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Design aims - Home Style Research Foundation Geodesic Dwelling

The Grand Rapids Geodesic dwelling of Buckminster Fuller and his architectural associate James W. Fitzgibbon, is an entirely exploratory venture.

Though Fuller has invested one third of a century in designed experiments with structures and mechanics of dwellings intentioned only for quantity reproduction by industry's "mass" technology, his most recent developments - the Geodesic domes, and Octet Truss structures - have been the first to attain the industrial production stage.

The Geodesic domes and Octet Trusses have, however, reached the industrial reproduction stage only as sheltering and supports of functions other than those of dwellings for man. A variety of Geodesic structures for an equal number of National Defense purposes are now issuing from industry at velocities bordering on mass production. This production of bare Geodesic shelters has been reached only after a severe evolution of tests and modifications.

In the twenty years (1927-1947) of Mr. Fuller's search and design immediately preceding his recent ten years' development of Geodesic structures , he co-ordinated the development of his structures with a concomitant development of dwelling mechanics (see FORTUNE Magazine, July 1932, "Five Questions as Asked by FORTUNE in the First Five of its Articles on Housing...And A Striking Answer", by Archibald MacLeish).

In a shift of policy originating with Geodesic structures he determined to solve the structural problems of mass producible, world-around air deliverable environment control, before proceeding to the development of the mechanics, sanitation and instrumentation of such controlled environments. In the Grand Rapids Geodesic dwelling his first experiment in full-scale mechanization of a Geodesically controlled environment takes place.

The theory of the Grand Rapids Geodesic dwelling is ecological. (American College Dictionary: "ecology: the branch of biology that treats of the relations between organisms and their environments, - bionomics".) There are two ecological patterns characterizing biologic life: the major and the minor. For instance, in the total regenerative process "tree" the visible, local tree together with its roots, comprises the minor ecological pattern, and the pattern of the tree's seeds blowing progressively around the world to constitute in due course the pine belt or the palm belt is the major ecological pattern of the total regenerative process "tree".

The half-world-around patterns of annual bird migrations are the major ecological patterns of the respective migrating bird species. The total geometric limits (spherical) swept-out by the local flight patterns of birds only during their courting, mating, nest building, egg hatching, food foraging and brood raising are the minor ecological patterns of the respective bird species' regenerative processes as the composite in total seasonal patterning.

Ecological patterns, - in common with thought patterns or with the picture patterning of the cinema's dynamic continuity or in common with the swiftly spotlighted scanning pattern of TV pictures, - are all together dynamic "overlay" composites of a complex of action and event functions. Ecilogical patterns are not static structures and single

"things". Ecology, thought, cinema, and TV patterns are similar in result of compositing to the pictures taken by modern photographers who leave the camera lens open all night at an airport and thus record a composite swirl of the many aircrafts' landing lights th throughout a series of approaches, landings, taxiings and take-offs.

This kind of dynamic patterning of which the ecological patterns are typical, provide composite results which are often at variance with popularly held static concepts, - for instance, the delayed shutter photographs taken from an airplane in motion at night of the brilliant tracer bullet firing from another airplane which hits a third plane - that of the enemy. Many such photographs in wartime provide an unbelievable corkscrew pattern of the bullet which followed the shortest course between the firing ship and the victim ship. These shortest energy lines are called "geodesic" lines. Many of the geodesic lines of most efficient energy actions of nature appear superficially to the unwary observer as round-about serpentine lines. As the bullet's effectiveness shows, the unwary observer's interpretation is in error. The error is usually precipitated by the observer's erroneous assumption of a static position in the universe which, for instance, would fail to understand that the top of a young vine in arranging always to be nearer to the sun than the plant's roots for preferential energy conversion , causes the stem of the vine which connects it to the earth - which in turn is revolving before the sun - to trace a corkscrew pattern in the universe to accommodate the stem-tips reaching eastwardly in the morning and westwardly in the afternoon (always pointing directly at the sun). The static viewpoint - thinking of the earth as standing still - would look upon the spiraling stem-end as a pattern of inefficient vacillation missing the "straight" line reaching directly towards a statically positioned sun. These same "static" people see the sun "rise" and "set" about their static world.

The spiraling pattern of the vine is a minor ecological pattern. In every case we find that the ecological patterns are described by a dynamic composite of actions, forces, and event functions.

In establishing their minor ecological domains, the male birds of a specie acting in coordination precede the females in their polewards springtime flights and seek out that territory wherein there probably will be adequate worms and bugs for all their future families' mutual support during the mating season. Upon their forward arrival at a favorable territory for their minor ecological pattern requirements, the males then divide that territory into spherically tangent zones like closest packing spheres. Each male bird's zone is of such a specific dimension that the female birds which will later be sitting upon their respective nests within those zones will be able to leave their nests periodically for the purpose of obtaining worms for their sustenance, always within the female's own staked-out and pre-planned exclusive domain in such a manner as to be able to reach a probable worm yet be able to return to the nest in time to re-seat upon her eggs before they have cooled off below a critical heat level of energy, which heat she as their regenerative mother has been providing through her own individual metabolic processes to meet the exacting chemistry of the gestating processes.

Until the Twentieth Century the predominant patterns of man on earth were those of hunting, fishing, and farming. Throughout all history to within a few decades ago the radius of function patterns of man's major and minor ecological patterns were mutually restricted to minutely local dimensions in respect to total world dimensions. They were so mutually minuscule geographically speaking in respect to other living species that the dimensional difference between man's historical major and minor ecological patterns is

mathematically negligible. We may say that historically in relation to the patterns of all living species man's ecological patterns, minor and major, were approximately of identical radius.

In respect to now predominantly industrial man, the major ecological pattern is that of his increasingly accelerated range and frequency of comings and goings, not only about the face of his local state and continent, but also around the face of the earth - both for business and pleasure. North American man's minor ecological pattern now shifts every five years and shuttles annually and seasonally between various local regenerative re-creational domains - for he now maintains a plurality of minor ecological "make-do-s" within a plurality of local environmental contrivances either abandoned by their previous occupants or architecturally counterfeiting yesterday's structural and non-mechanical accommodations of the mutually local and minor ecological patterns of agricultural man's previous all-history, non-shifting, non-shuttling, non-commuting requirements.

The new world-around range and ever increasing frequency of industrial man's major ecological pattern-trending calls for scientific design of new and suitable minor ecological pattern facilities. The new minor ecological pattern facilities must be swiftly and securely reorganizable at any point around the surface of earth.

The important new degree of man's development of control over physical events now makes it physically possible for him to install his minor ecological regenerative patterning domains around the face of the earth happily secure within a comprehensively anticipated and locally controlled environment despite proximity to the most hostile environmental events of nature.

According to Fuller's working assumptions of design factors, man's minor ecological pattern must now be made to serve his major ecological patterning. This reverses the conventionally accepted schemes of history, especially those schemes at present conventionally in momentum amongst U.S.A. and European patterns, to wit: build a home then find a job or sequence of jobs near home to support that geographically fixed unitary domicile.

The Grand Rapids Geodesic environment control and its mechanization constitutes an exploration in the de-limiting of man's major ecological pattern by his minor ecological pattern. (E.g. - ways in which a long term mortgaged home may be avoided without sacrifice of good living standards, thus avoiding the "ball and chain" home as an obstacle to acceptance of a better job elsewhere than within the commuting range of one's present domicile.)

The theory of the Grand Rapids Geodesic is predicated upon newly taken assumptions in respect to the swiftly developing patterns of contemporary life. The dimensioning of the Geodesic controlled environment relates to an adequate encompassment of those unique functions of the individual which are inherently independent of men other than those of the individual's family and the latter's regenerative and re-creative phases. This ecological concept abandons customary classification of man's housing functions as "urban", "sub-urban", "farm", "vacation resort" or "camp".

Fuller's ecological concept abandons the static building and frozen geographic aspect of such customarily classified housing functions. Instead, his ecological concept is that of an air-flight deliverable and instantaneously installable, controlled and instrumented environment so devised that its dimensions are in effect of such magnitude as to induce a swift and spontaneous loss of the occupant's awareness of the existence of the structural

encompassment of his local environment. That is, the sense of the presence of the structure should be no greater than the sense of the trees in a grassed and flowered woodland opening. Just as the individual would of course be aware of the existence of a woodland group when coming upon it from the open plain, so, too, would the individual be aware of the Geodesic structure when first coming upon it. However, just as the individual after entering the woodland area and coming upon a pleasant campsite therein, comes spontaneously to acceptance of the total local environment as a natural and unlimited seclusion, so, too, does the theory of design of Geodesic controlled environment purpose the structural accomplishment of that control in so economic a manner as to remove the sense of physical limitations while introducing the most economical, natural structural neighborhood.

Just as the camper may then enjoy a sense of unlimited seclusion and privacy, so in the Geodesic controlled environment dwelling advantage may the individual experience that sense of unlimited privacy while being spared the frequent physical interruptions of his enjoyment by the lack of environmental controls inherent in the natural patterns.

In addition to the sense of unlimited seclusion and proximity to the variety of interesting facets of nature provided by the happily discovered campsite, the individual occupying the Geodesic dwelling area will be free of the interruptions of his pre-occupations of choice by insects, rain, high winds, et al. The sense of secluded de-limitation should be sustainable to the electable limit of the individual.

The instrumentation of the Geodesic and its controlled mechanisms must be as subordinated to the controlling consciousness of the dweller as is the dweller's coordinated organic functionings of heart, glands, etc., to his conscious preoccupations.

In order to accomplish this invisibility of structure and subconscious coordination of the dwelling mechanics, Fuller goes in the opposite direction of conventional aesthetics of design which attempt to make sensorially obvious the "good" taste and conscious coordinating ability of the designer.

Fuller's theory calls for a new set of semi-autonomously operating "mechanical" functions of the dwelling. Don't look for familiar faucets and doorknobs. In fact, stop looking for any"thing" familiar in Fuller's Geodesic dwelling, for it will not be there.

There will be room under the Grand Rapids Geodesic dwelling for all the family and friends' cars to drive in beneath the controlled "sky" and park. After parking and walking into the subconsciously controlled environment, whatever impression you may have of the outside appearance of the Geodesic as you drove up to it, will swiftly be forgotten, for you will rarely be able to discover from then on whether you are inside or outside. It will be as if once within the forest and within one of its secluded vaulted clearings, the shape of the total forest goes entirely out of mind and one is at once both inside and outside.