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LAND AS SPACE FOR LIVING

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It is a real pleasure for me to meet with your Association again. My last attendance was at the Lake Tahoe meeting. I was then representing Alaska which finally has almost served its allotted time as a territorial possession. I left that extensive frontier of land use in our soon-to-be northernmost State with real regret. It was exciting to work on the fringes of settlement and there was much rewarding work to be done.

Now I am working on one of the intensive frontiers, that of expanding urban land use. Modern urban society is nibbling away at lands of rural communities all over the country--and in varying degree all over the world. I find the assignment fully as great a challenge as was my Alaska assignment.

Although my study of the literature is far from complete, it is becoming more and more evident that we do not know very much about the way social and economic forces interact within the twilight zone that lies between the city and the farm. With your permission, I shall sketch the need for growth in urban land, the area needed for nonfarm uses, and the place of planning and planners. I regret that time does not permit adequate development of any of these subjects.

Since World War II, we have had a revolution in the rate of reproduction. This has resulted in the alltime high of well over 4 million babies a year in this country. The number of marriages is less than a few years ago but there are more births per 1,000 couples. We can expect another bulging birthrate when the War Boom babies begin having families. How different our outlook is from the outlook 20 years ago, when demographers were lamenting our declining birthrate and our stagnating economy.

Rates of reproduction have risen and fallen throughout history in response to limits of food supply and as reflected in the mores of the day. Malthus' theory was not wrong if we accept his assumptions--his error lay in not being able to foresee the technological revolution that was to flare forth shortly after his time. We can see the effects of upsetting the equilibrium between checks and balances among the populations of underdeveloped countries.

The population of the United States now totals more than 173 million people, and it is estimated that we will reach at least the 350-million

/1 The opinions expressed in this article are those of the author and do not necessarily represent the views of the Farm Economics Research Division, ARS, or the U. S. Department of Agriculture.

level (double our present numbers) within another 50 years.

Before 1860, the population doubled every quarter-century, and its major characteristic lay in its westward migration across the continent. After 1860, settlement of the intervening open spaces continued, but new migrants settled more and more frequently in eastern and central cities. By the close of World War I, migration to the West except to Pacific Coast cities had practically stopped. Migration to cities was greater than ever before.

Urbanization in the United States started slowly but gained momentum during the last century. In 1800, only 6 percent of our population lived in urban places. This proportion increased to 15 percent by 1850, to 40 percent by 1900, to 56 percent by 1930, to 64 percent in 1950, and to an estimated 67 percent in 1958. We have become an urbanized nation.

Our urban population has increased by 7.7 million from 1950 to 1956. Rural population during the same period increased by 7.0 million with 87 percent of this rural increase accounted for by standard metropolitan areas. Therefore, it follows that 94 percent of the net population growth in the United States since 1950 has been of an urban nature. Perhaps I should mention here that, because of population growth and other factors, the 1960 Census of Population will classify as urban additional parts of the 1950 rural territory.^{/1} In numbers, the net migration to these new subdivisions nearly equaled the number of people who migrated to urban areas from farms and rural territory. This migration from the farms was much greater than the natural increase of the farm population. Consequently, from 1950 to 1957,^{/2} the number of people on farms declined by 4.7 million. More than four-fifths of the country's increase in population between 1950 and 1956 was in the 168 large metropolitan areas.

From 1870 to 1950, workers in agriculture declined from 50 to 12 percent of the total labor force. In 1955, agriculture represented only about 10 percent of all workers, and no doubt this percentage will decline further within the next few years. Improved technology, both on and off the farm, has contributed greatly to the reduction in labor required. Also, some steps of packaging, transporting, and processing formerly done on farms now are provided by others. More and more of the consumer's dollar spent for farm products goes to pay for these specialized services.

As Jean Gottman has pointed out, "The United States has demonstrated that enough agricultural commodities of all kinds can be produced for a populous nation, enjoying a high standard of living, by the work of only one-eighth of the total population.... Thus 90 percent of a prosperous nation must live from nonagricultural pursuits, but not in congested slums."^{/3}

^{/1} U. S. Dept. of Commerce, Bureau of the Census, "Civilian Population of the United States, By Type and Residence," March 1956 and April 1950, Series P-20, No. 71.

^{/2} "Estimates of the Farm Population of the United States, April 1950 to 1957," Series Census AMS (p. 27), No. 24. October 20, 1957.

^{/3} Gottman, Jean, "Megalopolis or the Urbanization of the Northeastern Seaboard," Econ. Geogr. 33:3 (July 1957), p. 197.

Our wants and needs have changed. Our way of life has changed. The relative importance of food and fibers has declined in relation to other things which I will group under "services" in the total demands we place on land resources.

Adopted technology has made it possible for fewer farmers to produce more goods. The surplus farm labor force can be utilized effectively only in nonfarm industrial, trade, and service activities. The strength of the Nation is based firmly on adequate supplies of relatively cheap food, but its prosperity depends on a steadily growing gross national product, of which nonfarm activity provides an increasingly large proportion. Prosperous urban families have higher levels of living--as measured by automobiles, paid vacations, general health, level of educational attainment, and detached residences--than ever before. The established areas of our cities are no longer able to meet the needs of the urban population. Urbanized areas must expand. Agriculture's prosperity depends on prosperity of the nonfarm consumer families. The people of the United States are not faced with starvation now or in the foreseeable future. They are faced with an urbanized population bursting at its seams.

Place of residence has less significance than it had in the past. Modern transportation makes it possible for people to live in the open country and work in city offices or factories. A New Hampshire study shows a drop in number of rural farm and urban age groups and a rise in the rural nonfarm group between 1940 and 1950.^{/1} City residents moved to neighboring rural areas and small towns, partly because of industrial development and partly because they preferred to live in rural areas and commute to jobs in industrial centers. The authors concluded that the movement does not indicate a decline in agriculture so much as an economic reallocation of resources to increase the total product of the State.

An Ohio study shows that 37 percent of the farmers in Ohio worked off the farm 100 days or more in 1954; in some counties, the proportion was more than 50 percent.^{/2} This shift to nonfarm work was associated more directly with the availability of industrial opportunities than with the quality of land or type of farm. Industrial expansion has provided a chance for many farmers to overcome their longstanding problem of low farm incomes.

Similar changes are reported for the Ozarks, the Southwest, Utah, and around the Nation. The change does not stop with employment. Our rural homes use the same appliances and the same electricity as urban homes. Our children are educated in the same school systems, watch the same TV programs, and have the same movie idols. Our women wear the same styles and brands of clothing, lipstick, and perfume. We drive cars of the same vintages. We meet at the same service clubs and the same vacation spots. The birth-rate differential is narrowing between the open country and city sectors

^{/1} Bowring, J. R., Purington, M. C. and Durgin, O. B., Population of New Hampshire; Migration and Changes in Composition, N. H. Agr. Expt. Sta. Bul. 425: 1-22, August, 1956.

^{/2} Wayt, W. A. and Moore, H. R., Farms are Fewer and Larger; More Part-time Farmers, Ohio Agr. Expt. Sta. Farm & Home Res. Bul. 300:39, May 1956.

of our society, particularly if comparisons are made between groups based on income, age, or educational level.

No one knows what the future will bring. It is, then, only sound judgment to urge that the relative merits of changes in land use to be made now and in the future be weighed carefully so that each alternative use will create as little irreparable harm as possible to the productivity of our natural resources as is economically feasible for the benefit of future generations. But agriculture must not oppose well-planned, necessary, nonfarm growth into presently rural areas.

For those who maintain that agriculture is the backbone of our national prosperity, the fact is that no society is prosperous when large numbers of the population work solely to feed themselves. Productivity per worker must be high in a growing trade or industrial economy before the country's level of living can advance. In the United States, as has been pointed out, there is a high degree of correlation between the growth of cities and the rise of economic output.

Now let us look at our land area. Continental United States without Alaska contains about 1,904 million acres. This is divided roughly into these uses: 1,724 million acres, or 90 percent of the total area, is in some form of agricultural use, including grazing and forestry on public lands, farmsteads and farm roads and lanes; 19 million acres, or slightly less than 1 percent, is urban; and the remaining 161 million acres, or roughly 9 percent, constitutes all other uses.

From the standpoint of ownership, about 71 percent of our land area is privately owned; about 5 percent is owned by States, counties, and municipalities; 21 percent is owned by the Federal Government and 3 percent is Indian land managed (but not owned) by the Federal Government.

The major outlines of American land use were well established by 1910 or 1920, although adjustments--ebbs and flows--continue in response to economic conditions and improved knowledge as to biologic balance. In many rural areas adjustment must be to a less intensive land use more nearly in keeping with the inherent ability of soils and to space in which to produce economically desired goods and services. More and more frequently the desired uses are for living and playing spaces, travel space, water production and storage, wildlife refuges, and defense areas.

Probably the chief reason for retaining large areas of land in Federal ownership is the public interest in Federal management of land for essential public purposes--for facilitating national defense, conserving and developing natural resources, and discharging our treaty obligations with the Indians. More than 30 million acres of State-owned land are set apart for essentially the same purposes as the Federal lands.

Although in general, our public lands are of lower value per acre than our privately owned lands, in the aggregate, they contain enormous values in essential resources--forests, ranges, minerals, wildlife habitat, and scenic masterpieces.

Approximately 20 million acres are in urban areas. An additional 10 million acres are occupied by rural villages and towns with populations of 100 to 1,000 and thus are not tabulated as urban areas. The estimated acreage in these small villages and towns, together with 11 million acres of farmsteads and lanes, now is scattered among other major uses of land, such as forest, grazing, farm, and other land.

Land use per acre is less intensive in villages, towns, and small cities than in larger urban centers. Clawson observed that "for all the cities in the United States, cities of 2500 to 5000 total population averaged 1,695 persons per square mile; cities of 25,000 to 50,000 averaged 3,575 persons per square mile; and cities of 250,000 to 500,000 averaged 6,135 persons per square mile, for instance. Of the land used by cities of 2500 and over population, half the total area was in cities of 25,000 and less; but these cities had only one fourth of the urban population. Land is used more lavishly in small than in large cities, partly because it is cheaper. The average size of city has grown in the United States, from less than 10,000 in 1800 to well over 20,000 today; and with the growth in size of city has come a parallel growth in density of settlement within the cities. Had this not been true, our cities today would be spread over more than twice the area they now occupy." /1

One of the concerns about land use is with the 172 million acres of nonagricultural rural land. About 80 million acres can be discounted immediately as deserts, sand dunes, bare rock areas, and marshes that are not used as military areas, parks, or wildlife areas. Except for their value as space and for discovered and undiscovered minerals, some of these are about as nearly useless as anything one can imagine.

Of the remaining 82 million acres, 25 million are in transportation--roads, railroads, and airports--24 million are in national defense and atomic energy areas, 28 million are in dedicated parks and forests or wildlife areas, 4 million are in flood-control areas, and the remaining million are in State, institutional, and miscellaneous uses.

In addition to the dedicated parks and wildlife areas, an estimated 200 million acres of private and public lands have high supplemental values for recreational purposes. These areas include many sites in the Lake, New England, Appalachian, and Western States, as well as along the seashore to the east, west, and south. These large recreational areas intermingled in forest, farm and nearby regions do not include the many thousands of farm ponds, streambanks, and woodland glades that provide picnic spots here and there among the farms and ranches of the country.

Ordinarily, urban and transportation areas are most directly in competition with agriculture for the use of level and fertile land. Other related uses such as open-country industrial sites, nonfarm residential and commercial sites in rural areas, mines, quarries, cemeteries, and golf

/1 Clawson, Marion, Current Land Uses and Overall Demands for Land in the United States. Paper presented before the Land Economics Institute, University of Illinois, June 23, 1958, p. 5.

courses, which are included in other land use categories, also compete frequently for good farmland. Recreational uses, however, often compete successfully for the less desirable farming areas.

Too little thought has been given to competing uses for land. The qualities that make lands valuable for agriculture make them valuable also for nonagricultural purposes. Moderate slope, good surface and subsurface drainage, and good soils help to reduce costs of construction and make transportation easier and less expensive. Incidentally, I suspect that more time, effort, seed, fertilizer, and sweat are spent per acre of urban lawn than farmers spend on their crops. Marion Clawson estimated recently that "the intensity of all urban land use is at least 100 times greater than the intensity of all nonurban land use."¹ Returns from investments in urban improvements on good land usually are greater per dollar invested than returns per dollar invested in agriculture on the same land. The greater economic returns from urban than from rural land uses are capitalized into land values. Society makes its wishes known through the pricing system.

I cannot agree completely with Whyte that "the old concept of 'highest and best use' in land values is outmoded."² Demand for the products of land is reflected in the prices offered for the land. This demand is a sum of judgments made by the majority of buyers. If their decisions are wrong, more enlightened people can try to improve the quality of their judgments, or change the rules for doing business. We have many examples of land use dedications by farsighted groups and individuals that have preserved open space for enjoyment by the community.

Here we come to the backbone of the problem. How farsighted do we need to be, and how far ahead can we look before the projections lose usefulness to people making commitments of land for present and future uses?

One needs only to glance at economic literature to see how wrong earlier, relatively short-range, studies were. Obviously, we can't predict with any degree of accuracy beyond the limits of effects of the factors already in existence. Within this time period, it looks as though we may well be plagued by agricultural surpluses, not by food shortage. For every argument that posterity will be starving in 100 or 200 years, there are counter arguments that they will be living better than ever before, dining on hothouse-grown algae, new and delicious plant products, and strains of meat animals not yet dreamed of. One argument can be as wrong or as right as the other. How much faith do we have in continued ingenuity?

One advantage of long-range planning is that it gives general guides to changes and future problems that may arise. But it leaves to the future most of the adjustments. It is hard to second guess progress.

No one, to my knowledge, has attempted to apply benefit-cost analysis techniques to the problem of future land utilization. This would be quite a

¹ Op. Cit. p. 4.

² Whyte, William H., Jr., Urban Sprawl, Fortune 57:1. (Jan., 1958) p. 107.

task, even when limited to a period of years short enough to enter economic calculations. But if it were well-done, it would help to formalize our thinking, and it might remove some of our fears.

The experiences of Great Britain since World War II prove that it is impossible to contain urban growth but it is possible to direct it. Alternatives must be weighed and adjustments made as the pressure builds. There must be a safety valve.

Our real culprit in the regional land use scene is urban sprawl. It detracts from the appearance of the countryside; it is wasteful of site values; it is expensive of public utilities. It blights values far beyond its periphery and prevents logical community development. It is unnecessary. I shall expand on this theme later.

I would like now to move on to the city and its utilization of land. All of us have seen numerous vacant lots, blocks, and larger units surrounded by built-up areas. R. D. McKenzie reports that historically nearly two lots have been subdivided for every lot utilized.^{/1} The major reason for the surplus appears to have been speculation in land values. The greatest proliferation of excess subdivision was during the 1920's.

Clawson, Held, and Stoddard quote Bartholomew to the effect that, of 53 central cities studied, on the average the total area was 1.79 times the developed area. Among 33 satellite cities, the total area was 1.57 times the developed area.^{/2}

Closer examination shows that a high proportion of the lots and blocks are too small for modern building standards. Title to many of them is obscured, and the public bill for back taxes, street and other facility assessments, and interest total more than the land is worth. The legal framework for getting these charges adjusted, changes in the plats, and other problems discourage most potential developers. Significant breaks through occur only infrequently and are usually associated with urban renewal or with an exceptionally active city planning and development group.

Population density varies with size and age of city and within cities by zones. Bogue developed data to indicate that each new job normally adds 3 to 5 persons in area population.^{/3} Each new urban family of 4 persons takes a median of 0.95 acres for housing, transportation, trade and industry, recreation, and public buildings.

Recently, I analyzed several studies of urban land uses and found that most estimates clustered around 24 to 25 acres per 100 persons. Percentage distribution would be meaningless as the studies are not directly comparable. However, they indicate that somewhere around half of our urban area is undeveloped; that residential uses, streets, and public and semipublic lands

^{/1} McKenzie, R. D., The Metropolitan Community (McGraw-Hill 1933).

^{/2} Unpublished manuscript, Future Land Use in the United States, Resources for the Future, Inc.

^{/3} Bogue, Donald J., Metropolitan Growth and the Conversion of Land to Nonagricultural Uses. Scripps Foundation for Research in Population Problems. Miami U., Oxford, Ohio (1956) p. 16.

including playgrounds are about equal at roughly one-sixth of the total area; and that commercial, industrial, and railroad lands make up approximately the remaining one-twelfth.

Robinson Newcomb, an economic consultant, holds that urban demands for land probably will not continue at present rates.^{/1} He bases his conclusions on the current population distribution and projects a reduction in household formation between now and 1975. Bulges in demand will occur among the newly established households and those of the elderly. Their space requirements will be smaller than for other families. Apartment house and trailer living may be better adapted to their needs.

In addition, rural nonfarm density next to cities is growing and these areas are being incorporated or annexed. The decreasing number of middle-aged families may mean less pressure for rural living. The increasing productivity of new equipment is reducing space requirements per unit of goods and services turned out, redistribution of industry and commerce is bringing jobs and workers closer together, and a more efficient layout of the new urban streets and thruways is bringing more efficient use of land for transportation purposes.

The increase in land use for urban purposes may be 20 to 30 percent less between now and 1965 than it was during the 1940's, according to Newcomb, and the net additional use of land may decline somewhat below current levels. This may make it easier to increase the proportions of urban lands used for parks and other recreational purposes, and it may encourage further renewal of the centers of the older cities. Several cities already are providing desirable living accommodations in large apartment buildings through their redevelopment programs.

There seems to be little hope among students of urban land uses that area requirements per capita can be reduced appreciably. As present areas of sprawled subdivisions enter urban calculations, the proportion of undeveloped land will rise. In time, it will fall again as some interstices become built up and as communities acquire more park and playground areas.

In this context, we have made several studies of land use changes in urban fringe areas by use of air photo interpretation comparison techniques.

It is becoming apparent that present demands for land for production and for land for space are two separate functions of the market. California and some other areas that have large investments in improved farmlands and produce specialty products report an immediate shift from crops to subdivisions. However, in many more areas of the country the soils lack these special characteristics; consequently, the investment in improvements per acre is lower, the demand for the products produced is lower, and the investor is under less pressure to realize a return. His choice lies between committing the land for year-to-year use for cropping or holding it in an "idle" or "ripening" status for possible nonfarm development. We have found sections

^{/1} Newcomb, Robinson, Are Urban Land Pressures Easing? Urban Land, Vol. 17:5 (May 1958).

in which fully half of the area is in this category. It is not being farmed because the owner is not interested in farming. His hopes and his plans are pinned on urban development. His land is committed to that purpose. Technically, the land is "urban idle" and should no longer be included in statistics as agricultural.

The same studies indicate that many subdividers have made little if any provision for recreational areas. Tracts now bypassed because of their size, shape, or physical condition will be available later to be picked up for public use. But in the meantime, in sections in which peculiar site values do not upset the generalized pattern, about 4 acres of rural land are affected for each acre actually developed for urban use--at least 2 acres on the edge of activity enter a nonuse, ripening stage, nearly an acre inside the area of activity is undeveloped and about an acre is used. Exceptions to these generalizations are found where soils are particularly fertile and easily worked, where especially profitable crops are grown, or where farmers have unusually high investments in land. But growth of industrialization in areas of poor soils and low land values remove larger areas from production. The owners find it more profitable to work off the farm. These situations are easily visible from the air as one flies over the country.

The rise in urbanism, with its increasing levels of living and more people taking regular summer vacations, creates new problems in rural land uses. On the one hand it has emptied vast sections of their resident population. On the other, it has provided new land uses and new occupational opportunities for those remaining through servicing according to Gottman the "transhumance of city folks to summer pastures."

Projecting a drastically greater population, a greater accumulation of capital goods, greater amounts of leisure time, and greater mobility of the population can lead to only one conclusion concerning future land uses in the United States, which is that urban-oriented land uses will continue to grow and that other uses must be adjusted to the changed demand situation. Already, most physically productive land in the United States contributes to the national supply of all kinds of products. Adjustments among uses will occur to keep all uses relatively in balance with demand.

Projected land uses for the next 50 years vary greatly, depending upon the assumptions used--the technological progress within agriculture, the growth of urban populations, and the level of nonfarm demand for land evolved. Apparently, there is ample land with which to meet foreseeable needs if we plan wisely.

Under assumptions currently in use, the total acreage of cropland by 1975 might be around 500 million acres. By 2010 it might be as much as 575 million acres. Half or more of the increase would probably come from transfer of the best areas of soils now in permanent grassland pasture to the cropping rotation. The assumptions also include replacement of some poor projects and by conservation and other programs.

Absorption of cropland by urban and industrial developments, highways, airports, reservoirs, and recreation areas, together with internal adjustments

within agriculture, may involve as much as 150 million acres during the 60-year period. Growth of the nonagricultural special-use areas at rates comparable to those of the 1945-54 period would increase them from 100 million acres in 1954 to 180 million acres in 2010. Urban areas might increase from about 19 million in 1954 to about 46 or 47 million acres in 2010; rural transportation facilities, from 24 million to 33 million acres; parks and wildlife refuges, from 28 million to about 47 million acres; reservoir and flood control areas, from 4 million to 15 million acres; national defense, from 23 million to 29 million, and all other special non-farm uses from about 1 million to more than 8 million acres. The 80 million-acre net adjustment implied in such estimates of changing uses probably would come largely from lands now in pasture and woodland.

What is to be done?

We are an urbanized and industrialized Nation; each year, fewer people depend solely on agriculture as a way of life. Our technology has increased productivity per acre. We have more productive land nationwide than we can use effectively at the moment, but growing numbers of people to feed mean that we may need the extra land someday. People need space in which to live, work, play, and travel. It is obvious that urban growth will continue. It is equally obvious that most of this growth will be outward into open country.

We have been lavish in the use of our resources because we are so bountifully supplied with them. Our problem is not an absolute shortage of land. It is the pattern of use--and, if you will, the benefits received related to the costs capitalized over time. We can see that urban sprawl is wasteful--it is a monument to lack of planning. Most of our productive land contributes to the national supply of goods and services. It will become increasingly difficult and expensive to transfer uses in the future. When land is alienated for cities, the process cannot be reversed.

Thus, over a long period, competition may become more keen between food production, residential and industrial, and recreational uses of land as space. More individual and group attention and action will be necessary to decide upon and protect the land products most desired. Important policy issues will be involved in these decisions.

Society's lag in dealing effectively with public policy problems affecting land use means that usually corrective measures are more expensive than they would be in a situation of perfect competition or perfect knowledge. It is possible that action or lack of action today will limit the economic feasibility of some future adjustments. But as we are not omnipotent, we can hope only to develop programs that will cause the least total harm to future economics.

Planners and educators have a vital role in the formulation of public policy as it applies to land use. They are needed to inventory present land uses, to make projections of our indicated requirements, to indicate ways of meeting the situation realistically and at lowest possible cost, and to work for popular acceptance of the program evolved.

Planning is a staff job, not a line function, in government. The staff has no real authority. Therefore, the best-laid plans often are not followed because the voters and their representatives fail to take necessary steps. Yet, almost invariably, planners defeat their purpose in the community when they are given or assume responsibility for an action program.

People must make up their minds whether they want urban growth or urban growth and agriculture in balance. As Solberg put it, "when and if the people decide that they want farming too, the destruction of fertile farmlands, when other lands are available, is not likely to be long tolerated. When that basic decision has been made, the agricultural zoning problems, including problems that stem from poorly adapted zoning tools, from unrealistic taxation, and from an ill-advised location of public improvements may soon be resolved."/1

We must recognize that decisions for public programs of land purchase or use-control are made largely in a political, not an economic, framework. We must recognize, also, that problems of land use vary in their application. Some apply to the ownership unit only, others to the community, and still others to the region or the Nation. Some problems, such as flooding or silt deposit may have their source far from the visible effects. In the same way, the genesis of most corrective and preventive programs range in varying degree from individual interest to national security and welfare.

We can see the reaction to this variable impact to urbanization in the actions or inaction of local people across the country. The situation was critical enough in local communities in California, for example, so that they sponsored and won corrective legislation. Other States like New Jersey and communities like Bucks County, Pa., feel the need of taking effective action.

Some planned action is needed. My major concern is that we segregate the real culprit--urban sprawl--and concentrate our fire power on it. I have tried to emphasize that urban growth, as such, is not bad--it is necessary, healthy, and desirable. We must work for greater consideration of an integrated land use pattern in which the several uses are balanced to provide the greatest net product of service to all.

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DISCUSSION: LAND AS SPACE FOR LIVING

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As one who has not worked in the area of Dr. Johnson's paper, I was tempted to accept a discussant's assignment primarily as an interested

/1 Solberg, Erling D., Some Agricultural Zoning Problems. Address before Agricultural Section, Commonwealth Club, San Francisco, Calif., June 16, 1955.

onlooker upon the rapid growth of my own community in recent years. The San Francisco Bay Area has experienced astonishing growth since the war, not without growing pains, nor without an acute and widespread awareness of some of the problems encountered. The pruning back of prune orchards and the choking out of artichokes are among the least significant manifestations of this growth process. Land uses which rank far above farming have been leap-frogged in what Dr. Johnson refers to as "an immediate shift from crops to subdivisions," owing to the extreme pressure of rapid growth. And leap-frogging seems to me the right metaphor; because no sooner does a medium priority use get leaped over by a higher than the medium priority assumes a still higher priority in turn. Consider the case of golf, which at a certain density of population and income has a lower priority than home building sites, so it is leaped over with a surge of population growth, but that very growth creates the density which raises the priority of golf--alas, too late. Memberships in the Los Altos Golf Club have been a better form of "land speculation" than the holding of building lots. After all else was gone, Palo Alto built a golf course on a windy, smelly salt marsh where the game is now pursued more avidly and under less favorable circumstances than I had thought possible.

Among the concomitants of our growth are the continuing rivalry of political subdivisions; zoning, annexation, and incorporation disputes; refuse disposal problems; serious traffic congestion; the declining economic importance of "downtown" areas; occasional smog; noise; a fledgling Regional Transportation Authority and cautious consideration of the creation of additional regional bodies; a country "green-belt" zoning ordinance; and the efforts of Stanford University to remain "The Farm," albeit a highly urbanized farm.

For all of this I have no desire to return to the quiet midwestern farm where I spent my childhood; nor do I detect signs of any such exodus. I consider the growth to have been progress, frequently of the sort that takes the backward step before taking the two forward steps. Much of the credit goes to good planning--from Stanford's utterly communistic "Master Plan" to the coldly capitalistic calculations of the local realtors and such innovators as the butcher-turned-builder who has graced the landscape with good design in houses and other buildings.

Frank Lloyd Wright may have had San Francisco in mind when he characterized our cities as "centers of sin and banking."

My purpose in bringing San Francisco into the discussion is to focus briefly on the concept of congestion, in line with the emphasis Dr. Johnson has placed upon space in his paper--not to discuss sin or banking. I have seen three bankers at these meetings, so I dare not pose as an authority on banking; and would never pose as an authority on sin in the presence of economists. With its very high population density, San Francisco still represents good utilization of land as space for living. From such an example we can have reassurance, if any is required, that we are confronted by no spectre of inadequate space. It is only inconsiderate or foolish use of the plentiful supply of space that gives rise to misgivings about a general congestion problem. Recently a commercial airline pilot recounted to me an experience he had while flying over the middle of Nevada. He received a

radio warning to "proceed with caution" because "numerous jet craft would be crossing your flight path on training missions." For the next half hour Nevada seemed very congested to him--approximately as congested, if you please, as a rifle range would seem to you as you walked across its unoccupied center knowing that numerous bullets would be crossing your course on "training missions." Such utilization of space is only less stupid than the fatuous advice "proceed with caution."

That I am unable to provide the expert commentary which Dr. Johnson's paper deserves has now been made clear. It was already clear that he is concerned with an interesting range of problems which he is well-equipped to approach.

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