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A Study of  
OPERATION BREAKTHROUGH

By

William R. Ford

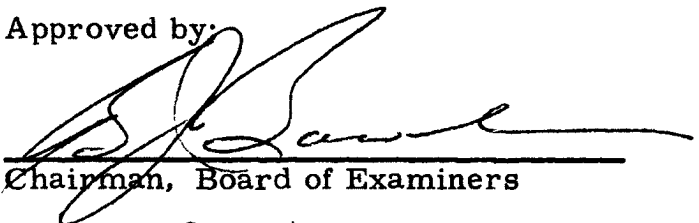
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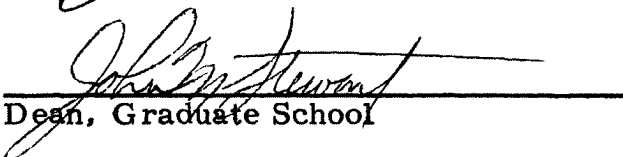
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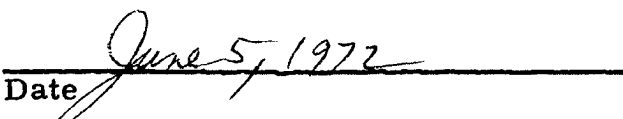
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## CHAPTER I

### OPERATION BREAKTHROUGH

In 1949 and again in 1968, Congress declared that it was national policy to provide a decent home and suitable living environment for every American family. Government studies indicated that to achieve this goal twenty-six million housing units would have to be built or rehabilitated in the decade between 1968 and 1978. The production rate up to that time fell far short of this goal and had, in fact, never exceeded two million units in any given year (see Appendix, Chart 1). Something had to be done to stimulate industry into achieving this national housing goal.

#### The Conception

In May of 1969, Secretary of Housing and Urban Development (HUD) Romney introduced a program sponsored by HUD that was intended to add impetus to the sagging home construction industry. OPERATION BREAKTHROUGH, as it was called, was to develop, test and promote the best in technologically advanced systems for housing production. "The basic program objective is to increase the overall production capacity of the American housing industry through support of the application of advances in building materials, construction techniques, management and financing

methods, and site planning for the production of quality housing in volume and the creation of better communities for Americans of all incomes."<sup>1</sup>

To implement this program, HUD sponsored a contest that invited private industry to propose complete housing systems<sup>2</sup> which could be put into production within a relatively short period of time. The competition was advertised publicly, and approximately 5,000 Requests for Proposals were mailed to major companies in the housing industry. Operation Breakthrough emphasized soundness of design, structure and methods rather than novelty; however there was no attempt to discourage the exercise of imagination by housing producers. Evaluation factors included housing system design, production methods, financial capability, management quality, land planning and architectural design capabilities, plus the extent of anticipated community involvement in design, production and employment.

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<sup>1</sup>OPERATION BREAKTHROUGH Questions and Answers, U.S. Department of Housing and Urban Development (U.S. Gov't Printing Office, 1971), p. 1.

<sup>2</sup>"Housing system" describes the total mechanism employed by a business firm for large-scale production and sale of quality residential housing units and is an efficient process involving new technologies in building materials, construction and management techniques, marketing operations and financial resources to produce physical housing units and housing structures.

Following the selection of final designs, units of all the selected housing systems would be constructed on nine prototype sites (see Appendix, Figure 3). These sites were also selected competitively. Secretary Romney invited states and cities to submit proposals to HUD as possible locations for Operation Breakthrough prototype development. The proposing entity had to indicate that it would waive local building codes and zoning requirements to accommodate the innovative features of Operation Breakthrough site plans and housing systems. A total of 218 sites from 37 states and the District of Columbia were proposed from which eleven sites were selected (two sites were dropped later, see Chapter II).

Although the completed prototype units would be rented or sold, it was expected that their costs would, in many instances, exceed the normal costs of the systems in full production. Economies of scale could not be achieved in a situation involving the prototype nature of the development nor because of the small number of units assigned to each producer at a site. HUD would finance the additional costs.

HUD received and evaluated 236 proposals to implement Operation Breakthrough and selected twenty-two housing system producers to build approximately 2,800 prototype units on the nine prototype sites.

One may question how this relatively small number of housing units was going to effect the vast volume of units needed. It was merely



to provide a showplace and proving ground to illustrate to the housing industry what could be done using the latest in the housing system concept.

The housing system concept was not new or unique in this country or abroad, but it had to be improved upon to effectively increase production and decrease costs. The conventional methods of construction had to be modified to achieve this goal. Volume production and marketing techniques had been applied to virtually all other industries except the construction and sale of residential housing. Relatively few firms had the capability of truly "volume" production and even fewer had effective research and development programs to improve methods or technology. Consequently, construction methods have remained essentially unchanged for the past forty years, utilizing a high proportion of highly skilled and expensive carpenters, plumbers and electricians while conforming to established but sometimes archaic construction techniques.

Through Operation Breakthrough the Government hoped that some new technology would be demonstrated and that the use of mass production would reduce the total cost of labor to a point where quality housing could be obtained by all income levels.

#### The Development

Operation Breakthrough was to be developed in three phases.

Phase I was for continued design and research, a period HUD estimated should take four to six months. These designs would then be re-evaluated by the producers and HUD. Operation Breakthrough would then proceed to Phase II--the actual prototype construction on the nine prototype sites throughout the United States.

Both of these two phases would be directly subsidized by HUD. Construction at each of the prototype sites would include three to six of the twenty-two finalist proposals, matched to the site according to region and climate. These sites would be testing grounds for design performance feedback because the units would eventually be completely occupied.

The final phase, Phase III, would be the eventual volume production of the units. HUD would not fund Phase III, but would instead actively strive to produce market aggregation through innovation of financing procedures, modification of existing building codes and zoning ordinances, and, in general, liberalization of any restrictive policies against industrialized housing concepts.

Market aggregation, or the creation of a more favorable environment for housing, was then one of the primary objectives of Operation Breakthrough and was expected to be by far its hardest task. HUD would use its influence upon local governments to ease restrictive practices through the pressure of the other government subsidy programs.

This type of pressure would probably be effective only in communities needing federal aid. A big question was whether or not Operation Breakthrough would be able to influence large metropolitan areas-- the areas most in need of low- and moderate-income housing.

### Major Obstacles

The obstacles facing Operation Breakthrough were actually two-fold and could be categorized as those effecting hardware and software.

Hardware deals directly with the physical construction of a unit: the various materials, methods and techniques of construction and the design of a housing unit. The primary obstacle in the hardware field was that contractors and component producers had not caught up with existing technology, let alone with future technology or innovations.

Many new materials and methods are available to housing producers now, but they are unwilling to use them because of the new skills required, labor restrictions or plain reluctance to breaking tradition. Almost 100 percent of all producers of housing utilize factory-made components of one type or another, notably window frames and cabinets. However, very few producers have taken the step further to use items that completely change the conventional method of wooden frame, sometimes referred to as stick-by-stick, construction. The use of panel systems (two-dimensional units constructed of pre-cast, light-weight cement incorporating windows, wiring, plumbing, exterior and interior

facings), styrofoam and cardboard honeycomb are good examples of breaks in traditional construction. Fiberglass will even be used for construction in some of the units at the Seattle sites.

Some of these materials are so superior in strength and durability to earlier materials that codes, regulations and requirements have to be redesigned to be aligned with technology. This area is where the software obstacles come to light.

Software deals with all of the obstacles facing Operation Breakthrough except those falling into the category of hardware. Major software constraints are diversified local building codes, restrictive land use and zoning regulations, transportation tariffs and routing, labor work practice requirements, finance regulations and unfavorable publicity.

Specifically, then, the major obstacles confronting Operation Breakthrough are: (a) outdated construction techniques and materials, (b) building codes that must be changed to effectively use the new technological breakthroughs, (c) finance techniques that must be modified to create a larger market, (d) labor unions that must be persuaded to ease restrictive work practices, (e) transportation agencies that must assist by creating route and rate changes, and (f) inadequate publicity that must be changed to highlight potential successes of Operation Breakthrough to increase interest from both manufacturing and consumer fields.

## CHAPTER II

### PROGRESS OF OPERATION BREAKTHROUGH

Originally, Phase I was visualized to take only four to six months. Prototype construction and site development of Phase II had a target date of November, 1969, with occupancy of the sites in November, 1970. This timetable proved extremely optimistic as will be shown later in this chapter.

The progress of Operation Breakthrough through March, 1971, was summarized in an article entitled, "Breakthrough: 2 Years, \$20 Million, No Homes."<sup>3</sup> At that time Operation Breakthrough had not produced a single dwelling under the program. As a matter of fact, only one contract had been signed for one site with twenty-eight living units--approximately one-hundredth of the total goal of the project.

The reasons for the lag varied from site to site, but foremost was the producers' desire for much more money than originally proposed. Arthur S. Newberry, Deputy Director of Operation Breakthrough, attributed the delay to "how tough the producers are in negotiation for

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<sup>3</sup>"Breakthrough: 2 Years, \$20 Million, No Homes," Engineering News Record, March 25, 1971, p. 9.

costs higher than Breakthrough officials feel are warranted."<sup>4</sup> The original plan was for HUD to pay for all costs of production that were in excess of the "normal economic costs if all units were in volume production."

Phase I cost estimates of Operation Breakthrough by March, 1971, had already been exceeded by six percent. The original estimate of \$15 million for the previous fiscal year was overrun by \$2.5 million, and officials hoped to make up for this loss during fiscal year 1972.<sup>5</sup> Excess costs in July, 1971, amounted to an average of \$22,280 subsidy per unit for a total cost of \$46,000 each.<sup>6</sup>

The result of the cost overruns was the reduction of sites and contractors. Dropped from the program were the Wilmington, Delaware, and Houston, Texas, sites, leaving only the current nine sites in the eight cities (see Appendix, Figure 3). The sites cut were already involved in controversy and litigation. HUD determined they would drop them from the program rather than incur additional expense in legal fees. The Wilmington site was involved in a legal suit over the title to the site development land, and Houston officials had petitioned their

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<sup>4</sup>Ibid.

<sup>5</sup>Ibid.

<sup>6</sup>"Going Up: Breakthrough Housing Gets Expensive Look." Engineering News Record, July 15, 1971, p. 21.

representative to the House of Representatives, Bob Casey, asking him to block construction.

The sites were not dropped until Congress in 1969 cut back the appropriation for Operation Breakthrough to only \$20 million, \$5 million less than needed for Operation Breakthrough and \$25 million less than the \$50 million requested by HUD Assistant Secretary Finger.

Problems existed at other sites. The Seattle sites were also involved in litigation. The area had been hit hard by employment reductions and labor layoffs in the aerospace industry. Approximately 2,300 new homes were unsold in the Seattle area, and residents filed suit in the King County Superior Court to stop the project. However, the council in King County approved the 35-acre site but it added two meaningful stipulations. The first condition of approval was that Boeing Company had to continue working with the King County planning commission to reach agreement on a list of twenty relatively minor changes suggested by the commission. Included were such items as sidewalks on both sides of the street and additional parking spaces. The second condition basic to the settlement was that Boeing Company had to submit a detailed marketing plan to the commission for its approval prior to any units going on sale.

The downtown Seattle project was also affected by the fund shortages and increased demands by the producer. It was subsequently reduced

from eighty units to seventy-two and finally to fifty-eight units to stay within the budget.

Not until September, 1971, had the last of the twenty-two contracts been signed for the production and erection of 2,796 dwelling units at a total cost of \$62,658,266. This was almost the last cut in the number of producers and in housing units, a reduction of over 300 units from the original plan. One more cutback was announced recently when Townland Marketing and Development Corporation dropped out of the program because of its "inability to obtain the capital need to construct the housing units awarded to it."<sup>7</sup> Townland had contracted to build forty-two units at Jersey City and fifty-eight at the downtown Seattle site. Boeing is expected to take over the contract at Seattle; however, HUD has not announced any substitute plans for the Jersey City site.

The total cost of the program will be approximately \$125 million. This includes both private and Government funds--\$65 million in private mortgage money and \$60 million from HUD's research and technology budget. The on-site costs of the nine sites are \$103 million--\$65 million from private sources and \$38 million from Breakthrough funds. Extra costs of producing and erecting the units amounted to \$23 million, plus

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<sup>7</sup>"Breakthrough Proves Itself as It Speeds to Completion," Engineering News Record, October 21, 1971, p. 38.



management and administrative costs amounted to \$15 million. Off-site costs accounted for the remaining \$22 million.<sup>8</sup>

### Software

Operation Breakthrough has had marked success in the "software" field. Old methods are not easy to change. Being unfamiliar with new materials, contractors are often unwilling or unable to utilize them in the construction methods. Outdated building codes may prohibit the use of these materials or techniques even though approved by national standards. Building codes vary from one community to another and almost all of them inhibit the housing producer from providing a single-structure design that can be marketed over a wide area. If the manufacturer does produce a design acceptable to all areas, he has added so many extras that the structure becomes too expensive to be competitive with local custom construction. The final result of restrictive codes is that large areas needing the housing are closed to development.

HUD stated its objectives in this regard as follows:

A major objective of the HUD Breakthrough, testing, evaluation and certification program is to provide a credible certification procedure on which state and local government officials may safely rely. A housing system which has received the formal HUD Breakthrough Certification should achieve ready acceptance in states that have established independent mechanisms for approving industrialized housing.

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<sup>8</sup>"All 22 Breakthrough Housing Contracts Signed," Engineering News Record, September 2, 1971, p. 10.

Elsewhere, it is anticipated that the HUD Breakthrough Certification will afford adequate assurances to local elected officials and to local building codes officials of the safety and soundness of the certified housing and persuade them to accept the certified housing within their jurisdictions despite inconsistencies with specifications in their own local building codes.<sup>9</sup>

Once the building codes have been updated, it is anticipated that producers will utilize the existing technology and techniques to build less expensive homes and pass the cost savings to the consumer.

In the late 1960's, only a handful of the states had tried to solve this problem. South Carolina had adopted a law which provided for state acceptance of industrialized housing which had been approved by HUD. Five other states--California, Washington, Ohio, Virginia and Hawaii--enacted legislation under which the state evaluates and certifies industrialized housing systems. Once certified by the state, the structure was not required to conform to the local building codes except with respect to foundation structures. Additionally, some states evaluate and approve industrialized systems without legislation. For example, Connecticut has a system whereby all local building codes have been replaced by a single building code with state-wide applicability.

As of December 1, 1971, twenty states had passed mandatory state-wide industrialized housing laws or general purpose building codes

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<sup>9</sup>OPERATION BREAKTHROUGH Questions and Answers, U.S. Department of Housing and Urban Development (U.S. Gov't Printing Office, 1971), p. 14.

where none had existed prior to Operation Breakthrough.<sup>10</sup> In general, the laws state that once a system is approved by its certifying body that local building codes cannot interfere with the erection of the industrialized unit. There was even an attempt by certain members of the House of Representatives to pass a nation-wide building code.

The Housing Rights Act of 1971 (HR 4632), introduced by Representative Bob Wilson (Republican, California) would, "... provide that no local codes, laws, ordinances or local labor agreements could be used to restrict the use of new technology on preassembled products on federally subsidized housing." It authorized the Secretary of HUD to certify new building technologies and the Attorney General to bring civil suits in federal court to invalidate any local law or contract restricting their use.<sup>11</sup>

HUD is not trying to force local governments to adopt new building codes just to facilitate the industrialized housing system producer, but it is striving to establish a sound code based upon new technology and techniques to increase housing starts through reducing costs and/or improving production. However, HUD has demonstrated its willingness to apply its will against balky local governments. When San Francisco refused to change its building codes to allow the use of plastic pipe,

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<sup>10</sup>"OBT Spurs Innovation Beyond Its Prototype Units," Engineering News Record, October 21, 1971, p. 38.

<sup>11</sup>"Congress Takes Aim at Local Building Codes," Engineering News Record, July 8, 1971, p. 48.

HUD ordered urban redevelopment funds cancelled. The mayor and board of governors surrendered and finally changed the code.<sup>12</sup> It is hoped that, as San Francisco "became enlightened," other cities will follow suit. New materials and technology will undoubtedly find quicker acceptance in the future with HUD making it clear that it will not tolerate local politics hindering its progress even if it is necessary to enforce its desires through collateral programs.

Another obstacle facing Operation Breakthrough is the high cost of labor and restrictive labor practices. One of the main objectives of the industrialized housing system is to utilize off-site labor and to get away from restrictive labor practices required and supported by the unions. Great strides have been made in this area. In 1969, for the first time, national unions representing carpenters, electricians, plumbers and laborers signed contracts with a number of housing system designers. Called the "Tri Trades" agreement, it allows all unions to operate under one labor agreement instead of each union negotiating its own. The unions themselves realized that fewer and fewer houses were available because of the rising costs of labor,<sup>13</sup> land and finance

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<sup>12</sup>"San Francisco Loses Federal Money for Public Housing," Engineering News Record, November 25, 1971, p. 3.

<sup>13</sup>Labor costs have nearly doubled between 1960 and 1970--common labor from \$2.699 per hour to \$5.224; skilled labor from \$4.031 to \$7.314. This compares to an approximate increase of 15 percent in construction costs (see Appendix, Chart 2). Labor Force Employment and Earnings--Hourly Earnings and Help Wanted Index, U.S. Dept. of Commerce, Business Statistics, 18th Biennial Edition, Superintendent of Documents, (U.S. Gov't Printing Office, 1971), p. 84.

charges. A joint statement by major union leaders<sup>14</sup> proclaimed: "All of us recognize that the housing industry cannot long continue to build houses unless there is an adequate market for them. Today all but a small fraction of our citizens are priced out of the housing market. Skyrocketing land prices and finance charges have all but killed the home building industry. Therefore, we call upon the government and appropriate private sectors to bring the same bold engineering to bear on solving these problems that they are exercising in the production field."<sup>15</sup>

Peter Fosco, General President of Laborers International Union of North America, stated: "Conventional construction methods must be supplemented if we are to build homes quickly enough and cheaply enough. It is time that we follow the lead of a number of other countries which have successfully dealt with housing shortages by applying mass production techniques to home building. . . . By supporting industrialized housing, we can help open up new employment opportunities for our members and provide housing they can afford at the same time."<sup>16</sup>

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<sup>14</sup>M. A. Hutchinson, General President of the United Brotherhood of Carpenters and Joiners; Charles M. Pallord, International Brotherhood of Electrical Workers; and Peter T. Schorman, United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada.

<sup>15</sup>"Labor Looks at Breakthrough and Speaks Its Mind," HUD Challenge, U.S. Dept. of Housing and Urban Development, (U.S. Gov't Printing Office, March, 1971), p. 5.

<sup>16</sup>Ibid, p. 6.

Apparently, then, the nation's leading labor leaders realize that cooperating with the industrialized producer will open up new job opportunities for their workers through year-around jobs in the factories and will also provide lower cost housing for their families. This cooperation with the labor unions in eliminating restrictive work practices has been one of the major successes of Operation Breakthrough. It has not been as successful in containing wages or increasing productivity relative to the new wage rates.

Other constraints faced by Operation Breakthrough were in the transportation field. Many states do not allow loads of over twelve foot in width on their highways, thus limiting the size of modules. In addition, highway regulations may only allow over-width loads to travel during daylight hours, which effectively limits the economic area of transport to a 300 to 400 mile radius. Many states also restrict the transport to only one unit per trailer. The market aggregate becomes very small.

Transportation by railroad provided various constraints, too. Limits are also placed on width and height, but to a lesser degree. Special equipment is needed to on- and off-load the module. And, rail transportation involves inherently high costs. For example, ITT-Levitt, Inc., in Battle Creek, Michigan, transported twenty-eight Breakthrough units 2,200 miles to the Seattle site by rail at a cost of \$150,000, or

approximately \$5,400 per unit, under the existing rates (85 percent of first-class rates).<sup>17</sup>

HUD has also exerted its influence on the transportation field. In April, 1971, Assistant Secretary Finger solicited the assistance of James McCollum, a transportation expert from the National Aeronautical Space Administration (NASA), and sponsored a conference on rail shipments for modules. Attending were Housing producers, officials of railroads, and representatives from the Government Services Administration (GSA), National Bureau of Standards and the Department of Defense. The conference objective was to find an economically feasible means for a producer to ship modules over distances ranging from 300 to 1,000 miles. GSA represented HUD and proposed that the rate of \$16.57 per train mile be dropped to \$12.12 per train mile for 1,000-mile shipments. These charges compared with the flat rate of \$18 per train mile set by the Southern Freight Association and the Eastern trainload rate of \$5,750 plus \$13.25 per route mile on a 2,400-foot train (maximum 1,600 tons).<sup>18</sup> If Levitt, Inc. had been allowed this lower rate on its Seattle shipment, the total cost would have been \$89,000 instead of \$150,000.

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<sup>17</sup>"The Modules Look for a Cheaper Ride," Business Week, May 22, 1971, p. 23.

<sup>18</sup>Ibid.

### Hardware

Hardware obstacles are much more easily overcome because for the most part they can be manipulated by the individual producer. As stated above, contractors have not caught up with existing technology. In the realm of materials and techniques, contractors are essentially limited only by capital and/or their own initiative. The materials and techniques are available to those willing to break with tradition and use them.

In other areas of hardware, some individual progress by the producers and industry is also being made. For instance, Operation Breakthrough has stimulated private industry to solve some of the major problems involving transportation. For example, tests are being conducted by the Southern Railroad to examine the ride characteristics of modules on piggyback cars. The C&O/B&O and the Clark Equipment Company are independently developing trucks that load and unload modules from rail cars and trucks.

Producers are cooperating with the railroads by modifying their modules to conform to maximum clearance restrictions. Boise Cascade developed a ten-foot, eight-inch module to conform to a specific route requirement. It is hoped that some standardization can be achieved in the future as to the size of the module in order to facilitate routing and standardize tariffs. Handling equipment could and should be standardized



as it was for the international marine containers.<sup>18</sup>

### Financing Methods

The following discussion on finance, interest rates and loans is included although they are demand oriented and not specific Breakthrough programs. However, they do fall under the purview of the management and financing methods objectives of Operation Breakthrough.

Section 235<sup>19</sup> financing was not an Operation Breakthrough innovation, but it is a prime example of Government's interest in stimulating the home building industry. It was enacted in 1968 and provided that only a minority of the Section 235 commitments could involve existing homes. Under this program, developers and producers were not limited to a statutory cash return and could indeed be fairly certain that they would receive a fair market value for their homes. This act added impetus to the housing industry; and, by August 1, 1970, two years after the program started, 110,000 houses had been started under the program.

In another move to stimulate the building industry, President Nixon committed \$2 billion of subsidy funds to hold the interest rate at seven

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<sup>18</sup>"Modular Housing by the Trainload," Handling and Shipping, November, 1971, pp. 54-58.

<sup>19</sup>Section 235 reduced home financing costs to eligible families by decreasing mortgage interest cost to as little as one percent per annum. A family would pay twenty percent of its income toward the cost of financing its home purchase. The Government subsidized the payment to an amount needed to reduce the family's own contribution to the equivalent of paying off the mortgage at one percent interest rate.

percent on unsubsidized Federal housing. Previously Secretary Romney, fearful that rising interest rates on mortgages would price homes out of the reach of most families, established a ceiling of seven percent on new mortgages. The new subsidy funds were used to insure the purchaser would not pay more than seven percent on Federal Housing Administration (FHA) or Veterans' Administration (VA) mortgages. Until that time, FHA and VA mortgages had not been subsidized.

Under this program, Government National Mortgage Association (Ginny Mae)<sup>20</sup> is authorized to buy mortgages at the market price and sell them to the National Mortgage Association (Fanny Mae) at the seven percent rate, using its \$2 billion treasury authority. This means that "Ginny Mae" will be picking up the difference between the current eight to eight and one-half percent interest rate and the established seven percent rate by directly subsidizing mortgages--buying at the higher interest rate and selling at seven percent. This subsidy applies up to \$22,000 for single-family homes and \$24,000 for homes with four or more bedrooms. The Government estimates were that up to one million homes could benefit from this program in an eighteen-month period.

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<sup>20</sup>Ginny Mae and Fanny Mae: Their mission is basically to help keep the mortgage supply healthy--Ginny Mae relative to subsidized housing; Fanny Mae relative to non-subsidized housing. Fried, Joseph P., Housing Crisis U.S.A., (Praeger Publishers, Inc., New York, N.Y., 1971), p. 63.

## CHAPTER III

### OPERATION BREAKTHROUGH COMPARED WITH OTHER HOUSING PROGRAMS

Upon reviewing the progress of Operation Breakthrough, it is important to note the major difference between this program and past programs attempted by the Government to increase housing in America. Basically, the purpose of all the past programs was to stimulate the demand for housing by making financing easier, either for the producer or the purchaser, or offering some other financial incentive to build or buy houses. Operation Breakthrough, on the other hand, was designed to increase the supply of houses by offering more house for less money through innovation, technology and design. This, in effect, will lower the cost of the house instead of directly subsidizing the difference between what a person could pay and the cost of the house.

The ideal situation is, of course, to offer savings to the purchaser through both methods--begin with a more efficiently built house and then obtain favorable financing through one of the various programs currently in operation.

A review of past programs aimed at satisfying the demand for housing shows that various degrees of success were achieved. For

example, the Housing Act of 1937 provided subsidies to cover costs of construction and development. It gave local communities the authority to manage their own low-rent housing and provided that the local government would furnish additional subsidies through various forms of property tax exemptions. The object, of course, was to lower rents or payments to make housing available to "families who are in the lowest income groups and who cannot afford to pay enough to provide enterprise in their locality or metropolitan area to build an adequate supply of decent, safe and sanitary dwellings for their use."<sup>21</sup> By the summer of 1970, there were only 970,000 units produced under this program in the United States and its possessions (an average of 26,200 per year).

The Housing Act of 1949 cited as its goal: "A decent home and a suitable living environment for every American family." Aimed at urban renewal, this act authorized the construction of 135,000 units of low-rent public housing each year for six years. The total 810,000 units were not built by 1955; as a matter of fact, this total had not been reached by 1969. It is interesting to note that by 1968 approximately 409,000 housing units had been demolished in renewal areas, but only 41,580 units had been built.<sup>22</sup>

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<sup>21</sup>"A Decent Home: The Report of the President's Committee on Urban Housing (Kaiser Report)," as quoted in Joseph P. Fried, Housing Crisis U.S.A., (Praeger Publishers, Inc., New York, N.Y., 1971), p. 72.

<sup>22</sup>Fried, Joseph P., Housing Crisis U.S.A., (Praeger Publishers, Inc., New York, N.Y., 1971), p. 98.

The Housing Act of 1954 was essentially the same as the 1937 Act except that local communities had to establish a "workable program" for dealing with slum areas before the Federal government would grant aid. The idea behind this was to insure that the towns and cities would take a more active interest in the program's success. This "workable program" stipulation caused problems later in the 1960's when other programs aided private developers. These private developers were not required to have local approval, but when the local government had determined construction was not desired, they blocked it by not adapting a "workable program." This problem was recognized and eliminated in the 1969 Housing Act.

The Housing Act of 1961 was again aimed at a financial incentive. Known in the industry as 221(d)(3)BMIR,<sup>23</sup> the act was intended to cut construction and development costs by substantially reducing mortgage interest cost. Private developers could get FHA-insured mortgages at interest rates far below current market rates (since 1965, three per cent). In turn, the developers were limited in the charges made for rent or carrying charges, thus passing the savings on to the tenants. The application for admittance under the program was one example of the red tape connected with it. It was 283 pages long including illustrative forms.

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<sup>23</sup>BMIR: Below Market Interest Rate.

A new twist was added in 1965 when rental supplements were introduced. The program was aimed again at private sponsors; but, instead of receiving lower financing charges through FHA, the sponsors would pay current market interest rates. The Government then agreed to subsidize the sponsors the difference between twenty-five percent of the eligible tenant's income and the fair market price of the unit. The developer was not limited to renting only to eligible tenants but could rent to anybody, thus encouraging a good mix of tenants.

Between 1965 and 1970, only 33,000 of the 55,000 units started had been completed. The main reason was, again, the lack of Federal funds. Originally authorized \$150 million through 1968, the program was only appropriated \$42 million which included nothing for 1967.

In over thirty years then, since the Housing Act of 1937 and including all of its succeeding subsidy programs, a little over one and a half million housing units have been produced by the Federal government for the nation's poor and moderate-income families--one-seventh of the "rock bottom" need of eleven million units that the Commission on Urban Problems found to exist among these groups.<sup>24</sup> It is interesting to note that the National Commission, in its 1968 report, found that "government action through urban renewal, highway programs,

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<sup>24</sup>As of July 31, 1970.

demolitions on public housing sites, code enforcement, and other programs has destroyed more housing for the poor than government at all levels has built for them."<sup>25</sup>

It is obvious then that, for one reason or another, Government housing under the subsidy program did not achieve the desired degree of success. A different approach was needed, and Operation Breakthrough may provide the answers. In reviewing and comparing the different housing acts, one should note that past housing acts provided for subsidized construction and production, subsidized payments to both the producer and the purchaser, and tax reliefs to producers. All acts were financial subsidies in one form or another.

Operation Breakthrough could have been accomplished using different methods--at least Phase I and Phase II. The Japanese government sponsored a similar program that was Breakthrough-oriented, but it called for private industry to cover all costs incurred. There was no contest ranking, but the winners receive certificates that they meet all specifications. The Japanese government is hoping for thirty percent of the housing starts to be factory-made in 1976.<sup>26</sup>

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<sup>25</sup>Building the American City: Report of the National Commission on Urban Problems to the Congress and to the President of the United States (Douglas Report), quoted in Joseph P. Fried, Housing Crisis U.S.A., (Praeger Publishers, Inc., 1971), p. 62.

<sup>26</sup>"Japanese Breakthrough," Engineering News Record, June 10, 1971, p. 21.

Since many of the successful industrialized housing producers in the United States are also their own developers, it would appear that HUD could have made a similar arrangement with the U.S. Breakthrough producers. Offering them the site free of cost, publicizing the progress and certifying the finalized product are certainly meaningful incentives. This method of approaching the program would probably have limited contest homes to regional producers or only to the very largest producers who could have absorbed the cost of transportation of the units or relocation of factories; however, the cost savings to the Government could possibly have produced many additional units at different sites.

Regardless of the method used, Operation Breakthrough has achieved a success. By showing contemporary, as well as industrial, producers better and cheaper ways to produce homes, the program hopes to increase housing capacity through innovation and technology instead of through direct subsidy.



## CHAPTER IV

### EVALUATION AND CONCLUSION

Opinions vary as to the actual success of Operation Breakthrough, but the dissident group may be limiting its scope of reference to the problems encountered in Phases I and II of the demonstration sites without taking into consideration the overall successes scored by Operation Breakthrough.

"Buckminster Fuller, who coined the term 'industrialized housing,' finds no merit in what is going on with Operation Breakthrough except for awakening public awareness. '... most of the manufacturers involved in Operation Breakthrough haven't got as far as my 1927 report. They're piling mobile homes on top of one another and that's not the answer.' He went on to explain that the house of tomorrow must be much more inventive, much less costly and more easily transportable."<sup>27</sup>

While Phases I and II did get off to poor starts, the construction of the Breakthrough sites is proceeding as expected since completing the

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<sup>27</sup>Walker, Mark, "Tomorrow's Housing Is on the Way," Popular Science, May, 1972, pp. 111-113.

negotiations on all of the contracts. More important than the model homes on the Breakthrough sites are the other basic program objectives: increase the overall production capacity of the housing industry; support the application of advances in building materials, construction techniques, management and financing methods; and site planning.

The first objective is being achieved. The tremendous increase in housing starts since Operation Breakthrough was initiated is indicated in the Appendix, Chart 1. In 1970, the first full year after Operation Breakthrough, the housing industry reached an all-time high in home production with 2,048,000. The seasonally adjusted rate, as of February, 1972, was 2,678,000 units.

As for supporting advances in building materials and construction techniques, Operation Breakthrough's success in the labor field, state-wide building codes and zoning restrictions has unquestionably added to the increase in housing starts. The physical obstacles are minor when compared with the software problems of route changes, tariffs and regulations that are different from line to line, state to state. Overcoming and standardizing these areas are essential to achieve a real breakthrough in the transportation field.

The management and finance area is a multi-faceted problem in which success or failure may or may not be directly attributed to Operation Breakthrough. The general decline of bank interest rates

had a large impact on the number of units produced and, of course, was not a result of Operation Breakthrough. Various programs in effect (HUD 235 loans and HUD 236 subsidies) were not specific Operation Breakthrough programs, but they were Federal emphasis on specific programs that encourage new home construction; and they certainly helped the rising market for homes.

In assessing the future of industrialized housing, Secretary Romney recently reaffirmed his earlier prediction that "66 to 80 percent of all housing construction in the United States would be industrialized by 1980."<sup>28</sup> The impact of this statement is not fully appreciated until the volume of houses that must be produced is comprehended. "To meet the projected population growth, we must provide the equivalent of a new community, capable of housing and servicing 70,000 people, every week between now and the year 2000," is the estimate of Alfred Perry, director of HUD's Operation Breakthrough.<sup>29</sup>

Conventional construction methods cannot meet this demand. Industrialized housing is the answer. In the future there will be more and more sophisticated factories developed and, eventually, even a few dominant producers as in the other fields of mass production. These

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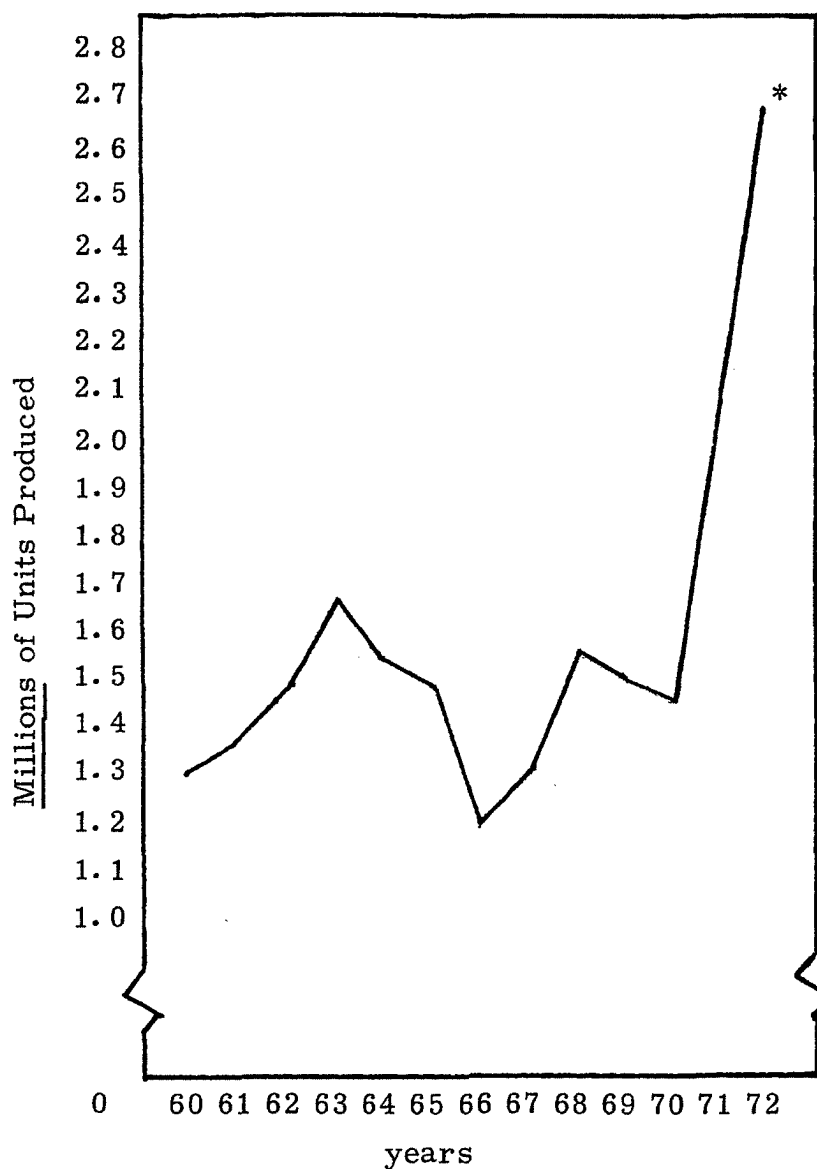
<sup>28</sup>"Romney Sees Rosy Future for Factory Housing," Engineering News Record, November 11, 1971, p. 17.

<sup>29</sup>"Modular Houses by the Trainload," Handling and Shipping, November, 1971, p. 57.

producers will be able to achieve the savings that mass production generates; and these savings will be passed on to the consumer, eventually achieving the national policy of providing a "decent home and suitable living environment for every American family."

CHART 1

NEW HOUSING UNITS STARTED (including farms)  
unadjusted for seasonal variations

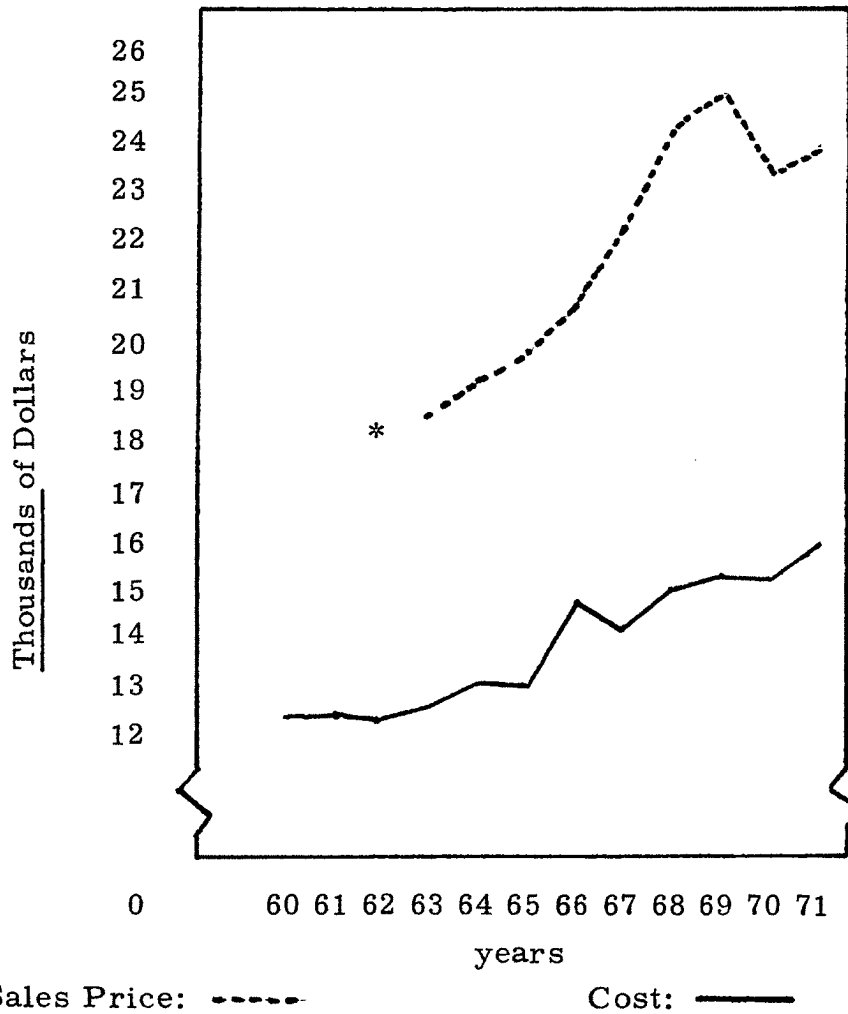


Source: U. S. Department of Commerce, Bureau of the Census  
(Construction Statistics Division)

\*February, 1972, private housing starts rose 31/2 percent (from previous month) to a seasonally adjusted rate of 2, 678. 000.

CHART 2

AVERAGE COST OF CONSTRUCTION/UNIT  
Median Sales Price



Source: U.S. Department of Commerce, Bureau of the Census  
(Construction Statistics Division)

\*Information not available prior to 1963.

FIGURE 3

NINE BREAKTHROUGH SITES

<u>Site Contacts</u>	<u>Developer</u>
<u>City-County, Jersey City, N.J.</u> Joseph Exinberg, Executive Director Redevelopment Agency 574 Newark Avenue Jersey City, N.J. 07308	Voit Information Sciences, Inc.
<u>Macon, Georgia</u> Craig Lindelow, Planning Director Macon-Bibb County Planning and Zoning Commission Grand Building, Mulberry Street Macon, GA 31201	Macon Breakthrough Housing Venture Fickling & Walker, Inc.
<u>Memphis, Tennessee</u> Orelle Ledbetter, Executive Director Memphis Housing Authority 700 Adams Avenue Memphis, TN 38705	Alodex Corporation
<u>Indianapolis, Indiana</u> David O. Meeker, Director Metropolitan Development 1955 North Central Avenue Indianapolis, IN	Urban Systems Development Corporation
<u>Kalamazoo, Michigan</u> James Caplinger, City Manager City Hall, 241 West South Street Kalamazoo, MI 49006	Bert L. Smokler & Co.
<u>St. Louis, Missouri</u> Norman Murdoch, Director Planning & Development City Planning Commii Civil Courts Bldg., 10 N. 12th St. St. Louis, MO 63101	Millstone Construction Co. Millstone Associates, Inc. University Heights Village

Site ContactsSacramento, California

Walter Slipe

Assistant City Manager

300 City Hall

Sacramento, CA 95814

King County, Washington

Joseph McGavick

Assistant to the King County Executive

King County Courthouse

Seattle, WA 98104

Seattle, Washington

Jack Tiemeyer, Assistant Director

Project Operations

Department of Community Development

Seattle, WA 98101

Developer

Campbell Construction Co.

The Boeing Company

The Boeing Company



FIGURE 4

REGIONAL OPERATION BREAKTHROUGH DIRECTORS

REGION I--Boston

Edward Cachine  
Boston, MA 02203

REGION II--New York

James Sweeney  
New York, NY 10007

REGION III--Philadelphia

Alfred R. Marcks  
Philadelphia, PA 19106

REGION IV--Atlanta

James Mills  
Atlanta, GA 30323

REGION V--Chicago

Joseph Sabella  
Chicago, IL 60601

REGION VI--Fort Worth

Thomas Barber  
Fort Worth, TX 76102

REGION VII--Kansas City

Kansas City, MO 64106

REGION VIII--Denver

Harold Bolas  
Denver, CO 80202

REGION IX--San Francisco

John Keast  
San Francisco, CA 94102

REGION X--Seattle

Robert Brockway  
Seattle, WA 98101

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