achieving

DESIGN EXCELLENCE

UNITED STATES AIR FORCE

The United States Air Force vision and direction for the future is:

> *"Air Force people building the world's most respected air and space force…global power and reach for America."*

We must understand that our installations and facilities are the foundation upon which our flying mission capability is based. Installation excellence is essential to maintaining excellence in our flying missions.

Achieving Design Excellence states the doctrines and principles which are integral to our vision for the Air Force. Planning and design are the essential foundation to achieving installation and facility excellence. Decisions made during the planning and design processes have long range effects — often 50 or more years. It is essential these decisions ensure prudent use of our resources to provide Air Force people excellent environments in which to work, live, play, worship and serve.

GARY M. ERICKSON, P.E.
Director
Air Force Center for Environmental Excellence

The projection of United States air power around the globe requires bases with facilities, infrastructure and environments of the highest quality. The Air Force goal in all elements of base planning and design is excellence.

This goal requires a clear, comprehensive vision to ensure each project, regardless of type or scale, contributes to the total base environment.

It requires partnerships and the commitment of all who influence or control the process.

Design excellence must be initiated from the top. Success requires decision makers to actively encourage, and accept nothing less than, the very best in planning, site development, architecture and interior design.

This publication advocates design excellence by commanders, managers, planners, programmers and designers.

The mind is a strange machine which can combine the materials offered to it in the most astonishing ways.

— Bertrand Russell

The early days of base design provide a benchmark of quality.

South porch of Officer's Club, Grand Central Air Terminal Glendale, CA 1933

South Entrance to Officer's Club Randolph AFB, TX 1936

The expansive vision in planning, thoughtfulness for lifestyle, care for detail, response to environmental conditions and sensitive material selections which they exhibit are as important today as they were then.

...history is philosophy learned from examples.

—Thucydides

Grand Central Air Terminal Glendale, CA

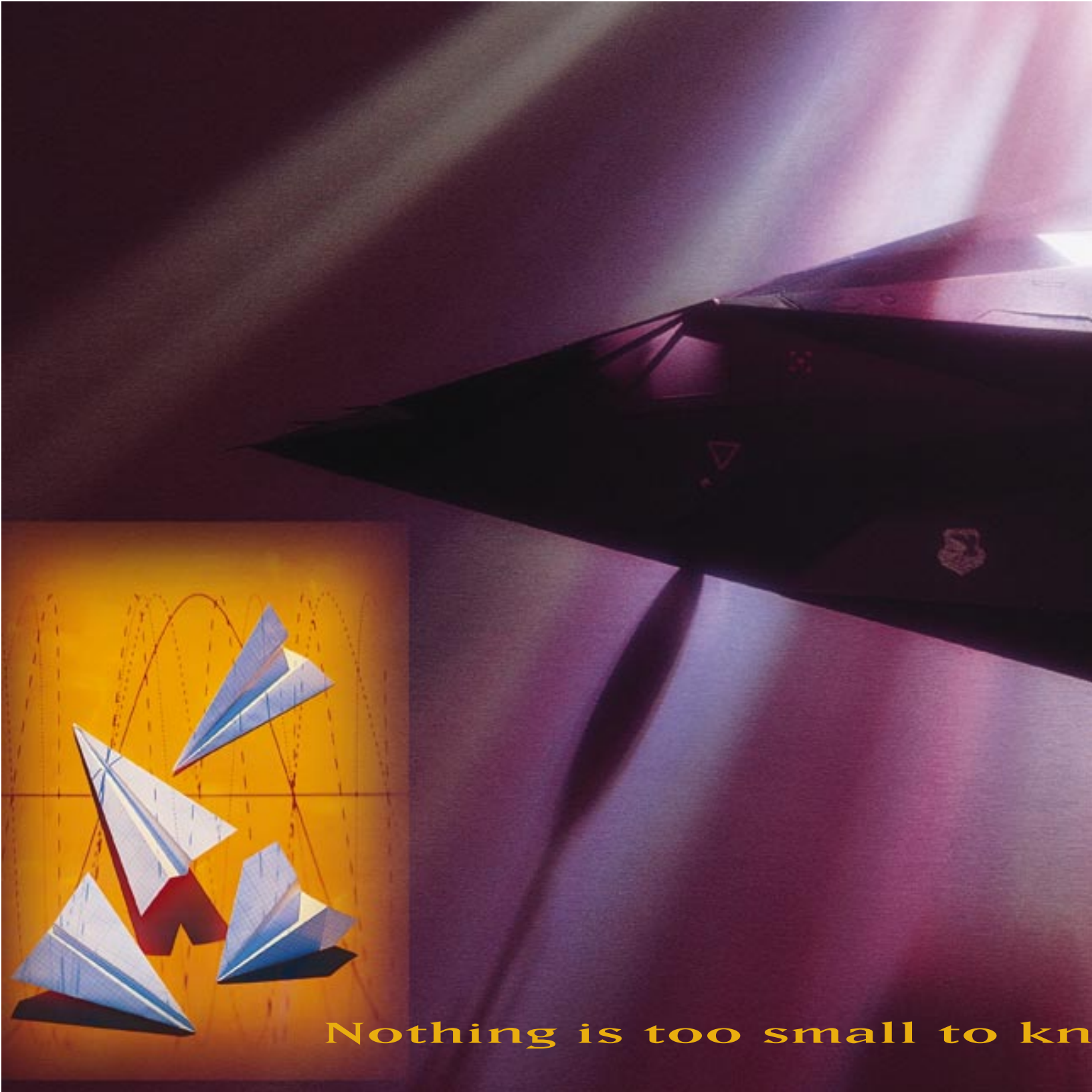
Mobilization for World War II caused a surge of construction which left a huge legacy of buildings. Though never intended as permanent, many are still in use. Subsequent military buildups created other building waves; excellence of design was not an apparent concern. There were exceptions, of course. The Air Force Academy remains a masterpiece, heroic and military in its planning concepts, and one of the nation's very finest architectural compositions. This is design at its best.

Air Force Academy, CO

The last decade brought an increased awareness of the value of design and a number of design achievements. The Air Force has provided the leadership in environmental concerns and has become the leader in architectural design.

Today, new realities affect design, presenting great challenges but also great opportunities. Retaining a skilled force, trained at great expense, requires greater care for the physical environment. Our efforts must be directed to making our bases places where Air Force personnel and their families find satisfaction in working, learning and living. They must be places where people want to be.

General Dynamics F-16s


Nothing is too small to kn

At its best, United States Air Force hardware illustrates absolute design excellence.

At this outer limit of technology, physical laws dictate virtually every design decision, and the aircraft designer has only a limited opportunity to influence these awesomely beautiful forms.

Excellence in architectural, interior and site design is achieved the same way, but with much more room for individual creative contributions. Functional requirements must still be met. Compliance with all codes and regulations must be achieved. While this requires skill, the designs which result may only be adequate.

Exceptional design depends on the vision of the managers, the skill of the designers and the amount of effort all are willing to expend. Utilizing design professionals with proven records of quality design enhances the probability of success. Design excellence requires commitment and exceptional effort on the part of all involved.

Our expectation is design excellence.

ow, and nothing too big to attempt.

—William Van Horne

Buildings should be good neighbors.

—Paul Thiry

Air Force Senior Noncommissioned Officer Student Dormitory
Maxwell AFB, AL

Air Force design must satisfy the requirements of our military mission and our people.

Air Force bases are home; the security of home is important to deployed personnel and their families.

Design is personal. People you know and work with will drive the streets you lay out, walk the pathways you put down, enjoy the shade of the trees you plant, work and learn in the buildings you design and live in the dormitories and houses you plan.

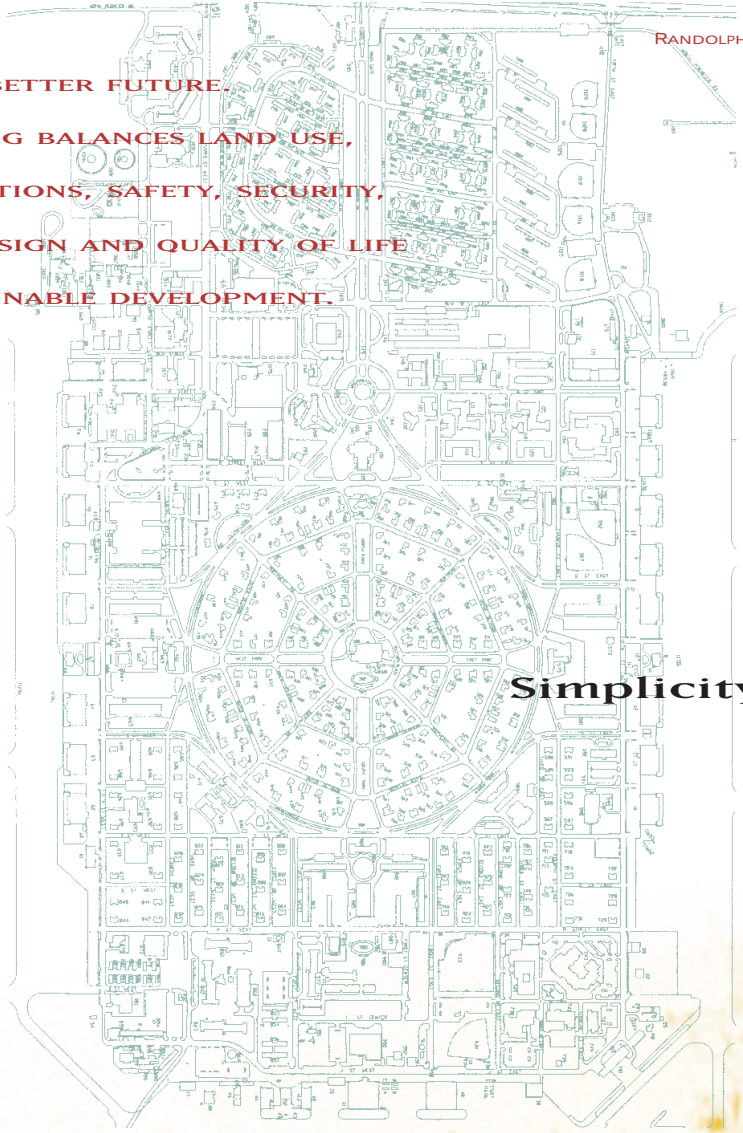
People respond to good design. It instills pride of ownership. Pride of ownership increases pride in service.

The pages which follow offer some ideas on achieving and sustaining this pride.

PLANNING

Planning visualizes a better future. Comprehensive planning balances land use, transportation, operations, safety, security, environment, urban design and quality of life to define future sustainable development.

Randolph AFB, TX



Randolph AFB, TX

Simplicity is the

The General Plan provides the underlying structure for base development.

Whether seen from an airplane or a pedestrian's stroll, a coherent plan creates structure and unity.

A strong plan fosters a sense of arrival, identity, orientation, and completeness.

Your plan should impart a perceivable sense of base-wide order.

THE GENERAL PLAN NEEDS A UNIFYING ELEMENT, AN ORGANIZING PRINCIPLE. WITHOUT THIS SOUL, A PLAN MAY BE NO MORE THAN A GROUP OF BUILDINGS.

THE UNIFYING ELEMENT may be an open space, an important avenue, a strong pattern of streets or a natural feature of the site. Important buildings or monuments, as focal points, can reinforce this unifying element.

essence of the great, the true and the beautiful in art.

—George Sand

RANDOLPH AFB, TX

SIMPLICITY is a quality of the best plans. Strong and simple plans are most easily perceived.

GROUPING LIKE USES has many benefits. Sharing of common facilities and improved environmental quality are but two. Convenience, efficiency and increased productivity are others.

INCREASED DENSITY reduces infrastructure costs, encourages pedestrian activity, reduces fuel consumption and has a positive environmental impact.

CLUSTERING new buildings and in-filling formless open spaces are logical ways to increase density, create a more human-scale environment and strengthen your plan.

PIERRE CHARLES L'ENFANT'S DESIGN FOR FEDERALIST BANQUET. MANHATTAN, 1788

Base Plan
Lackland AFB, TX

Our souls,

whose faculties

can comprehend

the wondrous

architecture of

the world.

—Christopher Marlowe

Randolph AFB, TX

Detail of Pierre Charles L'Enfant's plan for Washington, D.C.

The General Plan should

MINIMIZE CONFLICT. Separate vehicular traffic from other traffic and minimize their crossing points.

PROMOTE PEDESTRIAN ACTIVITY. Encourage walking with handsome walkways, well-placed lighting, attractive landscaping and seating areas, all shaded from sun, sheltered from wind and taking advantage of your best views.

CAMOUFLAGE PARKING. Clustered parking minimizes the visual impact on the overall base development.

Island and perimeter planting moderate seas of asphalt and shiny chrome. Parking lots are not desirable front yards; plan so views are to landscaped areas.

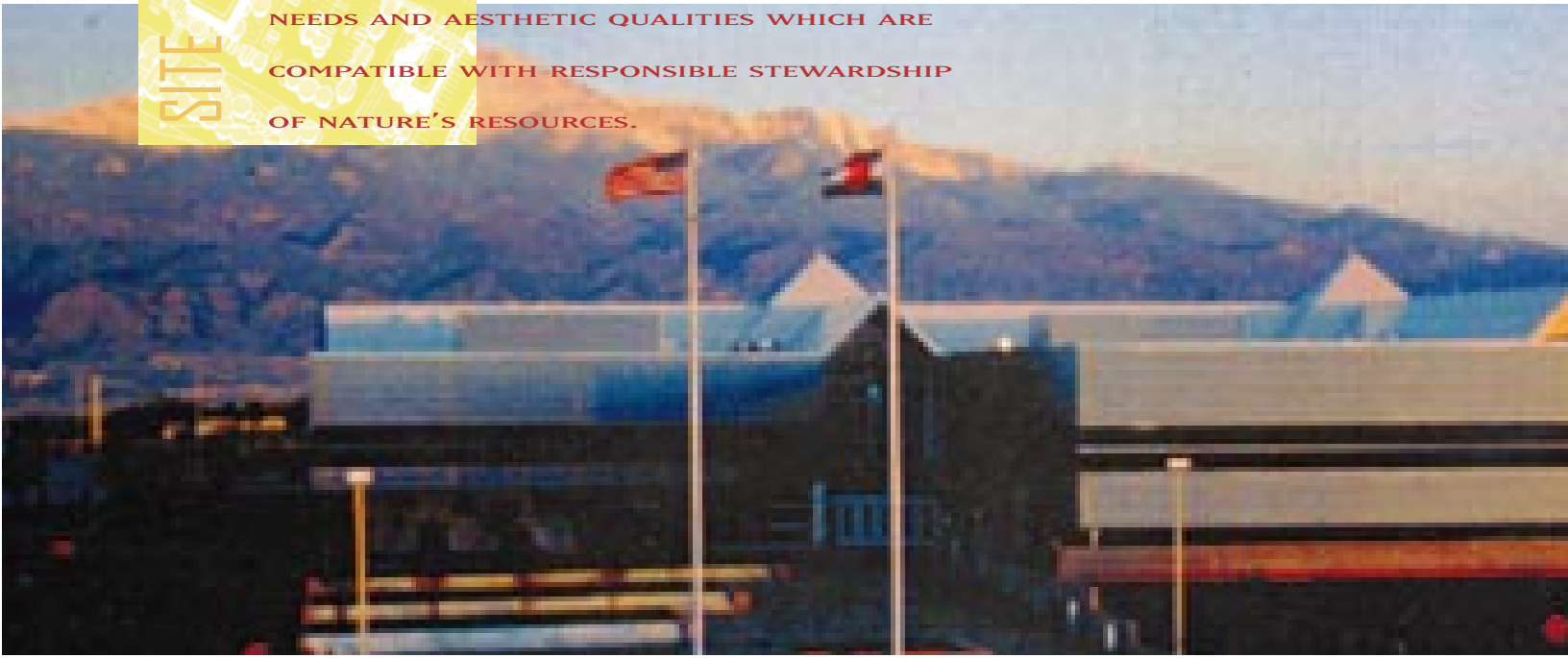
If you find existing elements in conflict with the comprehensive plan, consider erasure. Eliminating inappropriate site elements, unnecessary streets and minor buildings or facilities can strengthen your plan.

Our life is frittered away by detail...Simplify, simplify.

—Henry David Thoreau

SITE

Site development employs design in solving the unique and varied challenges of our interface with nature. It focuses on human needs and aesthetic qualities which are compatible with responsible stewardship of nature's resources.



You are designing for the future. Not 10 or 20 years, but 50 or more. Choices become most important; achieving design with timeless quality, the goal.

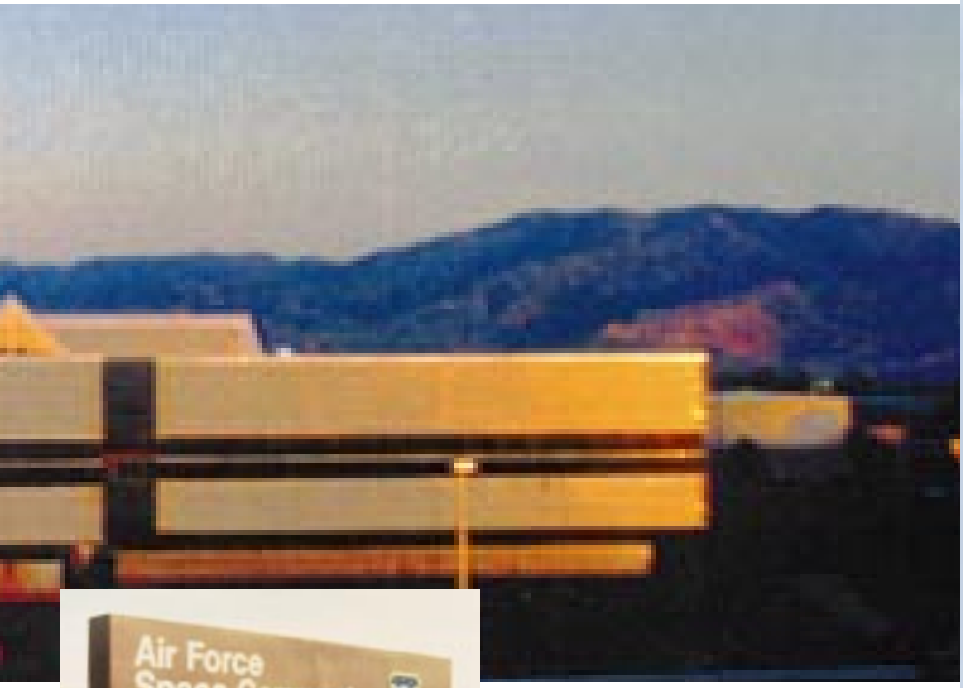
The plan will not be complete for many years. Each step may be small, but each is critical to final realization of the grand plan.

Site Design for your base encompasses planting; roads, parking areas and sidewalks; walls, fences, gates; recreational areas; lighting and other amenities that make being there more enjoyable.

Air Force Space Command
Headquarters entrance
Petersen AFB, CO

Vandenberg AFB, CA

Air Force Space Command
Headquarters
Petersen AFB. CO



Way-Finding Graphics start at the front gate or on the flightline and encompass the entire base. A visitor should be able to easily find the way to any place on base.

is no vision, the people perish.

—Proverbs 29:18

Site design integrates outdoor elements with buildings to create a unified development.

It can also, on its own, make a design statement so powerful that it mitigates past architectural misjudgments.

GOOD SIGNAGE is easily comprehended, changeable and maintained. It contributes to the base image. Continuity is achieved with consistent graphics, materials and color.

OUTDOOR SPACES are given form by site design. It utilizes buildings, streets, walkways and landscape features to achieve definition.

BUILDINGS help to define outdoor spaces just as partitions define rooms and exterior walls define buildings.

Some of the same elements which provide definition also contribute to creating the proper scale and character of outdoor spaces. Formal patterns — straight lines, classical shapes — fit formal areas — like parade grounds and headquarters. Recreational and residential areas are more relaxed, suggesting patterns found in nature — flowing, curving lines and more softly defined spaces.

People like trees. They signify permanence and tranquility. Trees provide shade for pedestrians, reduce solar gain in buildings and block winds in harsh climates. Massed, they abate noise and define outdoor spaces. They mitigate the expanse of large parking areas and can mask undesirable features of the site or buildings. Formally arranged, they evoke a sense of order and dignity. Casually placed, they provide a park-like atmosphere. But trees don't live forever. Interplanting younger native or adapted species ensures continuity of mature development in the years to come.

Remember, some elements of design simply appeal to people more than others. They have qualities which people can relate to: patterns in paving materials to break up large expanses; variety of textures in plant materials and paving; scale in lighting fixtures and other amenities; materials which are pleasant to touch; colors which are mellow and natural and small sounds like the bubbling of a fountain.

Recreation Structure
New Boston AF Station, NH

The Site Plan

should have HIDDEN POWER. Plan for underground utilities; however, when above-ground utilities cannot be avoided, route them to minimize their visual impact.

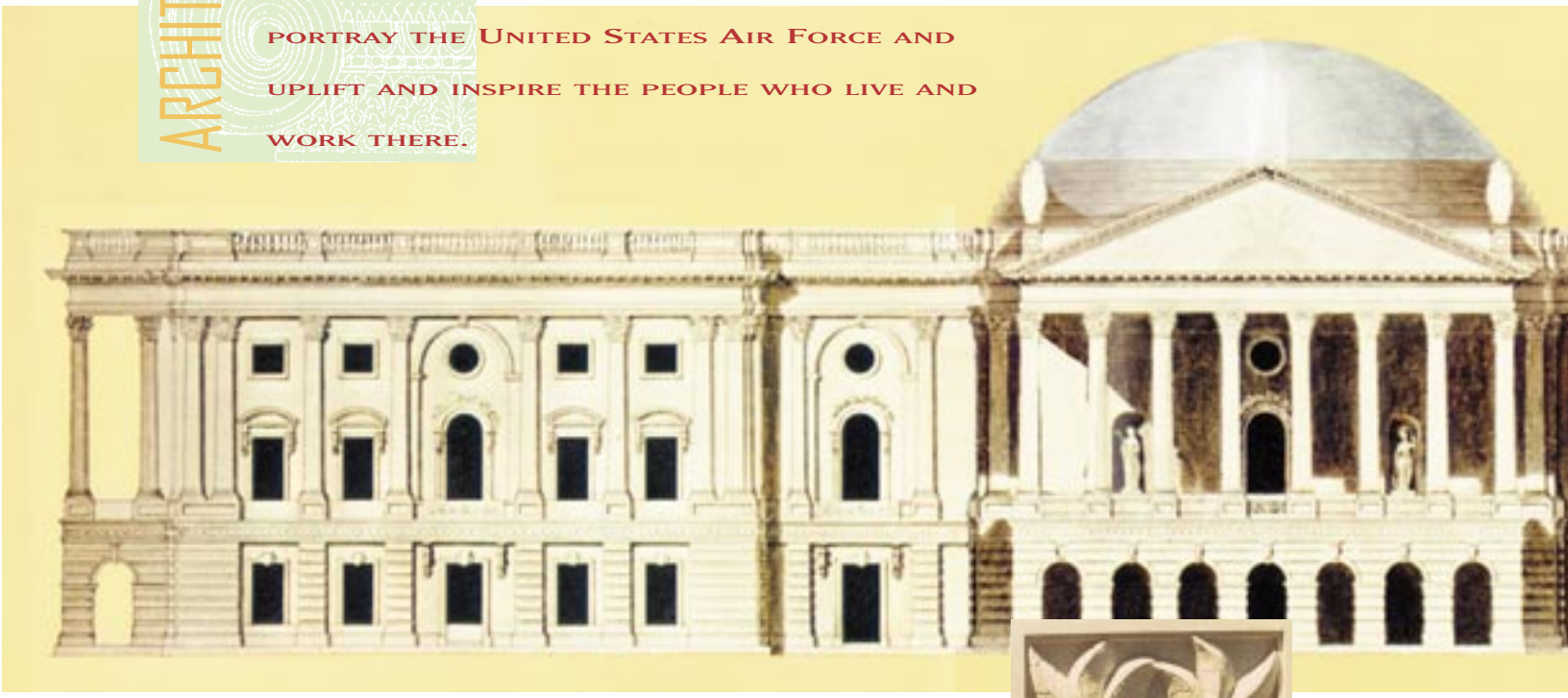
ILLUMINATION. Light for safety and security and aesthetics, using fixtures which direct light where it is needed.

FOCUS. Continuity of materials provides coherence in site design. Consistent use of species of trees, shrubs and ground cover; sidewalk paving materials; lighting standards; benches, bus shelters and trash receptacles will assure a sense of base-wide comprehensive design.

MINIMAL CLUTTER. Minimize service elements mounted at-grade; incorporate them into buildings wherever possible. Painting service elements in a background color or screening them with well-scaled planting is usually sufficient. Built screens can be as visually intrusive as the element being screened.

ARCHITECTURE

Facility design is the creation of physical environments which support the mission. It must respect the General Plan, positively portray the United States Air Force and uplift and inspire the people who live and work there.



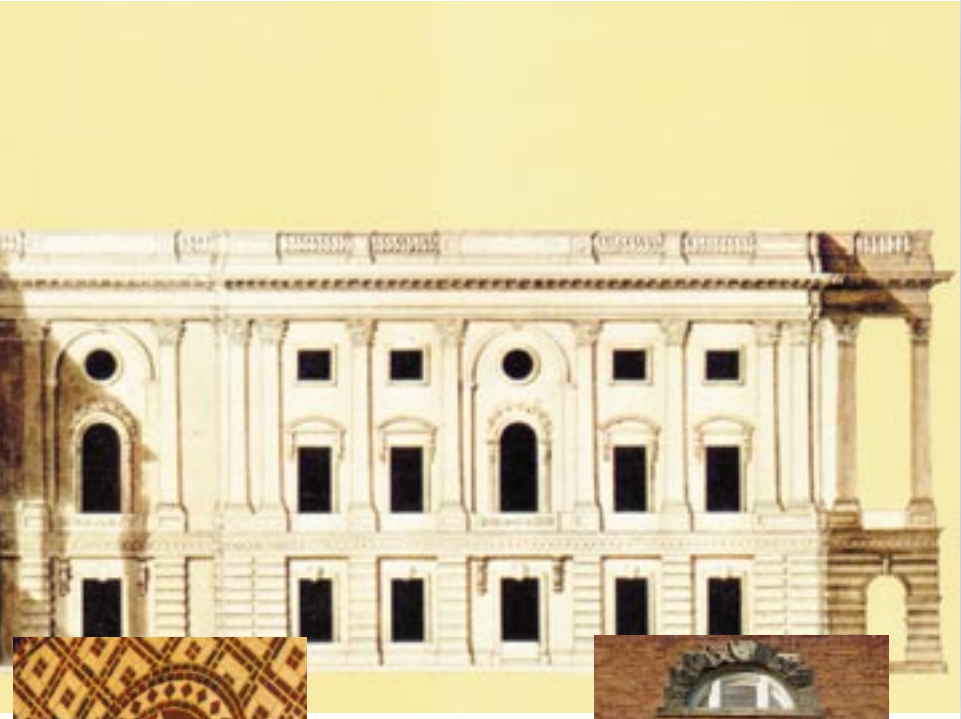
You begin with a blank sheet. Your task is to create, from the program of requirements, within the resources available, something that works and more — something called architecture. You are creating for the future, perhaps drawing on the past. You conceive an original form, or a new interpretation of a traditional one. Original or interpretation, you see it in a new way, and when your vision is realized, we see it too.

Building detail
Vandenberg AFB, CA

Recreation Pavilion
Elmendorf AFB, AK

CLIMATE MATTERS. In wet, warm climates, broad overhangs provide shade and shelter from the rain. In northern climates, comfort and energy costs suggest special fenestration.

Rendering of William Thornton's original design for Capitol Building



Gable detail
Langley AFB, VA

Gable detail
F E Warren AFB, WY

Society needs a good image of itself. That is the job of the architect.

—Walter Gropius

LOCATION. Look around. Study your place. Then design for compatibility. Some architectural elements have a regional appeal. This usually doesn't travel well. When removed from the original context, design elements frequently do not work.

MATERIALS. Every material has some distinctive characteristics which can be used to design advantage. Capitalizing on these unique qualities reinforces the architectural concept. Native materials are the logical, and often best, choice. They belong to the place and are readily available. Materials appropriate for the Air Force connote permanence and dignity.

CONTINUITY. Buildings of widely varying uses can form a coherent architectural composition if the designs are compatible in some of the elements of material, scale, texture, pattern and color. These are among the strongest tools available to the designer for achieving architectural continuity.

Continuity in overall height brings unity to any architectural grouping. A single structure of a height greatly different from its neighbors dilutes the goal of a strong comprehensive plan — unless this structure is intended to be a focal point.

Architecture is,

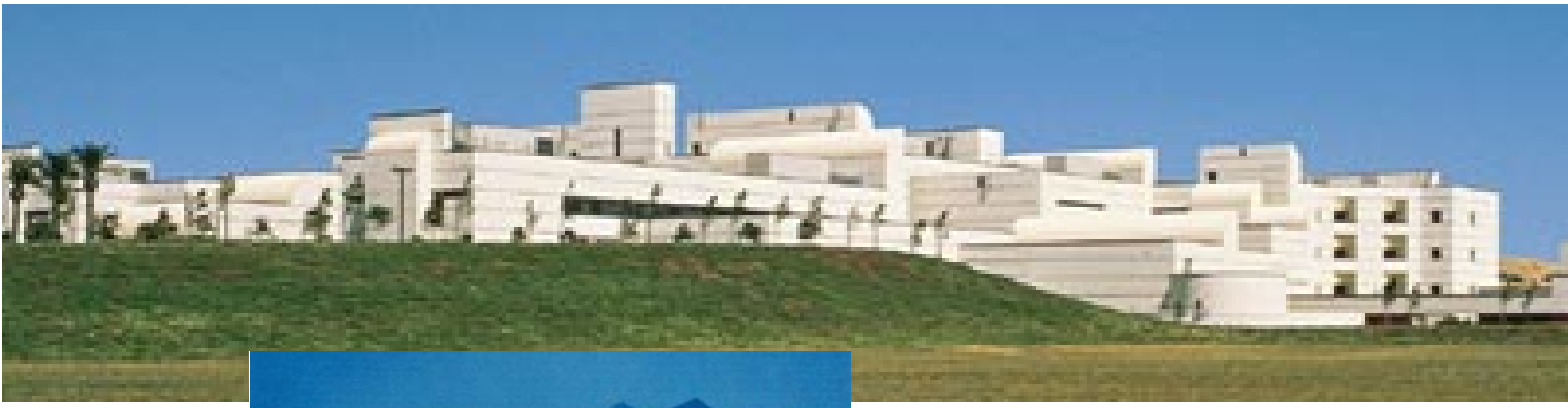
in general,

frozen music.

—Friedrich Von Schelling

Environment. The Air Force can seize the initiative in this area of increasing public concern. Products made from reclaimed materials are increasingly available. When building for fifty years, ecologically sound material selections are critical.

Noise. When spaces are located in close proximity to aircraft operations, special construction is essential to achieve acceptable interior noise levels. Room-to-room noise in mixed-use buildings should be addressed during design.



Medical Center
Travis AFB, CA

Microelectronics Laboratory
Hanscom Air Force Base, MA

NATURAL LIGHT AND VENTILATION. Everybody wants a window. People feel and work better with natural light. Plan buildings so that intermittent-use and support functions are located to the interior. Save areas with windows for work and living. Everybody also likes to open a window. It gives a sense of control over one's environments, and, like light, improves performance. Natural light and ventilation yield energy savings.

Logistical Systems
Operation Center
Wright-Patterson AFB, OH

BUILDING RE-USE. Buildings rarely wear out; only people's attitudes about them. Renovation is environmentally responsible, conserving both resources and energy. Historic structures are part of the Air Force heritage.

Many existing buildings have served more than one function over their useful lives. New buildings will as well. It is difficult to predict mission changes or living patterns far into the future. Adaptable, univeral designs should be a goal. Simple floor plan configurations and structural systems are generally more flexible for adaptive use.

INTERIOR

Interiors involve design on the most personal scale. Using space, material, light, color, texture and pattern, the designer creates places which foster increased productivity, original thought and a general sense of community and well-being.

The finishing touches are yours. The first, and often last, impression, the feel of the place — All require your very best.

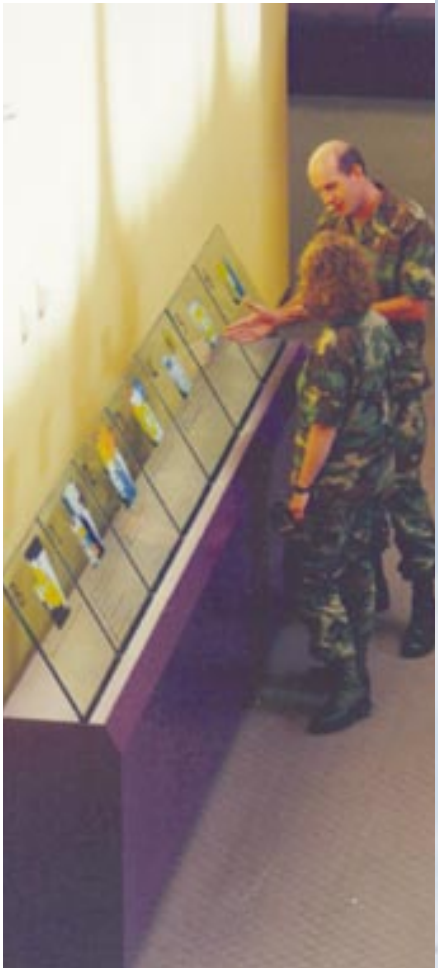
NCO Club
McChord AFB, WA

Interior Office
Air Force Academy, CO

And life is color and warmth and light.

—Julian Grenfell

As with outdoor graphics, coherent, adaptable interior graphics systems are important to building occupants and visitors alike. Integrated into the design, they become strong elements of continuity.



SPACE PLANNING. Orderly layouts are visually more appealing and more adaptable to change. Design the interior with clear circulation patterns and a layout which is easily perceived.

MATERIAL. Material selections establish the character of the space. Metal, glass, wood, fabric, plastics in profusion are yours to choose, but respect the integrity of the material.

COLOR. Color has enormous impact upon people. Your task is to increase the psychological well-being of the user.

STYLE. Go for an enduring style. Materials which will be changed periodically are logical places for a play of color; permanent materials, the place for safer neutrals.

TEXTURE. Texture has its own psychology. Soft, warm and inviting to touch are right for some situations; cool, smooth and shiny may be best for others; while coarse and rugged are right for still others.

PATTERN. Pattern selections can reinforce color choices. Bold, subtle, free-flowing or tightly geometric patterns can all be used to good effect, but with careful consideration for scale.

SOUND. Ceiling, wall, floor and panel surface materials should all be chosen to create the ambient noise level desired — from acoustically-lively lobbies to the quietest of work spaces.

Personalization of Space.

People feel a basic need to personalize their work and living spaces. In living spaces great latitude is possible. In work areas a balance must be struck between this need and a sense of the proper order.

Military Memorabilia as Art.

Flags, medals, photographs, uniforms, insignia, small historic pieces of equipment are available possibilities. Mounted and displayed so that they are integral to the interior design, they make interior spaces uniquely Air Force.

SAC Exhibit detail
Offutt AFB, NB

The interior designer must consider

FLEXIBILITY OF FURNITURE. Thoughtfully designed, flexible and well constructed furniture and systems are more adaptable, last longer and look better. Superior design returns great dividends at nominal additional cost.

ERGONOMICS. For some elements of furniture — particularly task seating — only the very best should be considered. Good seating costs more to research, design and build, but is worth the investment in terms of productivity and the continued well-being of the work force.

Desks, work surfaces and computer stations should also be selected for the benefits which accrue from their proven ergonomic design and long-term value.

AREAS FOR PERSONAL INTERACTION. Common areas are very important to the well-being of building users; plan them as carefully as work and living spaces.

Contributions to our mission are not all made from a work station. The forum for new ideas is often seemingly casual interaction among our people. Design areas of interaction to encourage this activity.

Conference Center
Andrews AFB, MD

Simply, but with such style.

—Horace

RECOMMENDED READING

The New Urbanism
PETER KATZ

The Complete Landscape Designs and Gardens of Geoffrey Jellicoe
MICHAEL SPENS

Herman Miller, Inc.: Buildings and Beliefs
JEFFREY L. CRUIKSHANK AND CLARK MALCOLM

Interior Design Illustrated
FRANCIS D. K. CHING

Color
FRANS GERRITSEN

CREDITS

DIRECTOR, AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE:
Gary M. Erickson, P.E.

DIRECTOR, DESIGN AND CONSTRUCTION DIRECTORATE:
Donald L. Ritenour, AIA

THIS PUBLICATION WAS PREPARED BY A TEAM COMPOSED OF:
3D/International, Giles Design, Barbara Hendricks and the Air Force Center for Environmental Excellence.

ACHIEVING DESIGN EXCELLENCE EDITOR:
R. Mikeual Perritt, AIA

What is our praise

or pride but to

imagine excellence,

and try to make it?

—Richard Wilbur