement each other. For example, if we look more closely at the issue of code reform, we find there is a considerable range of possible approaches:

(1) Promulgation of a single national housing code (with whatever minimum provisions are required to take account of differences in climate from region to region).

(2) Preemption of local codes and inspection for components of housing shipped in interstate commerce, or a similar scheme on a voluntary basis.

(3) Preemption of local codes insofar as they apply to federally subsidized housing, which we understand will be proposed by the Kaiser Committee.

A judgment on which, if any, of these approaches (or some other approach) should be pursued in the near future turns on an assessment of the real beneficial impact of each, on the political practicality of each, and on the side-effects of each. For example, although all three proposals might seem worth pursuing, a sound judgment might be that only one should be selected for emphasis, rather than trying to move on several at once. Or a judgment might be reached that the third approach would significantly conflict with the policy goal of increasing the number of units built, for it might result in too many localities cancelling housing plans rather than accept the preemption of their local codes.

A further technical problem is that it is not clear now exactly what would be an ideal housing code. In particular, to maximize opportunities for innovation, we would like the codes to specify the minimum performance required, rather than to specify approved methods and materials for construction. But there are problems in working out such codes. On the other hand, it is mainly the prospect of consistency, with the opportunities it creates for mass production, that makes us interested in code reform. Further, although today builders and suppliers are often discouraged from seeking code ammendments to allow innovations (because that battle may have to be fought over and over again in many jurisdictions to create a worthwhile market area for the innovation), in the event of national-level code provisions that problem would not obtain.

In sum, it is clear that code reform should be an important part of any HUD strategy to encourage innovation in housing. But neither the technical information available nor the frankly political judgments required permit us to reach specific recommendations.

In one area of code reform, though, it is easy to reach a judgment. For it is hard to see how HUD can lead in forcing reform of local codes if it has not already moved to clear up inconsistencies and conflicts in the regulations imposed by its own divisions and among its own regional offices. For example, conflicts between FHA and HAA requirements are regularly complained about by builders. In one recent case (which was successfully resolved) conflicts among HUD codes threatened precisely the sort of aggregation that might be especially desired. (This was the National Homes case in Chicago, in which agreement had been worked out among the city, the producer of prefabricated town houses, and the local unions; but the project was, we understand, threatened by the initial inability of HUD's own agencies to compromise differences in their own regulations.) Here and elsewhere, it would appear in HUD's interest to make a stronger effort than has been apparent so far to exploit the powers already available to the top officials of the Department.

D. SUMMARY

It is not very useful to talk about aggregation of housing markets in general. In the first place, HUD's interest is not in aggregation for its own sake, but in aggregation as a means, or a necessary condition, for certain kinds of significant improvements in the American housing industry. In the second place, unless we try to be specific about what kind of aggregation, to what end, with what incentives, against what resistance, we will not be able to reach very specific judgments on policies. Within the limits of time, available information, and the political constraint noted in the opening section, we have tried to move reasonably beyond the stage of generalities which may have a nice ring but do not translate into meaningful policy decisions.

In general, we find that a practical assessment of the possibilities for direct aggregation finds them quite limited, and sometimes at least potentially in conflict with other HUD goals. On the other hand, the DoD efforts at innovation should be helpful to HUD within realistic limits, and HUD might well explore the bold, but no longer radical, idea of supporting a consortium of private interests in the creation of an experimental new town on some such federal site as Bolling-Anacostia. Certainly federally created aggregations of this sort cannot now be foreseen as meeting more than a very small fraction of the needs of the next decade. But federally initiated experiments and demonstrations can play a valuable role.

There are clearly worthwhile possibilities for indirect HUD strategies to foster innovation, and since most aggregation, if there is to be aggregation, will not be done by the federal government, pursuit of these indirect strategies seems essential.

Finally, we reiterate that it is hard to foresee the changes in the way things look, and in the balance of social forces, if indeed the years ahead do see the 10-fold increase in the level of low income housing construction proposed under the new Housing Act and the strong demands on the housing industry, and on the construction industry generally, that are suggested by current economic forecasts. If these forecasts do come about, and even to the extent they are approached, we will surely expect to see a considerable strengthening of the incentives to aggregation and a considerable weakening of the constraints against it.

IV

THE LOW AND MODERATE INCOME HOUSING MARKET, WASHINGTON METROPOLITAN AREA

Forecasting the market for low and moderate income housing is by definition a speculative exercise. Introduction of the recently passed federal housing legislation has rendered housing market projection even less predictable and measurable. For low and moderate income housing, to which so many of the provisions of the new law are expressly oriented, market prospects have been altered radically upward, though it is premature to judge the magnitude of increase that will materialize.

A. FEDERAL HOUSING PROGRAMS RELEVANT TO MARKET AGGREGATION

Federally supported housing programs may be grouped into three major classes according to the governmental departments that sponsor them. Overwhelmingly the greatest share come under agencies of the Department of Housing and Urban Development, principally the Federal Housing Administration, but with the Housing Assistance Administration also responsible for a significant number of other programs such as public housing. The Veterans Administration has separate programs that are analogous to certain of those under FHA but which are exclusively related to former servicemen. The Department of Defense administers a program of military dependent housing expressly for service personnel on active duty. All government departments and agencies taken together, there are some 18 distinct federal programs directly devoted to aiding various segments of the American populace to acquire housing.

Recognition of the fact that each of these programs involves the common element of federal support suggests the possibility of coordinating them to achieve improved efficiency, cost savings, and other desirable ends. Because of this common denominator, aggregation should

theoretically be feasible to various hypothetical extents for a variety of hypothetical purposes. On abstract grounds, the idea has much appeal, particularly in light of the magnitude and pressing urgency of the urban housing problem.

This paper focuses on aggregating low and moderate income housing presently carried on under the several federal programs in order to create a potential mass market concentrated within the Washington metropolitan area. The total volume of such housing construction planned for the target area is substantial, but it is presently fragmented among individual HUD, DoD, and VA programs. These programs are not organized for central national administration, nor in such a way as to facilitate coordinating them for any given locality.

Further militating against aggregation is political fragmentation. The target area is roughly coterminus with the Washington SMSA (standard metropolitan statistical area), which is comprised of the District of Columbia and two counties each in Maryland and Virginia which include separate independent cities as well. The conjuncture of so many kinds and levels of government in one area complicates the task of assembling a single mass market from the respective housing construction projects tied to federal programs that apply locally. Finally, since the character of the housing situation--and the nature and circumstances of the housing problem--varies greatly from one political jurisdiction to another, the market we are confronted with is decidedly not homogeneous and is marked by considerable pluralism, moreover, within each of these subdivisions.

Assuming that some unspecified measure of aggregation might be managed at the national level on federal initiative, what means are available to do so? Clearly the wherewithal lies in the financial incentive integral to these various federal programs. Through them a patron-client relationship exists, implicit in which a control over fund allocation gives the federal authority commensurate influence on housing activity. But all the federal housing programs do not equally lend themselves to being used as instruments of market aggregation. Their leverage potential varies greatly, in proportion

to the amount of subsidy value they represent to the client. Depending on dispensable money flow associated with them, some programs leave little room even for persuasion, while others allow for positive inducements to encourage cooperation, including a limited negative capability to compel compliance through sanctions and coercion.

The federal housing programs can be ranked according to degree of potential financial leverage. Representing the greatest potential leverage capacity is the DoD military dependent housing program. Unique among all the federal programs, it exercises relatively full command of its special market. It is, moreover, the only program in which the federal government functions as entrepreneur and actually lets construction contracts.

Next in order come certain of the HUD programs. Those with perhaps greatest leverage potential are public housing programs under HAA. Here federal capital grants are directly bestowed and operating subsidies contributed to local public housing authorities for projects that meet HUD criteria. In most cases, without these funds the local public housing projects would be impossible. Significantly, HAA already requires adherence to various procedural, structural, and occupancy standards as a prerequisite to financial assistance.

Quite close to these HAA programs, with respect to potential federal leverage, are related special purpose HAA public housing programs. Included among these are projects for the elderly and handicapped, college and hospital housing, and senior citizens' housing sponsored by private, non-profit organizations. Again, the benefits of the federal financial support provided are substantial enough to be crucial as to whether a given housing project will materialize or not.

Almost the same degree of potential leverage as in public housing is inherent in several of the programs administered under FHA. Powerful financial benefits are especially represented in the Section 221(d)-(3) program. One phase of this program is direct federal rent supplements paid to or for low income tenant families in certain kinds of housing projects, which without such subsidy support would

not be financially viable. Another phase of the same basic program is Section 221(d)-(3) BMIR (Below Market Interest Rate). This provides an important indirect subsidy for low and moderate income rental housing wherein the federal government absorbs half or more of the interest costs incurred in capitalizing the project, without which the low-rent charges would not otherwise be possible.

Another program which yields a modest federal leverage potential is Section 202. This program provides for financing assistance in the form of three percent mortgage loans, but it is restricted to housing for the elderly with income eligibility corresponding to public housing and rent supplement limits.

Progressively lesser potential for leverage is associated with the remaining FHA programs. Falling mid-range on the leverage spectrum, where the federal financial benefits to be realized are nevertheless still respectably substantial, are, in more or less descending order: Section 231 (housing for the elderly, not eligible under Section 202), Section 213 (non-profit cooperatives), and Section 234 (condominiums). A given project may qualify under one or more of these programs, and indeed, if it also happens to be in whole or in part rental and low income, may theoretically be eligible under Section 221(d)-(3) rent supplement or BMIR, and perhaps even as public housing.

Allowing the least leverage potential are such conventional FHA mortgage insurance programs as Section 203 and Section 207 for regular home ownership and rental housing. Inherently, neither contains much financial incentive. The analogous VA program of mortgage guarantee is similarly near the low end of the spectrum.

Not all of these federal housing programs, however, are oriented to low and moderate income housing. Only a fraction are wholly pertinent and others only partially so. Listed in inverted progression, according to relative "lowness" of income level to which they respectively apply, the relevant programs arrange themselves roughly in the following order:

(1) Public Housing programs under HAA, which are expressly designed to provide the lowest rental accommodations catering to the lowest income category. (Significantly, despite the minimal costs involved, much public housing is still beyond the reach of many of the urban poor.) Also included here are the special low-rent public housing programs for the elderly and the handicapped.

(2) Section 221(d)-(3) rent supplement program under FHA, which is aimed exclusively at the low-income sector.

(3) Section 202 housing for low-income elderly.

(4) Section 221(d)-(3) BMIR, which is for both low and moderate income rental housing, the upper limits taking in a somewhat higher income level than that permitted under public housing or rent supplement programs.

(5) Section 231, housing for the elderly and handicapped, which is generally keyed to lower income levels.

(6) DoD military dependent housing, about two-thirds of which can be considered as low or moderate income housing.

(7) Section 213 (cooperatives) and Section 234 (condominiums) are applicable in part, to the extent that the cost of some of the housing can be afforded by those of low and moderate income.

(8) Section 203 (regular home ownership) and Section 207 (regular rental) theoretically also may include lower income range housing insofar as prevailing market conditions justify low enough land and building costs.

Thus the programs of primary concern--i.e., those expressly devoted to low and moderate income occupancy and at the same time endowed with financial leverage potential--center around the ones associated with federally subsidized housing. The core of these is concentrated in the following programs:

Dod Military Dependent Housing
Public Housing
Section 221(d)-(3) Rent Supplement
Section 221(d)-(3) BMIR
Section 202

It is from among these that we shall identify as many candidates as possible for potential market aggregation in the Washington metropolitan area.

B. THE DOD MILITARY DEPENDENT HOUSING MARKET

Military dependent housing programs of the Department of Defense offer the most likely prospects for market aggregation. Construction of sizable numbers of such new housing units is planned for various military installations in the Washington area. Table 1 shows the projected schedule of construction expected over the next five years.

Table 1

MILITARY DEPENDENT HOUSING MARKET
NEW FAMILY HOUSING CONSTRUCTION
FY 1969-FY 1973[a]

Washington Metropolitan Area

Service	FY 70	FY 71	FY 72	FY 73	Total
Army:					
Ft. Mead, Md.[b]	330	400	420	350	1500
Ft. Belvoir, Va.	150	100	-	100	350
Ft. Myer, Va.	120	120	120	120	480
Total Army	600	620	540	570	2330
Navy:					
Naval Complex Washington, D.C.	155	310	500	500	1465
Air Force:					
Bolling AFB, D.C.	160	300	500	500	1460
Andrews AFB, Md.	200	200	200	200	800
Total Air Force	355	500	700	700	2258
Total	1110	1430	1740	1770	6053

a. No new housing units are programmed for the Washington area for Fiscal Year 1969.

b. Fort Meade technically lies just beyond the geographical boundaries of the Washington SMSA but is here included because of its proximity and the size of its housing projects.

As can be seen from the schedule, the annual totals for the Washington area are substantial. However, a significant amount falls outside the low or moderate income category. In the absolute sense, income criteria are not supposed to be relevant to the DoD program, for the purpose is essentially to provide housing where none exists, for military personnel at all levels of the income spectrum. The major portion of the program, nevertheless, can be regarded as corresponding in many ways to low and moderate income housing in the civilian sector. Some 65 to 70 percent is earmarked for families of enlisted personnel of the top three grades.

Accordingly, the DoD program, revised to reflect low and moderate income housing construction, is approximately as shown in Table 2. This constitutes the pertinent military dependent housing market for the Washington metropolitan area that is of primary interest to the present study.

The Department of Defense is interested in reducing the cost of the housing it constructs across its entire program. A policy striving for economy is actively pursued, and certain experimentation has been undertaken to this end. Therefore, the military dependent housing program, or some aspects of it, should theoretically lend itself to possible aggregation, either alone or in combination with other federally supported housing programs, in order to create a mass market having certain features in common to which cost-saving techniques might be applied.

The magnitude of total DoD housing construction for any one year offers an inviting experiment-size possibility if viewed as a single coherent market. Even the low and moderate income portion of the program for FY 1971 and annually thereafter is large enough for experimentation. But to exploit it, serious coordination problems would be encountered. Though there would undoubtedly be ready agreement in principle, considerable divergence and resistance could be expected in trying to achieve meaningful aggregation in practice, particularly when it came to specific implementing details. It is noteworthy that DoD housing authorities are already encountering sharp differences on

the part of individual Military Departments regarding the respective kinds and quantities of housing each Service should get.

Table 2

LOW AND MODERATE INCOME
MILITARY DEPENDENT HOUSING MARKET
NEW FAMILY HOUSING CONSTRUCTION FY 1969-FY 1973

Washington Metropolitan Area

Service	FY 70	FY 71	FY 72	FY 73	Total
Army:					
Ft. Mead, Md.	220	266	280	232	998
Ft. Belvoir, Va.	100	66	-	66	232
Ft. Myer, Va.	80	80	80	80	320
Total Army	400	412	360	378	1550
Navy:					
Naval Complex Washington, D.C.	105	206	332	332	975
Air Force:					
Bolling AFB, D.C.	105	200	333	332	970
Andrews AFB, Md.	133	132	133	132	530
Total Air Force	238	332	466	464	1500
Total	743	950	1158	1174	4025

Aggregating the DoD housing program merely to the extent of establishing a "requirement" for fiscal planning and budgetary purposes alone has thus proved difficult. Aggregating the various component projects into a single DoD market would compound the difficulty. Yet, in the light of the past success of the single-manager concept in other spheres of military endeavor, it should be feasible. To do so, a prerequisite would be the firm desire forcefully imposed from above and accompanied by sanctions, probably best emanating directly from the White House.

C. HUD SUBSIDIZED HOUSING MARKET

A real and substantial subsidized housing market already exists in the Washington metropolitan area and will continue for at least the next 5 years. However, it does not exist as a cohesive, integrated entity. Rather, it is fragmented and compartmentalized, and although the dimensions are fairly stable, its form and exact configuration are in a perpetual state of flux.

The projected construction of public housing or subsidy housing under FHA programs in any one of the component political jurisdictions in the Washington SMSA is in itself insufficient to constitute a market of the required magnitude (for the purposes of this study, 1000 units or more). Combinations of two or more localities, though, would be sufficient. Various candidates for such aggregation through combination, based on different mixes of jurisdictions, are conceivable. Local constraints aside, the likelihood of and the advantages to be gained from each of the several possibilities depend largely on what size and what features in common are desired, and how the resulting market aggregation is to be exploited. Presumably, different objectives will dictate different choices for optimization.

Before exploring which of the sub-market increments hold promise for potential aggregation, the composition and characteristics of the Washington area housing programs should be examined individually and as a whole. However, as indicated earlier, firm statistical data regarding future housing activity are hard to obtain.

The need for subsidized low-income housing in the Washington area is great. Some extreme estimates place the unfulfilled need in the District of Columbia alone as high as 140,000 households, or comprising almost half the total population, but such appraisals seem to beg the question of what constitutes substandard, inadequate, or overcrowded housing conditions. A more conservative estimate, based on criteria at once more austere and more objective, places the figure much lower though nevertheless still substantial. Table 3, showing the occupancy potential for subsidized housing for the entire SMSA, may be construed as reflecting the absolute minimal need. At the

same time, it constitutes true demand, for it represents how much can be made available, in the sense of that for which federal subsidy is obtainable, if local jurisdictions undertake appropriate projects under the various programs to the extent permitted. Table 4 shows how much will actually be realized in the form of new construction.

Table 3

OCCUPANCY POTENTIAL FOR SUBSIDIZED HOUSING UNITS
ESTIMATED AVERAGE ANNUAL RATE, 1969-1973
(Mean Increase of 3 Percent Annually)

Jurisdiction	(1)[a] Public Housing	(2)[a] 221(d)-(3) BMIR	(3) Rent Supplement	(4) Section 202	(5)[b] Approx. Net Potential
District of Columbia	2250	2100	1150	325	3000
Montgomery County, Md.	200	200	100	50	300
Prince Georges County, Md.	400	350	150	50	500
Arlington County, Va.	200	250	50	25	250
Fairfax County, Va.	150	150	50	25	175
Alexandria City, Va.	200	250	100	25	275
SMSA TOTAL	3400	3300	1600	500	4500

a. Totals in Columns 1 and 2 are mutually exclusive, but those in either one are partially additive with totals in 3 and 4 (indeterminate because of overlapping among programs).

b. Approximate net occupancy potential for all subsidized housing programs adjusted to take into account overlapping among programs.

Best estimates of the projected schedule of new housing construction under federal subsidy programs administered by HUD, adjusted to reconcile discrepancies between sources, are presented in Table 4. These include HAA public housing programs as well as FHA Section

221(d)-(3) BMIR. The figures given have been further adjusted so that acquisitions of existing structures are duly discounted and excluded from the new-construction totals.

Table 4

PLANNED NEW CONSTRUCTION UNITS
UNDER SUBSIDIZED HOUSING PROGRAMS
PROJECTED AVERAGE ANNUAL RATE 1969-1973

Jurisdiction	(1) Public Housing	(2) 221(d)-(3) BMIR	(3)[a] Section 202
District of Columbia	700	---	(250)
Montgomery County, Md.	350	---	(100)
Prince Georges County, Md.	250	---	(50)
Arlington County, Va.	0	0	0
Fairfax County, Va.	0	125	
Alexandria City, Va.	0	250	
SMSA TOTAL	1300	375	(400)

a. Totals in Columns 1 and 2 are not additive. Those in Column 3 are included in Column 1 and show the estimated proportion of new public housing that may be financed under Section 202.

It should be noted that the estimates in Table 4 are realistic projections based on testimony by authorities of local housing agencies; the totals reflect a reasonable degree of commitment already made, in the form of policy and plans presently being followed, and are fully expected to be carried out. Furthermore, they are conservative estimates, hedged by a factor of as much as 35 percent. They thus represent minimums, and probably much higher totals will prove to be the case in practice. Finally, the validity of the projected

figures given is not contingent upon larger variables such as the course of the racial issue, social class problems associated with poverty, or pressures for and against relocating ghetto slum populations from the core city to the suburbs. The subsidized housing construction plans here referred to are oriented to providing housing only for the poor currently residing in each of the respective local jurisdictions. The planning does not contemplate an influx of needy from outside and in fact, local housing policy resists the idea. Should new forces emerge to alter the basic demographic circumstances bearing upon the general housing picture of the area in the future, the impact would be to change the magnitude of subsidized housing construction upward, adding undetermined increments over and above present estimates.

As can be seem from comparing the demand or occupancy potential for subsidized housing (Table 3) with the amount of new construction that will actually be supplied (Table 4), the shortfall is sometimes considerable, especially in the District of Columbia. Much of the slack, it should be noted, is taken up by programs other than those for new construction, such as by acquisition of existing facilities from the commercial inventory through the Turnkey procedure or by the use of rent supplement programs. On balance, the shortage of subsidized housing nevertheless is substantial. Availability of federal funds is not the bind. Usually the less than maximum scale of construction is accounted for by local housing policy, lack of suitable land, or no workable project proposals being submitted.

D. POTENTIAL MARKET AGGREGATIONS

Various combinations of programs and local political jurisdictions are suggested by the DoD military dependent housing in Table 2 and the HUD subsidized housing in Table 4 from which to create the desired markets of required size for potential aggregation. A number of different theoretical possibilities for such market aggregation present themselves. Following below is a list of potentially aggregatable federally subsidized housing programs in the Washington metropolitan

area. Selections are based on arbitrary market criteria of quantity (1000 or more new units programmed annually for 1969 through 1973). Qualitative choice as to appropriate kind and degree of aggregation sought will depend on the purpose of the particular market.

Theoretical Market Candidates

Potentially Aggregatable Federal Subsidized Housing Programs in the Washington Metropolitan Area (SMSA)

(Average rate of 1000 or more new construction units programmed for each annually, 1969-1973)

SMSA Total, all programs (DoD low and moderate income military dependent housing, plus HAA public housing and FHA BMIR) = approximately 2600 annually on the average.

SMSA-DoD low and moderate income military dependent housing = approximately 1000 annually

SMSA public housing and BMIR = approximately 1600 annually

D. C. public housing plus DoD in D. C. = approximately 1200 annually

D. C. public housing plus DoD in SMSA = approximately 1700 annually

Maryland suburbs public housing plus D. C. public housing = approximately 1300 annually

Virginia suburbs BMIR plus D. C. public housing = approximately 1075 annually

D. C. public housing plus DoD in D. C. and DoD in Maryland = approximately 1600 annually

D. C. public housing plus DoD in Maryland = approximately 1000 annually

Maryland suburbs public housing plus DoD in Maryland = approximately 1000 annually

Maryland suburbs public housing plus DoD in SMSA = approximately 1600 annually

Virginia suburbs BMIR plus DoD in SMSA = approximately 1375 annually

An additional, different kind of potentially aggregatable market should be mentioned as another theoretical possibility, that is, a market based on project size. All of the programmed non-military subsidized housing in the Washington SMSA is scatter site and made up of relatively small, multi-family projects. The projects range in size from town-house complexes of about 20 units to apartment-type structures containing more than 300 units. Thus, a potential market candidate for aggregation, totalling over the required 1000 units, can be identified on the basis of commonality in size of individual projects. Throughout the SMSA about 16 or 17 multi-family projects of medium size, consisting of between 50 and 100 units each, are expected to be constructed annually under public housing or BMIR programs. These 16 or 17 projects together involve a total of approximately 1300 housing units. Their geographical distribution, however, is not known, because exact location of projects depends in each case on availability of sites, and suitably situated tracts for subsidized housing where most needed are characteristically in short supply in the Washington metropolitan area.

V

A POSSIBLE PHASED EXPERIMENT IN AGGREGATING THE MARKET IN THE WASHINGTON METROPOLITAN AREA

A. INTRODUCTORY NOTE

The phased experiment in the aggregation of low-cost housing in the Washington metropolitan area suggested below is in response to an oral request of the project sponsors. Our exploration into institutional constraints to aggregation does not provide a basis for confidence that an experiment along the lines suggested below will necessarily succeed. If, however, HUD determines that some experiment in local aggregation would be useful in testing innovative construction techniques on the one hand, and in probing the depths and complexities of institutional constraints on the other, something along the lines sketched out here may merit consideration.

It is important to note at the outset that what we are describing is a phased experiment. The phasing is geared to a succession of increasingly greater institutional bureaucratic constraints or difficulties that we anticipate would arise in an attempt to aggregate the market.

The shape of this proposal is immediately determined by three points that emerge from an examination of the "General Problem of Institutional Constraints" (Section II, above). First, if urban housing markets are to be aggregated in areas where they are now most urgently needed, the economic benefits of aggregation need to be clearly demonstrated. This is necessary to strengthen the case for aggregation generally, and to counter the inertia and vested stake in the institutionalized practices which presently stand in the way of innovative construction techniques. It is probably fair to say that an underlying reason why significant market aggregation has not already occurred is that the case for it has not been

adequately demonstrated. The most pressing need, then, is to demonstrate the (presumptive) economies of new, industrialized, and mass production methods of housing construction. Thus, the first purpose of our experiment is to provide an opportunity to test the possibility of achieving economies through new design, management, and construction techniques and through savings of time and interest costs as a result of market aggregation. Hopefully, however, it should also teach us something about the problem of market aggregation itself.

Second, the easiest place for the federal government to conduct the test is, generally speaking, on sites directly controlled by the federal government. This much is recognized in general in Section 108 of the 1968 Housing Act. But it may be possible to proceed a step or two beyond the literal terms of this provision. An attempt to aggregate markets may indeed serve to identify constraints within the federal structure that would need to be relaxed if aggregation of markets were in fact to be facilitated.

Third, innovative methods of housing construction may encounter fewer obstacles if not associated exclusively with subsidized housing for the poor. If such innovations were made a part of a more generally applicable revolution in housing technology, there would be better prospects for a wider market as well as fewer invidious connotations. Accelerated off-site, factory-style production of components for on-site assembly should also be considered part of this total experiment.

In general, our approach would be to use federal land in the Washington metropolitan area to its maximum potentiality to provide sites for DoD-sponsored housing, as well as for a range and variety of the types of housing sponsored, assisted, or authorized by the Department of Housing and Urban Development. Federal land would be supplemented with phased increments of private land first within the District of Columbia and, later, in other jurisdictions. The ultimate program would thus involve housing construction under the widest possible range of legislative authorizations and administrative jurisdictions. The purpose of this diversity would be to test the compatibility of

these different provisions and jurisdictions in a common endeavor to deal in a coordinated way with a single, unified, market. Among the provisions of the Housing Act that might be used would be those providing authority for public housing, rent supplements, BMIR, and housing for the elderly. These appear to provide the greatest potential leverage for influencing housing construction by local authorities or groups.

As will be evident, HUD's ability to cope with its own intra-departmental modes of action and internal regulations will be a key element in our suggested experiment. But, as instructive as it may be for HUD officials to confront the situation as it actually exists, the prospects for success of our suggested experiment would be enhanced if the Office of the Secretary undertook direct control and responsibility, on a pilot basis, for the phased aggregation. In addition to increasing the probability of success, such an approach might provide the Secretary with useful, direct experience with the intra-agency problems which may now be standing in the way of market aggregation and which we believe will have to be addressed as a priority problem if more ambitious programs of aggregation are to be undertaken.

The total potentially available public housing market in the Washington metropolitan area is summarized in Table 2, Section IV above,[1] and in the list of prospective markets, also shown in Section IV.[2] Table 2 lists exclusively that portion of the housing planned by the DoD for military dependents which corresponds most closely to the low and moderate income housing in which HUD is interested. This grouping would form the initial core of an aggregated market and would be the focus of the first phase of experimentation. Increments for subsequent phases might then be chosen from the list of 11 different combinations of prospective markets. We recognize, of course, that the various "mixes" we suggest are by no means

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1. See page 42.
2. See page 47.

homogeneous in terms of cost, type of housing, and residents. It reflects our belief that reduction of housing construction costs for the poor will be served best in the long run by methods that reduce construction costs of housing in general.

B. THE SUGGESTED EXPERIMENT

The experiment outlined below is addressed to the market summarized in Table 2 and in the list of prospective markets, both cited above. Progressively difficult aggregations of planned housing construction are introduced in four stages. At each stage there is an opportunity to test possible economies of scale and innovative construction methods. At each stage, too, there is an opportunity to probe the increasing complexities of social, political, legal, and organizational problems.

1. Stage One

Goal: To aggregate as much as possible of the new family housing planned for military dependents in the Washington metropolitan area (see Table 2).

Purpose: Primarily to test possible economies of scale and innovative construction methods. Useful experience should also be gained in inter-departmental cooperation in the housing field.

Advantages: The proposed aggregation would be entirely on federally-owned land and would be sponsored by a single federal department.

Problems: Inducing the Department of Defense to construct the experiment in a manner which would provide results useful to HUD, as well as DoD, would probably not be easy. The Department of Defense might not be interested in types of housing units similar to those appropriate to HUD programs. Or DoD might prove unable or unwilling to coordinate the housing efforts of the three military services. And finally, by staying entirely within the field of DoD-sponsored housing divided among six sites, it might prove difficult to achieve significant economies of scale.

2. Stage Two

Goal: To aggregate DoD-sponsored housing in combination with HUD-supported housing planned for construction on government-owned land located within a relatively small area and all in one political jurisdiction. Out of a total of 970 units of dependent housing which the Air Force plans to construct on the former Bolling AFB over the next five years, and the total of 8000 units tentatively planned for civilian families on a part of the same former Air Force base and on the adjacent former Anacostia Naval Air Station when and if that land becomes available, we can estimate that an aggregation of at least 2000 units annually would be possible after 1970 for this stage of the experiment. The 3800 to 4500 units planned for the nearby Fort Lincoln Urban Renewal Area might be an alternative source of civilian units for Stage Two.[3]

Purpose: To test economies and innovative construction methods possibly achievable through a larger aggregation than would be likely in Stage One and in addition to gain practical experience in HUD-DoD cooperation on a large-scale aggregation effort.

Advantages: Only one local political jurisdiction (the District of Columbia) would be involved. If Bolling-Anacostia, rather than Fort Lincoln, provided the civilian side of the effort, all construction would be on federally-owned land.

Problems: Coordination required within both HUD and DoD would be almost as complicated as that required between the two Departments. Achieving agreement on the specifics of proposed construction and on the scheduling of building operations would be involved.

Both of the possible civilian components of this proposed aggregation involve special difficulties. Congress has prohibited the Department of Defense from disposing of any of the Bolling-Anacostia land before December 31, 1970. In the case of Fort Lincoln, the

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3. Alternatively, these HUD-sponsored supplements might simply be added to all of the DoD dependent housing covered in Stage One.

land (formerly owned by the federal government) has been turned over to the National Capitol Housing Authority which has made certain agreements with local leaders and is in the process of negotiating others. Acceptance by NCHA and those local leaders of any aggregation proposal of the nature contemplated here cannot be assured.

3. Stage Three

Goal: To expand the HUD-DoD aggregation proposed in Stage Two by adding additional civilian housing units to be built on privately owned land in the District of Columbia.

Purpose: By achieving an even larger aggregation, to provide a better test of possible economies of scale and innovative construction methods and also to explore the problems of gaining local governmental and community cooperation in an aggregation effort.

Advantages: The effort would still be limited to a single political jurisdiction.

Problems: All of the problems of Stage Two would be present. The difficulties involved in enlisting local cooperation would of course be compounded. In addition, it might prove difficult to concentrate the total effort sufficiently within a small enough area to achieve the desired economies of scale.

4. Stage Four

Goal: To add to Stage Three civilian housing units in nearby political jurisdictions outside the District of Columbia.

Purpose: Again, the size of the attempted aggregation would be expanded, permitting in theory a still better test of possible economies of scale and innovative construction methods. Experience would also be gained in coordinating the efforts of several local governments.

Advantages: None, other than the opportunity to make the test and gain the experience which would be the purpose of the effort.

Problems: The problems encountered in Stage Three would be greatly increased by the need to deal with several local governments, to gain the acquiescence of a greater diversity of community interests, and to seek economies of scale within a larger and more scattered total effort.

VI

A GAMING APPROACH TO THE AGGREGATION OF HOUSING

Section V outlined a four-stage, phased experiment in aggregating a low-cost housing market in the Washington metropolitan area. However, it appears possible that insufficient is now known by any agency interested in such aggregation, including HUD, to provide the basis for articulating a complete proposal even at the "simplest" level of housing-market aggregation.

If this is in fact the case, a tentative or hypothetical aggregation proposal might first be "gamed," using an adaptation of the techniques used in politico-military games and business games (see Appendix B for a brief discussion of the general nature of "gaming"). Agreement, or lack of agreement, on a serious proposal could of course be arrived at through the normal process of staffing, coordination, negotiation, compromise, and so on. But the area of interest is a new one, which may offer few precedents for action by either public agencies or private groups, and the normal process could well consume months or even years. "Gaming" might be a means of forcing the normal process, and thus of arriving very rapidly at an enhanced understanding of constraints and possibilities in connection with a proposed aggregation of a housing market.

Sketched out below is the suggestion of a specific game, involving a game "scenario," playing teams, and a control, or umpire, team.

A. A SCENARIO FOR AN AGGREGATION GAME

1. The Nature and Purpose of a "Scenario"

A "scenario" in the kind of game that is suggested here is the description of a hypothetical situation. Its purpose is to confront the "players," or teams of players, representing diverse and often

conflicting interests and objectives (i.e., "stakes" in the given hypothetical situation), with a concrete set of circumstances which they must address and to which they must react. In the standard approach used in games such as the one that is being proposed, the participating teams are first asked to muster and report their respective positions and strategies vis-a-vis the scenario. Following this step, an interaction is accomplished in response to the several positions. This interaction, which is put together by a "Control Team," acting in an umpire capacity, modifies the initial set of circumstances with which the teams had been confronted and produces in effect a new hypothetical situation or "scenario." The process is repeated until in the judgment of the Control Team, and subject to the time constraints imposed on the game, some logical stopping point has been reached.

To elicit the required response, the initial scenario must measure up to certain essential criteria. It must be realistic--that is, the hypothetical situation must incorporate as many elements of the real world as possible in order to make it plausible to the players and to permit them quickly to become "vicarious" with the postulated situation. Secondly, it must be as specific as possible in order to elicit specific responses and to avoid misunderstandings and misinterpretations by and among the players.

What is described below is not a full-fledged scenario, but simply the outline of one, with the suggested elements that would go into it. The specifics would have to be filled in by HUD experts, probably in consultation with experts from some of the other governmental agencies and authorities who would be involved in the game. The specifics would apply particularly to some of the critical assumptions made in the scenario, such as those referring to the (as yet apparently unknown) precise technological and economic benefits to be derived from an aggregation of the low-cost housing market in the Washington area. Without such a clear postulation of benefits, the main incentives for cooperation by the players in the game (as well as the real world) would be missing.

2. The Outline of the Scenario

The scenario might be along the following lines:

The time is May 1969 when a new US Administration is ensconced in office. Prodded by continued violence and disorders in the cities, and under increasing public and Congressional pressures to alleviate urban problems, the Administration decides to speed up implementation of the provisions of the Housing and Urban Development Act of 1968.

Accordingly, the White House issues a directive to all relevant agencies of the federal government instructing them to cooperate with the Secretary of Housing and Urban Development in implementing, in line with Section 108 of the Housing and Urban Development Act, a pilot project addressed to the construction of low-cost housing in the District of Columbia. At the same time, the President calls upon Mayor Washington and other local authorities in the District to cooperate with HUD in this endeavor.

The pilot project is based upon a proposal, previously submitted to the White House by the Secretary of HUD, for an experimental aggregation of the construction of low-cost housing in the District of Columbia. The proposal has drawn upon the following:

(1) The results of a HUD survey which indicates that, according to existing programs both federal and local, there will be an annual construction, beginning in 1970, of at least 2000 units of low-cost housing on federally owned land in the District of Columbia. These include military dependent housing scheduled by the Air Force in the former Bolling AFB as well as civilian housing on land expected to be released for this purpose at Bolling and on the adjacent former Anacostia Naval Air Station (see Stage Two of the phased experiment in aggregation outlined in Section V). The common denominator of these housing programs is their susceptibility to some strong measure of financial "leverage" which could be applied by the federal government--subject to local rights, laws, and other constraints--upon the construction of the units.

(2) The results of HUD studies and discussions with potential contractors which show convincingly that, if the number of units to

be constructed, as described above, could be combined into an "aggregated market"--that is, "controlled" or coordinated to the extent of being made amenable to technological innovations and/or technologies of scale--the resultant savings in construction costs, below current standard levels of expenditure, would be on the order of 15 percent.

The Secretary of Housing and Urban Development is thus instructed by the White House to set this experiment in motion, with the full backing of the Executive Branch of government. The backing applies to the basic provisions of the experiment, not to the specifics. The specifics of the scheme are to emerge from agreement among HUD and other relevant federal agencies and local authorities.

B. SUGGESTED GAMING TECHNIQUE

In the suggested game, each interested federal agency (HUD, DoD, Labor Department, and the Small Business Administration) would be asked to field a team of experienced senior officials. The "team" in the case of Labor or SBA might be a single representative of each agency. In the cases of HUD and DoD, however, each team would probably consist of a representative of the Secretary plus sub-team players from the major interested component agencies of the department. In playing out each move of the game (e.g., dealing with the scenario or revisions thereof), HUD and DoD would be required to arrive at Departmental positions (game responses), presumably after having consulted with the agencies within their Departments.

Having received the initial scenario (and the revised scenarios of later moves), all participants would be required to submit a response within a short specified period, the purpose being to uncover constraints, pitfalls, and possibilities as rapidly as possible.

A Control Team would meld responses to the initial scenario (and to subsequent revisions) and project a more plausible scenario for the next move, and also provide clarification to players as requested. The Control Team should be chaired by HUD, but would include representatives of DoD, Labor, SBA, and the White House.

It seems possible, and even probable, that the play of this game among executive departments and agencies will demonstrate that the hypothetical aggregation is impractical, perhaps because additional enabling legislation may be required, or for numerous other reasons. In this event, the game would terminate with, however, something having been learned.

But should agreement be reached on a federal proposal for the hypothetical aggregation of District public and military housing, gaming could proceed to a further stage. In this stage, HUD would game the proposal out with the local authorities and groups, using the technique outlined above. These groups would probably include the D.C. National Capital Planning Commission, the National Capital Housing Authority, the D.C. Redevelopment Agency, the Washington Urban League, as well as components of the District administration such as the Boards of Education and Health, the Departments of Highways and Traffic, Sanitary Engineering and Recreation, and the Metropolitan Transit Commission.

Before and after each stage of the game, all participants would gather, initially to achieve a common understanding of purposes and techniques, and subsequently to critique and de-brief.

Problems peculiar to that of aggregating housing will doubtless require the adoption of gaming techniques different from those used in, for example, a politico-military game. "Real time"--that is, realistic phasing into the game of the likely time periods required by events and actions relevant to the given scenario--as opposed to "game time" is important in the latter game and must be kept in mind for every move: time as a game variable is perhaps not particularly relevant to the type of game suggested here. In that respect, the HUD game should prove easier to stage and to manage than the standard politico-military game. Other game aspects may require innovations for HUD purposes, but should prove amenable to such innovation.

C. POTENTIAL PAY-OFF OF THE GAME

In the case of the kind of game which has been suggested above, the potential benefits may be the following:

(1) Conceivably the game may be substantively successful--that is to say, the game produces broad agreement among the participants, both federal and local, that the aggregation proposal which is postulated in the scenario, as it may have been modified in the gaming process, is a workable one. In this ideal case, the way might be partly paved for an actual-life experiment. (Alternatively, an extension of the game may be attempted to include the construction of low-cost housing in suburban areas beyond the confines of the District of Columbia, using as additional participants the representatives of the relevant authorities in these areas.)

(2) Short of this fortuitous result, the game may result in agreement among the participants representing the federal agencies--only to bog down in the "negotiations" between federal and local authorities. This, too, would be no mean accomplishment, in that it would point a way to a "federal position" on the issue--to be translated into actuality by appropriate instruments of inter-agency coordination and procedures.

(3) Whether or not the game proves successful in one or both of the above respects, at the very least it should, if staged properly, attain the basic objectives of baring and illuminating some of the principal obstacles standing in the way of the particular aggregation experiment--be they legal, bureaucratic, sociological, or other--and suggest possibly some routes of remedial action.

(4) At the very least, also, such a game would prove educational to the participants, including the sponsors. Again if staged correctly, it would tend to deepen or sharpen their insights into the general problem area and the contending viewpoints associated with it. If the participants are selected carefully, the game experience might also enhance their receptivity (and the receptivity of the agencies and authorities which they represent) to an actual experiment in the future.

Appendix A

SOME SUGGESTIONS FOR FURTHER STUDY

Appendix A

SOME SUGGESTIONS FOR FURTHER STUDY

In the course of our research and interviews, we have encountered certain problems and gaps in information which might merit additional HUD research. We have not listed some of the more obvious areas of study, such as the formation of a market data bank. The following areas of study are suggested:

A. REVIEW OF HUD INTERNAL PROCESSES

(1) A study of where and why delays occur in HUD's assessment and approach of new projects and proposals.

(2) A study of the feasibility and desirability of standardizing the varying, and sometimes conflicting, requirements of HUD's constituent agencies.

B. EXAMINATION OF REASONS FOR FAILURES OF PAST HOUSING EXPERIMENTS

A study of the dozen or so largely unsuccessful experiments by major corporations with industrialized housing in the years immediately after World War II.

C. ESTABLISHMENT OF NATIONAL BUILDING CODES

At the federal level, there seems to be almost universal agreement on the need for a national building code. Since there are few, if any, local incentives for a uniform building code, it has been suggested that such a code must be federally imposed. Therefore, national building codes in other countries, such as Canada, might be studied to discover:

- What advantages are attached to such systems?
- Do local authorities resent such codes?
- Have uniform building codes facilitated aggregation of housing units?
- Have uniform building codes opened the way to innovative technology?

D. DEVELOPMENT OF COST GUIDELINES AND EFFECTIVENESS CRITERIA

One of the biggest problems in comparing housing studies and proposals is that there are no accepted guidelines for quantifying the cost versus the value of house and components of houses. Therefore, a study to develop cost guidelines and effectiveness criteria should be considered. As useful guidelines are obtained, HUD could promote their use by insisting that studies submitted to it abide by these common ground rules and thus allow reasonable comparability among various studies and proposals.

Appendix B

"GAMING" AS A TOOL OF "SOCIAL ENGINEERING"

Appendix B

"GAMING" AS A TOOL OF "SOCIAL ENGINEERING"

The problem of accomplishing aggregation and introducing new technologies in the construction of public housing is, in many respects, similar to the problem confronting industrial engineers wishing to introduce change in an industrial system: in view of the complexity of modern industrial systems, it is often too costly to undertake comprehensive experiments in innovative designing, so that engineers are forced to risk a trial-and-error approach to new systems. Business management is faced with a similar problem in introducing new policies or undertaking reorganizations, experimentation or pilot studies being even more difficult in ongoing business organizations. But the larger and more complex a system, the higher the cost and the greater the risks in trial-and-error implementations. And it can and does happen that an objectively good program is vitiated and even discredited because of mistakes that are extrinsic to it, but which, so to speak, have contaminated it.

During the last two decades a technique has been developed which has proven to be of significant help to industrial engineers and to business management with respect to the above problem. Depending upon the role played by the computer or by man in the technique, it is called simulation or gaming. If the computer plays a major role in the implementation, it is called simulation; if man plays the major role while the computer is reduced to a mere auxiliary function or even completely dispensed with, it is called gaming. The "man-computer" mix is determined by the nature of the system under consideration: to the extent that it is physical or mechanical it can be simulated by a computer; to the extent that men's decisions and actions play a role in it, the computer becomes inadequate and men have to be introduced to play the game.

Industrial engineers are generally interested in production lines, transportation systems, logistic systems--inanimate physical aspects of industrial production. A mathematical model reflecting the structure of the system under consideration, or reflecting it with enough accuracy to make the effort worth while, can be constructed with relative ease. The model can then be "fed" into a computer and various policies checked out; i.e., the model consists of a coordinated set of functions, and policies can be given a set of values to provide variables in terms of the functions. A policy is tested by having the computer find the solutions for the formulas, given the specific values representing a determined policy. The solutions are generally in the form of overall and/or specific aspects of cost effectiveness. What are actually tested are not policies as such, but optimum mixes which admit to wide variation. The range of possible mixes is tested systematically and those yielding optimum cost effectiveness figures are identified. Men play no role in this kind of simulation, other than to program the machines.

In management gaming, it is basic policy decisions, not mere mixes of "ingredients," that are being tested. There is no way of testing these systematically. Here human players make decisions concerning major policies and the computer calculates the consequences of these decisions. The most developed form of this gaming is used to sensitivize students to problems inherent in the allocation of funds within a company. The students are given a corporate financial statement and are required to allocate funds for various purposes, such as advertising, capital investment, dividends, research and development, product mix, and so on. Within the computer there is a mathematical model of what such an allocation of funds would yield in terms of goods produced, at what cost, and with what return for those goods in the market. Many business years of operation can be compressed into a day or so of playing, so that both long-term and short-term effects of policies can be calculated. In these games there are generally several teams of players, each team representing a company sharing the market.

In one form of management game no computer is needed, nor can it readily be used. Basically, members of the given industrial firm are organized into teams "simulating" various departments and groupings within the organization. The teams are then presented with a crisis with which they might have to cope in real life, but they are asked to play not only their own roles in the crisis, but the roles of others at the management level as well. In playing through the crisis, the amount of insight generated as to unique problems the others have which are not even felt, let alone taken into account, by the players in real life is almost always surprising. In such games there is a control team instead of a computer. Instead of having the decisions made by the teams at each step of the game fed into a computer, they are sent to the control team. This team then intuitively decides how the picture within the corporation would look as a result of decisions and actions taken and informs the teams of the "new look" for their information and further action. After the game is terminated, the players meet for discussion and the various individual insights are shared with the group, generating new insights in the process.

The non-computerized management game is similar to a form of game which has received more publicity: military and crisis gaming.[1] Despite their seemingly independent development, the "human relations" management game and the crisis game share many features. In the crisis game, the teams represent nations, and the problem to be "solved" is some putative international crisis introduced by means of an elaborate scenario. The teams then react to the scenario by making decisions and taking actions which are forwarded to the control team, which then "updates" the scenario and distributes it to the teams for additional action.

Under the best of circumstances, it appears very difficult to design (engineer) a new social program without serious bugs in it; and to the extent that the scope of the program increases, the

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1. A concise history of the former and discussion, with examples, of the latter is to be found in The Crisis Game, Sidney F. Giffin (New York: Doubleday & Company, 1965).

difficulty approaches impossibility. Here an analogy is in order to help clarify the argument. Aviation engineering exhibits a highly developed state-of-the-art. An examination of the process beginning with the idea of an aircraft and ending with its production discloses at least three distinct steps. They are: blueprints, models, and prototypes. Blueprints are obvious; they play the identical role in the development of a new aircraft that planning plays in the implementation of a new social program. None can deny that both the state-of-the-art and the science of blueprint designing are far more advanced in aviation engineering than in the state-of-the-art of planning social programs. But the aircraft as it initially appears in the blueprints is so far from being capable of flying that two additional steps have to be interposed before production is undertaken. Yet the far less developed art of introducing novel social programs has nothing corresponding to the first step interposed, modeling.

The first step in checking the initial airplane blueprints for bugs and errors consists of modeling. The classic example of this technique is the testing of the flight characteristics of the proposed aircraft by means of a small model in a wind tunnel, but modeling is used far more extensively, especially in testing for airframe strain resistance. Modeling is not cheap and its extensive use indicates that enough corrections were found to make it worth its expense. As already indicated, nothing is available to those responsible for planning and implementing social programs that corresponds to this step.

The improved blueprints following from this step are still not reliable enough for starting production. One or a few prototype models of the aircraft are then built and tested extensively. Building a few prototypes and flight-testing them extensively is also an expensive procedure and again one must presume that enough improvements are made in the design of the aircraft prior to starting its production to make the step worth while. Pilot studies or pilot programs are roughly equivalent to this step in aviation engineering. Before undertaking a wide-scale implementation of a new social

program, it is usually the custom to implement it on a restricted scale to see how it will work out. And the importance of such pilot studies cannot be overstressed, although, needless to say, they are not at all as accurate and definitive as the test flying of prototype aircraft.

Obviously, the entire process of planning and implementing a new social program would be helped, presumably significantly, were it possible to introduce something comparable to the modeling step in aircraft engineering design. Gaming may be able to play that role.

Let us consider any program aimed at the aggregation of low-cost housing. The Department of Housing and Urban Development might plan this program as it normally would: it would proceed as if no game were to be planned. However, just prior to "formalizing" the program plans by a public announcement it would test them out, without publicity, by means of a game, which might be played out at successive levels of interest and timing. Representatives of the agencies and groups that would be affected by the new program, or that by their concerted action may affect the implementation of the program, would be invited to play in the game. To the extent that organized groups are dealt with, the representatives should be seasoned advisers and/or aides of the top management or senior leadership; to the extent that the groups are not organized, the representatives should be people who have established themselves as spokesmen for those groups. Based on experience with games in other settings with other groups, there is no reason to doubt the real cooperation on the part of most concerned, once the purpose of the game is understood by them. The teams representing the social groups involved, including HUD, will then be played by the representatives of those groups.

The game might start by having HUD present the new program to these groups exactly as it would do when presenting it to them in real life. The players then would try to decide how the groups they represent would react to the proposed program. After deciding what the reaction would be, they would write it out and relay it to HUD. After receiving all the reactions, HUD would then determine what the

picture would look like at that point, communicating this to the teams for further action. And the process would be repeated. This could continue ad libidum until stopped for the purpose of evaluating a mass of material, until the new program is launched successfully so that no serious problems are anticipated or until the program collapses as the game terminates in unsolvable conflict.

What possible advantages may be gained by the gaming recommended here? One has already been discussed above. It is the anticipating of reaction to the proposed program. It is reasonable to expect that the reaction of the teams to the proposed program can lead HUD to new insights on how to introduce the program. The behavior of the teams may show where the program is misunderstood and how it is misunderstood. By observing the behavior of its own team, HUD may obtain insight in what to do and what not to do in its relations with other agencies and the public.

The actual public introduction of this (perhaps revised) program may be facilitated in another way as well. The game participation of representatives of other interested agencies or interests should be of use. They will understand the plan better for having played it through. As a result, they will be in a position to explain it to their superiors and peers which, to the extent that the explanation is positive, should do more to gain its acceptance by the groups concerned than the best advocacy of "interested outsiders," i.e., the spokesmen for HUD. The mere playing of the game enhances the probability of a positive attitude on the part of the players, especially if they are given the opportunity to critique the plans after the game, since both the playing and the opportunity to critique increases the commitment of those involved to the new program. And this leads to the third obvious way in which the game may be beneficial.

If the first draft of airplane blueprints must be modified several times, how much more are the first drafts of plans for new social programs in need of modification? Since in the game the plans will be subjected to a kind of test and an intensive study, one may reasonably expect that at least some flaws in planning may be

detected. In addition, the game may yield insight into possible complications which may arise as the implementation of the plan proceeds, which otherwise could not be anticipated because of the relatively undeveloped state-of-the-art of social planning, i.e., the problem of unanticipated interactions. In this respect the game most closely approaches the role played by modeling in the aviation industry.

Appendix C

PERSONS INTERVIEWED IN CONNECTION WITH
THE EXAMINATION OF INSTITUTIONAL CONSTRAINTS
IN THE AGGREGATION OF LOW COST HOUSING MARKETS

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Mr. Vincent A. Marino	Assistant Regional Administrator for Housing Assistance
Mr. Samuel H. Hawthorne	Assistant Regional Administrator for Program Coordination and Services
Mr. Richard A. Traussi	Acting Regional Administrator for Renewal Assistance
Mr. William E. Bergeron	Assistant Regional Administrator for Housing Assistance--Region VI, Seattle, Washington

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Mr. Joseph Burstein	Associate General Counsel for HUD (author of Turnkey Concept)
Mr. Abner Silverman	General Deputy, Assistant Secretary for Housing Assistance
Mr. Richard Steiner	Head of HUD's National Program to Utilize Surplus Federal Lands
Mr. Byron Hanke	Special Assistant to the Director, Architectural Division, Technical Standards Division
Miss Clara Cole	Formerly head of Public Housing Library of HUD

National Capital Housing Authority

Mr. Lester Morton	Deputy Executive Director
Mr. Monteria Ivey	Executive Office, Economist
Mr. Joseph A. Minor	Senior Architect, Development

National Capital Planning Commission

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Mr. Robert Gold	Chief, Research Division

Local Government Representatives

Mr. Gangu Ahuja	Council of Governments of Metropolitan Washington
Mr. Thomas Fletcher	Deputy Mayor, Washington, D.C.
Mr. Scott Robinson	Arlington Planning Commission
Mr. Melvin Smith	Alexandria Housing and Redevelopment Authority
Mr. Warren Nellis	Fairfax County Housing Advisory Office
Mr. Tom Appleby	Executive Director, District of Columbia Redevelopment Land Agency
Mr. James Reid	Director, Department of Community Development, Prince Georges County, Maryland
Mr. Donald W. Clifford	Deputy Director of Housing, Montgomery County Housing Authority

Other Persons Interviewed

Mr. Hugh Morris	Author of "Computerized Low-Cost Housing Plan Outlined" in Housing and Urban Affairs Daily, June 27, 1968
Mr. Fred Jones	Vice President, Allied Homes
Mr. Milton Semer	Formerly General Counsel of HUD, now Washington representative of National Homes
Mr. Richard Bryant	Assistant to Mr. Semer
Mr. David Pellish	Staff Director, Commerce Technical Advisory Board, Douglas Commission
Mr. Nicholas Satterlee	Architect, formerly President, American Association of Architects
Mr. Joseph H. Lewis	Urban Institute
Mr. William Sohn	Washington Architect
Mr. Frank Kristoff	Assistant Director for Planning and Programs, Housing and Development Administration
Mr. Carl Lyle	Chief, Loan Processing Section of Veterans Administration
Mr. John J. Reed	Deputy Assistant Secretary for Family Housing, Office of Secretary of Defense
Mr. Harlow W. Harvey, Jr.	Office of Deputy Assistant for Housing, Office of Secretary of Defense

Other Persons Interviewed (continued)

Mr. Michael Sumichrast	Director, Economics Department, National Association of Home Builders
Mr. Lewis G. Odem, Jr.	Staff Director, Senate Banking, Currency Committee
Mr. Kenneth A. McLean	Staff Member assigned to Senator Proxmire, Senate Banking & Currency Committee
Mr. Allen D. Manvel	Deputy Staff Director, Douglas Commission
Mr. Robert M. Dillon	Executive Director, Building Research Advisory Board, National Research Council of the National Academy of Sciences

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Montgomery County Community Development Department
Montgomery County Planning Board
Fairfax County Housing Advisor
Fairfax County Redevelopment & Housing Authority
Fairfax City Planning Department
Alexandria Planning and Urban Renewal
Alexandria Planning Department
Subcommittee on Housing, Committee on Banking and Currency (House of Representatives)
Subcommittee on Housing and Urban Development, Committee on Banking and Currency (Senate)

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This study examines constraints on the coherent aggregation of federally subsidized housing; strategies by which to simulate the aggregation of housing markets; some possible groupings of planned public and military housing in the Washington area that may offer possibilities for aggregation; a phased experiment in the aggregation of public and military housing in the Washington area; and a possible "gaming" approach to proposals for aggregation.

The constraints that are described--institutional and political, cultural and economic--are considerable, but not necessarily insurmountable. Possible strategies to effect aggregation of federally subsidized, low-cost housing are assessed. Opportunities for achieving aggregation through direct federal action are found to be limited, although not insignificant. The most promising strategy appears to be the indirect one of removing existing institutional and other constraints on the free operation of normal economic incentives. A four-stage experiment is outlined, utilizing information drawn from an investigation of planned public and military housing in the standard metropolitan statistical area (SMSA) of Washington.

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