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# SOME REGIONAL DEVELOPMENT ISSUES IN DEFENSE PROGRAM SHIFTS\*

By

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## 1. *Introduction*

In recent years a number of 'impact' studies have been conducted for the purpose of demonstrating the quantitative contribution of defense spending to the employment and income totals of the economy of the U.S., and the probable size of the gap to be filled under conditions of reduced military and aerospace spending.<sup>1</sup> For the most part, these studies recognize that selected local impacts can be demonstrated to be relatively more severe than the overall effects.<sup>2</sup> This paper wishes to carry this recognition somewhat further, and to argue that the pattern of defense and defense-related government purchases (1) has reinforced certain industrial and urban development shifts in the nation, and (2) by accelerating the growth of selected urban areas, has not only created local situations of great vulnerability to decline in market demand, but has also focused on the need for sources of new demand and new programs. We wish to study the impact of defense expenditure on urban growth, the possible impact of reductions of defense expenditure on that urban growth, and the possible combination of solutions to urban problems and the larger social and political problems of the economy posed by the pattern of defense and aerospace demand.

This paper falls into two parts: description of the shifts that have taken place, as seen from the perspective of an 'impacted' area; and calculation of possible impacts on local areas of changes in the level and composition of Federal programs.

The area chosen to illustrate these points is California. Since a high share of defense contracts (23% of Department of Defense prime contracts, and perhaps a slightly higher share of subcontracts) is now going to California,<sup>3</sup> California provides a good laboratory for studying these effects and for examining possible counter-measures.

The main points of this paper are as follows:

1. National defense spending in the United States has
  - a. changed the industry mix, and has been chiefly responsible for the emergence of certain growth industries, and
  - b. by its locational choice for federal installations and selection of contractors, appreciably shifted the geographic mix of certain industries, and created new industries in new locations.
2. Defense procurement policies<sup>4</sup> have substantially influenced and abetted the concentration of scientific and technical personnel in a relatively few major metropolitan centers of the country.
3. Defense procurement policies have not dispersed urban population but have helped to create new urban agglomerations, sometimes in older large cities, but chiefly in cities in the West and South which, though growing, would not have reached present levels without a strong infusion of non-local demand.

4. The impact of defense spending has effected major changes in the California economy. Certain urban concentrations have grown more rapidly than would otherwise have been the case. New metropolitan areas have emerged. Despite sizable growth in agriculture, and a relative shift of the nation's agricultural output to California, agriculture has been supplanted by manufacturing as the most important contributor to state income, and as the most important 'export' of the state. In a decade (1950-60) in which employment in manufacturing in the United States decreased absolutely, the number of employees in manufacturing in California increased. California industry is newer — in products as well as firms — than that of the nation as a whole. Its wage and salary level is higher than average and its concentration on high-skill labor requirements, particularly for Research and Development work, is marked.
5. Any large cutback in defense and aerospace procurement without commensurate offsets would (a) create local distress areas, (b) slow down the tendency of American industry to rationalize its locational pattern and individuals to express geographic and other space preferences, (c) produce substantial local underemployment of research and engineering skills, and (d) deal a heavy blow to a few rapidly growing industries and firms. The principal hopes for securing sizable reductions in defense spending without suffering these effects lie in substitute governmental procurement programs in non-military products. While no wholly integrated program for creating such demand has yet been planned, the development of new communities, with government support and incentives, is beginning to attract the attention of many planners.

## 2. *National defense influence on industrial and regional shifts*

Several factors combine to relate defense expenditure to the growth of new urban regions, or the revived growth of certain older metropolitan areas, in the United States. First, national defense spending has been heavy in *new* technology and industrial products. Defense spending has created or developed new industrial giants, as measured by the rise of aerospace contractors to the top rank of American corporations. Second, defense spending has produced investment in new plant and equipment, and has been directed either to new areas of the nation, or to new portions of established metropolitan areas. Third, in the regional distribution of defense and aerospace investment, states and regions have changed their historic economic specializations.

One aspect of the defense procurement program which almost guarantees a degree of geographic concentration of purchases, is the relatively small number of prime contract recipients. Official statistics of the Office of Secretary of Defense show that 72% of the value of the military prime contracts awarded in fiscal 1962 was accounted for by 100 corporate contractors (companies and institutions).<sup>5</sup> Of these 100 companies, more than half (56) were engaged in aircraft, missile and space work, or in electronics and research and development work directly related to aircraft and missile programs.<sup>6</sup>

Four industries, all of which have been rapid growth industries in the last decade, are heavily dependent on defense contracts. Aside from ordinance (including missiles), which is 100% dependent on such contracts, the aircraft industry sold 94% of its output in 1960 to the military, ship construction 61%, and electronics 58%. Not surprisingly, aircraft and ordinance (primarily missile) firms dominate the large contract awards, with a half-dozen aerospace firms ranking at the top of the list of defense contractors.

Four of these top-ranking firms have major production facilities in California. Of the 20 largest contracts to businesses let by the Department of Defense in 1964, 13 were awarded to California plants; of the 20 largest let in the first six months of 1964, 12 went to California.

Plausible links exist between defense spending, new industries, and the growth of states and metropolitan regions. A simple measure employed by Perloff, Dunn, Lampard and Muth demonstrates the net employment and population shifts within the nation in a given period.<sup>7</sup> They showed, for example, that the sizable net upward shift in employment to California has been achieved in large part by a net shift in industrial composition. While their work reveals that every major industry group in California experienced a greater increase in employment in the period 1939-58 than would have been the case if the industries had grown only at the national rate for each industry, the total local factor net shift was actually less than the total net shift in employment when calculated on the basis of the state's total expected rate of employment growth. The difference, as a popular version of their work points out, is a result of the underlying composition effect and exists because 'not only did each industry in California grow more than the national average for the industry, but California's industry mix or composition was such that the number of workers employed in growth industries exceeded the national average'.<sup>8</sup> California, they then conclude, 'experienced an upward shift in total employment because both the local-factor and composition effect in the major industries contributed to it'.<sup>9</sup>

To illustrate, the case of California is contrasted with those of Texas, Pennsylvania, and Georgia. While California's growth is attributable both to an upward net shift of local factors and composition of major industries, Texas experienced an upward net shift in total employment only

because a strong upward local factor was sufficient to offset a significant downward composition shift. That is Texas experienced a net gain in total employment relative to national expectations, without benefit of a shift toward favorable growth industries. Pennsylvania, on the other hand, suffered a net downward shift in total employment despite the fact of a strong composition shift, largely as a result of the rapid decline of such industries as mining, while Georgia's downward shift in employment was reinforced by a downward composition shift.

The impact of defense spending, because of the newness and rapidly changing character of military and space technology, is felt chiefly in composition shifts. Since the Korean War, the defense procurement mix has moved away from automobiles, steel, and other products of the long-industrialized East, North, Central, and Middle Atlantic states toward the electronics-missile products growing up in the Far West and Southwest.<sup>10</sup>

Perloff and his associates extended their analysis to each of the 48 states for which material was available in the period 1939-58. Examination of these studies reveals a strong influence of defense expenditure in the net composition effect. Certain states, such as Maryland (including Washington, D.C.) achieved total net upward shift despite local-factor net downward shifts, as a result of specialization in industry sectors which were growing at a faster rate than the average for all industries. In the case of Maryland, the growth industry component was fed by strong government military and defense purchases. In the seven states of Kansas, Washington, California, New Mexico, Connecticut, Arizona and Utah, employment in defense-related industries accounts for over 20% of total manufacturing employment. The six western states in this group were all sizable gainers in net upward shift of manufacturing employment during the decade 1950-60. The exception to this effect, the

eastern state of Connecticut, experienced a net downward shift in manufacturing employment despite its high military and defense component.

As the Connecticut case shows, defense industry employment has not produced as marked composition shifts in established manufacturing areas as in the new-growth manufacturing areas. In the older industrial centers, defense contracts have not produced marked industrial composition changes, either because they have been too small or because they have served chiefly to support established industries. The impact of defense expenditure on older centers, such as Hartford, has been offset by loss of traditional manufacturing lines, whereas the growth of defense production in the cities of Wichita, Los Angeles, Seattle, San Jose, Phoenix and Salt Lake City represents a marked net gain in industrial activity.

Not only has this created new manufacturing centers, but a sizable portion of defense production in the 1950s and 60s has taken place in new plants and highly specialized facilities. In some cases, the plants have actually been built by the Defense Department, which retains title to plant and equipment. These plants are frequently located in the suburban or exurban fringes of the metropolitan areas, since they tend to be large space-users, and to have certain security needs. But since they are large employers, whole new towns, or sudden inundations of building in older, small communities, follow the plants. Towns like Sunnyvale, Azusa, Fontana, and Canoga Park rocket upwards in population, and commuter developments proliferate around them.

In a rapidly growing state such as California, the defense production centers are the principal recipients of out-of-state migration. In the city of San Diego, characterized by strong military demand, over 36% of the 1960 population had resided in a different state in 1955, compared with 23% for all urbanized areas

in California. High defense production areas such as Los Angeles-Long Beach and Pomona-Ontario were above the state average, while low defense industry areas, such as Fresno, Stockton, and Bakersfield, were well below the state average.<sup>11</sup>

The shift technique employed by Perloff and his associates distributes the expected growth (i.e. the mean growth rate) of the U.S. among states in accordance with their positive or negative deviation from this mean expectation. The total amount of deviation in the period 1939-58 is approximately 13,000,000 persons. These 13 million were, for the most part, located in a relatively few metropolitan areas of the gaining states. Ironically, relatively little of this growth can be directly attributed either to the regional development economics suggested by these authors, or to direct public policies for regional development aimed at distressed areas, or areas of below national economic growth rates. The investment appears to have gone, for the most part, into rapidly growing urban areas (particularly in California) and to have had the effect of accelerating this growth.

In summary, the pattern of defense spending in the United States has produced or accelerated several shifts in the composition of industrial activity, nationally and regionally, in the distribution of population between states and metropolitan areas of the nation, and in the distribution of activities within metropolitan areas.

### 3. *Some special problems of defense spending changes*

On purely economic grounds, Leontief and Hoffenberg, Isard and Schooler, and others have made a strong case for disarmament, in terms of its effects on business activity, national output, and real income given certain offset programs.<sup>12</sup> This author agrees with Suits that '... a program of general and complete disarmament ... scheduled over a twelve-year

period, combined with only the most elementary offsets in the form of tax reduction and transfer expenditure creates an adjustment problem of a lower order of magnitude than that posed year in and year out by the growth of the labor force and increasing productivity. In fact, the impact of disarmament represented a slight — almost unnoticeable — intensification of the problem of adjustment to economic growth in general'.<sup>13</sup>

But while the problem of disarmament appears quite manageable in the arithmetic of economic aggregates, the shifts described in the section above have created areas of vulnerability which, at the points of impact, are no longer marginal. Even if the problems of sustaining adequate aggregate demand, absorbing labor force increases, and maintaining economic growth rates could all be met, sore spots would remain in the uneven geographic distribution of defense employment, its concentration in a few industries and firms, and the dominant role of defense in demand for certain high-order labor skills. The collapse of certain industries, firms, and local economies, the mass shifts of personnel, and the unemployability of many highly-skilled workers are potential dangers of disarmament which the nation will wish to avoid or minimize.

Let us consider some of these problems with references to California, which has been shown to be an area of high concentration of defense spending. California well illustrates (1) the potentially severe aggregate impact in a particularly defense-impacted area, (2) the special metropolitan area problems, and (3) the case of a high-skilled labor force concentration.

The aggregate impact of defense cutbacks on California can be estimated with the help of recent studies.<sup>14</sup> Using an econometric model based on time-series analysis of inter-sectoral flows in the California economy developed for the California State Development Plan, Dyckman and Burton measured a Goldberger-

type income impact multiplier for defense spending in the state.<sup>15</sup> The major defense cutback effect would be felt through reduction of the 'exports' to Federal government. (If purchases by Federal defense and space agencies from California firms are recognized as exports, the aircraft-ordnance industry group accounts for a third of the total exports of the state.) Given a 25% across-the-board cutback in defense spending, without offset, and falling evenly on present contractors, the impact on California would be formidable if there were no offset programs. By the Dyckman-Burton calculation, reduction of \$1 in exports of the impacted defense industries results in a \$2.47 reduction in total wages and salaries in California. Under a 25% cutback assumption, almost a billion dollars of wages and salaries would be lost to the aircraft-ordnance group alone, and the total state wage and salary loss would be \$2.88 billion. Thus a cutback of about \$5 billion in national defense spending in Washington might have an impact of almost \$3 billion on total wages and salaries in California, in the same year. The order of *local* offset programs needed is clearly of a much higher order than the needed national programs.

Local impacts within the state would be even greater. In the Los Angeles area, according to Tiebout, 42.5% of manufacturing employment is tied directly or indirectly to sales to the Department of Defense and the National Aeronautics and Space Administration. Individual industries vary from a high of 98% in Communication Equipment and Ordnance to less than 5% in Heating and Plumbing Fixtures.<sup>16</sup> Almost two-thirds of the employment is in 'large establishments'. Using a multiplier of 2.2, Steiner calculated that total income generated by defense expenditures in Southern California was about \$9 billion or about one-third of the Gross Regional Product estimated for the area in 1959.<sup>17</sup> The impact on southern California

of significant defense spending reduction, therefore, would be much more severe than that on the whole state.

Nor is the problem of researchers and other high-skilled personnel less acute in California. In the five years between fiscal 1959 and fiscal 1964, when Federal expenditures for Research and Development in the defense-related programs rose from \$5.2 billion to \$13.4 billion and the R and D share of all national defense expenditure rose from 11% to 22%, California, and particularly the Los Angeles area, increased its concentration in R and D work. Three industry groups, aircraft and missiles, electrical equipment and communications, and chemicals and allied products, accounted for 68% of the research and development financed by industry in 1961. If machinery and motor vehicles and other transportation equipment are added, the group accounted for 84% of all research and development activity, measured by dollar amounts devoted to these purposes.<sup>18</sup> These industries, along with direct Federal agency research, have played a prominent part in the great R and D growth in California. (Federal Research and Development expenditure, which is heavily concentrated in defense and space fields, rose from an annual rate of \$2.7 billion in 1953-54 to \$11.0 billion, or more than two-thirds of all such expenditure, in 1963-64.)

Research and Development expenditures require high-level employee skills. While it is difficult to assess the amount of movement of scientific and technically-trained workers into the defense industries and defense areas, certain indirect evidence of the concentrations of such persons in California may be inferred from the distribution of scientists. Data on the geographic distribution of scientists by metropolitan areas of the nation is necessarily sketchy. The National Register of Scientific and Technical Personnel, maintained by the National Science Foundation since 1953 provides some data on the distribution,

although these data are weighted heavily toward scientists and omit most industry and production engineers employed in the aerospace industry. This registry shows:

1. California standard metropolitan statistical areas succeed in maintaining a rank order in the national ranking equal to or better than their population rank by U.S. Census of 1960. At least one standard metropolitan area in California, that of San Jose, far exceeded its population rank in its relative position in the scientific register.
2. The California metropolitan areas are especially well represented in those fields contributing directly to aerospace technology. Thus, the Los Angeles-Long Beach standard metropolitan statistical area leads all other areas in the Register in number of mathematicians and physicists. It has 17.6% of all mathematicians in the register and 14.7% of the physicists. San Jose ranks with Boston and Rochester in the percentage (over 20) of its registrants listed in physics.
3. Los Angeles also led all other SMSA's in the number of scientists active in 'applied research'. Three SMSA's in California, Los Angeles, San Francisco, and San Jose, have 28.8% of the astronomers, 25.4% of the mathematicians, and 24.8% of the physicists. These three SMSA's account for 14,710 scientists in the Registry. If, as the NSF estimates, the Register has counted half the scientists, and if, as is generally estimated, there are at least two production and industry engineers for every scientist, these three areas would contain about 100,000 top technical personnel. We have independently estimated the actual number as somewhat higher (150,000-200,000).

Using his basic input-output coefficients for industry requirements, and National Science Foundation estimates for

ratios of engineers and scientists to labor force in given industries, Leontief has estimated the demand for engineers and scientists in the mid-sixties.<sup>19</sup> Assigning 23,000 scientists (of a total of 452,000) and 76,000 engineers (of a total of 1,304,000) to space exploration, Leontief estimates a total demand for 1,756,000 scientists and engineers. If the three California areas noted above were to house the same share of all scientists and engineers that they comprised of all scientists and engineers in the SMSA's of the United States listed in the Register (18%), they would need to employ about 300,000 such technical persons. Since space exploration is estimated to require more than twice as many scientists and engineers per billion dollars of expenditures as other uses of gross national product, it is obvious that any reduction in space expenditures would need to be accompanied by a more than commensurate expansion of other uses of scientific personnel, or by comparable offset programs, if substantial surpluses of highly trained persons are not to occur in areas of present aerospace concentration.

The interdependence of universities, government sponsored research, and defense contracts, and their concentration in a few major metropolitan belts of the country has been noted by Clark Kerr in his Godkin lectures at Harvard University on the Multiversity. Kerr pointed out that a relatively few areas — New England, the Pacific Coast, the Great Lakes-Big Ten area, and more recently and embryonically, the Gulf Coast — have come to dominate the American university scene in terms of strength of faculties, libraries, and particularly in volume of government scientific research contracts. Since so much government research has been pursued with an eye to defense uses, and since scientists and engineers often wish to be in contact with advanced university research, the tendency of scientific personnel to cluster in a few areas has been reinforced.

With any change in the pattern or level of Federal defense spending, government will face the alternative of concentrating offset programs heavily in these areas, or of creating incentives for the migration of scientific and technical personnel.

#### 4. *Requirements and opportunities in offset programs*<sup>20</sup>

The problems of maintaining aggregate demand sufficient to stimulate desirable rates of growth of the economy and the structural problems discussed above are obviously interdependent. Indeed, if one looks only at aggregate demand without regard to its interplay with structural effects, the solution is not only theoretically trivial, it is practically impermanent or unworkable. Similarly, some structural solutions will give quite different levels of economic growth than will others. Furthermore, governmental offset programs encounter political obstacles, since they invariably involve distribution effects, and business offset programs must be accompanied by adequate profit incentives. Few governmental programs can expect to meet with the widespread acceptance which has, in the past, been accorded the military and space programs.

Urban development programs have been persistently advanced as prime candidates for offset expenditure. They have the intuitive popular appeal of improving an environment in which almost everyone shares, they involve the economic and political participation of many decision levels and groups, and they have certain of the economic characteristics of national defense spending — such as convenient devices for government underwriting of risks, continuously recreated and almost inexhaustible demand, rapid obsolescence, and a productive technology which has modest skill requirements and abundant use of labor. The potential demand for urban facilities conveniently expands with population, and exercises in offset programming which are concerned with



employment effects can, for reasons cited above, almost always show aggregate employment increases for dollar investments, whether public or private, easily realizable out of defense spending cut-backs.<sup>21</sup>

Unfortunately, conventional urban renewal and development programs, such as those presently authorized in the U.S., have a number of serious drawbacks for present offset use. While they can offer ample employment effects, they presently offer little employment prospect for the highly skilled R & D scientists and technicians now engaged in defense work.

Though the federal government provides the basic subsidy for urban renewal in American cities, there are effective limits. Federal funds are confined chiefly to land clearance costs, and in the case of public housing, to low income building subsidies. In some cases, funds are also available for highways, transit and community facilities. But local governments find themselves restrained in renewal programs, by intractable problems of relocation of low income families, small businesses, and certain industries, and by their own incapacity to mount adequate operating programs to match the federally supported capital investment. So long as local government resources are based heavily on property taxation, the very efforts of local administrations to raise funds to mount appropriate programs are self-defeating, in that increases in local property taxes serve as a damper on property improvement.

Furthermore, renewal programs must contend with the fact that the bulk of the investment is earmarked for improvement of private assets, and government must either openly confer a transfer of benefits to these parties, or run the collateral political risk of taking a position in these assets.

From an economic standpoint, urban renewal stresses short-run output and consumption at the expense of long-run

growth, to the extent that it substitutes expenditure on housing, and publicly provided consumer amenities for investment in production equipment, research, and producers' goods (barring, of course, a condition of overcapacity in traditional lines). Present urban development programs, moreover, are heavily oriented to the renewal of older cities. By and large, these are not the cities most directly impacted by the defense spending programs, and most vulnerable to their reduction. Unless one wishes to shift population and activities back from the new centers to the older centers, new programs must be devised.

Fortunately, there is evidence that consideration may soon be given to programs which could, under conditions of reduced armament spending, be more useful to the impacted new growth areas. These programs are generally subsumed under the label of 'New Towns'.

The proposals for a national New Town program, which have been put forth in a modest fashion by the Housing and Home Finance Agency, might, if vigorously expanded, constitute a major offset program. Like urban renewal, New Town construction has the advantage of stimulating an industry (construction) which (1) is of considerable structural importance to the economy, (2) suffers, under ordinary market conditions, from severe fluctuations, and (3) provides a large number of jobs for a given item of investment. Like urban renewal, New Town development targets would not quickly be met, nor the program easily exhausted.

In addition a New Town program might have a number of advantages over the urban renewal program. For one, the New Town building scheme would permit the population drift, precipitated and reinforced by defense spending, to continue. Since there is a general movement of population toward the west and south in the United States, and particularly toward the metropolitan areas on the rim of these

regions, a New Town program might provide public assistance for the further accommodation of this movement. At the same time, it would help by offering substitute construction activities for present defense production and the employment and retention of persons who would be laid off by defense cutbacks. To the extent that the New Towns supported a net shift of population to the west and south, they would assist these areas to reach a scale of market size and necessary social overhead for the support of competitive enterprise.

The construction of whole new communities is a more complex task than the replacement of individual facilities, such as housing. The planning work involved in such enterprises is formidable — it may be of an order equal to that required by many contemporary defense space programs. While it is dangerous to presume any easy transfer of skills, it is possible that the degree of transfer of defense and space scientists to new community programs might be higher than would be the case with many traditional public works programs. There are many aspects of town planning which have parallels in the systems-engineering work conducted for military or space objectives. Some of the numerous scientists now working on production scheduling tasks could certainly find places in New Town development programming. Individual experts in problems of controlled environmental conditions necessary for space work might make contributions to the problems of air pollution, water conservation, noise abatement, etc. — all characteristic town planning concerns.

It is not surprising that some scientists in the aerospace industries have taken to the idea of New Town development with enthusiasm. Norman Petersen, chief scientist of the Air Force Flight Test Center at Edwards Air Base, California, calls new community development the Century-21 Urban Center Frontier and sees this as the

greatest opportunity area of proposed civilian growth. In his words, 'Its scope of activities, its requirements for all types of talent, all skill levels, new materials, identifies it as a frontier without parallel. This is a frontier that every citizen in the nation could contribute to and participate in to the limits of his ability'.<sup>22</sup>

It is noteworthy that Petersen has stressed the substantially diversified nature of the demand generated by new city technology and new city style of life. From the standpoint of both the national economy and the utilization of the particular talents of the present defense industries, the New Town and related urban centers schemes are well suited to the task of demobilization. Adequate analysis of the issues posed by these complex but interesting proposals would require substantial investment in the problem areas of optimum population size and density, power and water supply planning, waste disposal and pollution control technology, the relation of transportation to travel desires under different physical arrangements, and a host of others.

The net shift of population during the next decade is likely to approach the figure of 30 million persons. The Far West, which has been the recipient of the shift mentioned earlier in this paper, could easily gain 10 to 12 million persons. If the net (above national average) gain alone were accommodated in New Towns, the program would need to build a hundred New Towns. Of these 30 would be in the Far West, under the assumption that new towns would be built on the average scale of 100,000 dwelling units, with an average population of 350,000. Though this figure is substantially higher than that usually set for New Towns, it is about the same scale as the net addition to the San Jose, California, area during the decade 1950-60. If these towns were to be genuinely independent of existing metropolitan centers, a scale of 350,000 persons seems to be minimum.

The total cost of a new community for 100,000 households is estimated at \$9 to \$10 billion. Almost a third of the cost would be for residential units. We have estimated cost per dwelling unit at \$15,000 and the cost of the infra-structure necessary to support that dwelling unit, local streets, utilities, etc., to be an additional \$15,000. Thus, residential costs (inclusive of infra-structure) would amount to about \$3 billion of the total with industrial, commercial, educational, park and open space and other costs accounting for the rest.

Over a decade, ten New Towns at this scale would cost from \$90 to \$100 billion. At an annual rate, the New Town cost is approximately equal to the \$10 billion per year for space programs set aside by Leontief.<sup>23</sup> The total cost of New Town development over the period would equal only two years of present defense spending.

What is more important, however, the New Town program would involve substantially less federal money, because the federal share in such programs could not be expected to be more than one-half, and given local interest, private asset positions, and local government regulations, is not likely to exceed one-fifth.

The task of inducing the necessary private investment in the New Towns is less onerous than that of directing the investment into existing towns. In our study, *Capital Requirements for Urban Development and Renewal*, we estimated that renewal on private enterprise terms would require an increase in the annual private investment on new construction from the 42 billion level of 1958 to the 70 billion per year level by 1970.<sup>24</sup> At the halfway point in the period the economy is almost halfway to the desired level. However, the bulk of private construction investment has been going into building on vacant land. Most of the investment in rebuilding has been in commercial and office structures. Private investors show a marked predilection for open sites and virgin land

development around the fringes of large cities. It is not clear that this condition would persist if planning and control of development reduced speculative opportunity in land, but it is likely to be easier to secure private capital for New Town ventures, under certain favorable conditions, than for traditional urban renewal programs. The necessary incentives might range from federal and state tax concessions to government guarantees of mortgages and assistance in obtaining favorable interest rates on construction loans. At present, we are exploring the conditions for private land development in New Towns.

Not only must we have public planning for private investment programs in New Towns, but we must have public planning for private consumption as well, if the New Town is to be an appreciable advance over present suburban development. Indeed, if the New Town does not offer an appreciably better environment than that now provided on the urban fringes, it is unlikely that any program of this will secure support, idle resources and manpower notwithstanding. But if some of the talents now devoted to defense and aerospace production are to be turned to the production of consumer goods, there is need for complete reconversion of business practice and outlook as well as hardware. The transition from monopsonistic to mass customers, from over-design to competitive cost-cutting, from cumbersome procurement to astute buying, and above all, from regulated bidding to consumer persuasion and selling, is an essential condition to securing the consumer response needed for success of the program. For those defense contractors which also produce for ordinary consumer markets, the transition would be less traumatic, and the incentives to participate in new community development — as clients for industrial land, as participants in development of new products for government and urban markets, and asurveyors to those markets — would be more obvious. Certain defense-

spawned aerospace companies have shown interest, moreover, in creating architectural and development firms which might take active part in the direct development processes for the New Towns.

In this paper, we have placed emphasis on the new community development program as an offset device for the economy in a condition of disarmament or reduced defense expenditure, without attempting to specify the exact form of the development, nor its particular auspices. The demand for these towns, goes the speculation, will arise principally from a massive net shift in population. While one might well argue that a shift which accommodated the location preferences of the population would result in a net gain in social welfare, the analyst is hard pressed to demonstrate that this shift is worth the cost of the New Town program. More important, there are plausible grounds for holding that such large expenditure in New Town technology and development costs would command relatively low priority if considerations of income distribution effects were allowed. The beneficiaries of the New Town program sketched above would be primarily those technicians who might otherwise face at least temporary unemployment in a demobilization program, and others who shared their locational preferences, and who could afford to indulge them by moving to the impacted but high-amenity areas. On grounds of equity one might well argue that these are relatively privileged members of our society. A strong case could be made for placing programs such as educational support for the disadvantaged, housing for low income groups of the population, health programs for the aged, and a number of other social programs ahead of the New Town development scheme.

On the other hand, one reason for taking the New Town alternative seriously is the strong self-serving political and social pressure which might be exerted by the

affected technicians and skilled groups in the society, not to mention the well-placed defense contractors. Indeed, the very absence of strong redistributive aspects of the program prove a political asset under certain conditions in American life. But the program, which is likely to take its place as one of the possible offset programs considered under conditions of arms reduction, should not be taken as the pet project or the personal recommendation of the writer. Rather, the New Town program is considered because its special characteristics fit closely some of the more troublesome aspects of the local impact of defense reduction.

There is, however, a substantial experience with New Town development in the United Kingdom, the Netherlands, the U.S.S.R., and, in a less self-conscious way, the United States. In the frontier areas of developing nations, like Canada, almost all the communities are 'New Towns', and many are planned.<sup>25</sup> The essential feature of such developments has been public policy for population redistribution. In the United States, population redistribution has not been a public goal, and except for the short-lived Rural Resettlement Administration program of the thirties, we have not had a public New Town program. But in view of the substantial redistributive effects of the defense programs, and the local area problems which would be created by reduction in defense spending, a frank espousal of population distribution policy may be inevitable. Such policy would be implicit in any decision to move new economic activities into areas of reconversion from defense to civilian production, and would be further reinforced by a policy of building New Towns to serve as nuclei for further development in these areas. The case for such policy, however, is made daily in the choices of citizens to migrate to the west, particularly to California, and in the decisions of federal agencies to place contracts in this part of the country.

\* Mr. Gary Kane assisted in a number of computations for this paper. I am also indebted to Richard Burton for his work on the California State Development Plan studies.

<sup>1</sup> Benoit, E. 'Affording Disarmament: An Analysis, A Model, Some Proposals,' Columbia University Forum, Winter, 1962, pp. 4-10.

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Tiebout, C. and Petersen, R. Paper at American Economic Assn. Meeting, Boston, December, 1963.

<sup>2</sup> Particularly, Isard and Schooler, and Petersen and Tiebout.

<sup>3</sup> Tiebout and Petersen, op.cit.

<sup>4</sup> Defense procurement 'policy' is perhaps too strong an appellation. No consistent and well-rationalized policy has yet emerged. Moreover, the constant interaction between defense demand and local conditions prevents us from assigning a direct causal relationship to the federal demand.

<sup>5</sup> The 1958-61 shares ranged from 73.4% to 74.2%. As recently as the Korean War the largest contractors share was only 64%. Cf. *How Sick is the Defense Industry?*, A. D. Little, Inc., Cambridge, Massachusetts, September, 1963, p. 14.

<sup>6</sup> Weidenbaum, M. 'The Impact of Military Procurement on American Industry,' in J. A. Stockfish (Ed.) *Planning and Forecasting in the Defense Industries*, Belmont, California: Wadsworth Publishing Company, 1962.

<sup>7</sup> Perloff, H., Dunn, E., Lampard, E., and Muth, R. *Regions, Resources, and Economic Growth, Resources For the Future*, 1960. 'Net shift' = Actual Employment (or Population) in 1958 minus expected Employment (or Population) for 1958 based on projection of 1939 figures using national average rate of growth in Employment (or Population).

<sup>8</sup> Perloff, H. S. and Dodds, V. 'How a Region Grows,' Supplementary Paper # 17, Committee for Economic Development, New York, March, 1963, p. 75.

<sup>9</sup> *Ibid.*, p. 76.

<sup>10</sup> U.S. Dept. of Defense, 'The Changing Patterns of Defense Procurement,' G.P.O., Washington, June 1962, Table II.

<sup>11</sup> Foley, D. L., Wurster, C. B., and Smith, W. F. 'Housing Trends and Related Problems' in *California Housing Studies* (University of California, Berkeley: Center for Planning and Development Research, 1963) p. 117.

<sup>12</sup> Leontief and Hoffenberg, op.cit., Isard and Schooler, op.cit.

<sup>13</sup> Suits, Daniel B. op.cit., p. 111.

<sup>14</sup> Steiner, op.cit., Tiebout and Petersen, op.cit., have made studies of the southern California area. A. D. Little, Inc., has recently completed a statewide study for the State Office of Planning.

<sup>15</sup> Dyckman, J. W., and Burton, R. B. 'The Role of Defense Expenditures in Forecasts of California's Economic Growth,' *Western Economic Journal*, March, 1965 (forthcoming).

<sup>16</sup> Tiebout, C. and Petersen, R. op. cit.

<sup>17</sup> Steiner, op. cit., p. 22.

<sup>18</sup> Based on survey by National Science Foundation, 'Metropolitan Area Distribution of Scientists in the National Registry of Scientific and Technical Personnel', *Scientific Manpower Bulletin No. 18*, Nov., 1962.

<sup>19</sup> Leontief, W. 'Alternatives to Armament Expenditures', *Bulletin of Atomic Scientists*, June, 1964, pp. 20-21.

<sup>20</sup> This section of the paper draws heavily upon Dyckman J. W., and Isaacs, R. R. *Capital Requirements for Urban Development and Renewal*. (New York: McGraw-Hill, 1961)

<sup>21</sup> For example, see Isard and Schooler, op. cit.

<sup>22</sup> Norman Petersen, speech to the Phoenix section of the American Institute of Aeronautics and Astronautics, February 1, 1964.

<sup>23</sup> Leontief, W. in *Bulletin of Atomic Scientists*, cited above.

<sup>24</sup> Dyckman and Isaacs, op. cit. Also, v. Dyckman, J. W. 'National Planning for Urban Renewal,' *Journal of American Institute of Planners*, February, 1960, p. 56.

<sup>25</sup> See for example Robinson, I. M. *New Industrial Towns on Canada's Resource Frontier*. (University of Chicago, 1963)

## SUMMARY

The pattern of U.S. defense expenditure has reinforced certain industrial and urban development shifts in the nation, and by accelerating the growth of certain urban areas, has created local situations of great vulnerability. The shift to California has changed the industry mix in the State, raised the defense industry complex to the principal export industry of the State, produced new location patterns within the State, and concentrated a disproportionately high number of scientists and technicians in California. Under conditions of rapid and sizable defense expenditure reduction, California would face serious problems of reduced demand for its exports. But reduction in aggregate demand would also be accompanied by severe shrinkage in demand for certain skills. Most offset programs proposed for the nation would not alleviate the prospective condition of surplus technicians in selected California areas; further, some locational 'stickiness' of these technicians is expected. One offset program now being proposed by California space industries — development of a federally assisted New Town building program — is examined in some detail. The program in several aspects promises favorable offsets to the peculiar problems of defense contracting, though the social priorities of the program may be dubious.

## Краткое содержание.

Система распределения расходов на оборону в США послужила поводом к некоторым сдвигам в промышленно-городском развитии нации и, ускоряя рост определенных промышленно-городских районов, создала на местах обостренные проблемы.

Упор на Калифорнию привел к переменам в индустриальной структуре штата, сделал оборонную промышленность главным поставщиком, работающим на экспорт, сосредоточил в Калифорнии несоответственно большое количество научно-технического персонала.

В случае быстрого и значительного сокращения расходов на военные нужды, перед Калифорнией могут возникнуть серьезные проблемы, связанные с уменьшением спроса на ее главные экспортные товары.

Уменьшение спроса на оборудование повлечет за собой значительное сокращение штатов работников разных профессий и специальностей. Большинство программ, разработанных с целью решения проблем, которые могут возникнуть в определенных условиях, не облегчит предполагаемого положения, попавшего под сокращение технического персонала в некоторых районах Калифорнии. Затем нельзя не учитывать желания некоторой части технического персонала поселиться в Калифорнии. Статья более подробно останавливается на программе помощи техническому персоналу, предложенной отраслями промышленности Калифорнии, занятыми изготовлением оборудования, необходимого при изучении и освоении космоса.

Такому же, более детальному анализу, подвергается и федеральная программа строительства новых городов.

Во многих отношениях эта программа решения специальных проблем, связанных с сокращением военных расходов и спроса на военную технику, создает благоприятное впечатление, хотя социальные стороны программы не могут не вызывать сомнений.

## Research Communication:

# CONCERNING THE REDUCTION OF MILITARY EXPENDITURES

From

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In 1964 the Soviet Union reduced its military allocations by 600 million roubles, i.e., by 4.5 per cent, and is prepared to effect a further and bigger cut (of 10 to 15 per cent) if the Western Powers reduce their military expenditures in the same proportion.

Reduction of military expenditure does not require large-scale diplomatic, military-political or economic preparations by states, for the national defense systems will remain for a definite period almost the same as they are today. On the other hand, agreement by all or almost all states to check the growth of military allocations (which has assumed a chronic character) and to start reducing them would be of paramount significance, similar in impact to the decision to stop nuclear weapon tests in the three spheres already arrived at by the three Great Powers.

In my opinion, reduction of military budgets would have a beneficial influence on the economy of all countries. It would become possible to spend more on socio-economic needs, cut taxes and raise the living standard of the population. And the politico-psychological importance of such a step should not be overlooked, either.

The economic benefits will be the greatest under general and complete disarmament. But the countries which will decide to begin cutting down their military expenditures and reducing their armed forces will obtain immediate definite economic benefits as well.

The Soviet Union will use the means thus released for bigger investments in civilian branches, especially those directly connected with improving the well-being of the population. This not only involves reallocating 600 million roubles this year to peaceful needs and increasing investments in the chemical industry, the manufacture of fertilisers, and farm mechanization, which will increase substantially the production of grain and other agricultural products; it would also permit an increase in the labor force in civilian branches through the reduction of the number of military personnel and the direct use of materials and ammunition for peaceful purposes.

The Soviet Union has already adapted military equipment for use in agriculture and, for example, for combating avalanches. It is still easier to use materials and various military installations which in form differ little if at all from their civilian counterparts. I have in mind stocks of various raw materials, fuel, means of transportation and communication, houses and airfields, etc.

A highly interesting and economically important example of peaceful application of military supplies is provided by the use of explosives for earth-moving work. This problem has been elaborated theoretically and practically by Professors Georgy Pokrovsky, Mikhail Dokuchayev and other Soviet scientists. Using non-nuclear bombs, mines and torpedoes (without any expenditure on readaptation) released by the arms reduction, the Soviet Union has