PRINCIPLES OF COMMUNITY PLANNING IN AIR BASE DEVELOPMENT

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PRINCIPLES OF COMMUNITY PLANNING IN AIR BASE DEVELOPMENT

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THESIS

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PREFACE

I wish to acknowledge my debt to the United States Air Force for sponsoring my graduate studies at the University of Texas. It is with a sense of responsibility to the problems and needs of the Air Force that this thesis has been undertaken. I have attempted to create an awareness of the complexity surrounding base planning and of the possible applications of community planning principles and concepts to the planning of an air base.

Planning of air bases and facilities has reached the stage where only high level policy decisions and professional planning skills can hope to achieve a planned environment which will satisfy the complex needs of the Air Force and its people.

I hope that this work will be the first of many studies into the various elements which comprise the Air Force base environment. Within the total base planning process, these presented principles and ideas can subsequently form the basis for planning of typical or individual installations. The concern for base planning can also stimulate the research and depth study of individual areas within the air base physical environment such as housing, community facilities, recreation needs, core development, etc. These studies are needed if the Air Force is to meet its total responsibilities.

May 16, 1966 W. S.

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com.mu'ni.ty, n. 1. A body of people having common organization or interests or living in the same place under the same laws. 5. Ecol. An aggregate of organisms with mutual relations.

plan'ning, v. b To devise or project a method or course of action.

tel'e.sis, n. Intelligent direction of natural and social forces to a desired end; progress intelligently planned and directed.

Webster's New Collegiate Dictionary, G. & C. Merriam Co., Springfield, Mass., 1961.

CHAPTER I

INTRODUCTION

In 1965 the United States Air Force had over one hundred major installations, providing housing and work spaces for several thousand persons each, which need extensive and continuing community planning. Webster's definition of a community is a group of people with common interests living in a particular area. Because of the common interests which Air Force people have, this definition perhaps more nearly describes the Air Force installation than it does the civilian community.

With present military technology and patterns of military engagement, the air base in this country apparently is no longer an active element of the air-power weapon, but instead is an industrial, administrative and residential center which supports the world-wide theater of operations of U. S. air-power. The shoddy, temporary bases typical of World War II are no longer sufficient to meet the needs of the Air Force. What are now needed are complex, flexible, permanent installations which can meet the various personnel and functional requirements of the Air Force. The Department of Defense has made it clear that the Air Force is to consolidate its functions and close its excess facilities, thereby emphasizing the policy of permanent base development. For this reason it becomes doubtful whether the current policy of allowing a base commander, who is usually at an installation

for a relatively short time, to make substantial determinations about building siting, space utilization or other over-all planning considerations is in the best interest of the Air Force.

> Personal desires of individual military unit commands sometimes unnecessarily override overall (sic) Air Base physical plant needs. Some consideration should be given to removal of Base maintenance personnel from the command of changing military units passing through.[1]

It might be argued also that this is not a matter for major air command control either, since it becomes apparent that flexibility of facilities might be a major item in establishing permanent bases which will meet total Defense Department requirements or at least total Air Force needs.

With the evidence of high level interest in the Air Force's facilities, by the Department of Defense and by Congress in its control of the military construction program as well as the operation and maintenance program, the need for adequate and professional base planning has never been more real. It is no longer enough to think of base planning as a strictly military matter. A truer picture is expressed in the term "community planning" and planning for the community is sorely lacking for most of the Air Force bases now in use.

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1. McKie, Kamrath and Johnson, Five Year Modernization and Replacement Program, Phase A. Unpublished Report. U.S. Air Force, (AFOCEKB), Washington, D.C., 15 December 1965, 29.

The base is a community with the same basic functional requirements which are exhibited by the towns and cities in our country.

This is not to say that all the problems of the city are to be found in the development of an air base, or that there are not unique problems characteristic in air base development--what city, for instance, is so totally dominated by a large jet airport as an Air Force base? Air bases differ from civilian communities in that there are no 'free enterprise' economic forces at work constantly changing a base's development. The element of population forecasting and economic projections which occupy such a large portion of the energy of urban planners today is, or can be, reduced to a minimum in the military community planning process by adequate long-range planning of base and facility needs. But the entire subject of functional use relationships, land use requirements and environmental design are as valid, and, it might be added, as neglected in base planning as in city planning in general. As late as 1939, the Telesis Group in San Francisco was trying to establish the following basic considerations in the planning of communities.

> People and the Land make up the environment which has four distinct parts--a place to Live, Work, Play and the Services which integrate these and make them operate. These components must be integrated in the community and urban region through rational planning, and through the use of modern building technology.[2]

2. S. Chermayeff, "Telesis; birth of a group." Pencil Points, Vol. 23 (July, 1942), 48.

The subject of planning process in the development of air bases has not, to my knowledge, been documented. There are some Air Force directives which deal with a few of the principles involved and these have been used in the formulation of the following discussion. The conclusions about 'historical' planning of air bases have been gleaned from historical reports and an Air University thesis on the subject of Command in the earliest of our facilities at College Park, Maryland, and North Island (San Diego), California. I have had to deduce from these accounts, and quite rightly I believe, that there was little thought given to modern community planning concepts and, as will be seen, even little thought given to some of the more elemental of operational details.

I have had to conclude that there is no long-standing or researchable precedent for planning in the development of Air Force installations in this country. Therefore, I have taken a recent pilot study done for the Air Force as indicative of current thinking, and have used existing Air Force directives as the basis of current practice. From this position, I will try to relate professional planning concepts and practices to the needs and contingencies of the Air Force and the needs of air bases for physical planning. In many cases, it will be obvious that these are my own convictions and studies which have led me to apply certain community planning techniques and concepts to the Air Force base. The reason for doing this is that an air base is in many ways identical to a

civilian community in regard to its functional needs, environmental needs and personnel or population needs.

Planning, whether for a city or for an Air Force Community, is necessary to provide for orderly development based on the best forecast of future needs and requirements. While the methods of forecasting are different for a city and for an air base, the end results are identical. An Air Force regulation states:

> Plans must be prepared or revised to show an arrangement of facilities that will insure efficient and economical operations.[3]

Mr. C. W. Harris, Deputy Chief, Engineering Division, Directorate of Civil Engineering, Hq USAF, stated in a letter dated 5 August 1965, concerning revitalizing outmoded bases that

> ...in addition to reducing annual maintenance and operating budgets, a primary objective is to improve the living environment at our Air Bases considering facilities, land usage, open spaces, and associated living amenities.[4]

There are many land use and development policy problems to be solved before the living environment of our installations can be improved. It is possible, and I believe desirable, that in the development or redevelopment of Air

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3. Air Force Regulation No. 86-4 (Washington, D. C., 4 August 1964), 1.

4. See Appendix A.

Force communities that the Air Force be an innovator in providing experimental and advanced living and working environments. It is sad that while the Air Force has the most technically advanced aerospace equipment in the world, it has a living and working environment for its people which often does not meet the standards of the average civilian community.[5]

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5. Charles H. Coates, "America's New Officer Corps." Trans-action, Vol. 3, No. 3 (March/April, 1966), 24.

CHAPTER II

BASE PLANNING IN AIR FORCE HISTORY

EARLY PERIOD

The bases used by the United States Air Force are relatively new if compared to the forts, camps and bases used by the Army or Navy. The facilities used exclusively for aircraft operations had a beginning in 1909 with the establishment of a training field at College Park, Maryland, and have now matured to a physical inventory of over 100 permanent and semi-permanent Air Force bases in all sections of the United States.

Planning of the physical environment was never a major consideration in the layout or siting of the early airfields. Operational conditions were the moving factors in establishing the early bases, while only a small part was played by attention to personnel needs. The following quote gives an indication of the various factors involved in the setting up and operation of the 'air force's' first airfield.

> College Park, Maryland is particularly important...as it was the first Army flying facility that was not located on an established military post.[1]
>
> ...training was at College Park, Maryland in October and November of 1909. This site was selected, as Fort Myer's parade ground area was considered too restricting for instruction.[2]

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1. Myles R. O'Crowley, The Command of Air Bases Part I, 'Heritage and Pioneers,' Unpublished Thesis. Air University, Montgomery, Ala., 1964, 30.

2. O'Crowley, 21.

> The first Army buildings at College Park were four temporary wooden hangers built from plans furnished by Wright Company. These hangers were 45' X 45' X 20' and for the first time military hangers had the low curved roof with which we are all familiar.[3]

> At College Park a beginning was made. The first independent air base was operated for an extended period. To make that possible, required time and the muster of many things. A team was recruited and trained, buildings built, men housed and fed, safety provided for, experiments tried, ideas and concepts discussed and given form in acts or written articles. College Park was the culmination of many hopes and yet, on the start of others--a base.[4]

The first air force facility was established without the aid of planning and within a very short time was overcome by some major problems.

> Billeting of troops has long been a command responsibility. Billeting was one of the reasons Lt. Foulois, Airplane Number One, and the enlisted detachment left College Park for Fort Myer, Virginia in November of 1909:
>
> ...the Wright machine was moved from College Park (November 20) to the old balloon shed at Fort Myer. That enabled the enlisted detachment to enjoy the comforts of living in a barrack instead of in tents during the cold nights of November.[5]

The need for adequate site planning necessitated relocation on several occasions in the early years.

> Unfavorable winter weather, especially strong winds, made flying particularly hazardous for pilots. For this reason, low wind areas were sought for safer operations. These conditions were found at a number of southern locations, and as a result, flying operations were moved to Augusta, Georgia in 1911, and later to San Diego, California.[6]

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3. O'Crowley, 21.
4. O'Crowley, 44.
5. O'Crowley, 21.
6. O'Crowley, 21.

WW I

Planning as we know it today was not done for the air bases which were established in those early and formative years. Air facilities were constructed to meet short-range needs and were sited according to very simple criteria, quite often the availability of land at a minimum cost. It cannot be emphasized enough that no appreciable planning was done in the development and construction of the airfields of the Army Air Corps. This, then, is the heritage which we have today, not only the unplanned basic facilities, but the tradition of non-planning.

> During the 18 months of American participation in World War I, the Army had hurriedly expanded its 3 original training airfields to a total of 50 major installations. Urgent training demands had given little time for careful site selection, and simple operational characteristics of the aircraft then in use had permitted many of the fields to be located on sites which were little more than tracts of level land which could be acquired expeditiously. There had been little, if any, consideration for locating airfields for the defense of the United States. At the close of World War I the Army retained some 16 of the installations for its air component, and all but three of them were still in service in January 1939.[7]

1920--1939

The early air installations when built were not subject to any observable planning concepts or procedures; they were generally temporary in construction; and they were used for many years, normally outliving their original purposes.

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7. U.S. Air Force Historical Division, Study No. 69, Development of AAF Base Facilities in the United States, 1939-1945, Air University, 1951), 1.

Is it, then, any wonder that we construct bases with only rudimentary attention to planning; use cheap, temporary and ill-suited construction methods and then expect the facility to function adequately through mission changes, functional changes and long after the expected life had been reached? This is the heritage which the Air Force has had in base construction and planning.

It is interesting to note that many of the Air Force bases in use today, or until recently, have their origins in the very early days of Air Force history.

World War I origin.	Langley Field, Va.
	Mitchel Field, N.Y.
	March Field, Calif.
	Scott Field, Ill.
	Selfridge Field, Mich.
1917	Kelly Field, Texas
	Chanute Field, Ill.
	Maxwell Field, Ala.
1918	Brooks Field, Texas
1927	Wright Field, Ohio
1928	Randolph Field, Texas
1929-1930	Barksdale Field, La.
	Hamilton Field, Calif.
1938	Lowry Field, Colo.
1939	McChord Field, Wash.
	Bolling Field, D.C.[8]

8. U.S. Air Force Historical Study No. 69, 1.

WW II - TODAY

Many of the largest of our present-day facilities are in the above list. With the exception of those listed above, our present installations date back to the World War II years or to the years of the Korean conflict. These bases were generally constructed in great haste to meet the constantly escalating needs of the air arm during those conflicts, and in line with past experience, planning for a permanent community was not done.

During World War II, over 500 air force facilities were opened, constructed, manned and operated. The only element of these installations which was planned was the run-way and its supporting structure. The result of this is that many towns in west Texas, for example, have municipal airports which were at one time Army Air Fields. In many cases, the installations were deactivated nearly as quickly as they were activated. The expediency of war conditions made this justi-fiable. During the Korean conflict, many of the old WW II bases were reactivated and are in use today.

Between 1946 and 1950, there was a change in basic concept of air power with the separation of the Air Corps from the Army and the creation of a separate military Department of the Air Force. The need for permanent air bases was then given important consideration, and this was further accelerated by the military build-up for the Korean conflict. The Air Force during the early 1950's built many new bases, all of which were to eliminate objectionable conditions yet close enough for

community support. It is interesting to observe that after only ten years some of these bases are being deactivated as no longer necessary for our needs. It can, I believe, be deduced that even during the period of base development when planning was advocated, that there might just be some discrepancy in the concepts of planning advocated.

CONCLUSION

In summary it might be well to define what is meant by planning in the context of this study. Planning, in this work, does not refer to those concepts of operational planning which were employed, even in the earliest bases. It was after all necessary to 'plan' for level ground to operate airplanes, it was necessary to 'plan' for proper wind conditions and weather and it was necessary to 'plan' for safety (no tall trees at the end of runways, etc.). Without going into the detail which will be covered in later chapters, suffice it to say that planning as meant here is the over-all, long-range considerations for the total development of the air base, including the factors of work, living, play and service. As will be discussed later, this is nearly equivalent to the comprehensive planning done for cities and municipalities. This, then, is the planning that was not done. Specific tasks were planned for and immediate needs built for and individual military units accommodated. This is generally the picture of our bases today. It is common knowledge that we are living with the 'temporary' planning and construction of World War II,

but again note the historical precedent that there is to follow.

> The burden of World War I construction, supposedly temporary in 1917 and 1918, lay heavily upon the fields used by the Air Corps for training in 1939.[9]

Many specific factors have led to the present position of base development and planning in the Air Force, just as many individual factors led to the conditions found in the development of our cities and towns.[10] The major periods of base expansion have occurred during major periods of military conflict and, therefore, have exhibited a condition of expediency necessitated by war needs without the requirement to plan for long-term use.

It has been a practice of the Air Force to plan its facilities, buildings and bases, for a single function or purpose. The cost accounting and real estate accounting classifications give vivid evidence of this practice in the programing and use of buildings. The assignment of Major Air Command control over a specific air base gives rise to the single-

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9. U.S. Air Force Historical Study No. 69, 4.

10. Many authors (Lewis Mumford, Victor Gruen and Arthur Callion) chronicle the factors which have led to the present state of planning in the United States. These attitudes in urban American planning in many ways parallel the attitudes of the military base planner. An insight to these attitudes may be seen in Twilight of Cities, by E. A. Gutkind, (New York, 1962), 40--45.

function concept of base use. It is becoming more evident day by day that this can no longer fulfill the long-range needs of the Air Force. The Department of Defense is forcing a reconsideration of this point by its closing of facilities and its demand for consolidation of various missions on the remaining installations. From a long-range view of both economics and base utilization, the Defense Department action is the only reasonable and practical approach toward the proper use of our bases. Therefore, the Air Force can no longer afford a provincial outlook, but must create a chain of facilities which are capable of flexibility of use to accommodate the changing military needs, the advancing technology of our weapons systems and the requirements of our professional personnel for an environment conducive to career retention. The present attitude toward Master Planning must be changed. It is still tied to 50 years of experience in developing air bases without the aid of adequate, progressive and over-all planning. Just as professional planning is a crying necessity for the urban areas of our country, it is no less essential for proper Air Force base development and redevelopment.

CHAPTER III

PLANNING CONCEPTS IN AIR BASE PLANNING

FUNCTIONAL USE RELATIONS ON AIR BASES

The functional relationships of land use on air installations have been confused by the adherence to an unrealistic concept of use designations. This has been the result of various concepts of military organization being translated over a spectrum of time to physical development. A major example is the concept of organizational integrity which has manifested itself in a profusion of small office buildings, each housing a separate organization commander and his staff.

> ...the concept of earlier planning was apparently to plan various building facilities to meet the detailed needs of relatively small units of military, spreading facilities and buildings over rather large areas. The "spread" on (sic) these facilities...probably no longer has any merit from a defense standpoint and certainly results in a low utilization factor for both land utilization and military use of facilities.[1]

The above organizational attitude, along with attempts, on occasion, to surmount various funding limitations, has become codified in the real estate accounting system. The present account classifications give legitimacy to the confusion in present functional relationships and uses. The following partial list is an example of the detail within which facilities are classified, programmed and justified.

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1. McKie, Kamrath and Johnson, 27.

ADMINISTRATIVE FACILITY

610-121	AUTOMOTIVE ADMINISTRATION
610-123	POL OPERATIONS & ADMINISTRATION
610-125	ADMINISTRATIVE OFFICE
610-129	ADMINISTRATIVE, WING MAINTENANCE, CONTROL

COMMERCIAL TRANSPORTATION FACILITY

610-142	COMMERCIAL TRANSPORTATION FACILITY

BOMB PROOF FACILITY

610-153	COMMAND POST
610-155	SHELTER

HEADQUARTERS, BASE UNIT

610-243	GROUP, AIR BASE
610-247	SQUADRON
610-249	WING

HEADQUARTERS, MAJOR UNIT

610-282	AIR FORCE
610-284	COMMAND
610-286	DIVISION
610-288	RESERVE FORCES[2]

In contrast to such detailed functional uses, more general classifications are characteristic of the functional relationships used in evaluating land use for cities.

Generalized Presentation by Ground Area

Residence - low density, medium density, high density
Retail business
Transportation, utilities, communications
Industry and related uses
Wholesale and related uses
Public buildings and open spaces
Institutional buildings and areas
Vacant or nonurban use[3]

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2. Air Force Manual No. 93-2, (Washington, D.C., 1 July 1960), 46.

3. F. Stuart Chapin, Jr., Urban Land Use Planning, 2d ed. (Urbana, Ill., 1965), 276.

It is obvious that these use-classifications have a more realistic relation to the functional interaction of uses than does a more detailed classification such as that employed by the Air Force. McKie, Kamrath and Johnson in their planning report for Bergstrom cited, for example:

> ...office space requirements should probably be approached more by analysing probable overall (sic) base requirements, rather than programming a particular type of standard headquarters building because one particular military unit has been or may be authorized.[4]

To plan air installations adequately, it is imperative that more general classifications of use be used to establish functional relations. It is entirely possible that to meet the other requirements of over-all defense planning that these same general classifications of functional use be used for facility programming and use allocation rather than the detailed classifications now in vogue. The reduction of the use classifications to the following basic categories will perhaps give a more reasonable picture of the true functional requirements than the distorted view which presently prevails.

OPEN USE - all areas, without primary structures, which are used for buffer areas, recreational activities, sports, drill or parade fields.

RESIDENTIAL - all facilities (officer, airman or family) used as living quarters or directly related to living accommodations, e.g., dining halls, guest houses, dormitories or similar.

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4. McKie, Kamrath and Johnson, 27.

COMMUNITY - support facilities for all personnel including medical hospitals and clinics, e.g., theater, exchange, gymnasium, commissary, library, clubs, hobby facilities or similar.

ADMINISTRATIVE - facilities used primarily for offices and including military training or academic facilities (not including dependent schools which are a community facility).

LIGHT INDUSTRIAL[5]- facilities and areas for supply, maintenance, civil engineering, motor pools and flight operations characterized by heavy or commercial type traffic, warehousing, machine shops or flying activities.

HEAVY INDUSTRIAL[5]- areas which are hazardous; areas which are disruptive due to excessive smoke, odor or noise; or areas which are otherwise incompatible with other normal uses or present special problems of safety and welfare.

The functional relationships of land uses for most bases take on a relatively simple pattern if the classifications are themselves simplified. The schematic diagram, Fig. 1, shows a very straightforward relationship pattern. The main community facilities have a direct link to all other functional areas. This is obvious when one thinks of these facilities as the core such as in a civilian community's downtown area. This pictured relationship in itself, for example, points up the fallacy of placing the commissary deep in the warehousing area as has been done in practice for years.

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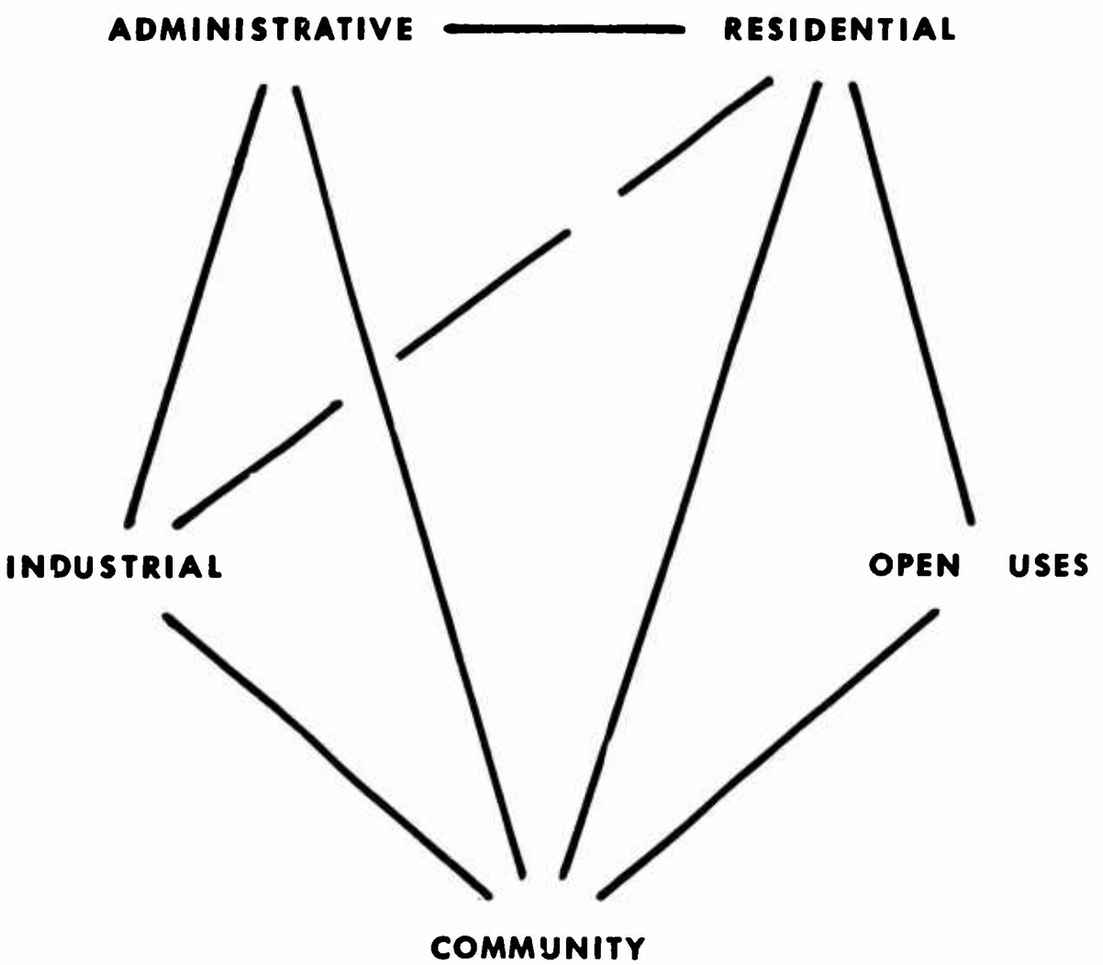
5. The term industrial is used to equate the included functions with similar functions in urban areas as classified by planners.



FUNCTIONAL USE RELATIONS

FIGURE 1

The relation of the residential area to all other areas is also fundamental, with one condition being the buffering of living accommodations from the nuisances of the industrial area. The problems of the present practices in this regard are discussed below. The recreation areas, which have a convenience and use relation only to the community and residential areas, can be used in themselves as buffer zones to isolate non-compatible uses and, further, to add aesthetic open space where needed or desired to improve the over-all living environment of the air base community.

The major problem in relating uses is the accommodation of the industrial area, which is of course the operational heart, usually, of the air base and is, at the same time, the least compatible of the various uses. It is this functional area which is a source of excessive sound levels, the major hazard area, heavy traffic originator and least aesthetically pleasing. Within the context of the several possible planning concepts presented, it is desirable to utilize major open areas to buffer the industrial areas from the other areas if and when possible.

All the presently designated facility uses fit within these classifications, and thus present a more unified and logical concept with which to work in relating like uses and disassociating incompatible uses. As an example, let us consider the various types of living accommodations found on our present bases. There are usually enlisted men's dormitories, non-commissioned officers' quarters and bachelor

officer's quarters. These are generally located at separate locations around the installation. Separate from these, and sometimes separated from the main portion of the base are the enlisted and officer family quarters, either single or multi-family housing. This means that there are at least four distinct areas which must be suitable for the same function--namely, a proper living environment. It is common knowledge that this is not the case. While the family housing might be in a location somewhat suited for comfortable living, it is often the case that enlisted dormitories are situated in or adjacent to the industrial areas of the base or the bachelor NCO and officers' quarters are located near the aircraft parking aprons with high noise levels. An example of this practice can be found at Reese Air Force Base, Lubbock, Texas.

The residential area, regardless of the type of housing, has a single characteristic and should be generally contiguous and in a setting which provides the amenities necessary to good livability. It is inconceivable that the living environment necessary for families should not be the same for non-family personnel. All the living accommodations should be closely related to and possibly integrated with the community facilities and should be as close to work areas as is practicable based, of course, on the characteristics of the work area. This would reduce excessive intra-base vehicular traffic and reduce its related costs in parking, congestion and inconvenience. It must be kept in mind that

the consideration given here is to the broad external relationships between use classifications and does not deny the existence of internal sub-use relationships which must also be met. For example, within the living area there should be consideration given to those requirements of the family living environment which are different than the requirements of the non-family areas. These factors might include children's playgrounds and the normal desire for a family to live, generally, adjacent to other families.

Still using the residential area as a case in point and thinking of the total residential requirements, such as is done within a city or town, a more advantageous use of housing types might be achieved. It might be possible to combine the various types of housing into a very pleasant total living environment, providing at the same time much more of a personal choice in housing accommodations. It is not unreasonable to expect the same desire for high-rise and garden apartments, multi-family units, patio houses, townhouses, cluster developments, and single family houses to exist among military personnel as does exist in the normal civilian community. With a more universal approach to facility needs, it would be highly likely that the economies and technology of the housing industry could be brought to bear more easily on the Air Force needs.

The same conditions hold true for the administrative functional area. It is an obvious fact that the general requirements for office space and environment are the same

whether the use is as a finance office, personnel office, supply office, et cetera. The accomplishment of administrative tasks requires the same equipment and space for each of these specific organizations.

An example of this procedure and its possible savings is found in the McKie, Kamrath and Johnson report.

> Regroup such functions as headquarters and administrative offices, except those which must be located near the scene of operations, into central facilities. This regrouping should incorporate flexibility of arrangement for changing functions.
>
> By grouping these functions into one, two or possibly three buildings the following economies could be effected:
>
> Reduction of total area required;
> Lower maintenance cost in a central building;
> Reduction in personnel.[6]

Figure 2 illustrates the possible amounts of saving which might be expected to accrue from such a regrouping.

PERFORMANCE STANDARDS

The consideration of performance standards by communities wishing to regulate land use more realistically than by only utilizing zoning provisions is becoming more common. Many of the provisions of performance standards to safeguard life and property have been used in the Air Force for years. There are many regulations which cover the use of and protection from flammable liquids, explosives and even simple fire hazards as are found in the home. However, there are several

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6. McKie, Kamrath and Johnson, 30-1.

Possible Savings from Regrouping

A. Savings in area requirements and facilities:

1. Receptionist and conference rooms
2. Toilets and janitor closets
3. Eliminate part-time office space (2 hat types)
4. Mechanical and storage rooms and equipment
5. Consolidate activities; such as drafting rooms
6. More efficient use of space
7. Eliminate duplicate office equipment

Possible Savings 5 - 15%

B. Savings in maintenance:

1. Change use without extensive modification
2. Less outside walls
3. Smaller utility bills
4. More effective janitorial supervision
5. Moveable partitions
6. Materials selected for low maintenance, such as terrazzo, tile, carpets, vinyl

Possible Savings 20 - 50%

C. Savings in personnel:

1. Fewer receptionists
2. Fewer secretaries
3. Fewer janitors
4. Fewer maintenance personnel
5. More effective use of personnel (more 2 hat types)

Possible Savings 5 - 20%

From McKie, Kamrath and Johnson, 32.

FIGURE 2

standards which are not systematically considered in the planning or control of base development. They are such items as noise, vibration, smoke, odor, air pollution, glare and waste disposal.

The control of several of these activities is of academic interest only, in that the frequency of their occurence is very limited.

On the other hand, the problem of noise on the air base is one of the most pressing problems confronting the planner and, at the same time, one of the most difficult to adequately solve. The need for control of noise and the consideration of the problem when planning base development is urgent. A psychiatrist, Dr. Julius Buchwald, of the Downstate Division, New York State Medical Center said recently

> The conscious perception of noise. . . can lower a person's productivity and "greatly" reduce his sense of humor and ability to handle "ordinary frustrations." Even perceived unconsciously. . . jet noise can build up frustrations that later explode.[7]

At the same hearing Dr. Howard M. Bogard, chief psychologist of Queens Hospital Center, said of the effects of jet noise:

> I have heard of several instances of children running into houses absolutely terrified. . . People should not be subjected to intimidation by outside forces over which they have no control.[8]

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7. Edward Hudson, "Jet Noises Linked to Psychotic Ills," The New York Times, Vol. CXV, (March 13, 1966), 66.

8. Hudson, 66.

Dr. Lee E. Farr of the University of Texas M. D. Anderson Hospital and Tumor Institute and the university's Graduate School of Biomedical Sciences in an interview discussed the effects of noise on the individual.

> (Dr. Farr) pointed out that noise can cause lack of sleep which in turn may lead not only to excessive fatigue but also may exaggerate anxieties and other neuroses. And if you already are ill with a modern tension disease, noise can make you still sicker.[9]

The effects of noise on the inhabitants of an air base can be severe and must be minimized as much as possible by use of proper planning techniques.

In regard to vibration, smoke, odor, air pollution, glare and waste disposal, the problem of control is not as critical on the air base as in a community due to the nearly complete control over those activities which might tend to produce these annoyances. But the possible incidence of these factors must still be taken into account when planning the relationships between and within land use categories.

The functional land use analysis must be made of the base as a whole. This requires that the base be thought of as a single community which is to serve a purpose within the total requirements of the Air Force and the Department of Defense. To do such an analysis, only the broadest of use categories can be used; specific and detailed use consideration as now

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9. "All That Noise Can Sicken You," The Austin American, (March 9, 1966), 4.

can be used; specific and detailed use consideration as now practiced always loses vital planning in a sea of detail and the total picture is never seen. It is also necessary that this evaluation be done at higher command levels where the knowledge of long-range needs and the authority to administer the plan exists.

The complexity of base planning, it can be argued, requires that the task of air base planning be done by professional planners using the whole body of planning theory and practice available. Also, this must be a continuing process in order that our installations keep pace with the ever-changing requirements and technology of the Air Force.

PLANNING PRINCIPLES

Based upon the functional use relations as discussed and defined, a few principles or concepts of planning consideration can be advanced. Obviously, these are not complete ideas in themselves nor do they form a complete coverage of all possible areas of concern. These ideas, though, are presented as representative of the types of ideas which are possible to explore in formulating a policy of physical development for air bases. There are no set, positive answers to the question of selecting 'one' concept or principle to go by in formulating a planning policy. But, rather, there are unlimited possibilities and an awareness and consideration must be given to a range of possibilities if a planning policy is to be useful.

Permanent core concept

Victor Gruen in his book The Heart of Our Cities discusses the need for a vital core within the city around which the many activities of the community can be related.[10] The core, in Gruen's conceptualization, becomes the focal point of the many intricate activities involved in a city. Because of scale, this idea related to an air base becomes, generally, the total base development. But the use and response to the central or focal point idea of the core is an essential in strong base planning. Symbolically, this concept has been part of the military tradition for years with the prominent placement of the parade ground, headquarters and flag pole as a focal point of the base. The implications of the affect of visual relationships to the city are presented by Kevin Lynch in The Image of the City.[11]

In addition to the emotional validity of this concept, there is the functional use of this idea in the developing of a network or system of air installations which fit into the long-range requirements of the Air Force. Functionally, the permanent core becomes the building block upon which the operational units are facilitated regardles of their specific missions. Within the permanent core are located the major

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10. Victor Gruen, The Heart of Our Cities, (New York, 1964).

11. Kevin Lynch, The Image of the City, (Cambridge, Mass., 1960).

administrative functions, prime personnel support facilities, major utility provisions, central operational facilities and primary housing units. Within this framework, only minor modifications would be required to satisfy individual needs of specific units. This does not mean that an air base designed and programmed as an air operations support facility, manned by a few thousand personnel, could be converted to a technical training center, with 20,000 or more students. The necessity for extreme types of re-utilization of this magnitude can and should be eliminated by sound long-range planning.

The advantages of adopting the permanent core idea as part of an over-all policy toward development and redevelopment of our bases is discussed in the next chapter.

Regrouping of uses

This concept relies on the previous discussion of a more realistic classification of functions. Where under the present system specific uses are classified (such as group headquarters, squadron headquarters and wing headquarters) and then translated into individual structures, the concept of regrouping would place all administrative functions within unified buildings based on area requirements, location requirements and the like. The planners investigating Bergstrom Air Force Base for the pilot study stated:

> An intelligent regrouping of buildings and combining of similar functions could reduce operational and maintenance costs in the following areas:

Reduction in number of building types;
Elimination of duplicate office equipment;
Elimination of duplicate personnel;
Elimination of duplicate mechanical equipment;
Reduction of structure square footage;
Reduction of exterior parking surfaces.

Private industry has found by using a well planned grouped concept that it increases efficiency and reduces the over-all maintenance and operational costs, which is necessary if they are to be competitive.[12]

Cluster organization

The cluster organization for community development is a current concept which is being advocated by many professional planners. For major urban development it has been specifically advanced in A Plan for the Year 2000 - The Nation's Capital and in the plan for Columbia, Maryland.[13] Ebenezer Howard, in 1898, showed a "correct principle of a city's growth"[14] which is very like the current cluster plan principle, Figure 3. Victor Gruen illustrates the various scales of cluster planning in his book by showing schematic drawings of the "cellular metropolis of tomorrow." (Figure 4)[15]

Foster Mackenzie, Jr., landscape architect and planner with the Master Planning Branch, Directorate of Civil Engineering, Hq USAF, advocates in an article in the Air Force Civil Engineer, November 1965, that the Air Force should move into

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12. McKie, Kamrath and Johnson, 31.

13. Foster Mackenzie, Jr., "Preserving Our Open Spaces." Air Force Civil Engineer, Vol. 6 No. 4 (November, 1965), 20.

14. Ebenezer Howard, Garden Cities of To-Morrow, (Cambridge, Mass., 1965 ed.), 143.

15. Gruen, 272.

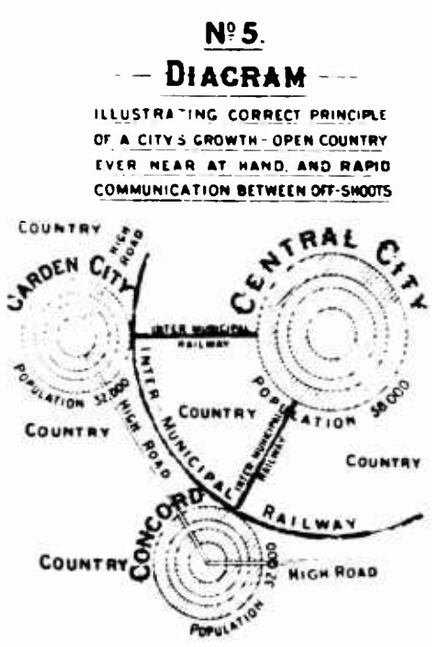


Illustration from Ebenezer Howard's Garden Cities of To-Morrow.

Plate B (below) is a Conventional Design. It is expensive, unimaginative and monotonous, has minimum open spaces, restrictive pedestrian access and uncontrolled vehicular traffic.

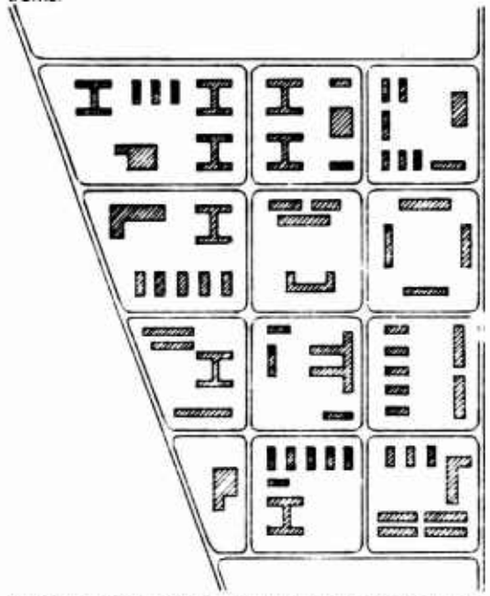
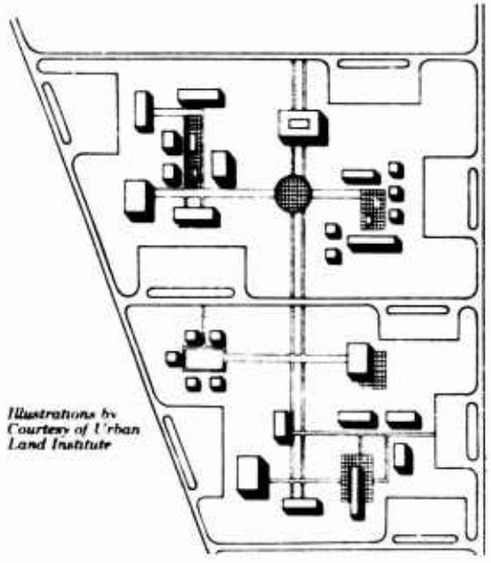


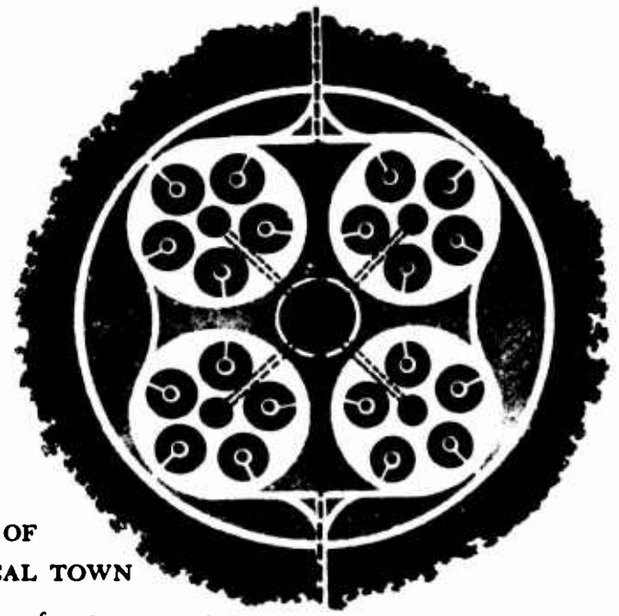
Plate C (below) is a Cluster Design. It is economical, functional, attractive, has ample open space, pedestrian safety, and controlled vehicular traffic.



Illustrations by Courtesy of Urban Land Institute

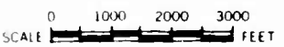
Illustration from Foster Mackenzie's "Preserving Our Open Spaces" Air Force Civil Engineer, November 1965

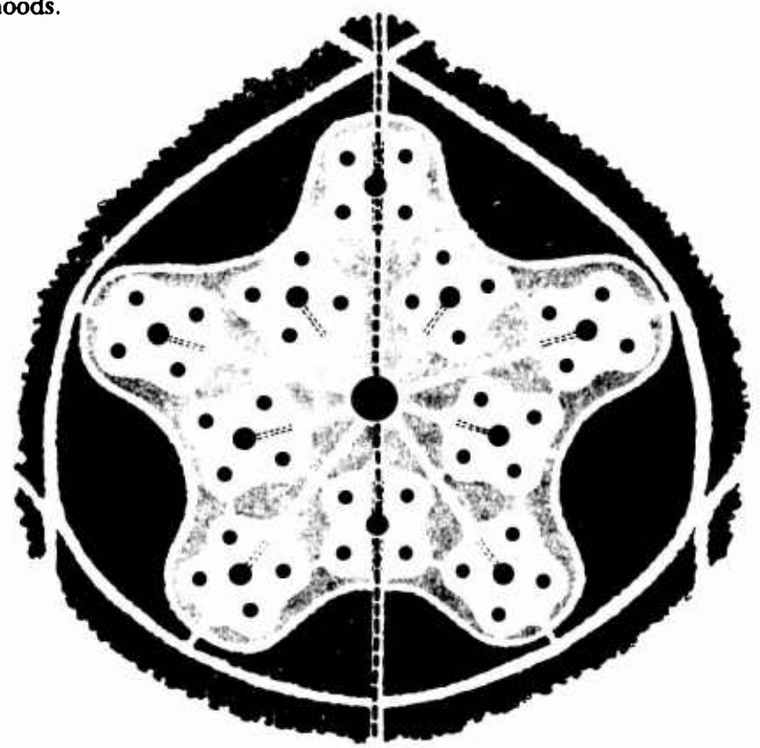
FIGURE 3



DETAIL OF
A TYPICAL TOWN

It consists of a town center around which four communities are placed. Each community consists of one community center and five neighborhoods.





DETAIL OF
A TYPICAL CITY

It consists of a city center and ten towns, each with its own town center

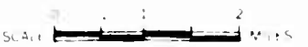


Illustration from Victor Gruen's The Heart of Our Cities.

FIGURE 4

new areas of base planning. He places the present condition of air bases to costs and economics, where "programs are often pared to the bone resulting in the continuance of...growth patterns stemming from initial military base planning."[16] He further states that the awareness of the military population toward their environment is being stimulated by the advances in community planning practice and the President's "natural beauty" programs.[17]

> The planning tool or "device" which aptly expresses the conservation of urban open spaces and green belts is identified in urban planning terms as the "cluster concept." Its advocates, however, are not content with merely endorsing the central village square, they desire to integrate the beauty of the outdoor spaces throughout entire residential and business communities.
>
> Grouping buildings in clusters with provision for common open spaces is economically sound. In comparison with the conventional design of regimenting buildings fronting on parallel streets, the cluster concept offers major economies, principally in reducing utility systems. The configuration of the large superblock, a necessary adjunct to the cluster, drastically reduces the amount of required road network. Substantial savings are also realized in reducing water, sewage, and storm drainage lines. These financial benefits are being readily recognized by private developers who obviously are more concerned with the monetary rather than the aesthetic aspects. The economic case for the cluster, therefore, should warrant the interest of our Air Base engineers in their efforts to "design up to a standard, not down to a cost."[18]

The cluster concept, Figure 3, has definite advantages as part of an integrated planning and policy and program.

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16. Mackenzie, 20.

17. Mackenzie, 21.

18. Mackenzie, 21.

This advantage is being realized, to some extent, albeit small, in current Air Force practice. Mr. Mackenzie in his article points out its present use in practice.

> Planning for the effective integration of common open spaces in military base planning is receiving increasing recognition by both base and command civil engineers. The Bolling Air Force base master plan currently under preparation, for instance, reflects the use of modern design concepts throughout their replanning for the envisioned reservation "renewal." Both the National Capital Planning Commission and the Commission of Fine Arts, acknowledged to be the Federal Government Planning Authorities in the Nation's capital, are whole heartedly endorsing the direction the Bolling plan is taking.[19]

The Mackenzie discussion concludes with the desire that "the Bolling concept will 'rub-off' on other Air Force planners--it may well serve as the avant-garde in upgrading our outmoded establishments."[20]

Environment

The environment is the whole context within which we live. All of the various concepts of planning are directed ultimately at molding the environment into a form which is useful, economical and pleasing. Basically, a concern for environmental design has been totally lacking in air base planning except, secondarily, in the area of 'usefulness.' But, a concern for proper environmental design can have strong implications on such diverse factors as personnel

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19. Mackenzie, 21.

20. Mackenzie, 21.

efficiency and utility economy. The latter implication was pointed out in the cluster concept as an effective means of ordering the base environment.

> A vivid and integrated physical setting, capable of producing a sharp image, plays a social role as well... A good environmental image gives its possessor an important sense of emotional security. He can establish an harmonious relationship between himself and the outside world. This is the obverse of the fear that comes with disorientation; it means that the sweet sense of home is strongest when home is not only familiar but distinctive as well.[21]

The importance of environmental design is significant and is a grossly neglected area of concern for the air base planner. The form of the environment is the final stage of the total design process--first there is the interior environment of a building, then the relation of this building to its neighbors and finally the total complex of buildings which make up an air base or a town. The possible factors to be considered in each of these areas, and the interrelations between them, are evident when a comparison is made of the work of Chermayeff and Alexander in Community and Privacy, and Robert D. Katz in Intensity of Development and Livability of Multi-Family Housing Projects. The Chermayeff and Alexander example is of the single building, in this case residences, and Katz's factors are exterior relations in multi-family developments.

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21. Lynch, 4.

Accommodations and land use

Problems of protection (security and safety)

Responsibility (ownership)

Climatic control

Illumination

Acoustics

Circulation

Communication

Equipment and utilities[22]

These factors cover the range of problems which are intrinsic in the design of the interior environment. Going from the interior environment to the surrounding exterior environment, some of these same factors are repeated and strengthened. In judging the multi-family housing area, Katz lists the following criteria.

> The aspects of quality are: privacy, usable open space, individuality, diversity, location, proximity to community facilities, safety and health, circulation, automobile storage, blending of new housing into surroundings, site details, and views from and to a site. I am not prepared to say that any one quality aspect is more or less important than any other, but individually and collectively they contribute to physical livability.[23]

The factors involved in creating a livable environment, as can be seen, are extremely complex. The substitution

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22. Serge Chermayeff and Christopher Alexander, Community and Privacy, (Garden City, New York, 1965), 153.

23. Robert D. Katz, Intensity of Development and Livability of Multi-Family Housing Projects, (Washington, D.C., 1963), 10.

of convenience or 'stark usability' for adequate design and proper planning and programming is extremely expensive, both monetarily and socially, and cannot be any longer legitimized by the failure to establish a strong policy for an air base development program in the Air Force.

CHAPTER IV

AIR BASE MASTER OR GENERAL PLANNING

The Air Force for some time has realized the need for planning of air installations. There have been planning directives issued and a program of "Master Planning" initiated at all bases. But, what has this accomplished in the actual design and development of Air Force bases? It is apparent from a view of physical development that planning has done little toward meeting the stated objectives of base planning. Air Force Regulation 86-4 states, "Plans must be prepared or revised to show an arrangement of facilities that will insure efficient and economical operations."[1] With the ever burgeoning operation and maintenance costs it is clear that this objective has not been reached.

The general tone of the planning directives is one of parts unrelated to a whole. Many details are discussed while controlling principles are not. The planning concepts presented are not really 'concepts' but rather details. To show this, the following is a list of titles of Air Base Planning Concepts from Air Force Manual 86-6, 10 February 1959.

55-1	Determination of Runway Orientation
56-1	Multi-mission Air Base Planning Concept
56-2	" " " " "
56-4	Site Planning for Building Groups - Dormitories
57-1	Traffic Engineering Criteria
57-2	Site Planning for Building Groups - Officer Quarters

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1. Air Force Regulation No. 86-4.

58-1[2]	Landscape Development Plans
58-3	Aircraft Noise Disturbances
58-5[3]	Air Base Community Centers

These various directives are, in themselves, quite useful, but they are not planning principles or concepts of planning. It then becomes evident that the principle used for planning air bases is 'historical precedent'. That is to say that we tend to plan our facilities according to tradition and past practice rather than using current planning precepts. With this in mind, a review of the use of the General Plan for a civilian community and its relations to air base planning might be useful.

The General Plan

T. J. Kent, Jr., in The Urban General Plan presents a very detailed description of the General Plan and its uses in the municipal community. Many of his points are equally applicable to the air base and its community. Mr. Kent defines the General Plan in this way.

> The general plan is the official statement of a municipal legislative body which sets forth its major policies concerning desirable future physical development; the published general-plan document must include a single, unified general physical design for the community, and it must attempt to clarify the relationships between physical-development policies and social and economic goals.[4]

2. See Appendix C for example of content. Air Force Manual No. 86-6, Planning Concept 58-1.

3. See Appendix D for example of content. Air Force Manual No. 86-6, Planning Concept 58-5.

4. T. J. Kent, Jr., The Urban General Plan, (San Francisco, 1964), 18.

This, in a very concise way, defines the purposes that are set forth in various Air Force planning documents. Again, it must be emphasized that in the regulations and manuals specifics are mentioned rather than concepts as in the above definition.

An over-all policy of installation development must be the first order of business. For too many years our physical plants have been single purpose facilities (regardless of the multi-mission concept which has been advocated meeting only short-term needs of a specific mission or, maybe, an air command, but seldom the long-range needs of the Air Force and rarely the possibility of future Defense Department requirements. An adherence to the above definition begins, for the first time, to encourage development which will have the flexibility needed to provide adequately for many years and many changes. Air Force Manual 86-6 even now states that Master Planning is "to provide the capability to satisfy changing requirements...to permit the achievement of greater economy in initial cost, maintenance, and operation of facilities."[5]

The plan must also be a guiding document, rather than an after-the-fact record of 'changed requirements.' The existing Master Plan, since it lacks the background of 'major policies concerning future development' and 'single, unified goals', is unable to fulfill its desired purposes.

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5. Air Force Manual No. 86-6, (Washington, D.C., 10 February 1959).

Specifically, what are the purposes of planning or, at least, master planning? Air Force Manual 86-6 gives this purpose: "A master plan must endeavor to anticipate future development, and should be kept current to portray changes in assigned mission and in operational concepts."[6] This gives no indication as to how or for what reason these purposes are to be achieved. To get more general and at the same time more specific, a paraphrase of Kent's purpose of the general plan can be used.[7]

(1) To improve the physical environment of the air base as a setting for human activities--to make it more functional, efficient, beautiful, decent, healthful and interesting.

(2) To promote the Department of Defense requirements and the requirements of the Air Force at large, rather than the missions of individual units or major commands that will use the base for a limited period of time only.

(3) To effect professional and technical coordination in base development. Professional and technical coordination means a logical relationship among the physical elements dealt with in the plan and the most efficient planning and scheduling of actual improvements so as to avoid conflict, duplication, and waste.

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6. Air Force Manual No. 86-6.

7. Kent, 25.

(4) To inject long-range considerations into the determination of short-range actions. In effect, this purpose is intended to achieve coordination through time, to attempt to make sure that today's decision will lead toward tomorrow's goal.

(5) To bring professional and technical knowledge to bear on the making of decisions concerning the physical development of the air base.

PHYSICAL ENVIRONMENT

The general or master plan is the translation into the physical realm elements of the policy decisions of the Air Force. The physical plant is the result of the myriad influences that have resulted from the various military build-ups, the "long-range" operational planning which has been effective generally for only short periods and, even in many cases, the personal whims of individuals involved. On the other side of the coin, however, the physical plant or environment directly influences the continuing operation of the Air Force. For example, the lack of adequate housing can reduce the retainability of personnel, or poorly conceived administrative office space can seriously lower worker efficiency, or improperly sited buildings can raise utility connection costs as well as subsequent maintenance costs.

Within current Air Force practice today, the relation of the master plan is totally to the physical; in fact, the typical master plan is little more than a generalized record

of what is now in place. The influence of the plan has not been felt in the further development of the facilities within a framework which increases the usefulness of the installation, but rather has been done only to satisfy current directives, the content of which can be changed or violated seemingly at will.

The physical plan and the resultant development is the meat of the total planning process. The air base is the end toward which the general or master plan is the means. The physical development, then, is the ultimate tool which can be used either, as at present, to meet very limited needs (current operational requirements, minimal personnel needs) or, in the future, to provide a flexible framework to meet long-range and varied Air Force and Defense Department demands and to strengthen the operational manpower efficiency through proper facilities and environment for both work and living space.

Air Force Requirements

To place the needs of the Air Force-at-large over the needs of individual units is equated by the need for consideration of the public good in a city before the individual desires of businessman or property owner. The Air Force is leaving the period of its history when an installation was only for a single mission or air command. With the rapid capacity for change with which the military is faced, it is compulsory that all air bases be planned and developed in

strict accord with an overall Air Force, or Department of Defense, plan.

The inflexibility of our present facilities, both structures and installations, are costing the government large sums of money in having to adjust to the inevitable change in technology and mission. It is possible that facilities which are now Air Force could be needed in the future for any number of different governmental agencies and should, within limits, be readily adaptable to these changing needs. Long-range planning, of course, can take all these contingencies into account if the planning is done at high level where policy decisions are either known or made. Multi-use facilities is not a new or revolutionary idea. In 1939 a proposal was made to create flexible-use camps in England.[8]

Professional and Technical Coordination

Professional and technical coordination means a logical relationship among the physical elements dealt with in the plan. It is clear that this can only be accomplished through central or relatively high-level planning. The mission planners at a base level cannot plan the base as a part of an overall network of military installations for the Air Force or the Department of Defense. It will be through professional and technical coordination that an interlocking system of

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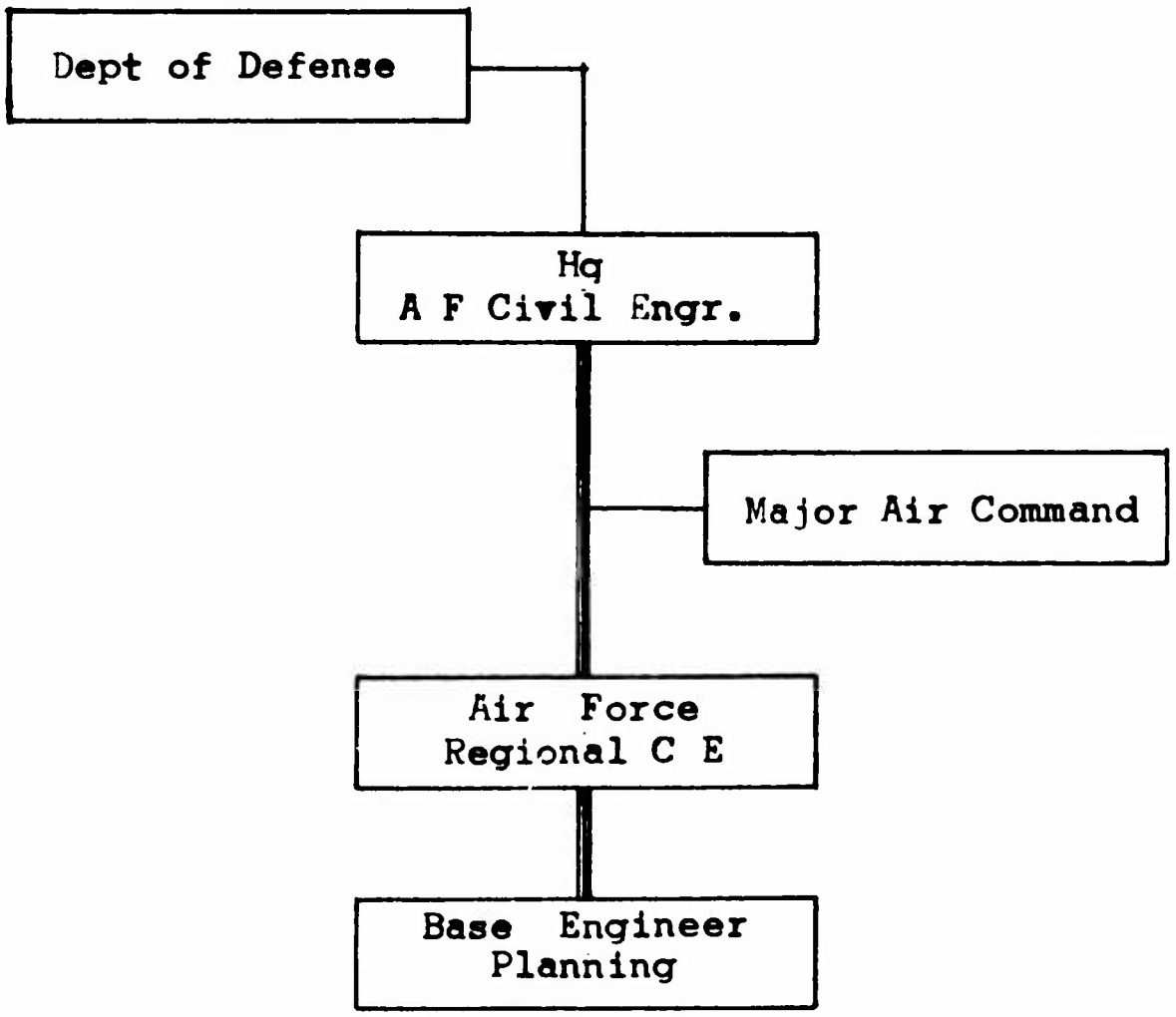
8. "Camps for Peace and War," The Economist (London), Vol. 134 (February 4, 1939), 236-7.

military facilities can be developed. In turn, this highly developed system and program based on long-range considerations can be the key to Congressional approval and support for our facility needs.

Long-range Programming

Long-range considerations have been implicit in most of the above purposes, but is of such importance that it needs separate emphasis. It is regrettable that the need for a B-52 bomber base of 1955 can only be translated into an abandoned airfield rather than a new use, foreseen and planned in the original development. Many of the decisions which have been made in regard to base development have been made to satisfy only yesterday's needs, not tomorrow's goals. The whole military establishment is burdened with the results of 'short-range' planning--temporary facilities under permanent use which result in excessive maintenance costs, poor operation capability and lack of flexibility in changing uses, not to mention the inability to properly serve its present function.

High level planning control--Air Force, preferably--is necessary if bases are t fulfill long-range goals. In a civilian community, planning is only effective if the community power structure supports and adheres to the principle of planning. Only at Air Force level can the total facility needs of the Air Force be known and only at this level can compliance with major planning objectives be enforced. (Figure 5)



MASTER PLANNING RESPONSIBILITY

FIGURE 5

Professional Knowledge

The knowledge and abilities necessary to begin to plan adequately a network of the complexity exemplified by Air Force bases can only be found in the background of professional planners. The result of non-professional planning is evident in the chaos of the present developments with which we are burdened. All the various factors which make up an air base--operational, sociological, functional, environmental--must be weighed and evaluated against the future requirements of our country. This task can only be accomplished by an individual versed in the complexity of the planning process as personified, ideally, by the community planner. Professional knowledge, ultimately of professional military installation planners, is vital to the successful development of bases or a system of bases that will have an element of permanence.

Reiteration

The general plan and master planning is not a product to be accomplished and then set on a shelf, even if reconsidered every year, but is rather a state of mind, a conditioned reflex-action which is a constant thing always being considered as the basis upon which all base development programs are evaluated. Master planning in the Air Force, much like comprehensive planning in our communities, is a well drawn map which is never really considered in making developmental decisions. The master plan then becomes not a framework for long-range goals but a record of what was done and, many times, a record of the violation of good sense in developing of the base.

T. J. Kent, Jr., lists some characteristics which a General Plan should contain or strive to achieve.

> The General Plan--
> (1) Should Focus on Physical Development
> (2) Should Be Long-Range
> (3) Should be Comprehensive
> (4) Should Be General, and Should Remain General
> (5) Should Clearly Relate the Major Physical-Design Proposals to the Basic Policies of the Plan[9]

Master planning in the Air Force must become a process and not a product. The specific plan at base level must be the end result of major planning considerations and decisions at all echelons above it in order that comprehensive, long-range requirements of the Air Force and Department of Defense can be met. The purpose of planning must be to lead effectively to the future.

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9. Kent, 91.

CHAPTER V

AIR BASE DEVELOPMENT PROGRAM

POLICY

The primary need of physical air base development and redevelopment is a framework which, including and following the various theoretical concepts presented in the preceding chapters, will allow total, consistent and comprehensive programming to be accomplished. Under the present procedures, very little credibility is given to the Air Force by Congress concerning the Air Force's ability to effectively plan and carry out a realistic construction program or operation and maintenance program. From the condition of our bases at present, the fears of Congress are reasonably well founded. It is more than obvious that the lack of planning or lack of substantial objectives regarding the physical environment of our installations is blatantly showing.

To overcome this disadvantage, a soundly based and inviolate policy and program must be developed for presentation to Congress. To provide guidelines for such a program, an over-all policy must be developed and followed. An examination of the following five-point policy will show that it does provide a frame of reference upon which to base a course or courses of action.

1. Evaluation of existing installations.
2. Flexible-use development criteria.
3. Permanent facility core on permanent bases.

4. System of interim use bases.

5. Long-range maintenance and construction funding.

A concerted effort must be made to develop a program of continued development and/or redevelopment of our air bases to provide the flexibility of use that is necessary to the needs of the Air Force and the Department of Defense. It is no longer enough to give lip service to planning and then violate the most elemental of its provisions at the whim of a single unit's short-term mission requirements. Our bases must be responsive to the changing needs of various units, air commands and new technology. This process, as in all good planning, must be a blend of far-sighted policy making and soundly applied planning principles to carry out the policy decisions.

Evaluation of Existing Installations

At the present time there are about 100 major Air Force bases active in the United States. These facilities range from small to very large, from urban to rural locations, from easy to difficult accessibility, from temporary to permanent construction, from post-Korean Conflict to pre-World War I. Many of the bases are capable of increased utilization, while others are hard-pressed to meet the current requirements. Air Force bases run the full range of possible conditions, operating costs, future capabilities, et cetera.

To begin a long-range program of development, a detailed survey of the existing bases must be done. This must be done at a high level, either Headquarters Air Force or

Department of Defense, in order that the potential for over-all development might be accurately determined. Many factors must be explored in order to give a basis for either continued use or abandonment.

a. Land in use and/or available,
b. condition of structures, utilities, etc.,
c. adaptability to changing uses,
d. relation to urban development and transportation networks,
e. support available from surrounding communities, (supplies, services, transportation, schools, housing, etc.),
f. relation to the economy of the area,
g. relation of the base to other military facilities in the area, and
h. relation of the base to the over-all network of Air Force and Defense Department installations.

This is not an all-inclusive listing, but is rather an example of the many areas of consideration which might be explored.

If we are to gain any amount of stability in our base development, the system of bases must take on an integrated character--integrated within the needs of the Air Force and the Department of Defense and also integrated within the region where located. It is possible that an important factor for developing a permanent installation will be the economic impact of the installation on the local or regional economy.

These decisions, of course, are major policy decisions which can only be made at the highest level, but are, nonetheless, decisions which will have a direct effect on any program which might be conceived.

Flexible-use Development Criteria

The next major policy decision which must be reached is the objective realization that our facilities are not single-use facilities, but rather, must be developed with a flexibility of use. In 1965, Bergstrom Air Force Base, a Strategic Air Command base, was redesignated to become a Tactical Air Command base by 1967 or 1968. This will necessitate a change in numbers of personnel and types of aircraft using the base. If a core of modern facilities existed, such as might be available in the civilian community, the change-over would involve very little expense or effort. As it is, the necessity for new or different facilities will be a great expense for the government.

It must be realized that basically, the operational units occupying a base are tenants, not 'permanent' occupants, and the basic facilities should be so constructed and planned. This, in general, is the method used in providing building space in the commercial market--general use buildings with internal adaptability geared to a generalized function rather than a specific task. This just makes good sense as can be shown by the opposite conditions, and resultant costs, that exist in the Air Force with its use of small specialized

buildings serving functions no different than the functions of many other buildings on a base.

The changes in base functions, brought about by new and advancing technology and by rapidly changing world situations, require that, to support a long-range program of development for military installations, a responsible policy of structural and functional flexibility be adopted. Only through the adherence to such a program can the expenditure of large sums of money for facility development or redevelopment be justified.

Permanent Facility Core

This policy was stated in the purposes set forth by the McKie, Kamrath and Johnson report for Bergstrom Air Force Base in 1965

> To the extent feasible, it is desired that basic cores of upgraded facilities (administrative, community, housekeeping, personnel, maintenance and utilities services) be developed for long term use, 15 to 25 years, and be made flexible to permit future expansion or contraction of mission or population.[1]

The permanent facility core along with the flexible use of our bases is at the very heart of a solution to the problem; that is, the inadequacies of our present bases to be readily changed from one use to another. This problem is further accentuated by the difficulty of predicting the extended usability of our facilities. With this as a back-

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1. McKie, Kamrath and Johnson, 1.

ground, it becomes increasingly apparent that bases must not be built around the minutiae of organization detail as has been done in practice, but must be actually planned for broad-termed uses as discussed in Chapter 3.

The core of facilities becomes the nucleus of present and future development of our bases. If, then, the base is a part of a total network of installations, not just one part of a single mission use, it provides a total, integrated framework upon which to meet the long-term requirements of both the Air Force and the Department of Defense.

System of Interim-use Bases

A system of purposely designed temporary-use bases would complete the network of bases and would complement the permanent bases by providing facilities for short-term needs. Part of the problem that exists today is the fact that there was not a proper balance of permanent bases versus temporary bases. The result has been that the Air Force is being forced to "permanentize" many temporary facilities which, in the long run, will not be suitable for the continuing mission of the Air Force. Therefore, it is necessary to provide the permanent bases to meet our known long-range needs and to provide designed temporary facilit - for experimental, short-term or contingent uses. Then, as functions become stable mission programs, they can be phased into a permanent installation which has the flexibility to adapt to the new long-range use.

Two of the possibilities for providing such installations are (1) the inclusion of provisions for temporary use within the developmental scheme for a permanent base, such as across the airfield from the permanent base, or (2) the construction (or modification of present non-utilized bases) of separate bases which are strictly for temporary use. There are advantages to both as well as disadvantages. The first scheme, while saving money by dual use of airfields, utilities and such, can present a strain on these same facilities which could disrupt seriously the capability of the permanent mission. The second possibility, while lessening the disruptive aspects, of course increases costs due to the duplication of some facilities. But another advantage of the second scheme would be the mobilization training which could be gained by the Civil Engineering forces in setting up and dismantling the facilities during their use periods. This aspect would coincide with the current manning of BEEF teams (combat support elements) within the Civil Engineering force.

To be a full and integral part of the over-all installation network there must be no use of these facilities on a permanent basis. The very fact that costs would be reduced by having a truly temporary design would make continued utilization out of the question. Again it must be pointed out that these decisions can only be made at the highest levels. Policy affecting the total, long-range needs and missions of the Air Force cannot be jeopardized by the parochial thinking

of unit commanders or major air command planners. This is precisely where we are today and the disadvantages of this position are more than obvious.

Long-range Program Funding

The current performance of programming in the facilities area of the Department of Defense has led to the adverse reaction of Congress to such programs and their refusal to provide funding as needed to upgrade and redevelop highly useful bases. It should be noted that the military's lack of planning is not alone the cause of this attitude of Congress. The long-standing practice of Congress to appropriate money by line item and for only one year in order to more effectively 'control' the Executive branch is going to be very difficult to overcome. Naturally, violations of good long-range planning principles, disregard to the spirit of Congressional controls and cross-purposes within the Air Force itself cannot hope to change the present system, except by solidifying it further.

On the other hand, if the Air Force and/or the Department of Defense could and would establish a strongly planned program for long-range development which embodied (a) adequate, professional planning, (b) high level policy and decisions only, (c) non-violation of policy and program and (d) over-all reduction of maintenance, operation and construction costs the possibility of obtaining Congressional cooperation would be greatly enhanced. Congress is well aware of the level of planning in the Air Force.

To repeat a statement from Chapter 1:

> Personal desires of individual military unit commands sometimes unnecessarily override overall Air Base physical plant needs. Some consideration should be given to removal of Base maintenance personnel from the command of changing military units passing through.[2]

This sort of possibility in theory and practice must be abolished if we can ever expect Congressional approval of long-range programs for the Air Force. Only when the military can present an adequately formulated and professionally considered program and demonstrate an ability to prevent violations and abuses of the program by subordinate levels will there ever be a possibility of funding being provided to accomplish such a planned program.

The realization of this fact is the primary purpose of this work. There is a need for adequate planning in the Air Force facility program and some of the many, many factors involved in base planning have been discussed. No answers have been given or intended, but rather, the complexity of planning consideration has been pictured.

A POSSIBLE COURSE OF ACTION

At this time, the Air Force is utilizing a pilot study, from which excerpts and quotes have been used throughout this study, to explore the area of base planning and programming. Many of the findings have been directly applicable to

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2. McKie, Kamrath and Johnson, 29.

areas of this work and, in general, the objectives meet some, but not all by any means, of the questions which have arisen. It must be emphasized that this is a pilot study and only is discussed as one of many possible approaches which the Air Force could initiate and adopt. The main reason for using this study as an illustration is that it is being tried currently and some field knowledge of its aspects could be additionally useful in evaluating this area of consideration.

Five Year Modernization and Replacement Program

The Five Year Modernization and Replacement Program was authorized as a pilot study program in August 1965. The specific report which is available to this author is the first phase report for Bergstrom Air Force Base, Texas, submitted to the Air Force in December 1965, by McKie, Kamrath and Johnson, Architects and Engineers, of Houston, Texas.

> The basic objective of the overall planning effort is to obtain professional recommendations for developing a program for upgrading air base facilities...which will reduce maintenance and operations costs to a minimum. It is important that expenditures for upgrading be economically justifiable and reasonable. The ultimate recommendations will be used as a basis for developing projects which can be included and reasonably justified in a five year military construction program.[3]

While this study was thought of as providing a "broad 'carte blanche' approach,"[4] still there is a basic requirement set

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3. McKie, Kamrath and Johnson, 1.

4. McKie, Kamrath and Johnson, 4.

forth in the purposes which are more specific than the broad theoretical proposals presented earlier in this chapter.

Within this framed purpose, the planners were able to perceive as features of their report the following:

1. Reduction of maintenance costs to a minimum level.
2. Establishment of a high level of imaginative planning featuring good aesthetics that will result in a physically beautiful base.
3. Obtain optimum air base function, considering present physical plant, and requirements of military operations.[5]

Policy correlation

To be truly effective, the Five Year Modernization and Replacement Program must eventually fit within the elements of the five point policy presented in the first part of this chapter. These policy areas again are:

1. Evaluation of existing installations.
2. Flexible-use development criteria.
3. Permanent facility core on permanent bases.
4. System of interim-use bases.
5. Long-range maintenance and construction funding.

The scope of the total planning process, using these policy considerations, can be realized by evaluating the proposed program against the policy items.

Evaluation of existing installations

The modernization program used as an example was physically limited to an air base in central Texas, but the

5. McKie, Kamrath and Johnson, 5.

relation of this study procedure to other bases was realized.

> It should be noted that instructions were to review Bergstrom facilities, as a pilot program, to formulate ideas and to probe possible planning changes relative to Air Force planning methods in general and to all Air Force Bases.[6]

In addition to these over-all considerations, the systems and facilities on the base were surveyed and scrutinized in order to properly determine those elements that were useful for long-range usability or to discover problem areas that might exist.

This phase of the study did not include review of the external relations, such as the economic and social relations of the base to the community. This, of course, would have to be done eventually in order to put future base development into context with community and regional development.

Flexible-use development criteria

At the time of the modernization program study the use of the air base had been under the control of a single air command for many years. Just after the report had been completed, it was announced that the base command would change in 1966. This fact serves to reinforce the contention that a flexibility of use is an essential element in the design and planning of air bases, in particular, and military installations, in general.

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6. McKie, Kamrath and Johnson, 1 (italics mine).

The survey team was well aware of the need for flexibility in the utilization of buildings on the base and related this need to cost commitments.

> ...the amount of funds being expended in moving partitions and adjusting uses of standard buildings may well justify the expenditure of two or three dollars more per square foot on all new Air Force office type buildings to obtain greater flexibility for changing military uses.[7]

The extension of this thinking to the planning of the air base and its monetary implications is a relatively easy step.

Permanent facility core on permanent bases

The concept of the permanent facility core is a major consideration in the survey team's report as well as in the purposes set for them by the Air Force.[8] The implementation of the permanent facility core also ties to Mr. Foster Mackenzie's scheme for the use of the 'cluster organization' of facilities and the strong central design and use element it would create.[9] The survey team summarized their recommendation for a basic planning concept thusly:

> The basic planning concept requires further study for regrouping to improve land utilization and efficiency, keeping in mind the need for future expansion. The entire land use concept, architectural theme and landscaping plan should be related in one unified scheme.[10]

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7. McKie, Kamrath and Johnson, 28.
8. McKie, Kamrath and Johnson, 1.
9. Mackenzie, 20.
10. McKie, Kamrath and Johnson, 30.

System of interim-use bases

The concept of interim-use bases was not a purpose or a consideration of the Bergstrom study. It is conceivable that this would never be a prime consideration for the planning of a single base, but, instead, would have to be planned and implemented at Air Force or Department of Defense level.

Long-range maintenance and construction funding

The Five Year Modernization and Replacement Program by the title itself indicated a basic consideration toward 'long-range' planning. This, though, is only a beginning. For total long-range planning, the planning process must be a continual process, constantly being re-evaluated and extending forward to the full foreseeable life of the installation.

Conclusion

The concepts which the firm of McKie, Kamrath and Johnson have formulated in their study of Bergstrom AFB are a result of the planners' realization of "the potential of creative planning," which could be fulfilled in the effort "to modernize Air Force Bases to better serve present and future needs."[11]

With this type of planning program in existence, it is hoped that an appreciation of the problems facing air bases might be engendered. It is desirable for such planning to be

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11. McKie, Kamrath and Johnson, 27.

extended to become a basis for future facility planning in the Air Force and, by extension, the Department of Defense.

It must be again emphasized that the Five Year Modernization and Replacement Program has been discussed as an illustration only and does not represent the only or best possible solution to the planning problems of the Air Force. The only apparent absolute is that there is a facility problem in the Air Force due to a lack of adequate installation planning. There is a need for a strong planning policy, procedure, and practice for installation development and redevelopment if the Air Force is to meet its commitments within the available national resources. Adequate planning will save money, will provide more functional capability, and will enrich the personnel environment and contribute to manning stability. Progressive and long-range planning will sell the Air Force programs to the Department of Defense and to the Congress. The need for competent community planning in the Air Force is urgent and must be met.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.

REPLY TO ATTN OF: AFOCE-KD

SUBJECT: Community and Regional Planning Thesis

5 AUG 1965

TO: 1/Lt William E. Shanks
AO 3116963
1404 Glenwood Dr.
Austin, Texas

Dear Lt Shanks

1. Acknowledgment is made of receipt of your letter dated [illegible] 1965.

2. It certainly is gratifying to learn of your educational [illegible] as an AFIT student at the University of Texas. Community and [illegible] Planning is becoming an increasingly important engineering [illegible] in the daily life of the Air Force Civil Engineer.

3. In response to your request for assistance in your thesis research endeavor, you may wish to consider a major problem confronting Air Force Civil Engineers - the need to revitalize our outmoded bases. As you know, we are now at a point in time when the majority of our Air Bases have achieved their maximum growth. Our attention therefore, can be effectively directed towards "upgrading" many of our substandard facilities that have been in our midst since World War II. In addition to reducing annual maintenance and operating budgets, a primary objective is to improve the living environment at our Air Bases considering facilities, land usage, open spaces, and associated living amenities.

4. A research effort on your behalf oriented towards achieving these objectives should prove both challenging and fruitful!

5. Attached are copies of documents which currently serve in the Air Force Master Planning Program. It is believed that these publications present the current Air Force Master Planning doctrine which you may be seeking.

6. We whole heartedly support your efforts and wish you continued success.

Sincerely

C. W. HARRIS
Deputy Chief, [illegible] Division
Directorate [illegible]

3 Atch
1. AFR 86-4, 4 Aug 64
2. S.O.W., 22 Nov 63
3. AFM 86-6, 10 Feb 59

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VITA

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Willis Shanks was born [redacted] [redacted] Wenatchee [PII Redacted] Washington, the son of Mrs. F. W. Fawcett of Friday Harbor, Washington, and the late Mr. Willis E. Shanks, II, of Wenatchee, Washington. He attended public schools in Wenatchee and Seattle, Washington. From 1948 he attended The Stony Brook School, Stony Brook, Long Island, New York, and was graduated Cum Laude in June 1951.

From 1951 to 1955 he served in the United States Air Force both in this country and in Morocco. He attended the Tennessee Polytechnic Institute, Cookeville, Tennessee, for a short period in 1951. In 1955 he entered the University of Washington and graduated with a Bachelor of Architecture degree in 1961.

In 1961 he was commissioned in the Air Force and has served in the Air Force civil engineering field as a planning and maintenance engineer. During 1962 and 1963 he did graduate work at Texas Technological College, Lubbock, Texas. In 1964 he entered the University of Texas under the sponsorship of the Air Force Institute of Technology.

Permanent address: [redacted]

[PII Redacted]

This thesis was typed by Margaret A. Grosenheider